



**ADVANCED**  
INTERCONNECTIONS®

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Click on a product group below for more info >>

**BGA Socketing Systems**

**Peel-A-Way® Carriers**

**PGA Sockets**

**PGA Adapters**

**DIP Sockets**

**DIP Adapters**

**SIP Sockets**

**SIP Adapters**

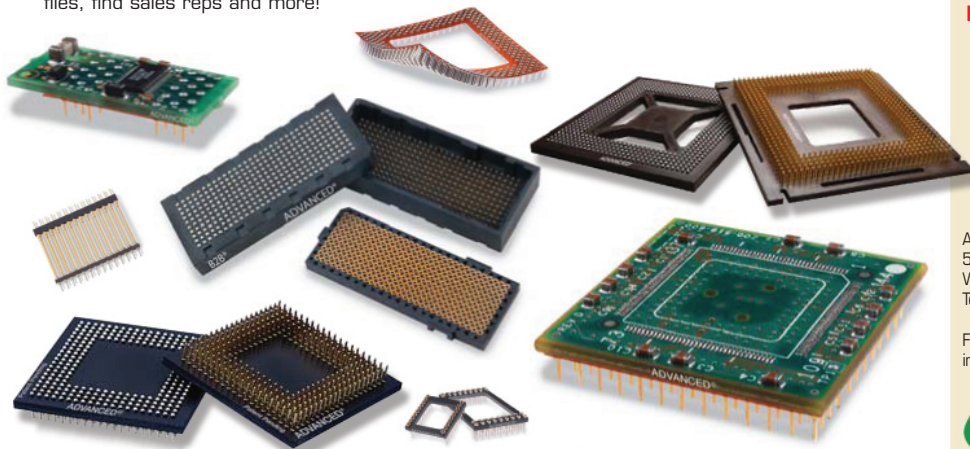
**Board to Board Connectors**

**Adapters**

**Terminals**

**BGA Footprints®**

**Reference**



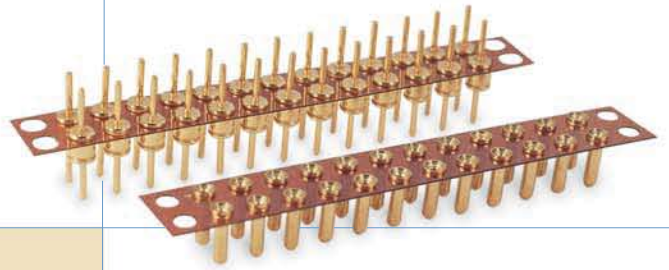
Advanced Interconnections Corp.  
5 Energy Way  
West Warwick, RI 02893  
Tel: 800-424-9850  
401-823-5200  
Fax: 401-823-8723  
[info@advanced.com](mailto:info@advanced.com)



\*In order to keep the Catalog PDF to a manageable download size the BGA Footprints have been removed but can be downloaded as a separate file by clicking on the name to the right in red.

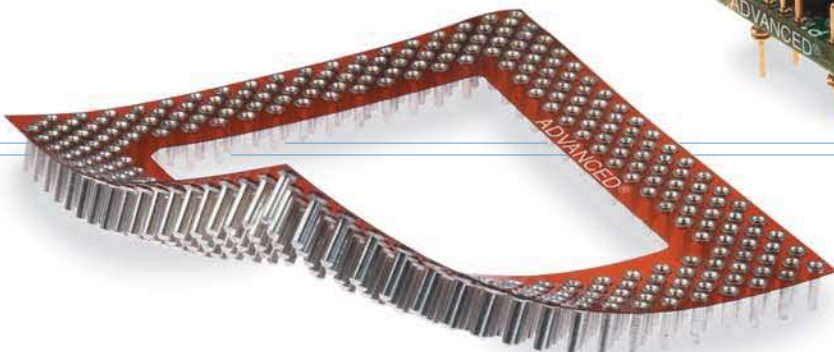
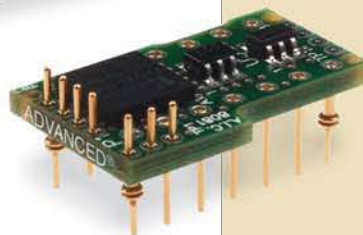
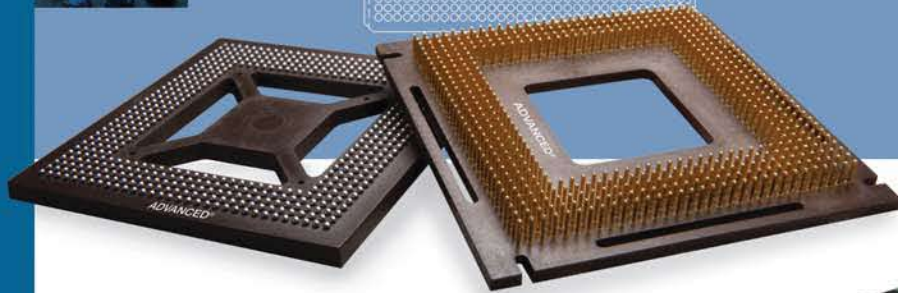
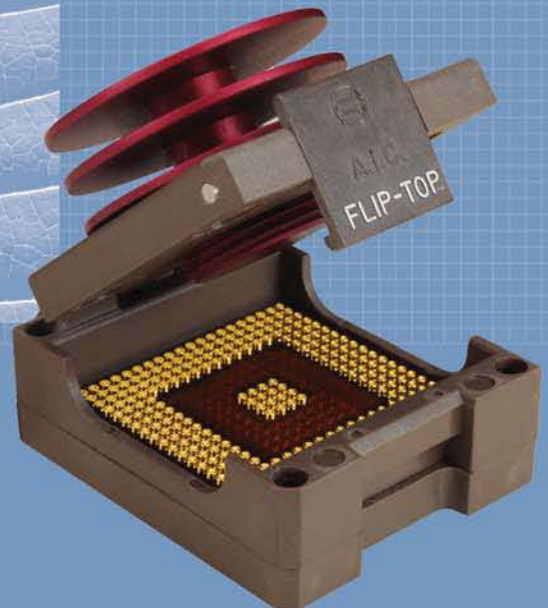
# Catalog 16A

IC Sockets, Adapters, and Board to Board Connectors



0.076[1.93]  
1.752[44.50] SQ  
1.600[40.64] SQ  
32 EQ. SP. @ 0.050[1.27]

INSULATOR  
P/N: 5897-560R



**ADVANCED**  
INTERCONNECTIONS®



# The Advanced® Difference



**ADVANCED  
INTERCONNECTIONS®**

Advanced Interconnections is a leading designer and manufacturer of innovative interconnect solutions for electronic applications worldwide. Founded in 1982, Advanced specializes in IC sockets, adapters and PC board connectors with technologically advanced features and benefits.

Our products feature the highest quality screw-machined terminals with multi-finger contacts. Standard and custom designs are available for thru-hole and surface mount applications. A variety of insulator and plating materials are available to meet RoHS and other worldwide directives for environmentally-friendly manufacturing.

## Patented BGA Socketing System for 0.50/0.65mm Pitch Devices

Our new BGA Socket Adapter System is a breakthrough in fine pitch socket technology. The patented design

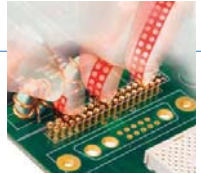


alternates male and female pins in an interstitial pattern – offering the reliability of screw-machined terminals with multi-finger contacts in a compact SMT socket.

At only 2.00mm larger than the device package, this compact design is perfect for development and validation of BGA and LGA devices, production level socketing, and SMT board to board connector applications. See pages 4-5 for complete details.

## Peel-A-Way® Removable Terminal Carriers

Our patented Peel-A-Way® Removable Terminal Carriers eliminate the need for hand loading terminals and offer a super low profile solution for socketing a wide variety of devices. The polyimide film carrier can be easily removed after processing or left in place for added stability.



## Screw-machined Terminals

Precision machined brass terminals (pins) with multi-finger beryllium copper contacts are the hallmark of Advanced quality. We offer hundreds of high reliability standard and custom terminals for applications including ultra-low profile, surface mount, and intrusive reflow (solder preform).



## The Solder Ball Advantage

Our exclusive solder ball terminals, available in standard Tin/Lead or new Tin/Silver/Copper, provide process yields equivalent to direct attach. From BGA Socketing Systems to our new B2B® High Density SMT Connectors, Advanced specializes in surface mount applications.



## Solder Preform Terminals

For intrusive reflow applications or mixed technology applications (both thru-hole and SMT devices on same PC board), our solder preform terminals are the perfect solution. Available in either Tin/Lead or new Tin/Silver/Copper, the preforms eliminate the need for solder paste and screening operations and ensure reliable solder joints with controlled solder volumes.



## RoHS Compliant Products

All of our standard and custom IC Sockets, Adapters and Board to Board Connectors are now available for RoHS Compliant applications, meeting requirements of the RoHS Directive for both material content and processing compatibility.



## Custom Solutions

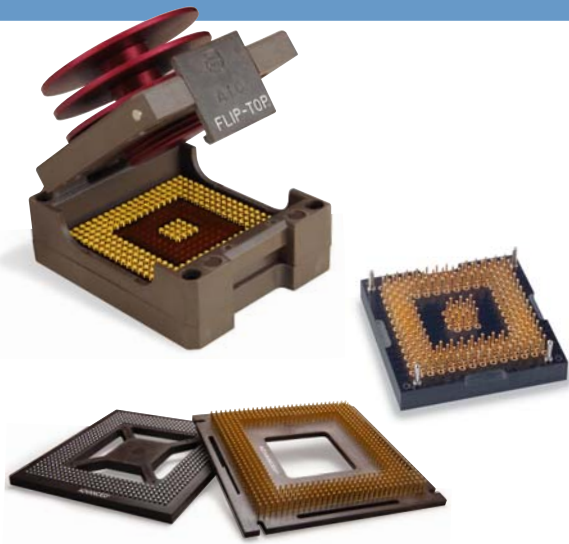
Our product application engineers are ready to assist with custom designs to handle everything from adapters for device package transitions to application-specific connectors.



## Free Samples and EXPRESS Delivery

From prototype through production, we understand that samples and fast delivery are critical to the success of any project. Take advantage of our free samples and look for the EXPRESS symbol throughout this catalog for products that can be shipped within 3 days (some quantity restrictions apply).

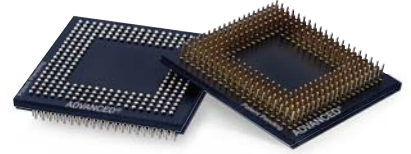




## BGA Socketing Systems

Our Ball Grid Array Socket Adapter Systems and Flip-Top™ BGA Socket offer a reliable method for socketing BGA, LGA, and CSP devices in validation, test and production applications.

- Compact designs match IC device footprint.
- Patented solder ball terminals offer process yields equivalent to direct device attach.
- Available in tape and reel packaging for automated assembly.



## IC Sockets and Adapters

Advanced offers a wide variety of IC Sockets and Adapters for virtually any package configuration including PGA, DIP, and SIP, as well as application-specific designs such as Image Sensor Sockets.

- Insulator options include FR-4, molded, and our own patented Peel-A-Way® Removable Terminal Carriers.
- Thousands of standard designs are available with Quick-Turn delivery.
- Peel-A-Way® Carriers can be easily customized with multiple terminal types and unique footprints to replace hand loading operations or to provide a quick method for socketing heat-sensitive devices.



## Board to Board Connectors

Proven reliability and design flexibility provide effective results for even the most demanding board to board and mezzanine board applications.

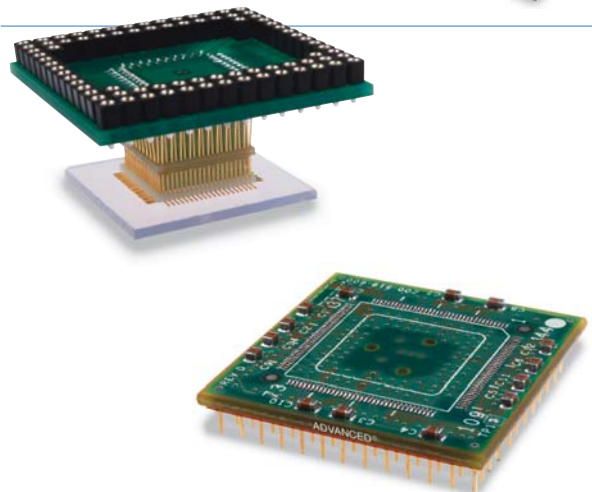
- Through-hole and surface mount designs available.
- High quality screw-machined terminals offer reliable electrical/mechanical interconnect.
- Unique solder preforms allow multi-tier Z-axis expansion.



## Advanced® Adapters

Advanced® Adapters are designed to your specifications for IC package conversion, test, emulation and development applications.

- Standard designs include SOIC to DIP and PLCC to PGA adapters.
- Full line of IC Package Conversion and Test Emulation Adapters.
- Custom designs can include device enhancements or corrections by adding passive components.







Please visit our web site at [www.advanced.com](http://www.advanced.com) for the latest product updates and access to test data, electrical performance, technical specifications, CAD drawings and more. In addition to products presented in this catalog and on our web site, we offer a wide variety of custom interconnect solutions. Please contact our experienced application engineers, manufacturer's representatives, and worldwide network of authorized distributors for standard and custom interconnect solutions to meet your application requirements.

## Build-A-Part Number

Build a part number online using our eCatalog at [www.advanced.com](http://www.advanced.com). Easy-to-use pull-down menus offer selections for terminal type, footprint, pitch, insulator material, plating, etc. Once the part number is built, enhanced options such as downloading a CAD drawing, searching distributor stock, requesting a quote, or printing a spec sheet are available.

In addition to this full-line catalog, our web site ([www.advanced.com](http://www.advanced.com)) is a great tool for selecting the exact socket, adapter, or connector part number for your application. Complete product information is available for download including:

- CAD drawings in PDF format
- Electrical performance including signal integrity data and models
- RoHS Compliance test reports
- Application notes
- Technical articles
- Distributor inventory
- Build-A-Part product configurator
- Searchable BGA Footprints database
- Product updates
- RFQ and Sample order forms
- Global sales directory of representatives and distributors

**Flip-Top™ BGA Sockets**

To use this CONFIGURATOR, please make all selections from the **PULL DOWN MENUS** to build the part number required.

To view a CAD drawing, click 'View Spec' below.

Select No. of Positions first which matches your device. View available Footprints by clicking on the Footprint link.

2	FR	G	280	708	G	G	CS
Footprint Catch Number	Model Type	Pitch	No. of Positions	Terminal Type	Outer Terminal Plating	Inner Contact Plating	Clamp

No. of Positions: 280

View Footprints: 2

Model Type: info Flip-Top BGA Socket

Pitch: 0.050" (1.27 mm)

View Terminal Type: Type-708

Outer Terminal Plating: Gold

Inner Contact Plating: Gold

Clamp: Coin Screw

If the footprint you need is not shown or the number of positions is not listed, please Fax or (801-823-8723) the Device Package Mechanical Specifications and we will set up a footprint number for you.

Custom designs are available - please call customer service. Products listed may be covered by patents issued and/or pending.

Check Distributor Stock

Add to View Spec Reset Help

Our e-Catalog makes it easy to build the exact part number needed to match your device footprint and application. Also available for our wide variety of board to board connectors. Once your part number is built, select from a variety of useful features including Request for Quote, Sample Order, Spec Sheet, and CAD Drawing.

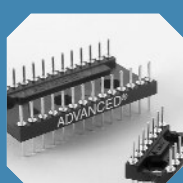
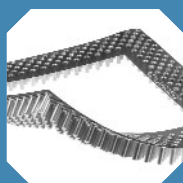
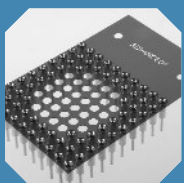
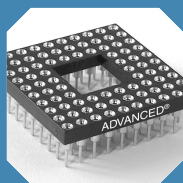
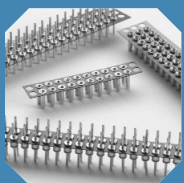
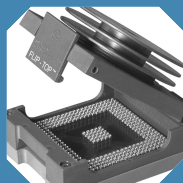
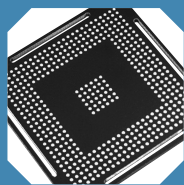


Advanced proudly manufactures in the USA from our 35,000 sq. ft. corporate headquarters in West Warwick, Rhode Island and our own screw-machine facility located nearby. Quality, in both manufacturing and customer service, is our guiding principle, as evidenced by our ISO 9001 certification.

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5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
info@advanced.com | [www.advanced.com](http://www.advanced.com)  
Catalog 16A



## BGA Socketing Systems

Designed for use with Ball Grid Array (BGA), Land Grid Array (LGA), and Chip Scale Package (CSP) devices in development, test and production applications. Over 1,000 footprints available online in our searchable BGA Socket Finder™ database at [www.bgasockets.com](http://www.bgasockets.com).

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## Peel-A-Way® Carriers

Peel-A-Way® Removable Terminal Carriers offer a quick and cost-effective solution for loading socket terminals onto a PC board. Standard and custom designs offer a high temperature, low-profile solution that can be used with multiple terminal styles. The polyimide carrier can be removed after board processing for complete solder joint visibility or left in place for added stability.

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## PGA Sockets & Adapters

High quality sockets and adapters for .100/(2.54mm) pitch Pin Grid Array (PGA) devices featuring industry's most reliable screw-machined terminals with multiple finger contacts. Hundreds of standard and interstitial footprints available in new high temperature molded LCP (liquid crystal polymer), FR-4, and our patented Peel-A-Way® insulators. Select your footprint online in our Build-A-Part feature at [www.advanced.com/pgastart.html](http://www.advanced.com/pgastart.html).

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## DIP Sockets & Adapters

High quality sockets and adapters for .100/(2.54mm) pitch Dual Inline Packages (DIP) featuring industry's most reliable screw-machined terminals with multi-finger contacts. Available in new high temperature molded LCP (liquid crystal polymer) and our patented Peel-A-Way® insulators.

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## SIP Sockets & Adapters

High quality sockets and adapters for Single Inline Packages (SIP) and Board to Board applications on .100/(2.54mm) pitch featuring industry's most reliable screw-machined terminals with multi-finger contacts. Available in new high temperature molded LCP (liquid crystal polymer) and our patented Peel-A-Way® insulators.

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## Board to Board Connectors

From thru-hole to high density SMT designs, Advanced offers a wide variety of solutions for board stacking applications. High quality screw-machined terminals offer long-term reliability for rigorous mating/unmating cycles.

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## Adapters

Advanced® Adapters provide high quality, proven solutions for device package conversion as well as device enhancements or corrections by adding passive components. Standard and custom designs are available for development, test and production applications.

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## Terminals

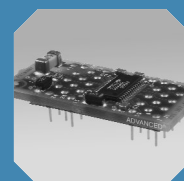
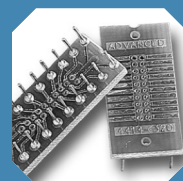
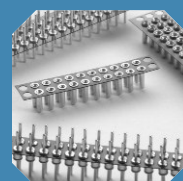
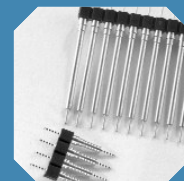
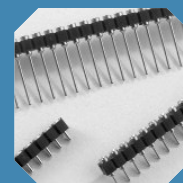
Advanced designs and manufactures hundreds of RoHS Compliant screw-machined terminals for our high quality sockets, adapters, and connectors. Advanced also offers a complete line of EMC® insulated and non-insulated terminals and test jacks for RoHS Exempt applications.

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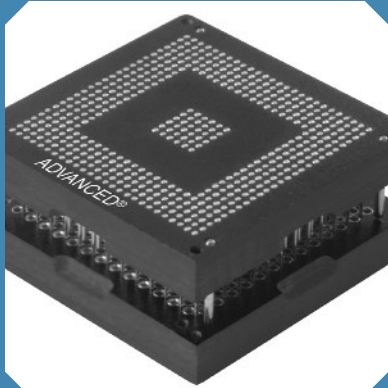
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**ADVANCED**  
INTERCONNECTIONS®

5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
info@advanced.com | www.advanced.com  
Catalog 16A

# BGA Socket Adapter System



## Features:

- Advanced's field-proven screw-machined terminals with multi-finger contacts, arranged in an interstitial male/female pin pattern are gold plated for gold/gold interconnect.
- Small overall size & same footprint as device – only 2.00mm larger than device.
- No external hold-downs required.
- Unique alignment pins protect pin field and aid in hand placement with optional stand-offs available.
- Sockets and Adapters are provided with protective covers which facilitate automated pick & place.
- Superior electrical performance – very low signal attenuation.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Solder Ball:

Standard: 63Sn/37Pb  
Lead-free: 0.50mm Pitch:  
96.5Sn/3.0Ag/0.5Cu  
0.65mm Pitch:  
95.5Sn/4.0Ag/0.5Cu

### Plating:

G - Gold over Nickel  
Gold per ASTM-B-488  
Nickel per QQ-N-290

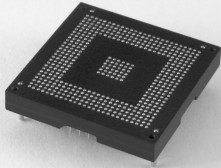
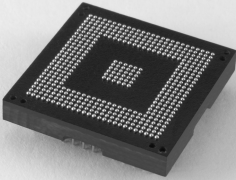
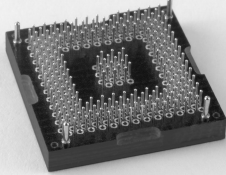
*Note: Alignment pins are Nickel plated.*



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# Fine Pitch BGA Socket Adapter System 0.50mm and 0.65mm Pitch

## Table of Models

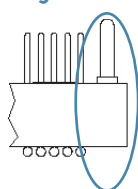
	Description: <b>Standard Adapter (A)</b> Material: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F) Note: Mates with Standard Socket for BGA device socketing.	Insulator Size: BGA device body +.079/(2.00)
	Description: <b>SMT Adapter (A)</b> Material: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F) Note: Mates with Standard Socket for LGA Socketing or Board to Board applications.	Insulator Size: LGA device body +.079/(2.00)
	Description: <b>Standard Socket (S)</b> Material: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F) Note: Mates with either Standard Adapter or SMT Adapter.	Insulator Size: BGA/LGA device body +.079/(2.00)

Note: Mated Height 0.214/(5.44)\* approx.

(\*will vary based on reflow profile, paste volume and PC board pad size)

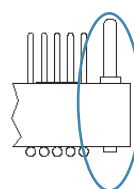
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### Alignment Pin Options



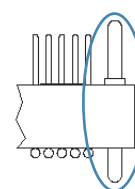
#### No Code

Alignment pin in each corner.



#### Code 1

Four alignment pins (top) with four stand-offs (bottom).



#### Code 2

Dual alignment pins (4 on top; 3 on bottom with stand-off in A1).

*Note: Alignment pins are Nickel plated.*

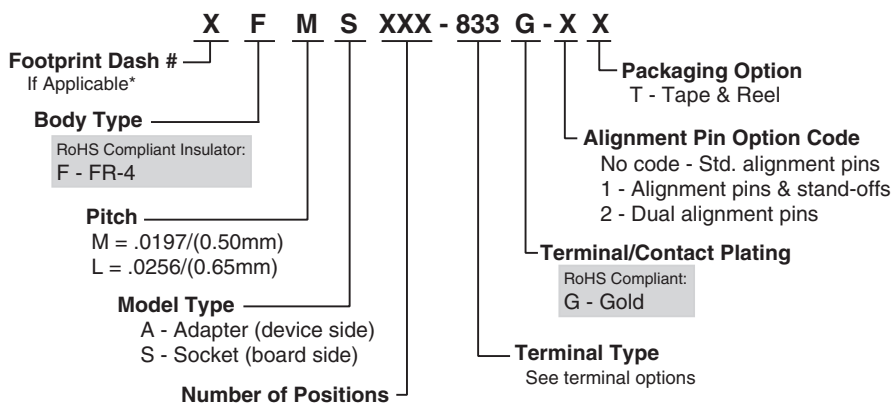
## Packaging Options



### Tape and Reel Packaging

- Conforms to EIA-481 Standard.
- Pick-up caps included.
- Add -T to end of part number when ordering.

## How To Order



\*See footprints section or online database.

Note: If no packaging code is indicated, parts are supplied in standard trays.  
Both sockets and adapters are supplied with protective covers and one extraction tool.  
Extraction Tool is also available separately; order P/N 8794.



Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

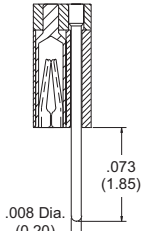
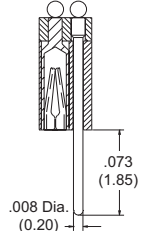
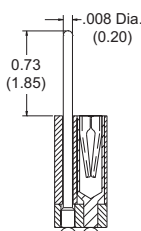
inch/(mm)



# Fine Pitch BGA Socket Adapter System

## 0.50mm and 0.65mm Pitch

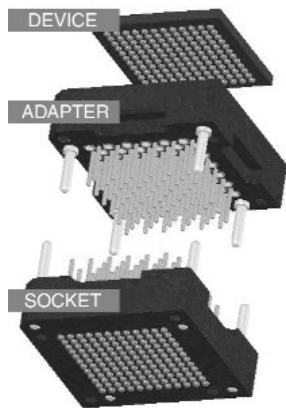
### Standard Terminals

Type -834	Tin/Lead: Type -832 Lead-free: Type -833	Tin/Lead: Type -832 Lead-free: Type -833
		
Standard Adapter	SMT Adapter	Standard Socket

Note: Solder ball diameter is 0.012/(0.30mm) on 0.50mm pitch models and 0.014/(0.36mm) on 0.65mm pitch models.

### How It Works

See page 15 for Generic Reflow Profiles.



Reflow solder device to Adapter.

- Adapter matches footprint of BGA/LGA device and plugs into mating socket using unique male/female terminals in an interstitial pattern (patented design).

Reflow solder Socket to PC Board.

- Socket matches footprint of BGA/LGA device. Use alignment pins to align Device/Adapter assembly during insertion into board-mounted Socket.



- One extraction tool (P/N 8794) is supplied with each order.

### Performance

#### Superior Electrical Performance

Even with adjacent Aggressor excitation, our socket system provides a Differential Data path of +/- 175mV @ 100psec and a Single-ended Data path of +/- 125mV @ 140psec.

Patented hybrid design ensures that adjacent terminal electromagnetic coupling is trivial; greatly reducing NeXT & FeXT, while creating a pseudo-matched impedance environment; stabilizing the Insertion & Return Loss response rates.

	0.50mm Pitch	0.65mm Pitch
<b>Differential Insertion Loss</b>	-0.40dB @ 1.0 GHz -0.55dB @ 1.9 GHz	-0.25dB @ 3.5 GHz
<b>Differential Return Loss</b>	-15.0dB @ 1.0 GHz -10.0dB @ 1.9 GHz	-14.0dB @ 3.5 GHz

Note: U.S. Patents 7,179,108 and 7,419,398

#### Insertion/Extraction Force

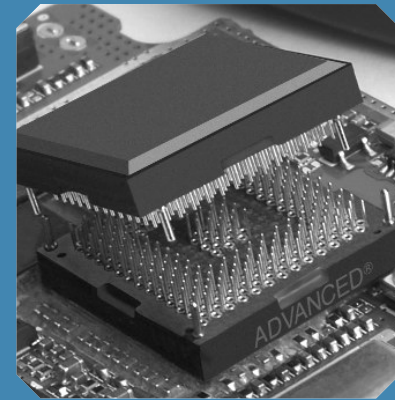
35g avg. Insertion & 30g Withdrawal (per pin)

Additional electrical performance, signal integrity data and models available online.

inch/(mm)

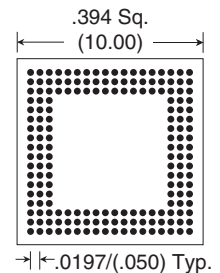
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

# BGA Socket Adapter System



### Footprints:

180 Pins  
Footprint Number 180-2



18 x 18 rows

- Footprint specific insulators drilled to exact device pattern.
- Many footprints available - see page 88, search online or submit your device specs.
- Use our Build-A-Part feature or search in our online BGA Socket Finder™ at [www.bgasockets.com](http://www.bgasockets.com).

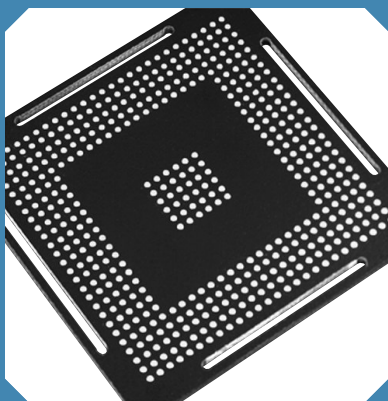
### Available Online:

- RoHS Qualification Test Report
- Application specification
- Technical articles
- Test data
- Signal Integrity Performance
- CAD drawings
- BGA Footprints



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Fax: 401.823.8723  
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Catalog 16A

# BGA Adapters



## Features:

- Soldering BGA Device to adapter subjects BGA to less thermal stress than soldering BGA directly to a PCB due to the adapter's lower mass.
- Uses same footprint as BGA device.
- Custom adapters available for heat sink attachment.
- Gold plated screw-machined terminals for superior durability.
- Unique SMT Adapter provides reliable solution for mounting or socketing LGA or re-worked BGA devices.
- SMT Adapters mate with our BGA Sockets for LGA to BGA conversion or SMT Board to Board applications.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Solder Ball:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

### Plating:

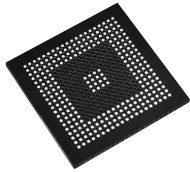
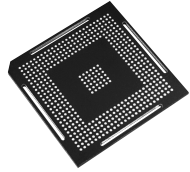
G - Gold over Nickel

Gold per ASTM-B-488  
Nickel per QQ-N-290

# Ball Grid Array (BGA) Adapters

For use with BGA Sockets on pages 8-9

## Table of Models

	Description: <b>Standard Adapter (A)</b> Material: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F) Note: Mates with Standard Socket (S)	Insulator Size: BGA device body +.079/(2.00mm)
	Description: <b>Extraction Slot Adapter (AX)</b> Material: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F) Note: Mates with Extraction Socket (SB)	Insulator Size: BGA device body +.157/(4.00mm)

Note: For use with LGA or reworked BGA devices, select surface mount (SMT) terminals which feature solder balls on device side. SMT Adapter terminals may also be used for surface mount board to board applications.

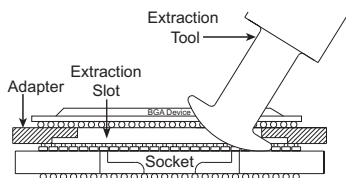
## Options



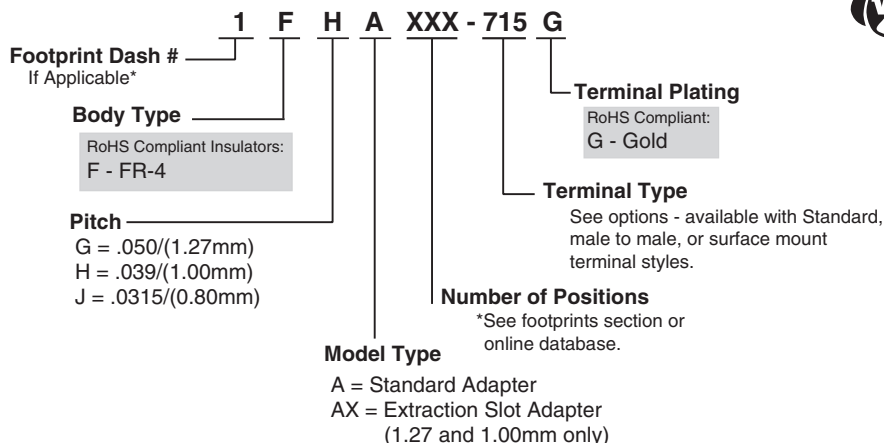
P/N 8125

## Extraction Tool

- Insert "T" bar end of tool into extraction slot adapter.
- Slide tool to end of slot and pry adapter from socket.
- Repeat in additional slots until adapter is separated from socket.
- Works with LCP or FR-4 sockets.



## How To Order



Note: See pages 4-5 for 0.50mm and 0.65mm pitch.  
Consult factory for custom 0.75mm pitch designs.  
For SMT Adapters, select Model Type A or AX  
and appropriate SMT Terminal Type from page 7.



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inch/(mm)



# Ball Grid Array (BGA) Adapters

For use with BGA Sockets on pages 8-9

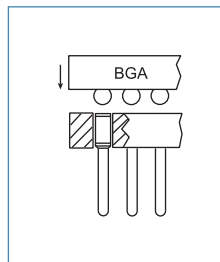
## BGA Adapters

### Standard Terminals

Additional standard and custom terminals available.  
See Terminals section or consult factory.

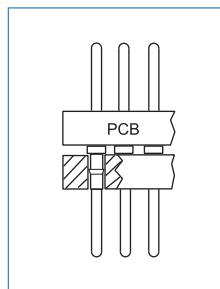
Standard

<b>Type -638</b> 1.27mm pitch 	<b>Type -715</b> 1.00mm pitch 	<b>Type -700</b> 0.80mm pitch 
--------------------------------------	--------------------------------------	--------------------------------------



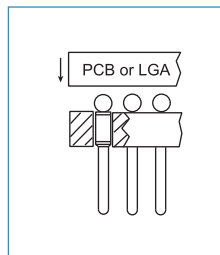
Male to Male

<b>Type -721</b> 1.27mm pitch 	<b>Type -735</b> 1.00mm pitch 	<b>Type -732</b> 0.80mm pitch 
--------------------------------------	--------------------------------------	--------------------------------------



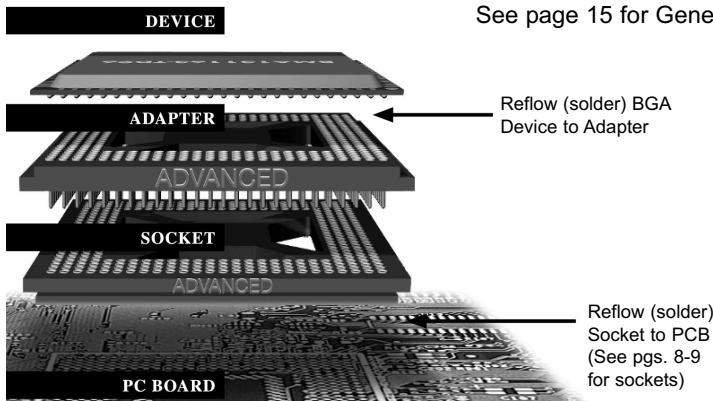
SMT (Surface Mount)

<b>Tin/Lead: Type -720</b> <b>Lead-free: Type -823</b> 1.27mm pitch 	<b>Tin/Lead: Type -737</b> <b>Lead-free: Type -824</b> 1.00mm pitch 	<b>Tin/Lead: Type -736</b> <b>Lead-free: Type -829</b> 0.80mm pitch 
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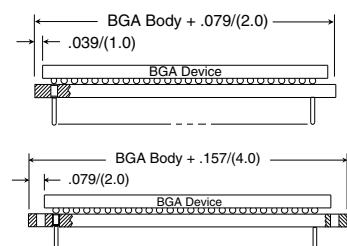
### How It Works

See page 15 for Generic Reflow Profiles.



- Either Tin/Lead or Lead-free device packages can be attached to our RoHS Compliant Adapters.
- PC boards can be processed with Tin/Lead BGA sockets in standard profiles or lead-free BGA sockets in RoHS Compliant, high temperature profiles.

### Dimensional Information



#### Standard Adapter (A)

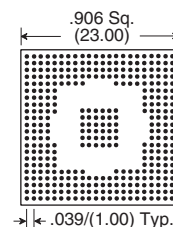
- Mates with Standard Socket (S)
- Adapter size equals BGA Device body + .079/(2.00)

#### Extraction Slot Adapter (AX)

- Slots allow AIC extraction tool (sold separately) to easily remove device/adapter assembly from socket
- Mates with Extraction Socket (SB)
- Adapter size equals BGA Device body + .157/(4.00)

### Footprints:

360 Pins  
Footprint Number 360-2



22 x 22 rows

- Footprint specific insulators drilled to exact device pattern.
- Over 1000 footprints available - see page 88, search online or submit your device specs.
- Use our Build-A-Part feature or search in our online BGA Socket Finder™ at [www.bgasockets.com](http://www.bgasockets.com).

### Available Online:

- RoHS Qualification Test Report
- Technical articles
- Test data
- Signal Integrity Performance
- CAD Drawings
- BGA Footprints

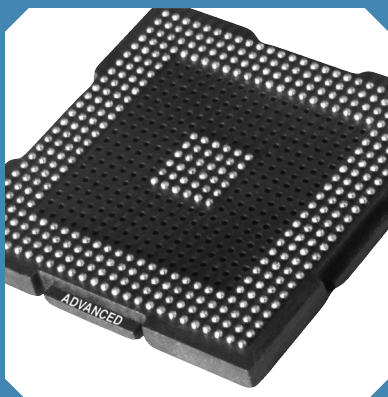


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inch/(mm)

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# BGA Adapter Sockets



## Features:

- Advanced® exclusive solder ball terminals offer superior SMT processing.
- Same footprint as BGA device.
- Proven long-term performance in vigorous temperature cycling applications - solder ball terminal absorbs TCE mismatch.
- Closed bottom socket terminal for 100% anti-wicking of solder.
- Gold contacts allow gold/gold interconnections to Adapter pins.
- Low insertion force socket with multi-fingered high reliability Beryllium Copper contacts.
- Coplanarity consistently under .006 inch industry standard.
- Custom designs available.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Solder Ball:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

### Plating:

G - Gold over Nickel  
Gold per ASTM-B-488  
Nickel per QQ-N-290

# Ball Grid Array (BGA) Adapter Sockets

For use with BGA Adapters on pages 6-7

## Table of Models

	Description: <b>Standard Socket (S)</b> Mat'l: High Temp. Liquid Crystal Polymer (LCP)* Index: -60°C to 260°C (-76°F to 500°F)	Insulator Size: Same size as BGA device body
	Description: <b>Extraction Socket (SB)</b> Mat'l: High Temp. Liquid Crystal Polymer (LCP)* Index: -60°C to 260°C (-76°F to 500°F)	Insulator Size: 1.27mm Pitch: BGA device body +.079/(2.00)  1.00mm Pitch: BGA device body +.138/(3.50)

RGS/RGSB replaces MGS/MGSB, MHS/MHSB replaces FHS/FHSB.

\* Some sizes may only be available in FR-4. See How To Order section or consult factory.

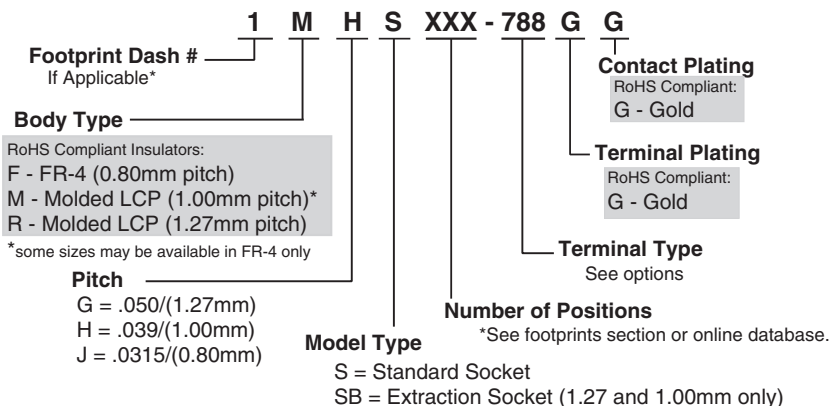
## Options



### Tape and Reel Packaging

- Conforms to EIA-481 Standard.
- Pick-up tape included.
- Add -TR to end of part number when ordering.
- Custom packaging available
- If -TR is not specified, standard tray packs are used.
- Extraction tool (P/N 8125) is available separately.
- Works with Extraction Slot Adapters and LCP or FR-4 sockets.

## How To Order



Note: See pages 4-5 for 0.50mm and 0.65mm pitch.



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inch/(mm)



# Ball Grid Array (BGA) Adapter Sockets

For use with BGA Adapters on pages 6-7

Additional standard and custom terminals available.  
See Terminals section or consult factory.

## Standard Terminals

SMT (Surface Mount)

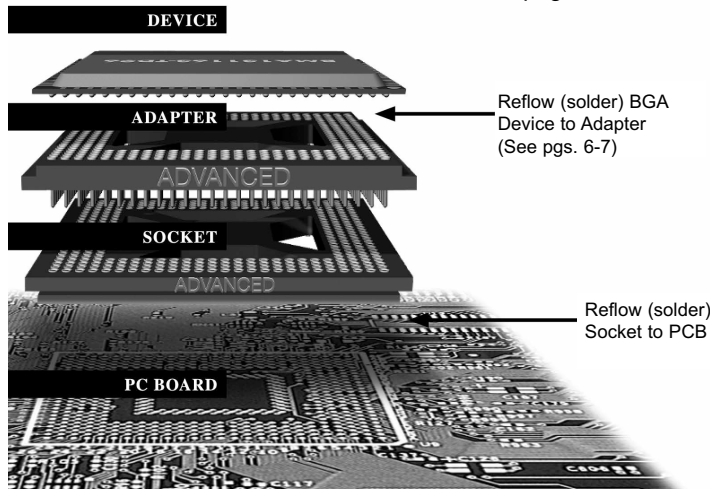
<b>Tin/Lead: Type -636</b> <b>Lead-free: Type -819</b> 1.27mm pitch  PATENTED	<b>Tin/Lead: Type -790</b> <b>Lead-free: Type -788</b> 1.00mm pitch  PATENTED	<b>Tin/Lead: Type -702</b> <b>Lead-free: Type -828</b> 0.80mm pitch  PATENTED
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Thru-Hole

<b>Type -673</b> 1.27mm pitch  PATENTED	<b>Type -789</b> 1.00mm pitch  PATENTED	<b>Type -731</b> 0.80mm pitch  PATENTED
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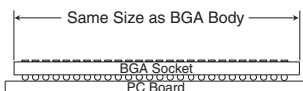
## How It Works

See page 15 for Generic Reflow Profiles.



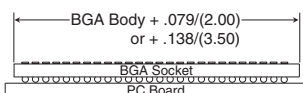
- Either Tin/Lead or Lead-free device packages can be attached to our RoHS Compliant Adapters.
- PC boards can be processed with Tin/Lead BGA sockets in standard profiles or lead-free BGA sockets in RoHS Compliant, high temperature profiles.

## Dimensional Information



### Standard Socket (S)

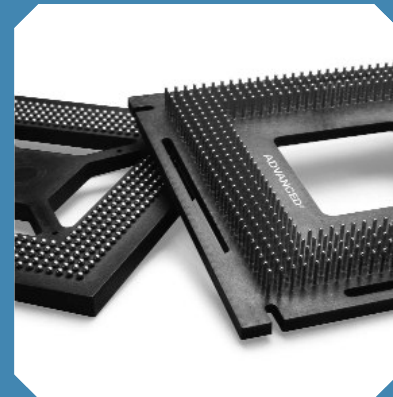
- Mates with Standard Adapter (A)
- Socket size same as BGA device body
- Use with SMT Adapter for LGA and reworked BGA device socketing (or board to board applications)



### Extraction Socket (SB)

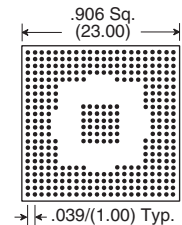
- Mates with Extraction Slot Adapter (AX)
- Socket size equals BGA body + .079/(2.00) for 1.27mm pitch or BGA body + .138/(3.50) for 1.00mm pitch
- Protects valuable PCB during device/adapter extraction - tool never touches PCB
- Available in 1.00 and 1.27mm pitch only

# BGA Adapter Sockets



## Footprints:

360 Pins  
Footprint Number 360-2



22 x 22 rows

- Full grid molded insulators populated to exact device pattern.
- Over 1000 footprints available - see page 88, search online or submit your device specs.
- Use our Build-A-Part feature or search in our online BGA Socket Finder™ at [www.bgasockets.com](http://www.bgasockets.com).

## Available Online:

- RoHS Qualification Test Report
- Technical articles
- Test data
- Signal Integrity Performance
- CAD drawings
- Generic Tin/Lead and Lead-free Reflow Profiles



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# Flip-Top™ BGA Sockets

## Mod5 Series Flip-Top™ BGA Sockets 0.50mm Pitch



### Features:

- Model shown accommodates BGA packages up to 12mm sq. (22 x 22 rows) with larger sizes available upon request.
- Precision machined spring probes offer high bandwidth with very low insertion loss.
- Compact size (small keepout zone) enables use on design boards.

### Specifications:

#### Guide Box:

High Temp. Glass Filled Thermoplastic (PPS)  
Screws: 18-8 Stainless Steel

#### Base Socket:

FR-4 Glass Epoxy,  
U.L. Rated 94V-0

#### Lid, Latch, Heat Sink, and Support Plate:

Anodized Aluminum

#### Spring Probe Terminals:

Crown-point Plunger:  
Tool Steel, Gold Plated  
Spring: Stainless Steel,  
Gold Plated  
Terminal: Brass (C36000),  
Gold Plated

#### Solder Ball (Board Interface)

##### RoHS Compliant (Lead-free):

96.5Sn/3.0Ag/0.5Cu (SAC305)

##### Not RoHS (Tin/Lead):

63Sn/37Pb

#### Continuous Operating Temperature Range:

-40°C to 140°C (-40°F to 284°F)

### Table of Models

	<p>Description: <b>SMT Standard (FRM)</b></p> <p>Note 1: See Application Spec. for recommended adhesive (epoxy) instructions.</p>	
	<p>Description: <b>SMT/Screw Mount (FRM)</b></p> <p>Note 2: Screws provided for additional strain relief when needed; reflow still required.</p>	
	<p>Description: <b>SMT Plus (FRM)</b></p> <p>Note 3: Additional solder balls provided for strain relief in low pin count SMT applications.</p>	

For device packages up to 12mm square:

#### Body Size

0.79/(20mm) W x 1.06/(27mm) L

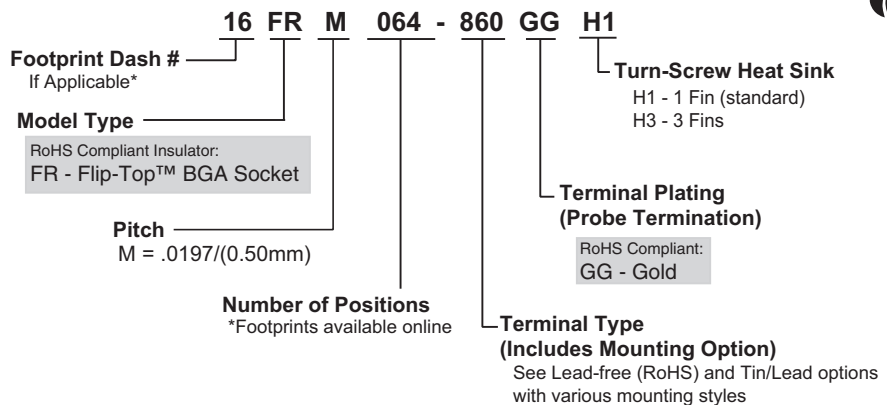
#### Height

0.68/(17.4mm)\* approx. (\*will vary based on reflow profile, paste volume, etc.)

Additional mounting options and custom designs available.

Consult factory for QFN and LGA devices.

### How To Order



- 4-point crown tip spring probes accurately align device solder balls, leaving only minimal witness marks to preserve the solder ball integrity
- Device mechanical specifications are required prior to ordering to ensure accuracy of device-specific chip support plate
- Sockets are packaged in foam-lined cartons



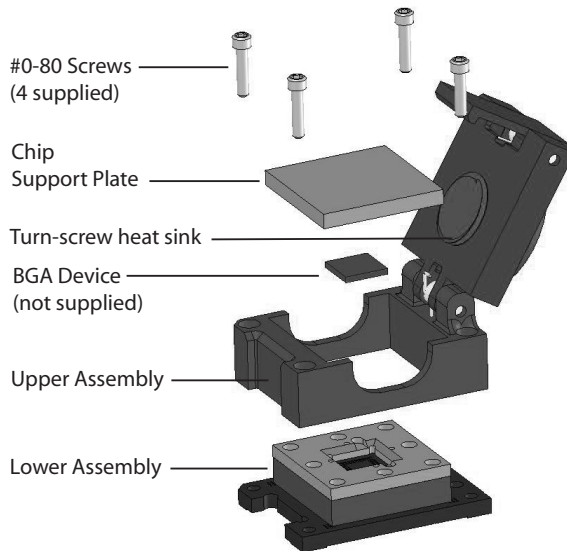
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inch/(mm)

# Mod5 Series Flip-Top™ BGA Sockets 0.50mm Pitch

## How It Works



Step 1: Solder lower assembly to PC board.

Step 2: Attach upper assembly using four supplied screws.

Step 3: Insert BGA device by hand or with the aid of a vacuum pen (recommended).

Step 4: Place device-specific chip support plate (supplied) over device, close lid, and screw down heat sink actuator for device engagement.

## Performance

### Durability

Actuation cycles: 500 minimum

### Current Carrying Capacity

2.8 Amps Max.

### Probe Contact Force

18 g (per position)

### Probe Contact Resistance

80 mOhms

### Return Loss\*

Differential	Single-Ended
-10db @ 2.6 GHz	-10db @ 8.0 GHz
-15db @ 1.3 GHz	-15db @ 3.5 GHz

### Insertion Loss\*

Differential	Single-Ended
-0.6db @ 2.6 GHz	-2.1db @ 8.0 GHz
-0.2db @ 1.3 GHz	-0.9db @ 3.5 GHz

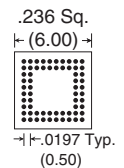
\*Complete SI Simulation Report Available

# Flip-Top™ BGA Sockets



## Footprints:

64 Pins  
Footprint Number 64-16



10 x 10 rows

- Footprint specific insulators drilled to exact device pattern.
- Over 100 footprints available - search online, see pg. 84, or submit your device specs.
- Use our Build-A-Part feature or search in our online BGA Socket Finder™ at [www.bgasockets.com](http://www.bgasockets.com).

## Available Online:

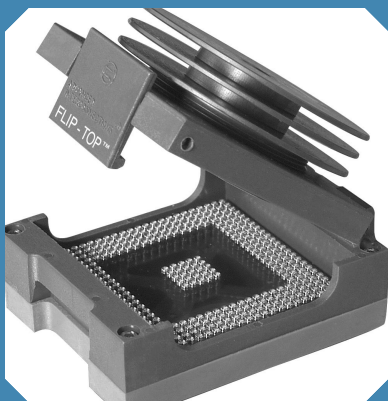
- Technical articles
- Test data
- Signal Integrity Performance
- CAD drawings
- BGA Footprints



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# Flip-Top™ BGA Sockets



## Features:

- Designed to save space on new and existing PC boards in test, development, programming and production applications.
- No external hold-downs or soldering of BGA device required.
- AIC exclusive solder ball terminals offer superior processing.
- Uses same footprint as BGA device.
- Available with integral, finned heat sink or coin screw clamp assembly.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Plating:

G - Gold over Nickel

### Terminal Support:

Polyimide Film

### Spring Material:

Stainless Steel

### Lid, Latch, Heat Sink/Coin Screw and Support Plate Material:

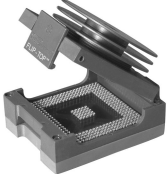
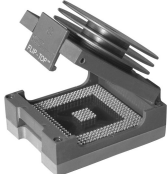
Aluminum

### Solder Ball:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

## Flip-Top™ BGA Sockets 1.27mm and 1.00mm Pitch

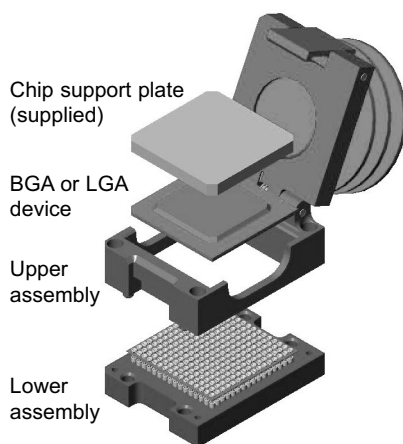
## Table of Models

	Description: <b>Socket (FRG, 1.27mm pitch)</b> Guide Box and Base Mat'l: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)	Socket Size: 3.00mm wider and 10.00mm longer than BGA device (for packages larger than 15.00mm square).*
	Description: <b>Socket (FRH, 1.00mm pitch)</b> Guide Box Mat'l: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F) Base Mat'l: FR-4 Glass Filled Epoxy Index: -40°C to 140°C (-40°F to 284°F)	Socket Size: 3.00mm wider and 10.00mm longer than BGA device (for packages larger than 15.00mm square).*

FRG replaces FTG.

\* For device packages smaller than 15.00mm square, the socket size is X = .709/(18.00) and Y = .984/(25.00).

## How It Works



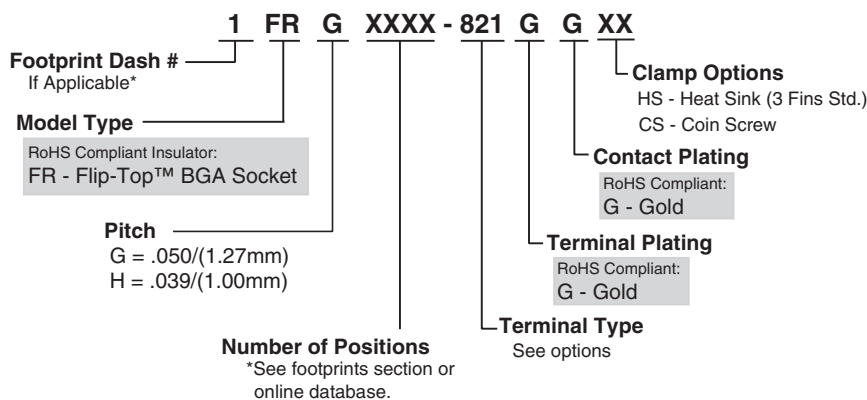
SMT models are shipped un-assembled to ease solderability. Thru-hole models are shipped fully assembled.

1. Lower assembly is soldered to PC board with no external hold-down mechanism. Thru-hole models may be soldered to PC board or plugged into a mating socket.
2. Upper assembly inserts easily to lower assembly by aligning guide posts and installing four (supplied) screws.
3. Finned heat sink or coin screw is screwed down to flush with bottom of lid.
4. Lid opens easily by pressing latch.
5. BGA device is inserted by aligning A1 position with chamfered corner of Flip-Top™ socket. Place support plate on top of device, close lid, engage heat sink or coin screw, and socket is ready for use.

Detailed Installation and General Usage Instructions are provided with product.

See page 15 for Generic Reflow Profiles.

## How To Order



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inch/(mm)

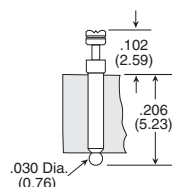
# Flip-Top™ BGA Sockets 1.27mm and 1.00mm Pitch

## Terminals (for test, development and production applications)

SMT (Surface Mount)

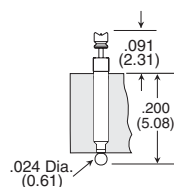
Tin/Lead: Type -690  
Lead-free: Type -821

1.27mm pitch



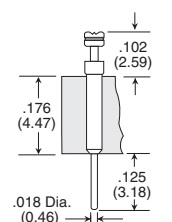
Tin/Lead: Type -752  
Lead-free: Type -837

1.00mm pitch

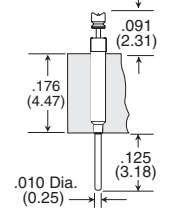


Thru-Hole

Type -708



Type -754

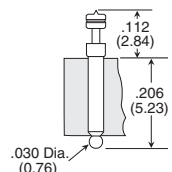


## Terminals (for LGA or de-balled BGA device applications)

SMT (Surface Mount)

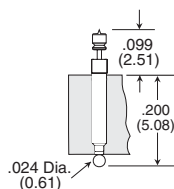
Tin/Lead: Type -713  
Lead-free: Type -822

1.27mm pitch



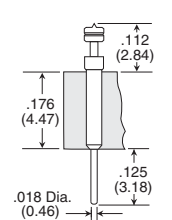
Tin/Lead: Type -762  
Lead-free: Type -838

1.00mm pitch

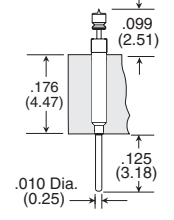


Thru-Hole

Type -712



Type -763

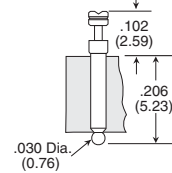


## Terminals (for BGA device test applications)

SMT (Surface Mount)

Tin/Lead: Type -659  
Lead-free: Type -820

1.27mm pitch



Tin/Lead: Type -TBD  
Lead-free: Type -TBD

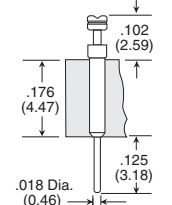
1.00mm pitch

Consult  
Factory

Thru-Hole

Type -657

Available with .016/(0.41mm) Diam. tail; Type -709



Type -TBD

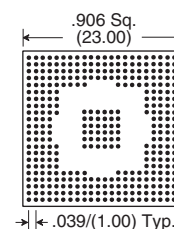
Consult  
Factory

# Flip-Top™ BGA Sockets



## Footprints:

360 Pins  
Footprint Number 360-2



22 x 22 rows

- Full grid molded insulators populated to exact device pattern.
- Over 1000 footprints available - see page 99, search online or submit your device specs.
- Use our Build-A-Part feature or search in our online BGA Socket Finder™ at [www.bgasockets.com](http://www.bgasockets.com).

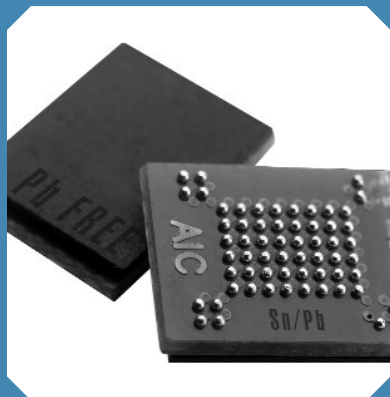
## Available Online:

- RoHS Qualification Test Report
- Technical articles
- Test data
- Signal Integrity Performance
- CAD drawings
- BGA Footprints



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Tel: 800.424.9850 | 401.823.5200  
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Catalog 16A

# Lead-free Applications



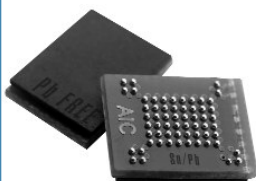
## Features:

When BGA devices are transitioned to lead-free packages, OEMs with RoHS exempt applications are faced with costly PC board redesign and/or the added cost and time delays associated with re-qualifying the board soldering profile. BGA Interposers and Socket Adapter Systems from Advanced are cost-effective methods for converting lead-free BGA device packages for use on boards processed with traditional Tin/Lead solder reflow profiles. These proven solutions solve BGA device transition, obsolescence, and solderability issues associated with the higher temperatures required in lead-free solder reflow profiles.

- Reduces costs associated with device package transition or obsolescence
- Solutions available for both RoHS compliant and exempt applications
- Industry proven screw-machined terminals with solder balls provide the high reliability required in medical, military, telecom, and automotive applications
- Same footprint as BGA device
- Device attach services available in-house
- Standard and custom designs
- Tape and Reel packaging available

# Typical Lead-free (RoHS) Applications

## Custom BGA Interposer



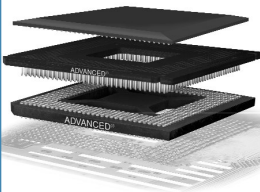
New BGA Interposers from Advanced Interconnections are a cost-effective method for converting lead-free BGA device packages for use on boards processed with lower temperature, Tin/Lead solder profiles.

Designed for RoHS exempt applications, Interposers from Advanced solve BGA device transition, obsolescence, and solderability issues associated with the higher temperature requirements to process lead-free BGA packages.

Advanced's turn-key solution consists of lead-free BGA device attach to an Interposer adapter board in a high temperature reflow process, followed by mounting of eutectic (63/37) Tin/Lead solder balls on the bottom of the Interposer. The compact Interposer assembly is shipped ready for use on existing PC boards, eliminating the need to change Tin/Lead solder profiles or subject other components to higher processing temperatures.

- Reduces costs associated with device package transition or obsolescence.
- Lead-free device attach service provided.
- Industry-proven solder ball terminal design provides the high reliability required in medical, military, telecom, and automotive applications.
- High temperature FR-4 adapter board closely matches original package size.
- Same footprint as BGA device (currently available in 0.80, 1.00, and 1.27mm pitch).
- Custom designed to customer's requirements.
- Tape and Reel packaging available.

## Standard BGA Socket Adapter System



BGA Socketing Systems from Advanced® offer an economical and dependable alternative to direct device attach. Our patented SMT designs are field-proven in production, development, programming and test applications. Compact designs and patented features offer you cost effective solutions for BGA, LGA or CSP device replacement, repair, upgrade, and testing while protecting valuable PC boards and devices from damage associated with direct device attach and removal.

- See pgs. 4-11 for standard models.
- Custom designs available.
- See page 15 for typical solder process example.



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Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)



# Typical Solder Process Example\*

## 1. Solder Paste Deposition

- Solder paste should be selected based on application requirements.
- The recommended solder volume is 0.0016 - 0.0032 cubic inches (0.040 - 0.080 cubic mm) with a pad diameter of 0.020 - 0.028 inches (0.51 - 0.71mm).

## 2. Solder Reflow

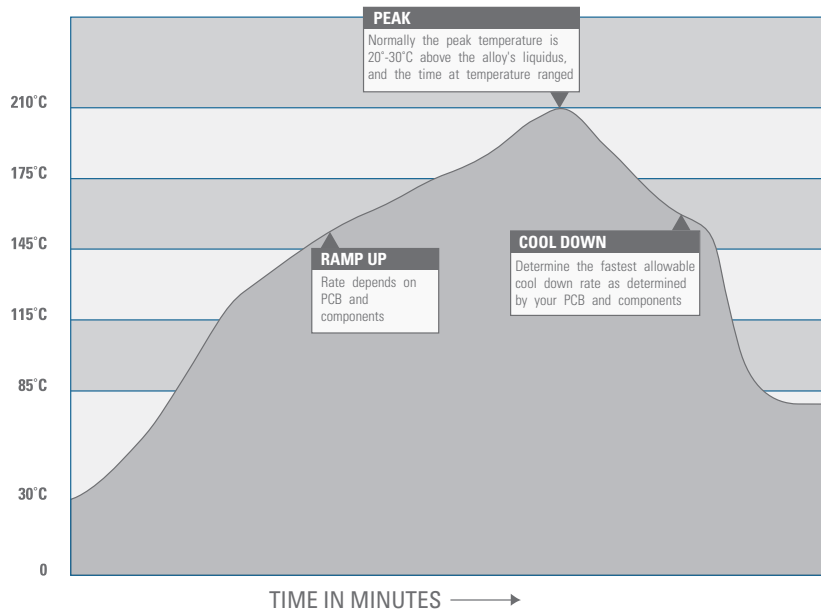
- See profile.

## 3. Inspection and Testing

- Initial visual inspection for positioning of solder ball to pad along perimeter is recommended to verify reflow of balls.
- Secondary X-Ray tests for overall continuity verification are recommended.
- For production applications, electrical MDA (Mfg. Defects Analysis) tests are recommended.

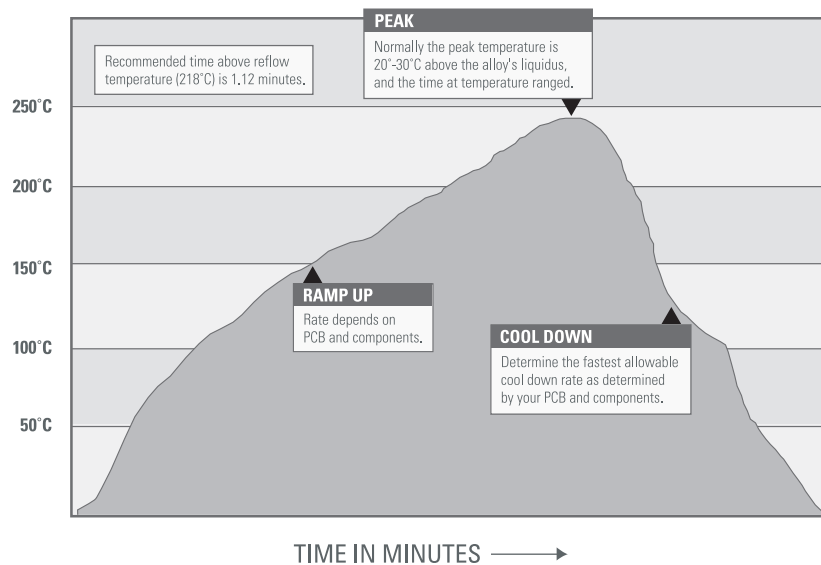
### Generic Reflow Profile

63Sn/37Pb Solder Liquidus@183°C (361°F)



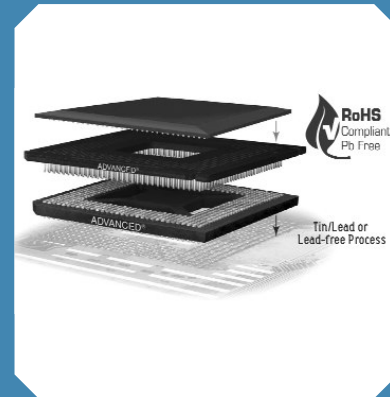
### Generic Lead-free Reflow Profile

95.5Sn/4.0Ag/0.5Cu Liquidus@218°C (424°F)



\*Solder process recommendation is presented for guidance only. Factors such as different board sizes, densities, and equipment will change actual solder process requirements. Example presented should be used as a starting point only - actual solder process specifications should be developed based on individual requirements and capabilities.

# Generic Reflow Profiles



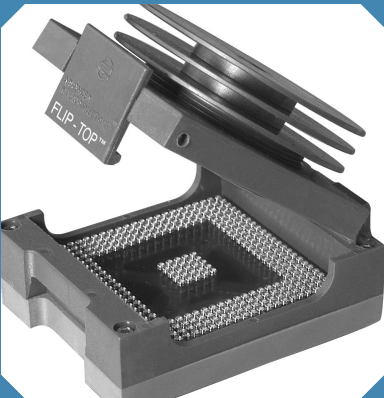
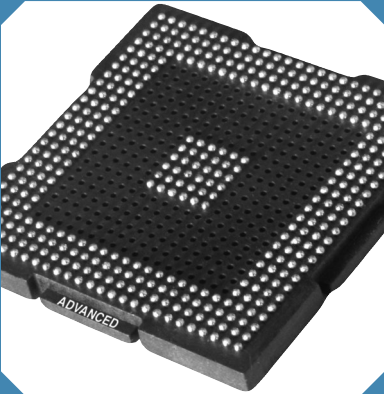
## Notes:

- These typical solder process examples are presented as a guideline for use with our BGA Socketing Systems in both Tin/Lead and Lead-free Reflow Profiles.
- A Generic Lead-free Solder Reflow Profile is provided as a guideline when using our products that feature the new Sn/Ag/Cu solder balls.
- Actual solder process requirements will be determined by the customer, based on the specific application.
- Contact our customer service department for application assistance and additional information.



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# Design Your Own BGA Socket



Advanced Interconnections has complete design and manufacturing capabilities for your BGA socket needs.

By answering the following questions we can design a socket to meet your requirements.

Copy this page and fill in the information required and/or attach complete device mechanical spec. Fax to 401-823-8723, or email to [info@advanced.com](mailto:info@advanced.com).



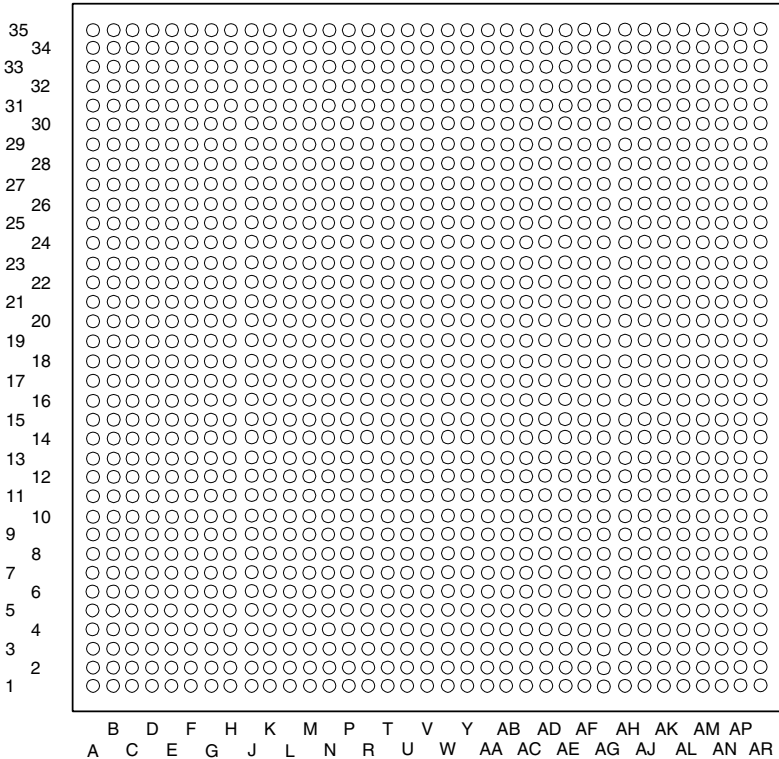
5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
[info@advanced.com](mailto:info@advanced.com) | [www.advanced.com](http://www.advanced.com)  
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## BGA Device Dimension and I/O Requirements

### Contact Information

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_ Country: \_\_\_\_\_  
Specifier: \_\_\_\_\_ Title: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

### Fill in Ball Location

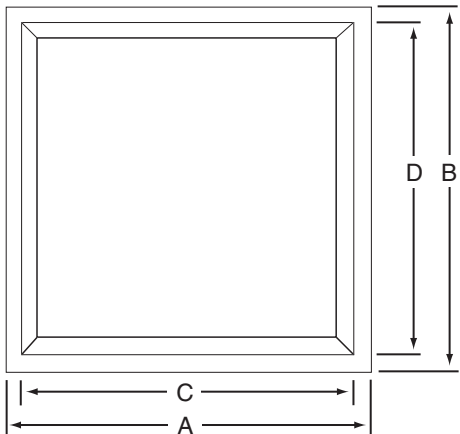


Fill in ball location\* or attach complete device mechanical specifications.

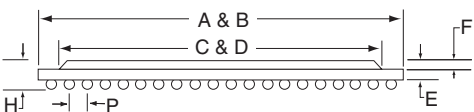
\*All sockets (footprints) viewed top down - looking toward seating plane of PCB and into female side of socket.

Complete the required dimensional table and attach BGA mechanical specifications including footprint.

BGA Device - Top View



BGA Device - Side View



Dim.	inches	mm	Tol.
A			
B			
C			
D			
E			
F			
H			
P			

Device Manufacturer: \_\_\_\_\_

BGA Device Model No.: \_\_\_\_\_

Application: \_\_\_\_\_

Socket Operational Bandwidth (MHz or GHz): \_\_\_\_\_

Number of Balls: \_\_\_\_\_

Grid Pattern (rows across x down): \_\_\_\_\_


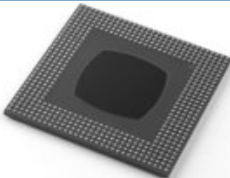
Pitch (specify inches or mm): \_\_\_\_\_

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

# BGA Device Attach and Solder Ball Re-attach Services

## Value Added Services

	Advanced offers <b>BGA Device Attach Services</b> on either customer supplied BGA Adapters or our own Advanced® BGA Adapters. Save time and money by ordering your Device Attach Service in conjunction with Advanced® BGA Adapters and mating sockets, both featuring the highest quality, screw-machined terminals.
	<b>BGA Solder Ball Re-attach Services</b> are available to restore previously used BGA devices to usable condition - perfect for expensive or hard to find BGA devices.

## Order Requirements

Device Attach	Solder Ball Re-attach
Quantity	Quantity
Adapters (indicate if supplied or we should add to the quote)	Solder ball composition
Electrical testing requirements (shorts, etc.)	Additional requirements
Device mfg. name, part number, and mechanical specifications (see form on page 12, use online form, or submit required information via email)	Device mfg. name, part number, and mechanical specifications (see form on page 12, use online form, or submit required information via email)
Bake-out for moisture control and thermal cycle specifications.	Bake-out for moisture control and thermal cycle specifications.

### Notes:

- Semiconductors must be supplied in ESD protective (anti static) packaging, vacuum sealed for moisture control, with outside containers marked accordingly.
- Advanced Interconnections assumes no responsibility or liability for the function of customer-supplied semiconductors either before or after the value added service is performed.
- Device attachment assemblies will be x-rayed for quality assurance. (AQL .4)
- Product is reshipped in ESD trays with internal foam layers in ESD shielded Vacuum sealed bags. If alternative method is required, customer shall provide all materials.
- Delivery will be supplied with quote.
- Volume above 10 pieces should be supplied in pick-and-place carriers.

# BGA Value Added Services



Equipment photo provided by Air-Vac Engineering.

## Equipment List:

- Air-Vac DRS24 BGA Rework Station
- Speedline MPM Ultraprint 2000 Fully Automatic Stenciler
- HTI Semi-Automatic Stenciler
- Quad Meridian 1030P Precision Pick & Place Machine
- Quad 4C Precision Pick & Place Machine
- BTU Oven VIP 98 Reflow Oven
- J.O.T. Panelmaster 18HS PC Board Router
- Nicolet X-Ray NXR-10HR X-Ray with Photo



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# Peel-A-Way® Carriers



## Features:

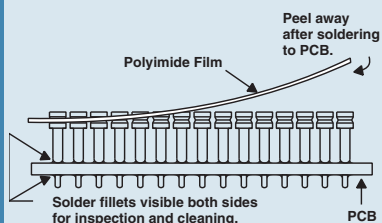
- Low profile.
- Eliminates hand-loading of socket terminals.
- Multiple terminal styles available on single sheet.
- Compatible with high temperature, RoHS Compliant profiles.
- Peel-A-Way® carrier can be removed after soldering for complete solder joint visibility or left in place for added stability.

## Material:

Polyimide Film  
Index: -269°C to 400°C  
(-452°F to 752°F)



## How To Use:



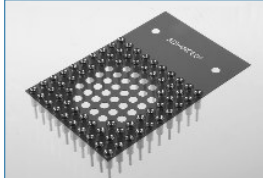
1. Place socket on PC board.
2. Send PC board and socket through soldering operation.
3. Peel away polyimide film carrier for complete solder joint visibility or leave in place for added stability.



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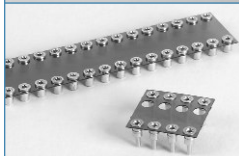
# Peel-A-Way® Removable Terminal Carriers Standard & Custom Configurations

## Standard Models



### PGA Sockets and Adapters

- Standard and interstitial grids
- Hundreds of terminal styles to choose from
- See pgs. 19-25



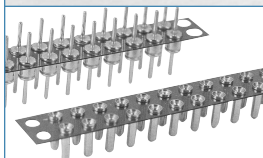
### DIP Sockets

- Standard sizes in row to row spacing from .300/(7.62mm) to .900/(22.86mm) with 8 to 64 positions
- See pgs. 30-31



### SIP Sockets and Adapters

- Available from 2 to 100 positions for SIP device socketting or board to board connector applications
- See pgs. 36-39

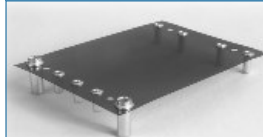


### Board to Board Connectors

- Single, dual and triple row configurations
- .100/(2.54mm), .079/(2.00mm), .050/(1.27mm) pitch and staggered models available
- See pgs. 40-51



## Custom Configurations



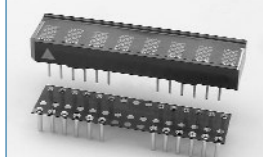
### SocketPac® Relay Sockets

- Sockets for power converters, splitters, I/O voltage modules, transformers, or test jack locations
- Power module sockets for DC/DC converters
- Eliminates heat distribution problems during wave soldering operations
- Facilitates power supply replacement, upgrades, and repairs



### Sheets of Sockets

- Maximizes socket loading rate
- No expensive tooling required
- Available with cut-out areas for loading caps, resistors, ICs, etc.



### Custom LED Socket

- Allows LED to be plugged in after board is processed in a lead-free profile
- Protects device from damage caused by high temperature processing



### Custom 6 Position Peel-A-Way® Socket

- This custom flex circuit socket features solder preform terminals in our patented Peel-A-Way® Removable Terminal Carrier. The design eliminated the need for hand loading terminals and wave soldering while meeting a low-profile specification and allowing complete solder joint visibility.

# Pin Grid Array Adapters .100/(2.54mm) Standard Grid

## Table of Models

	<b>Description:</b> Peel-A-Way® (KA) <b>Material:</b> Polyimide Film <b>Index:</b> -269°C to 400°C (-452°F to 752°F)	
	<b>Description:</b> Molded (RCA) <b>Mat'l:</b> High Temp. Liquid Crystal Polymer (LCP) <b>Index:</b> -40°C to 260°C (-40°F to 500°F)	

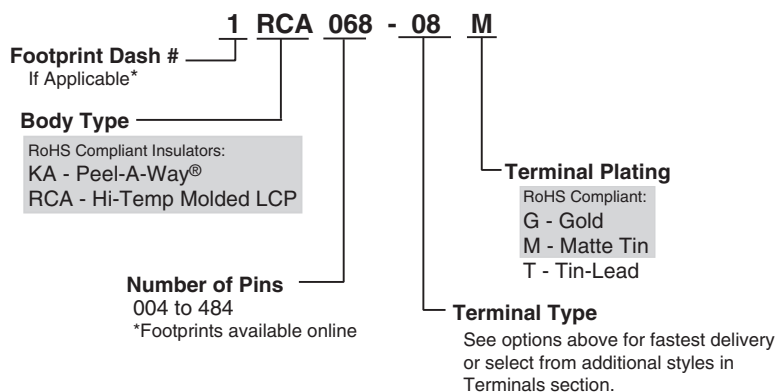
RCA replaces HCA.

## Standard Terminals

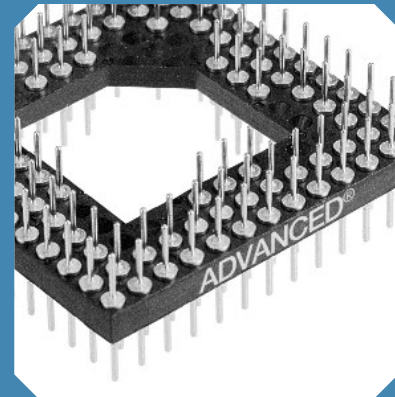
Additional standard and custom terminals available.  
See Terminals section or consult factory.

<b>Type -79</b> Peel-A-Way® only 	<b>Type -80</b> Peel-A-Way® only 	<b>Type -81</b> Peel-A-Way® only 	<b>Type -08</b> Molded only 
<b>Type -68</b> Molded only 	<b>Type -43</b> Molded only 	<b>Type -185</b> Molded only 	<b>Type -42</b> Molded only 

## How To Order



# PGA Adapters



## Features:

- Screw-machined terminals for long-term durability.
- Mating sockets available.
- Custom designs available.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Plating:

G - Gold over Nickel  
 M - Matte Tin over Nickel  
 T - Tin/Lead over Nickel

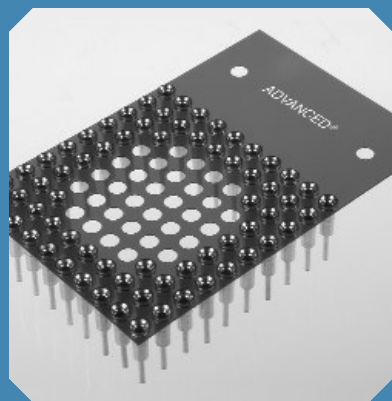
Gold per ASTM-B-488  
 Matte Tin per ASTM545-97  
 Tin/Lead per MIL-P-81728  
 Nickel per QQ-N-290

## Available Online:

- Hundreds of footprints
- Extraction Tools
- RoHS Qualification Test Report
- CAD Drawings



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### Features:

- Low insertion force (1 oz. average per pin).
- Screw-machined terminals with multiple finger contacts for reliability.
- Closed bottom terminal for 100% anti-wicking of solder.
- Tapered entry for ease of insertion.
- Custom designs available.

### Specifications:

#### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

#### Solder Preform:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

#### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

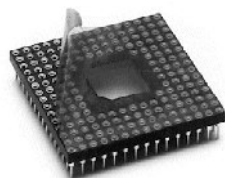
Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

### Table of Models

	<b>Description:</b> Peel-A-Way® (KIS) <b>Material:</b> Polyimide Film <b>Index:</b> -269°C to 400°C (-452°F to 752°F)	
	<b>Description:</b> FR-4 (FIS) <b>Material:</b> FR-4 Fiberglass Epoxy Board <b>Index:</b> -40°C to 140°C (-40°F to 284°F)	
	<b>Description:</b> Molded (RIS) <b>Mat'l:</b> High Temp. Liquid Crystal Polymer (LCP) <b>Index:</b> -40°C to 260°C (-40°F to 500°F)	

RIS replaces HCIS, HCS, CIS, and CS. KIS replaces KS. FIS replaces FS.

### Options



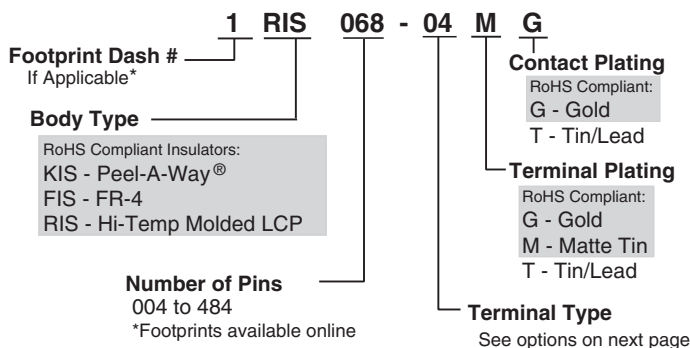
#### Tape Seal - add 3M to end of part number

- Removable tape seal protects plated contact in harsh environments
- Sealed socket will not allow dirt and other contaminants to enter socket chamber and become entrapped behind contact fingers
- Spray flux without contaminating contact area

#### Material

Silicone Backed Polyimide Film, -74°C to 260°C (-100°F to 500°F)  
Intermittent to 371°C (700°F)

### How To Order



Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)



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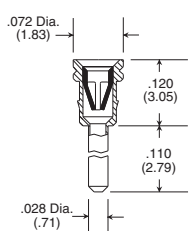
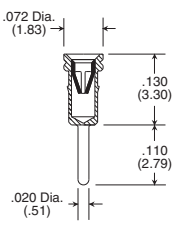
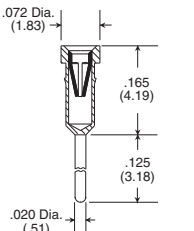
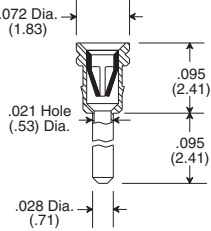
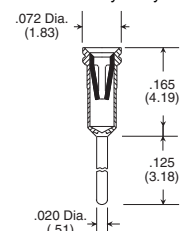
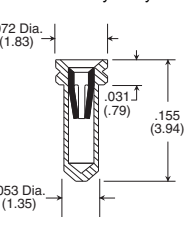
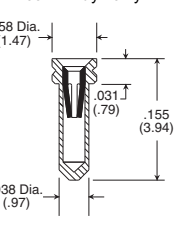
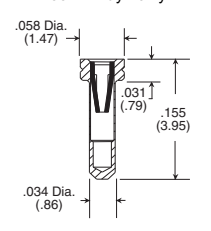
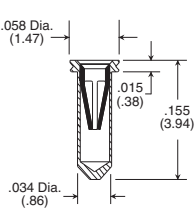
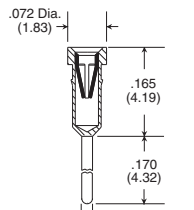


# Low Insertion Force PGA Sockets

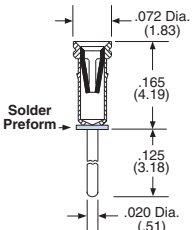
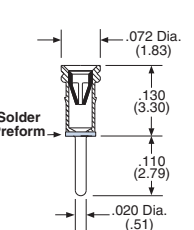
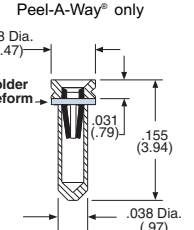
## .100/(2.54mm) Standard Grid

### Standard Terminals

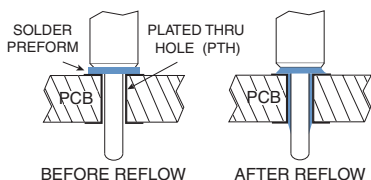
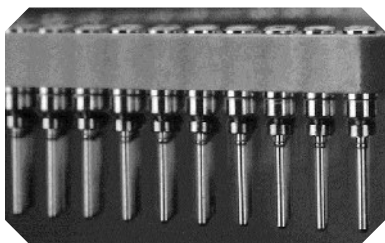
Additional standard and custom terminals available.  
See Terminals section or consult factory.

Type -04	Type -51	Type -01	Type -49
<b>.157/(3.99) Hole Depth</b> 		<b>Molded or FR-4 only</b> 	
Type -33	Type -50	Type -85	Type -176
<b>Peel-A-Way® only</b> 	<b>Peel-A-Way® only</b> 	<b>Peel-A-Way® only</b> 	<b>Peel-A-Way® only</b> 
Type -210	Type -29		
<b>Peel-A-Way® only</b> 	<b>Molded or FR-4 only</b> 		

### Solder Preform Terminals

Tin/Lead: Type -150 Lead-free: Type -811	Tin/Lead: Type -151 Lead-free: Type -812	Tin/Lead: Type -111 Lead-free: Type -810
		<b>Peel-A-Way® only</b> 

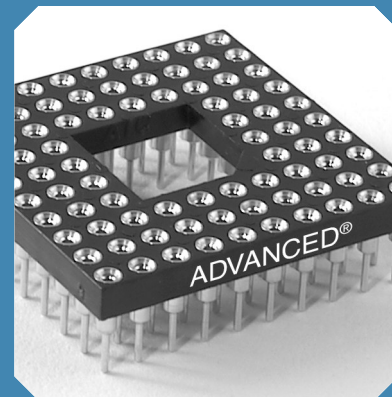
### Intrusive Reflow Application



### Solder Preform Terminals

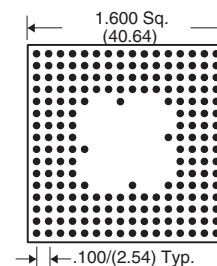
- Combines the labor of socket loading and solder application into one operation.
- Eliminates the use of solder paste and screening operation.
- Eliminates solder bridges and/or solder shorts due to excess solder.
- Ensures a reliable solder joint with controlled solder volume.
- Ideal for surface mount and mixed technology applications.
- For custom solder preform terminal applications consult factory.

## PGA Sockets



### Footprints:

200 Pins  
Footprint Number 200-1



16 x 16 rows

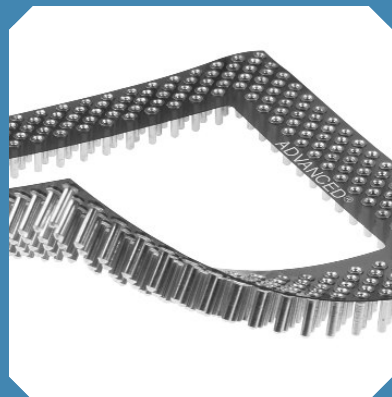
- Full grid insulators loaded to your specific footprint.
- Open centers available upon request (consult factory).
- Hundreds of footprints available online.
- Use our online Build-A-Part feature or download a Footprints Booklet in PDF format.

### Available Online:

- Extraction Tools
- RoHS Qualification Test Report
- CAD Drawings



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Fax: 401.823.8723  
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### Features:

- Low insertion force (1 oz. average per pin).
- Screw-machined terminals with multi-finger contacts for reliability.
- Closed bottom terminal for 100% anti-wicking of solder.
- Tapered entry for ease of insertion.
- Custom designs available.

### Specifications:

#### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

#### Solder Preform:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

#### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

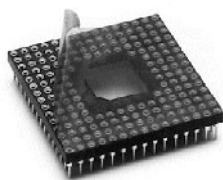
Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

### Table of Models

	<p>Description: <b>Peel-A-Way® (KSX)</b> Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)</p>	 Type -210 Shown
	<p>Description: <b>Molded (RSX)</b> Mat'l: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)</p>	 Type -235 Shown

RSX replaces CSX.

### Options



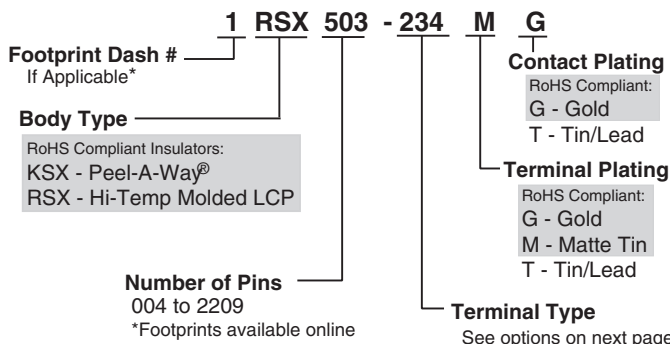
#### Tape Seal - add 3M to end of part number

- Removable tape seal protects plated contact in harsh environments
- Sealed socket will not allow dirt and other contaminants to enter socket chamber and become entrapped behind contact fingers
- Spray flux without contaminating contact area

#### Material

Silicone Backed Polyimide Film, -74°C to 260°C (-100°F to 500°F)  
Intermittent to 371°C (700°F)

### How To Order



Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)



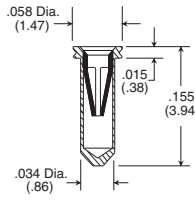
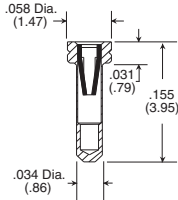
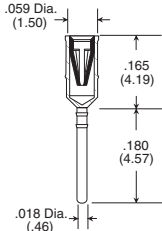
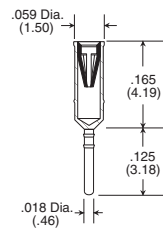
5 Energy Way, West Warwick, RI 02893 USA  
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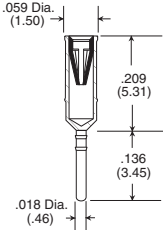
# Interstitial PGA Sockets

## Low Insertion Force .100/(2.54mm) Staggered Grid

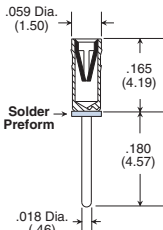
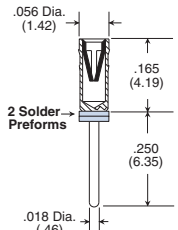
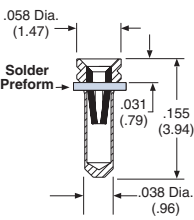
Additional standard and custom terminals available.  
See Terminals section or consult factory.

### Standard Terminals

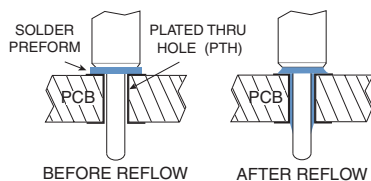
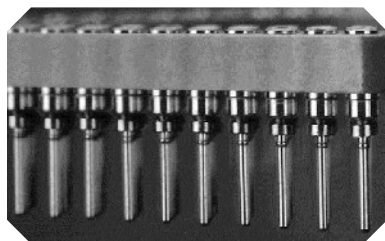
<b>Type -210</b> Peel-A-Way® only 	<b>Type -176</b> Peel-A-Way® only 	<b>Type -234</b> Molded only 	<b>Type -82</b> Molded only 
---	---	--	--

<b>Type -235</b> Molded only 4 standoffs per socket Type -234 used in remaining positions 
---

### Solder Preform Terminals

<b>Tin/Lead: Type -311</b> <b>Lead-free: Type -813</b> Molded only 	<b>Tin/Lead: Type -313</b> <b>Lead-free: Type -814</b> Molded only 	<b>Tin/Lead: Type -432</b> <b>Lead-free: Type -815</b> Peel-A-Way® only 
---	---	--

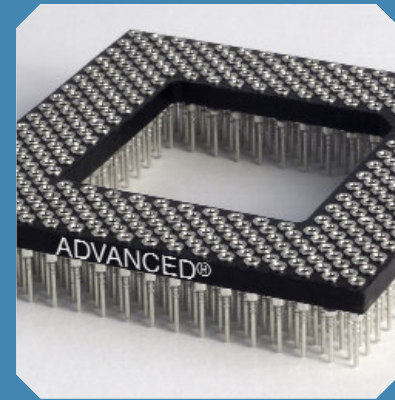
### Intrusive Reflow Application



### Solder Preform Terminals

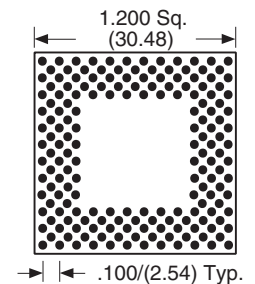
- Combines the labor of socket loading and solder application into one operation.
- Eliminates the use of solder paste and screening operation.
- Eliminates solder bridges and/or solder shorts due to excess solder.
- Ensures a reliable solder joint with controlled solder volume.
- Ideal for surface mount and mixed technology applications.
- For custom solder preform terminal applications consult factory.

## PGA Sockets



### Footprints:

180 Pins  
Footprint Number 180



23 x 23 rows

- Full grid insulators loaded to your specific footprint.
- Open centers available upon request (consult factory).
- Hundreds of footprints available online.
- Use our online Build-A-Part feature or download a Footprints Booklet in PDF format.

### Available Online:

- Extraction Tools
- RoHS Qualification Test Report
- CAD Drawings



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# Interstitial Grid Design Your Own PGA Socket

## .100/(2.54mm) Pitch Staggered

### Contact Information

Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_ Country: \_\_\_\_\_

Specifier: \_\_\_\_\_ Title: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

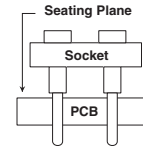
Email: \_\_\_\_\_ Pin Count: \_\_\_\_\_

### Fill in Pin Location

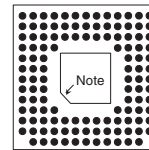
(Fill in or submit device mechanical specifications.)

BG	
BF	
BE	
BD	
BC	
BB	
BA	
AY	
AW	
AU	
AT	
AR	
AP	
AN	
AM	
AL	
AK	
AJ	
AH	
AG	
AF	
AE	
AD	
AC	
AB	
AA	
Y	
W	
V	
U	
T	
P	
N	
M	
L	
K	
J	
H	
G	
F	
E	
D	
C	
B	
A	

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	

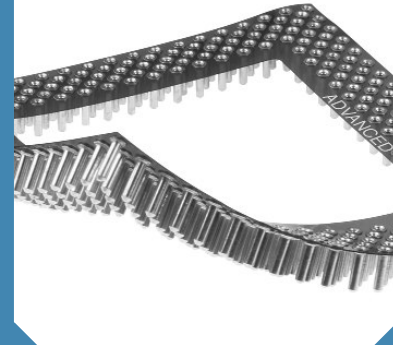


All sockets viewed looking toward seating plane of PCB and into female side of socket.



Note: Chamfer one corner for pin No. 1 location.

# Design Your Own PGA Socket



Advanced has complete design and manufacturing capabilities available for your PGA socket needs.

By answering the following questions we can manufacture a socket to accept your device.

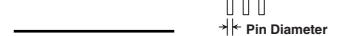
Copy this page and fill in the information required.  
Fax to 401-823-8723.

### Check insulator required.

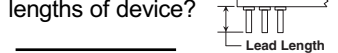
- ☐ High Temp. Molded LCP
- ☐ FR-4
- ☐ Peel-A-Way® Polyimide Film

### Fill in the following information.

a. What is the pin diameter of device?

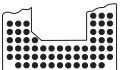


b. What is the min/max lead lengths of device?



c. Keying chamfer required on socket?

- ☐ Yes ☐ No



d. Is there a standoff on device?

- ☐ Yes ☐ No



### Circle Terminal Style Required

Additional standard and custom terminals available.  
See Terminals section or consult factory.

<b>Type -210</b> Peel-A-Way® only 	<b>Type -234</b> Molded/FR-4 	<b>Tin/Lead: Type -313</b> <b>Lead-free: Type -814</b> Molded/FR-4 	<b>Tin/Lead: Type -432</b> <b>Lead-free: Type -815</b> Peel-A-Way® only 
<b>Tin/Lead: Type -311</b> <b>Lead-free: Type -813</b> Molded/FR-4 	<b>Type -82</b> Molded/FR-4 		

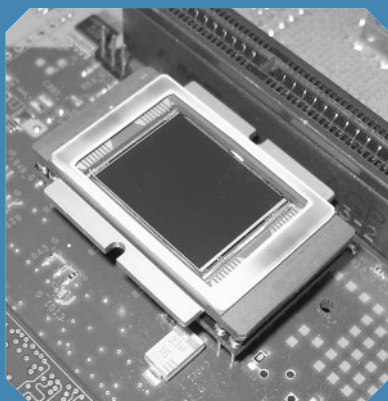
inch/(mm)

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.



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Catalog 16A

# Image Sensor Sockets



## Features:

- Protect sensor performance by inserting after the reflow soldering process.
- Eliminate the chance for damage to valuable sensors during exposure to heat and errant solder flux on glass components.
- Reduce costs by eliminating the need for glass cleaning operations.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

### Body Material:

F: FR-4 Glass Epoxy,  
U.L. Rated 94V-0

### Thermal Index:

-40°C to 140°C (-40°F to 284°F)

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290



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# Proteksion™ Image Sensor Sockets

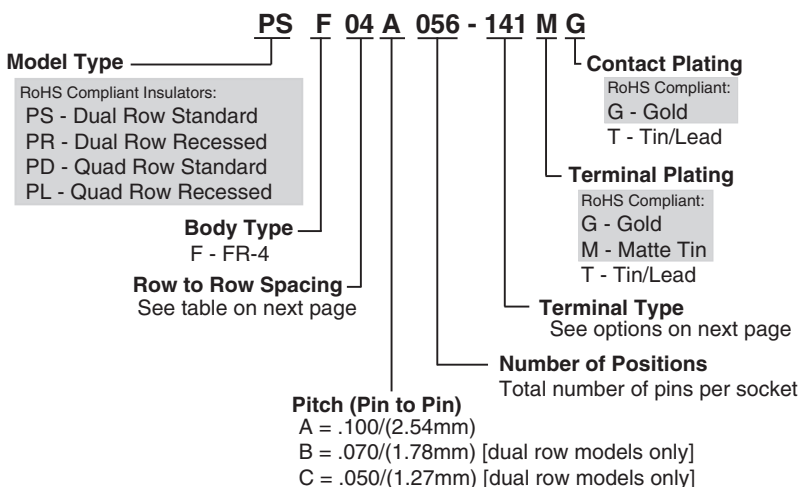
## Table of Models

Standard Body		Recessed Body	
PS	PD	PR	PL
Dual Row	Quad Row	Dual Row	Quad Row
Footprint-Specific Sockets			
PC	PF		
Open (Cutout)	Full (Solid)		

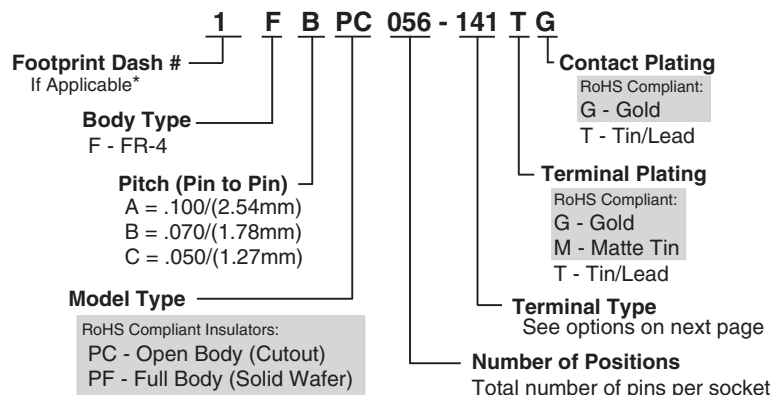
Shown above left with Kodak image sensor device, courtesy of Eastman Kodak Company, for demonstration purposes only.

## How To Order

### Dual Row and Quad Row Standard Sockets



### Footprint-Specific Sockets



\*Submit your device's mechanical specs and we will create a footprint number for you.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

## Standard Terminals

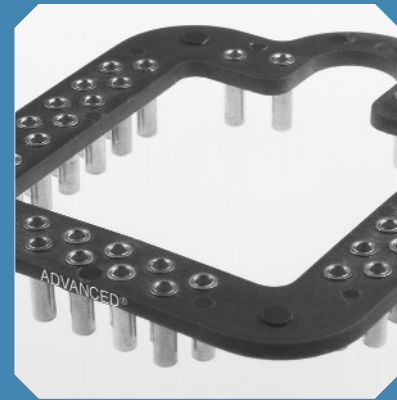
Additional standard and custom terminals available.  
See Terminals section or consult factory.

.100/(2.54mm) Pitch

Type -01	Type -141	Type -217	Type -346

1.78mm and 1.27mm Pitch

Type -385	Type -674

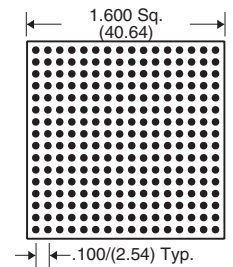


## Custom Options:

- Molded insulators
- Peel-A-Way® Removable Terminal Carriers for low profile applications
- Low, medium and high insertion force contacts

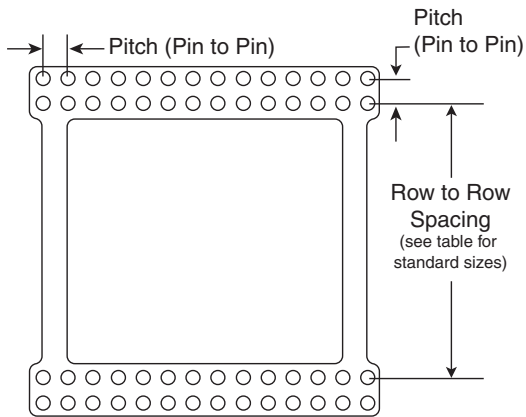
## Footprints:

256 Pins  
Footprint Number 256

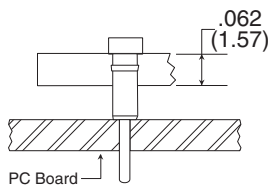


16 x 16 rows

## Row to Row Spacing



Example Part Number: PLF18A056-141TG



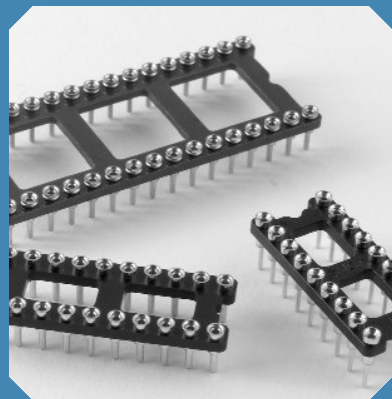
Code	inch	mm
01	0.300	7.62
02	0.400	10.16
03	0.450	11.43
04	0.600	15.24
05	0.610	15.49
06	0.700	17.78
07	0.800	20.32
08	0.802	20.37
09	0.880	22.35
10	0.900	22.86
11	0.910	23.11
12	1.005	25.53
13	1.010	25.65
14	1.200	30.48
15	1.300	33.02
16	1.320	33.53
17	1.400	35.56
18	1.410	35.81
19	1.520	38.61
20	1.700	43.18
21	1.800	45.72
22	2.000	50.80
23	2.010	51.05
24	2.600	66.04

- Virtually any footprint available.
- Submit your device's mechanical specs and we will create a footprint number for you.
- Fully customizable.



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### Features:

- Multiple finger contact on all sockets assures maximum reliability.
- Tapered entry for ease of insertion.
- Closed bottom sleeve for 100% anti-wicking of solder.
- To fit .100/(2.54mm) pitch.
- Easily customized to fit your application.

### Specifications:

#### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Contacts:

Beryllium Copper - Copper Alloy  
(C17200) ASTM-B-194

#### Solder Preform:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

#### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

### Table of Models

	<b>Description:</b> Closed Frame Socket (RDS) <b>Mat'l:</b> High Temp. Liquid Crystal Polymer (LCP) <b>Index:</b> -40°C to 260°C (-40°F to 500°F)	
	<b>Description:</b> Open Frame Socket (RLS) <b>Mat'l:</b> High Temp. Liquid Crystal Polymer (LCP) <b>Index:</b> -40°C to 260°C (-40°F to 500°F)	 *.100/(2.54) for 48 and 60 pos.
	<b>Description:</b> Peel-A-Way® Socket (KS) <b>Material:</b> Polyimide Film <b>Index:</b> -269°C to 400°C (-452°F to 752°F)  For more information, refer to the Peel-A-Way® DIP Sockets pages (30-31).	 EXPRESS

RDS replaces DS and HDS.  
RLS replaces LS and HLS.

### Options



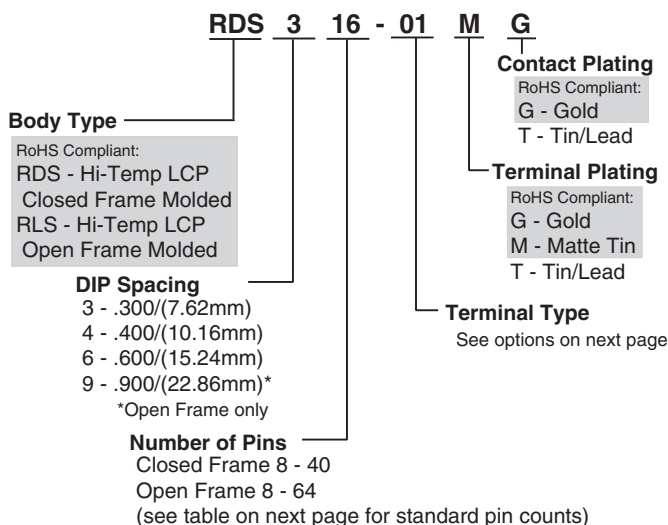
#### Tape Seal - add 3M to end of part number

- Removable tape seal protects plated contact in harsh environments
- Sealed socket will not allow dirt and other contaminants to enter socket chamber and become entrapped behind contact fingers
- Spray flux without contaminating contact area

#### Material

Silicone Backed Polyimide Film, -74°C to 260°C (-100°F to 500°F)  
Intermittent to 371°C (700°F)

### How To Order



Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

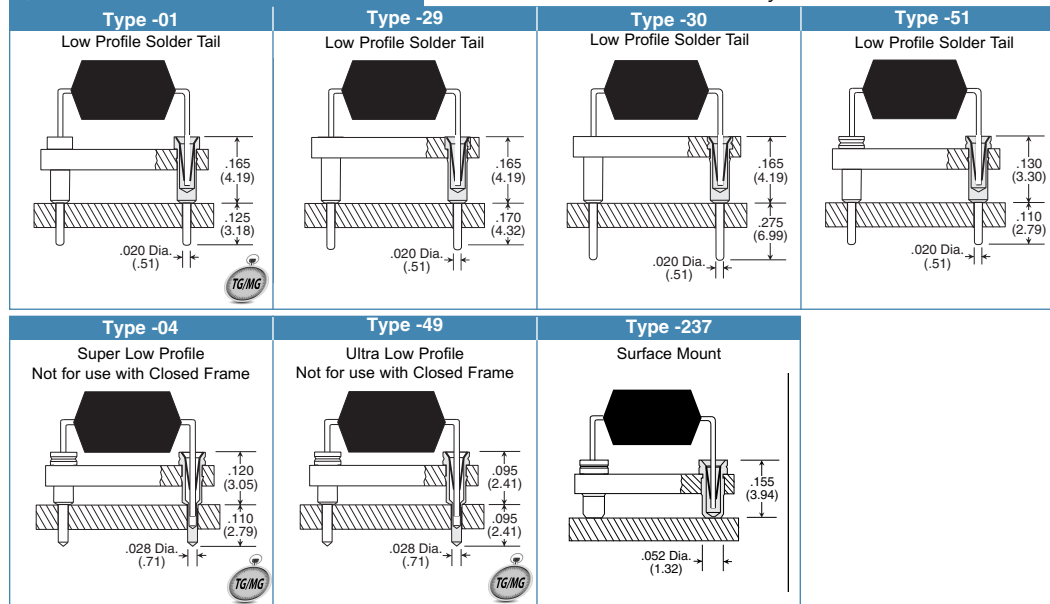
inch/(mm)

# Molded DIP Sockets

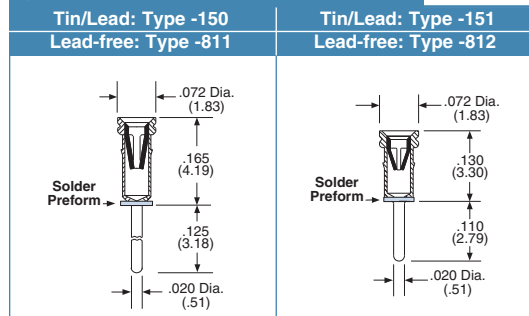
## Closed Frame and Open Frame

### Standard Terminals

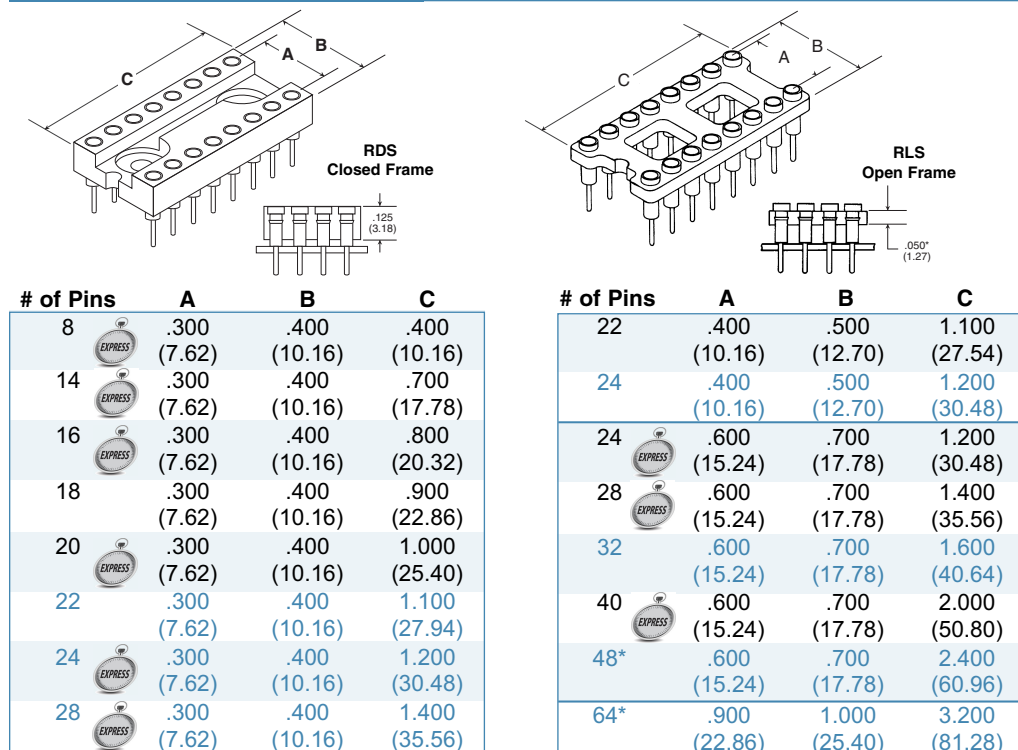
Additional standard and custom terminals available.  
See Terminals section or consult factory.



### Solder Preform Terminals



### Dimensional Information



The dimensions in blue are for Open Frame only.

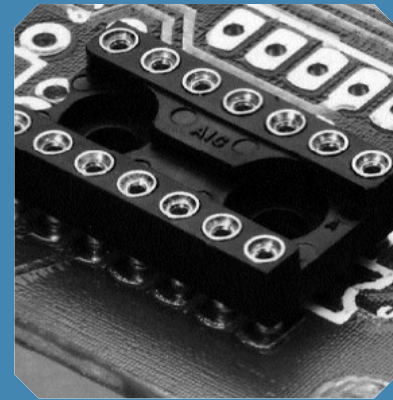
\*Socket body thickness is .100/(2.54) for 48 and 64 positions.

inch/(mm)

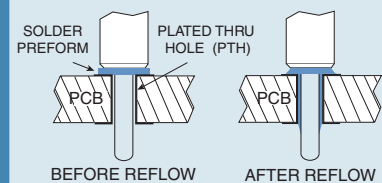
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

= EXPRESS in RLS

# DIP Sockets



### Intrusive Reflow Application:



- Combines the labor of socket loading and solder application into one operation.
- Eliminates the use of solder paste and screening operation.
- Eliminates solder bridges and/or solder shorts due to excess solder.
- Ensures a reliable solder joint with controlled solder volume.
- Ideal for surface mount and mixed technology applications.
- For custom solder preform terminal applications consult factory.

### Available Online:

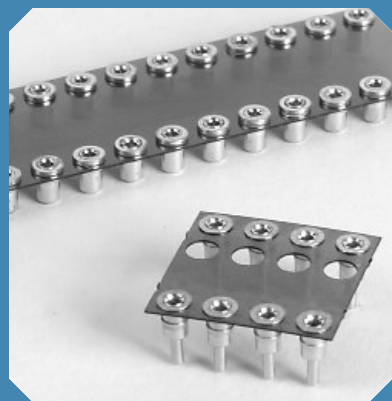
- RoHS Qualification Test Report
- CAD Drawings

### EXPRESS Delivery

Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
[info@advanced.com](mailto:info@advanced.com) | [www.advanced.com](http://www.advanced.com)  
Catalog 16A



## Features:

- Peel away terminal carrier after soldering.
- Disposable carrier.
- Complete soldering visibility on both sides of PCB.
- Maximum air flow.
- Better flux rinse.
- No contact damage due to terminal carrier insertion.
- No contact pull out due to extraction of terminal carrier.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper - Copper Alloy  
(C17200) ASTM-B-194

### Solder Preform:

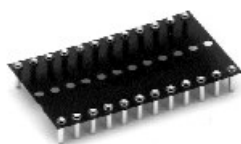
Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

### Plating:

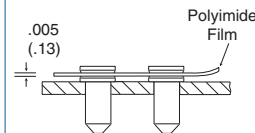
G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

## Table of Models

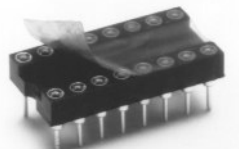


Description: **Peel-A-Way® Socket (KS)**  
Material: Polyimide Film  
Index: -269°C to 400°C (-452°F to 752°F)



For molded insulators, see pages 28-29.

## Options



(shown here on  
molded socket)

### Tape Seal - add 3M to end of part number

- Removable tape seal protects plated contact in harsh environments
- Sealed socket will not allow dirt and other contaminants to enter socket chamber and become entrapped behind contact fingers
- Spray flux without contaminating contact area

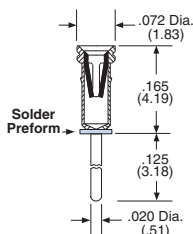
### Material

Silicone Backed Polyimide Film, -74°C to 260°C (-100°F to 500°F)  
Intermittent to 371°C (700°F)

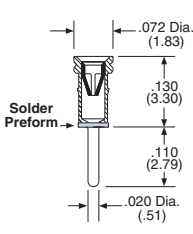
## Solder Preform Terminals

See pg. 29 for intrusive reflow application.

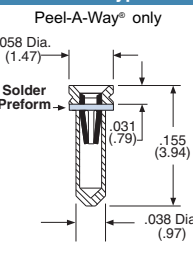
Tin/Lead: Type -150  
Lead-free: Type -811



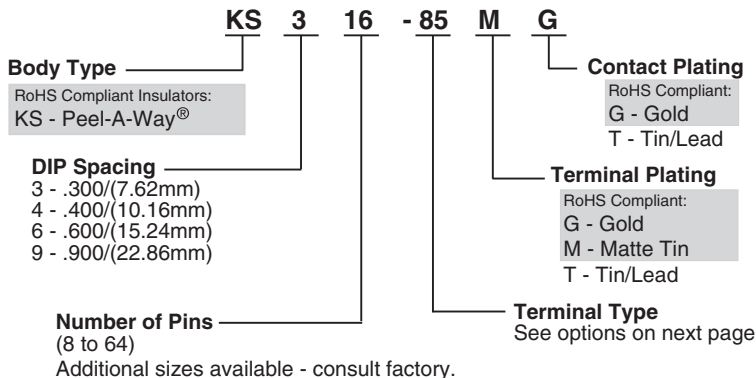
Tin/Lead: Type -151  
Lead-free: Type -812



Tin/Lead: Type -111  
Lead-free: Type -810



## How To Order



Note: Terminals plated with Matte Tin are available only with Gold plated contacts.



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Fax: 401.823.8723  
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Catalog 16A

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

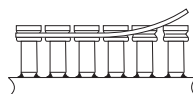
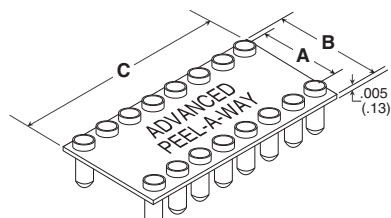
## Standard Terminals

Additional standard and custom terminals available.  
See Terminals section or consult factory.

<b>Type -33</b> <b>Low Profile Solder Tail</b> 	<b>Type -51</b> <b>Low Profile Solder Tail</b> 	<b>Type -04</b> <b>Super Low Profile</b> 	<b>Type -49</b> <b>Ultra Low Profile</b> 
<b>Type -85</b> <b>Near Flush Solder Tail</b> 	<b>Type -176</b> <b>Near Flush Solder Tail</b> 	<b>Type -210</b> <b>Near Flush Solder Tail</b> 	

Note: Terminals shown with insulator removed.

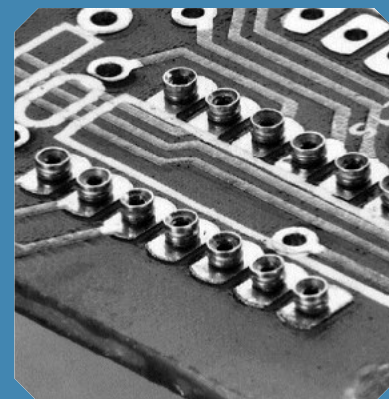
## Dimensional Information



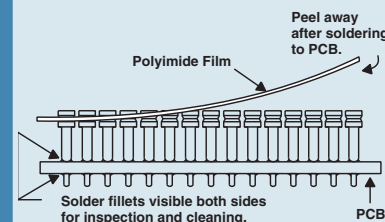
Surface Mount Options Available

# of Pins	A	B	C
8	.300 (7.62)	.400 (10.16)	.400 (10.16)
10	.300 (7.62)	.400 (10.16)	.500 (12.70)
12	.300 (7.62)	.400 (10.16)	.600 (15.24)
14	.300 (7.62)	.400 (10.16)	.700 (17.78)
16	.300 (7.62)	.400 (10.16)	.800 (20.32)
18	.300 (7.62)	.400 (10.16)	.900 (22.86)
20	.300 (7.62)	.400 (10.16)	1.000 (25.40)
22	.300 (7.62)	.400 (10.16)	1.100 (27.94)
24	.300 (7.62)	.400 (10.16)	1.200 (30.48)
28	.300 (7.62)	.400 (10.16)	1.400 (35.56)
40	.300 (7.62)	.400 (10.16)	2.000 (50.80)
16	.400 (10.16)	.500 (12.70)	.800 (20.32)
20	.400 (10.16)	.500 (12.70)	1.000 (25.40)
22	.400 (10.16)	.500 (12.70)	1.100 (27.94)
24	.400 (10.16)	.500 (12.70)	1.200 (30.48)
28	.400 (10.16)	.500 (12.70)	1.400 (35.56)
32	.400 (10.16)	.500 (12.70)	1.600 (40.64)

# of Pins	A	B	C
10	.600 (15.24)	.700 (17.76)	.500 (12.70)
18	.600 (15.24)	.700 (17.76)	.900 (22.86)
20	.600 (15.24)	.700 (17.76)	1.000 (25.40)
22	.600 (15.24)	.700 (17.76)	1.100 (27.94)
24	.600 (15.24)	.700 (17.76)	1.200 (30.48)
28	.600 (15.24)	.700 (17.76)	1.400 (35.56)
32	.600 (15.24)	.700 (17.76)	1.600 (40.64)
36	.600 (15.24)	.700 (17.76)	1.800 (45.72)
40	.600 (15.24)	.700 (17.76)	2.000 (50.80)
42	.600 (15.24)	.700 (17.76)	2.100 (53.34)
48	.600 (15.24)	.700 (17.76)	2.400 (60.96)
64	.600 (15.24)	.700 (17.76)	3.200 (81.28)
32	.900 (22.86)	1.000 (25.40)	1.600 (40.64)
36	.900 (22.86)	1.000 (25.40)	1.800 (45.72)
40	.900 (22.86)	1.000 (25.40)	2.000 (50.80)
52	.900 (22.86)	1.000 (25.40)	2.600 (66.04)
56	.900 (22.86)	1.000 (25.40)	2.800 (71.12)
64	.900 (22.86)	1.000 (25.40)	3.200 (81.28)



## How To Use:



1. Place socket on PC board.
2. Send PC board and socket through soldering operation.
3. Peel away polyimide film carrier for complete solder joint visibility or leave in place for added stability.

## Available Online:

- RoHS Qualification Test Report
- CAD Drawings

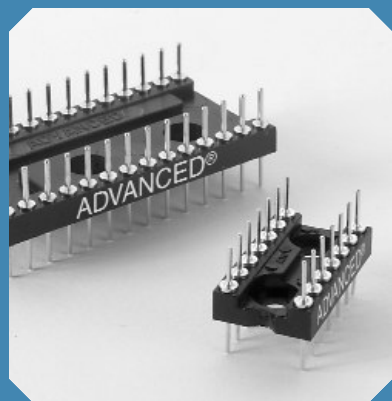
## EXPRESS Delivery

Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



5 Energy Way, West Warwick, RI 02893 USA  
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Fax: 401.823.8723  
[info@advanced.com](mailto:info@advanced.com) | [www.advanced.com](http://www.advanced.com)  
Catalog 16A





### Features:

- Low profile.
- Design allows for stacking on .100/(2.54mm) grid.
- Board to Board applicable.
- Easily customized to fit your applications.
- Mating sockets available in Open Frame or Closed Frame molded designs and Peel-A-Way® Removable Terminal Carriers.

### Specifications:

#### Terminals:

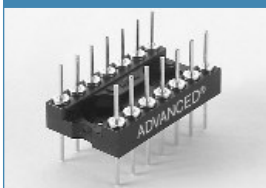
Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Plating:

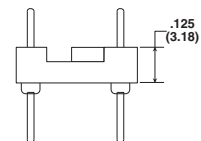
G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

### Table of Models

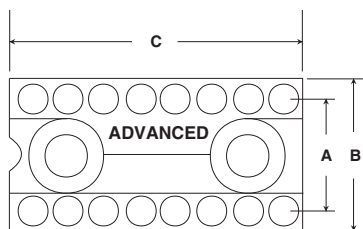


Description: **Molded DIP Adapter (RDA)**  
Mat'l: High Temp. Liquid Crystal Polymer (LCP)  
Index: -40°C to 260°C (-40°F to 500°F)

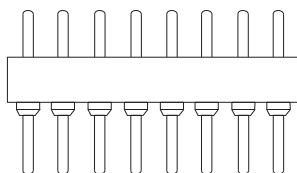


RDA replaces DA and HDA.

### Dimensional Information

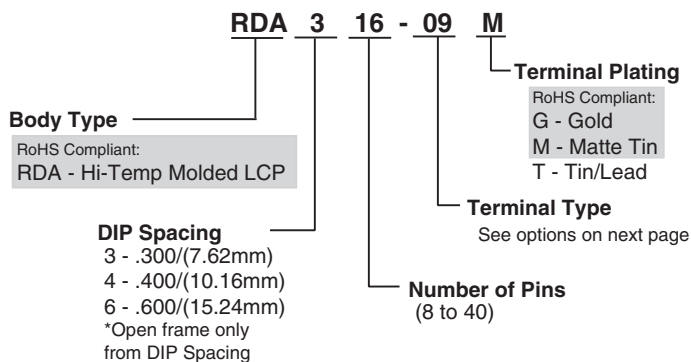


#### Terminal Type -09 Shown



# of Pins	A	B	C
8	.300 (7.62)	.400 (10.16)	.400 (10.16)
14	.300 (7.62)	.400 (10.16)	.700 (17.78)
16	.300 (7.62)	.400 (10.16)	.800 (20.32)
18	.300 (7.62)	.400 (10.16)	.900 (22.86)
20	.300 (7.62)	.400 (10.16)	1.000 (25.40)
22	.400 (10.16)	.500 (12.70)	1.100 (27.94)
24	.600 (15.24)	.700 (17.78)	1.200 (30.48)
28	.600 (15.24)	.700 (17.78)	1.400 (35.56)
40	.600 (15.24)	.700 (17.78)	2.000 (50.80)

### How To Order



5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
info@advanced.com | www.advanced.com  
Catalog 16A

# Molded DIP Adapters

## Dual In-Line Adapters / Discrete Component Carriers

### Standard Terminals

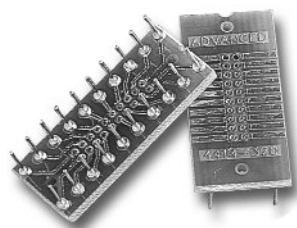
Additional standard and custom terminals available.  
See Terminals section or consult factory.

Type -08	Type -09	Type -68	Type -43
Type -185	Type -42	Type -71	

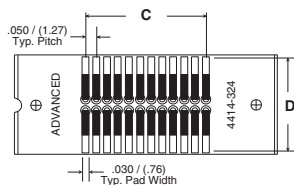
### Package Conversion Applications

See page 58 for complete details.

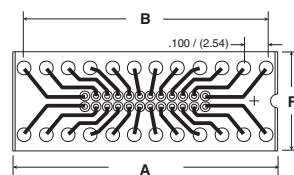
### SOIC to DIP Adapters



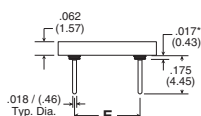
- Wide variety of package conversion adapters available including these standard SOIC to DIP adapters.
- Adapter allows present Gull Wing devices to be solderable or socketable in a thru-hole application.
- Pin spacing allows space for conductor runs on PCB.
- Saves space (X, Y & Z) when used with Advanced sockets.
- Radius ends of adapter pins to improve socketing.
- Allows testing with standard test clips.
- See page 58 for complete details.



Top View



Bottom View



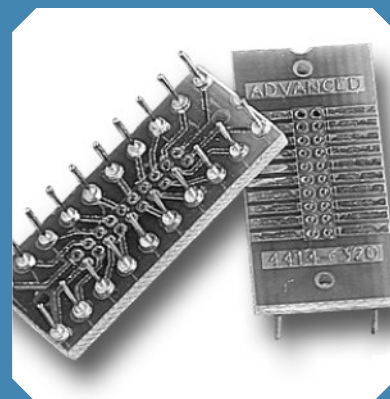
Side View



Standard Part Numbers	Lead-free Part Numbers	# of Pins
4414-308	4414-308LF	8
4414-314	4414-314LF	14
4414-316	4414-316LF	16
4414-320	4414-320LF	20
4414-324	4414-324LF	24
4414-328	4414-328LF*	28
4414-628*	4414-628LF*	28
4414-632*	4414-632LF*	32

\* Consult factory for availability.

## DIP Adapters

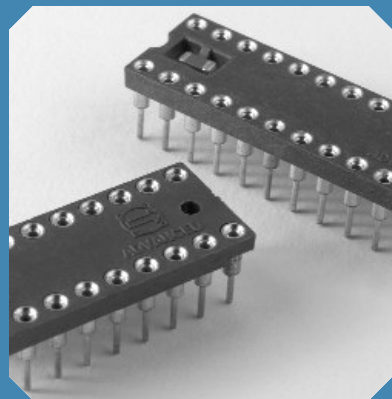


### Available Online:

- RoHS Qualification Test Report
- CAD Drawings



5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
info@advanced.com | www.advanced.com  
Catalog 16A



## Features:

- Quietest decoupling capacitor socket available.
- Insert molded circuit with committed voltage and ground terminals.
- .014/(.36mm) thick copper circuit offers excellent electrical and thermal conductivity.
- Standard decoupling capacitor values of .01μf, .1μf and .33μf. Other capacitor values available to suit your electrical requirements.
- Mounted height above PCB of .165/(4.19mm).
- Test report available upon request.

## Specifications:

### Terminals and Contacts:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16  
Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194  
Circuit: Copper

### Plating:

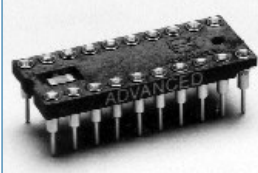
Terminal: G - Gold over Nickel  
T - Tin/Lead over Nickel  
Contact: G - Gold over Nickel  
T - Tin/Lead over Nickel  
Circuit: Tin/Lead\*

Gold per ASTM-B-488  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

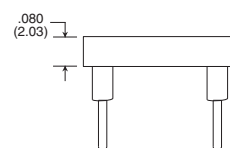


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## Table of Models



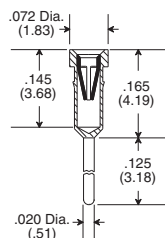
Description: **Decoupling Capacitor Socket (MDC)**  
Material: High Temperature Glass Filled Thermoplastic\* U.L. Rated 94V-0  
Index: -60°C to 260°C (-76°F to 500°F)



\*Note: This product is not RoHS Compliant.

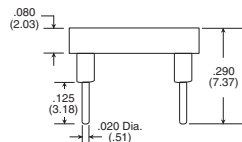
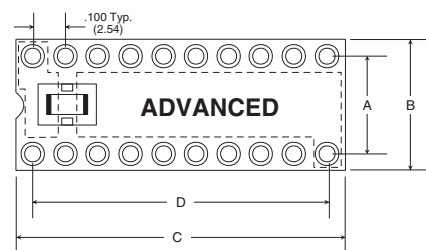
## Standard Terminals

Type -01  
Low Profile

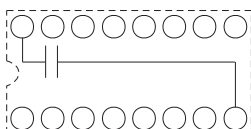


Additional standard and custom terminals available.  
See Terminals section or consult factory.

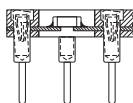
## Dimensional Information



Terminal  
Type -01  
Shown



Electrical Schematic



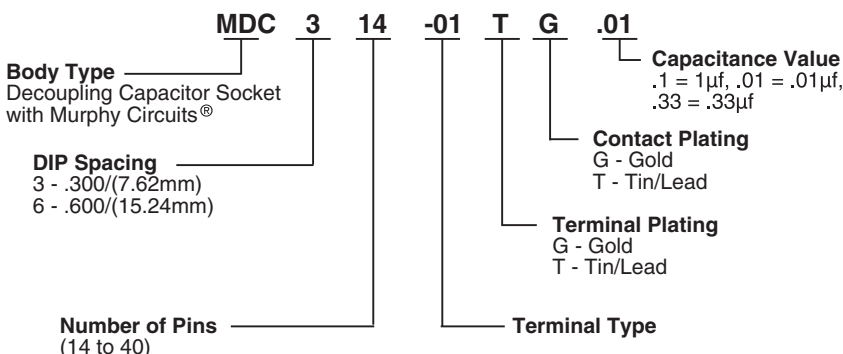
Sectional View  
of Capacitor

# of Pins	A	B	C	D
14	.300 (7.62)	.400 (10.16)	.700 (17.78)	.600 (15.24)
16	.300 (7.62)	.400 (10.16)	.800 (20.32)	.700 (17.78)
20	.300 (7.62)	.400 (10.16)	1.000 (25.40)	.900 (22.86)
22	.300 (7.62)	.400 (10.16)	1.100 (27.94)	1.000 (25.40)
24	.300 (7.62)	.400 (10.16)	1.200 (30.48)	1.100 (27.94)
24	.600 (15.24)	.700 (17.78)	1.200 (30.48)	1.100 (27.94)
28	.600 (15.24)	.700 (17.78)	1.400 (35.56)	1.300 (33.02)
40	.600 (15.24)	.700 (17.78)	2.000 (50.80)	1.900 (48.26)

### Available Online

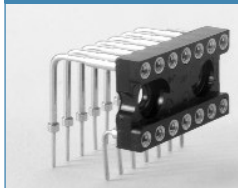
- Design your own Decoupling Capacitor DIP Socket
- Decoupling Capacitor Socket Effectiveness Study

## How To Order



# Closed Frame LED Sockets (Light Emitting Diode)

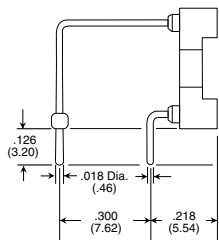
## Table of Models



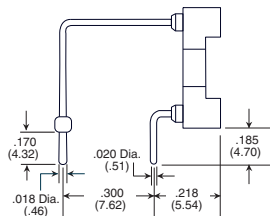
Description: Closed Frame LED Sockets (RDL)  
Material: High Temp. Liquid Crystal Polymer (LCP)  
Index: -40°C to 260°C (-40°F to 500°F)

## Standard Terminals

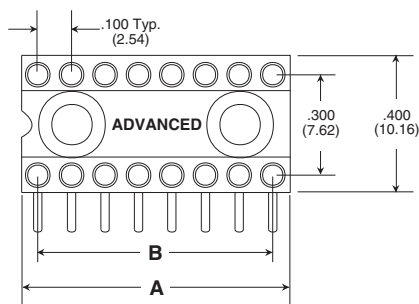
Type -370



Type -31



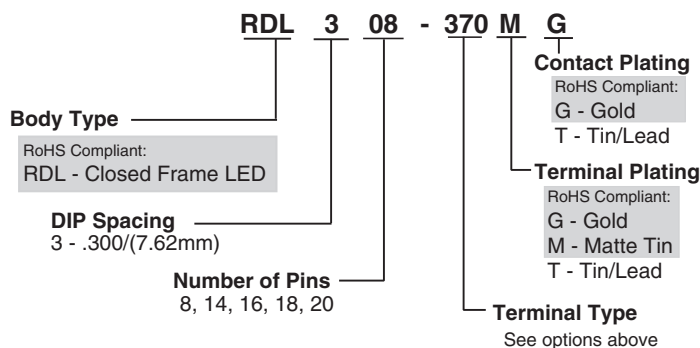
## Dimensional Information



Part Number	# of Pins	A	B
RDL308-XXXMG	8	.395 (10.03)	.300 (7.62)
RDL314-XXXMG	14	.695 (17.65)	.600 (15.24)
RDL316-XXXMG	16	.795 (20.19)	.700 (17.78)
RDL318-XXXMG	18	.895 (22.73)	.800 (20.32)
RDL320-XXXMG	20	.995 (25.27)	.900 (22.86)

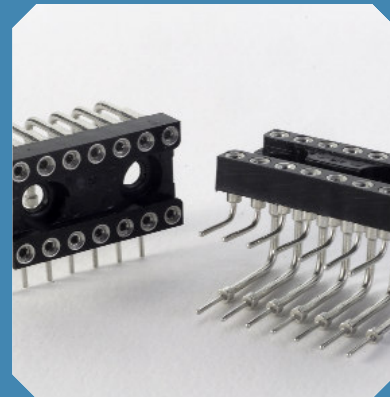
XXX denotes terminal type

## How To Order



Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

## DIP Sockets



### Features:

- Right angle design allows readable position of LED on PCB.
- Multiple finger contact for reliability.
- Tapered entry for ease of insertion.
- Closed bottom sleeve for 100% anti-wicking of solder.

### Specifications:

#### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

#### Plating:

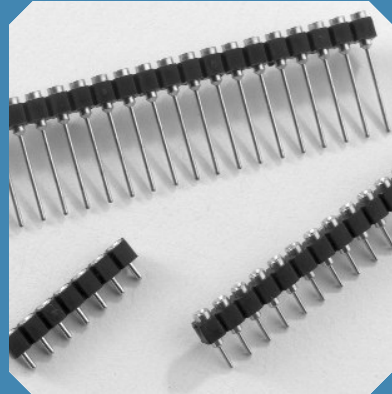
G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290



5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
info@advanced.com | www.advanced.com  
Catalog 16A





### Features:

- Available in three body types: Peel-A-Way® Removable Terminal Carriers, molded Solid Strips, and molded Snap Strips [breakable at .100/(2.54mm)].
- Tapered entry for ease of insertion.
- Multi-finger contacts for reliability.
- Closed bottom sleeve for 100% anti-wicking of solder.
- Custom configurations available.

### Specifications:

#### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

#### Solder Preform:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

#### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290



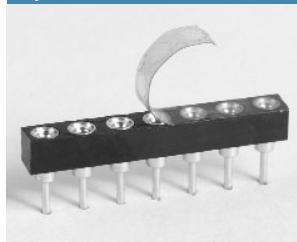
5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
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Catalog 16A

### Table of Models

	<b>Description:</b> Peel-A-Way® Strips (KSS) <b>Material:</b> Polyimide Film <b>Index:</b> -269°C to 400°C (-452°F to 752°F)	
	<b>Description:</b> Molded Snap Strips (HSS/HLSS) <b>Mat'l:</b> Glass Filled Thermoplastic (PPS) <b>Index:</b> -60°C to 220°C (-76°F to 428°F)	 Head Above Plastic      Head Flush with Plastic
	<b>Description:</b> Molded Solid Strips (RNB, RLNB) <b>Mat'l:</b> High Temp. Liquid Crystal Polymer (LCP) <b>Index:</b> -40°C to 260°C (-40°F to 500°F)	 Head Above Plastic      Head Flush with Plastic

HSS/HLSS replaces RSS/RLSS and SS/LSS. RNB/RLNB replaces HNB/HLNB and NB/LNB.

### Options

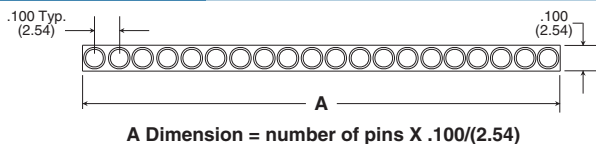


#### Tape Seal - add 3M to end of part number

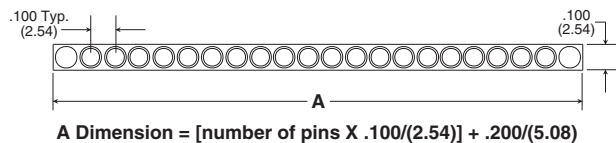
- Removable tape seal protects plated contact in harsh environments.
- Sealed socket will not allow dirt and other contaminants to enter socket chamber and become entrapped behind contact fingers.
- Spray flux without contaminating contact area.
- Material - Silicone Backed Polyimide Film, -74°C to 260°C (-100°F to 500°F) Intermittent to 371°C (700°F)

### Dimensional Information

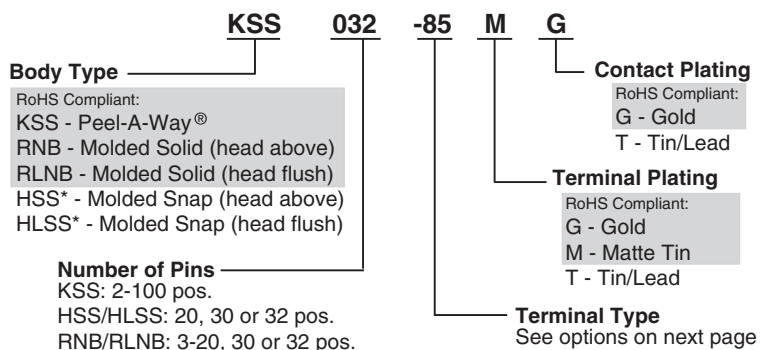
#### Molded Body Types



#### Peel-A-Way® Body Types



### How To Order



\*PSS Insulators (HSS/HLSS) are not suitable for high temperature, lead-free (RoHS) solder profiles.  
 Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

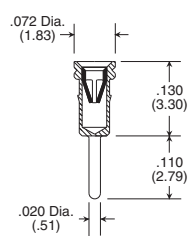
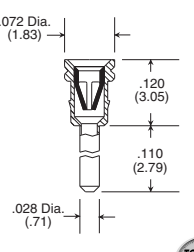
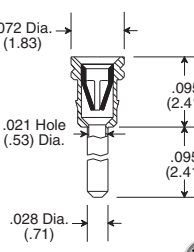
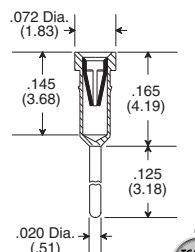
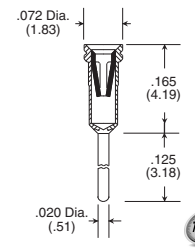
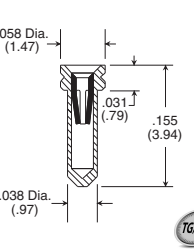
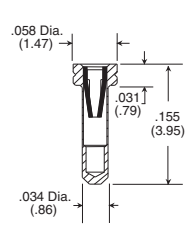
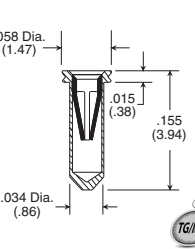
inch/(mm)

# SIP Sockets

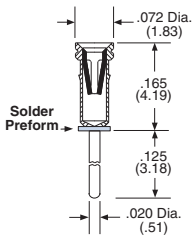
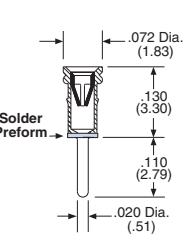
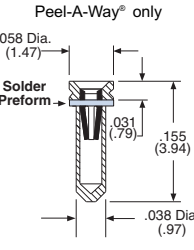
## Molded and Peel-A-Way® Insulators

Additional standard and custom terminals available.  
See Terminals section or consult factory.

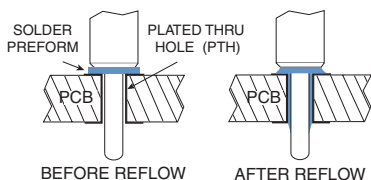
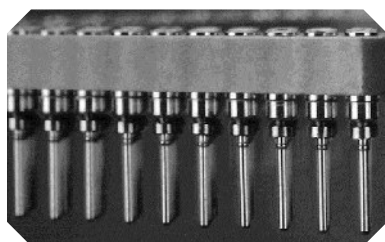
### Standard Terminals

Type -51	Type -04	Type -49	Type -01
 <p>.072 Dia. (1.83) .130 (3.30) .110 (2.79) .020 Dia. (.51)</p>	 <p>.072 Dia. (1.83) .120 (3.05) .110 (2.79) .028 Dia. (.71)</p>	<p>Not for use with HSS or RNB.</p>  <p>.072 Dia. (1.83) .095 (2.41) .021 Hole (.53) Dia. .095 (2.41) .028 Dia. (.71)</p>	<p>Molded only</p>  <p>.072 Dia. (1.83) .145 (3.68) .165 (4.19) .125 (3.18) .020 Dia. (.51)</p>
Type -33	Type -85	Type -176	Type -210
<p>Peel-A-Way® only</p>  <p>.072 Dia. (1.83) .165 (4.19) .125 (3.18) .020 Dia. (.51)</p>	<p>Peel-A-Way® only</p>  <p>.058 Dia. (1.47) .031 (.79) .155 (3.94) .038 Dia. (.97)</p>	<p>Peel-A-Way® only</p>  <p>.058 Dia. (1.47) .031 (.79) .155 (3.95) .034 Dia. (.86)</p>	<p>Peel-A-Way® only</p>  <p>.058 Dia. (1.47) .015 (.38) .155 (3.94) .034 Dia. (.86)</p>

### Solder Preform Terminals

Tin/Lead: Type -150 Lead-free: Type -811	Tin/Lead: Type -151 Lead-free: Type -812	Tin/Lead: Type -111 Lead-free: Type -810
 <p>.072 Dia. (1.83) .165 (4.19) .125 (3.18) .020 Dia. (.51)</p>	 <p>.072 Dia. (1.83) .130 (3.30) .110 (2.79) .020 Dia. (.51)</p>	<p>Peel-A-Way® only</p>  <p>.058 Dia. (1.47) .031 (.79) .155 (3.94) .038 Dia. (.97)</p>

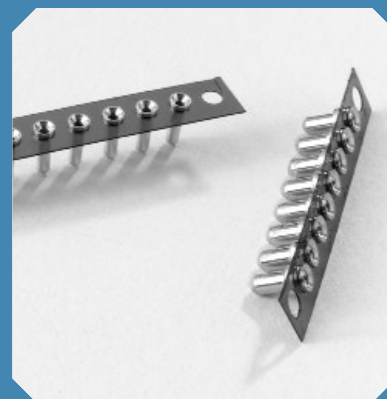
### Intrusive Reflow Application



### Solder Preform Terminals

- Combines the labor of socket loading and solder application into one operation.
- Eliminates the use of solder paste and screening operation.
- Eliminates solder bridges and/or solder shorts due to excess solder.
- Ensures a reliable solder joint with controlled solder volume.
- Ideal for surface mount and mixed technology applications.
- For custom solder preform terminal applications consult factory.

# SIP Sockets



### Available Online:

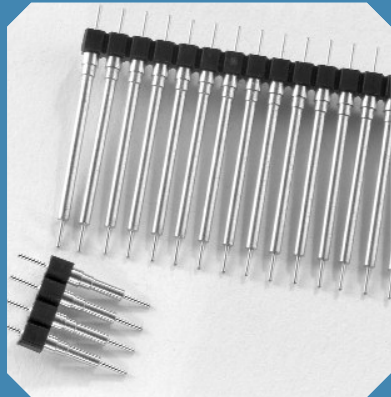
- RoHS Qualification Test Report
- CAD Drawings

### EXPRESS Delivery

Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
info@advanced.com | [www.advanced.com](http://www.advanced.com)  
Catalog 16A



### Features:

- Available in three body types: Peel-A-Way® Removable Terminal Carriers, molded Solid Strips, and molded Snap Strips [breakable at .100/(2.54mm)].
- Board to board applications.
- Peel-A-Way® Removable Terminal Carrier can be easily removed to allow inspection of solder joints on both sides of PC board, or left in place for added stability.
- Custom designs available.

### Specifications:

#### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

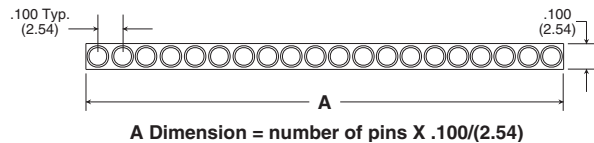
### Table of Models

	<b>Description:</b> Peel-A-Way® Strips (KSA) <b>Material:</b> Polyimide Film <b>Index:</b> -269°C to 400°C (-452°F to 752°F)	
	<b>Description:</b> Molded Snap Strips (HSA) <b>Mat'l:</b> Glass Filled Thermoplastic (PPS) <b>Index:</b> -60°C to 220°C (-76°F to 428°F)	
	<b>Description:</b> Molded Solid Strips (RNA) <b>Mat'l:</b> High Temp. Liquid Crystal Polymer (LCP) <b>Index:</b> -40°C to 260°C (-40°F to 500°F)	

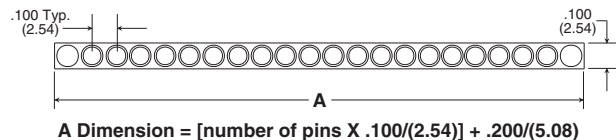
HSA replaces RSA and SA, RNA replaces NA and HNA.

### Dimensional Information

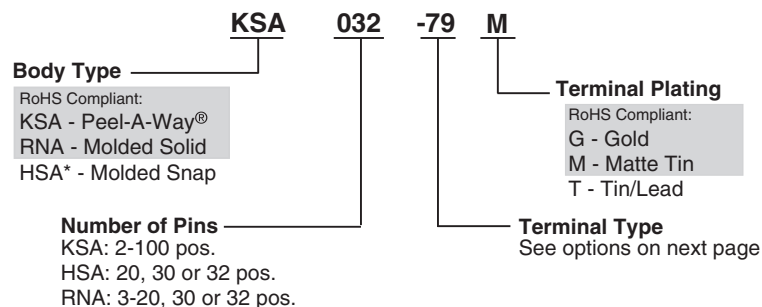
#### Molded Body Types



#### Peel-A-Way® Body Types



### How To Order



\*PSS Insulators (HSA) are not suitable for high temperature, lead-free (RoHS) solder profiles.



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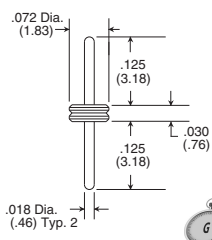
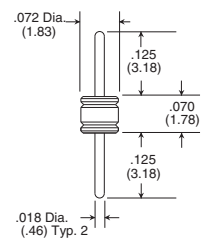
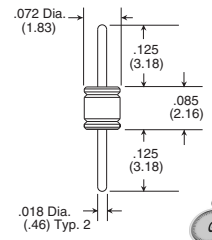
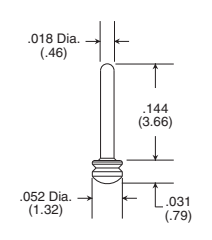
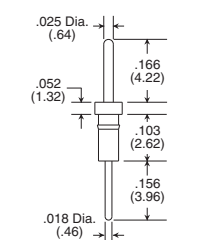
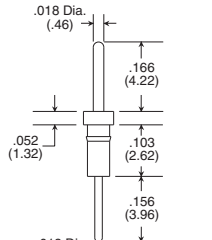
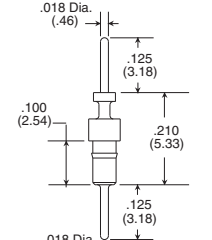
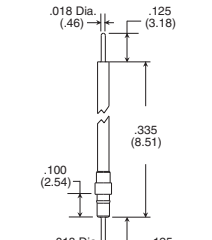
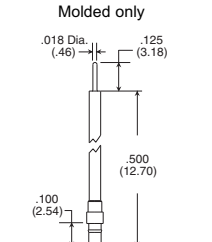
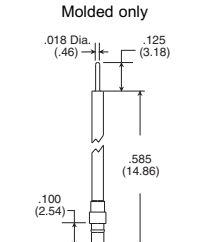
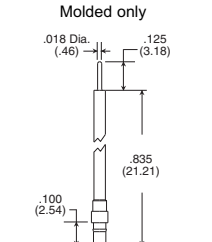
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

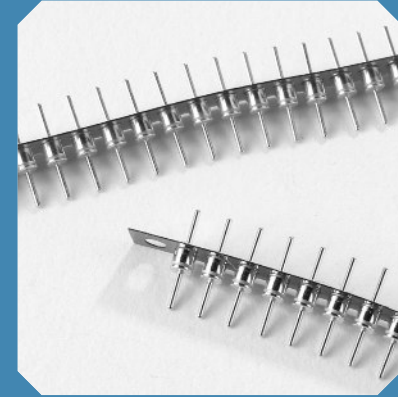
# SIP Adapters Molded and Peel-A-Way® Insulators

Additional standard and custom terminals available.  
See Terminals section or consult factory.

## Standard Terminals

Type -79	Type -80	Type -81	Type -574
Peel-A-Way® only	Peel-A-Way® only	Peel-A-Way® only	Peel-A-Way® only
			
Type -08	Type -09	Type -68	Type -43
Molded only	Molded only	Molded only	Molded only
			
Type -185	Type -42	Type -71	
Molded only	Molded only	Molded only	
			

# SIP Adapters



## Available Online:

- RoHS Qualification Test Report
- CAD Drawings

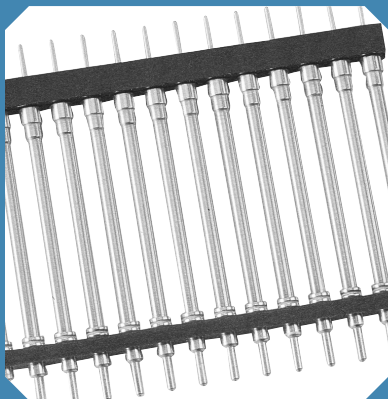
## EXPRESS Delivery



Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



# Board to Board Connectors



## Features:

- Male and female connectors are designed in mating pairs.
- .100/(2.54mm) row to row pitch.
- High reliability screw-machined terminals with closed-end construction for 100% anti-wicking of solder.
- For surface mount options, consult factory.
- Reliable mechanical support.
- Custom configurations available.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194


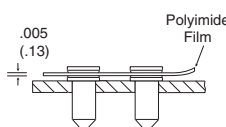

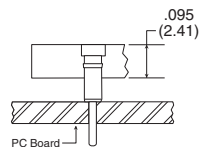

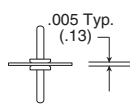

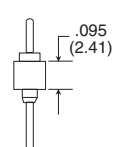
### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

# .100/(2.54mm) Pitch Board to Board Connectors Molded and Peel-A-Way® Insulators

## Table of Models

Female	Single Row	Dual Row	Description: Peel-A-Way® (KSS, DKS) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)		
	KSS	DKS			
Male	Single Row	Dual Row	Desc: Molded (RNB, RLNB, RDRS) Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)		
	RNB/RLNB	RDRS			
Female	Single Row	Dual Row	Description: Peel-A-Way® (KSA, DKA) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)		
	KSA	DKA			
Male	Single Row	Dual Row	Description: Molded (RNA, RDRA) Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)		
	RNA	RDRA			

RNB/RLNB replaces HNB/HLNB and NB/LNB. RDRS replaces HDRS and DRS.  
RNA replaces HNA and NA. RDRA replaces HDRA and DRA.

## How To Order

### Female

**Body Type** RNB 010 - 01 M G

RoHS Compliant Insulators:  
KSS - Single Row Peel-A-Way®  
RNB\* - Single Row Hi-Temp Molded  
RLNB\* - Single Row Hi-Temp Molded  
DKS - Dual Row Peel-A-Way®  
RDRS - Dual Row Hi-Temp Molded

**Total Number of Pins**  
KSS: 2-100, DKS: 4-200  
RNB/RLNB: 3-32, RDRS: 20-70

\*RNB - Terminal head above insulator  
\*RLNB - Terminal head flush with insulator

**Contact Plating**  
RoHS Compliant:  
G - Gold  
T - Tin/Lead

**Terminal Plating**  
RoHS Compliant:  
G - Gold  
M - Matte Tin  
T - Tin/Lead

**Terminal Type**  
See options

### Male

**Body Type** RNA 010 - 68 M

RoHS Compliant Insulators:  
KSA - Single Row Peel-A-Way®  
RNA - Single Row Hi-Temp Molded  
DKA - Dual Row Peel-A-Way®  
RDRA - Dual Row Hi-Temp Molded

**Total Number of Pins**  
KSA: 2-100, DKA: 4-200  
RNA: 3-32, RDRA: 20-70

**Terminal Plating**  
RoHS Compliant:  
G - Gold  
M - Matte Tin  
T - Tin/Lead

**Terminal Type**  
See options



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Catalog 16A

Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

# .100/(2.54mm) Pitch Board to Board Connectors

## Molded and Peel-A-Way® Insulators

### Standard Female Terminals

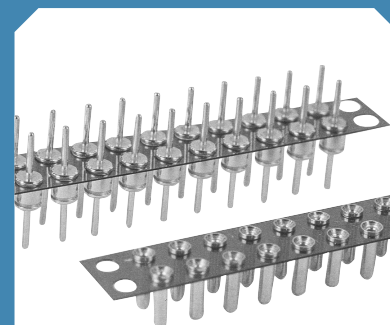
Additional standard and custom terminals available.  
See Terminals section or consult factory.

<b>Type -210</b> Peel-A-Way® only 	<b>Type -85</b> Peel-A-Way® only 	<b>Type -33</b> Peel-A-Way® only 	<b>Type -04</b> 
<b>Type -51</b> 	<b>Type -49</b> Not for use with RNB. 	<b>Type -01</b> Molded only 	<b>Type -299</b> Available in Peel-A-Way® or FR-4 (use FNB body type) only. 

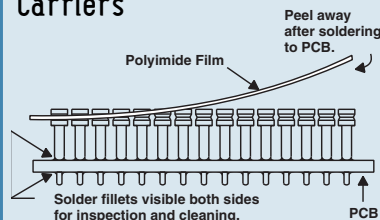
### Standard Male Terminals

<b>Type -79</b> Peel-A-Way® only 	<b>Type -80</b> Peel-A-Way® only 	<b>Type -81</b> Peel-A-Way® only 	<b>Type -68</b> 
<b>Type -43</b> 	<b>Type -185</b> 	<b>Type -42</b> 	<b>Type -71</b> 
<b>Type -444</b> 	<b>Type -398</b> 	<b>Type -399</b> 	<b>Type -403</b> 

## Board to Board Connectors



### Peel-A-Way® Removable Carriers



1. Place socket on PC board.
2. Send PC board and socket through soldering operation.
3. Peel away polyimide film carrier for complete solder joint visibility or leave in place for added stability.

### Available Online:

- RoHS Qualification Test Report

See following pages for typical board to board spacing configuration and additional dimensional information.

### EXPRESS Delivery

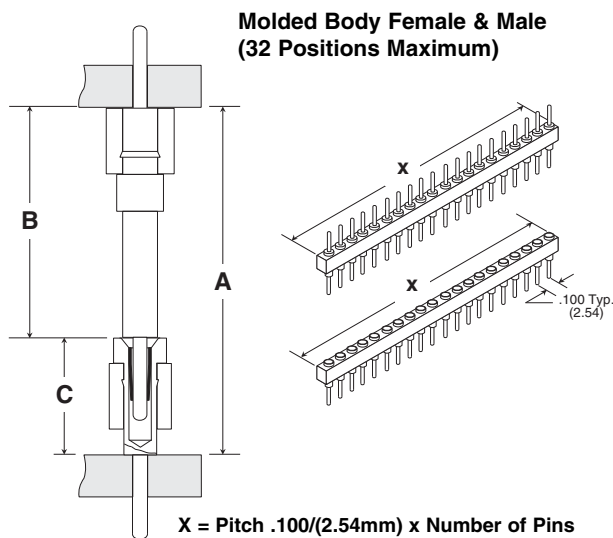


Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



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Catalog 16A

### Dimensional Information



Order one each Male & Female to get the required "A" dim.

B	C	A	Male Part #	Female Part #
.155/(3.94)	.083/(2.11)	.238/(6.05)	RNA020-444G	FNB020-299MG
.155/(3.94)	.095/(2.41)	.250/(6.35)	RNA020-444G	RLNB020-49MG
.155/(3.94)	.120/(3.05)	.275/(6.99)	RNA020-444G	RLNB020-04MG
.155/(3.94)	.130/(3.30)	.285/(7.24)	RNA020-444G	RNB020-51MG
.210/(5.33)	.083/(2.11)	.293/(7.44)	RNA020-68G	FNB020-299MG
.210/(5.33)	.095/(2.41)	.305/(7.74)	RNA020-68G	RLNB020-49MG
.155/(3.94)	.165/(4.19)	.320/(8.13)	RNA020-444G	RNB020-01MG
.210/(5.33)	.120/(3.05)	.330/(8.37)	RNA020-68G	RLNB020-04MG
.210/(5.33)	.130/(3.30)	.340/(8.63)	RNA020-68G	RNB020-51MG
.210/(5.33)	.165/(4.19)	.375/(9.52)	RNA020-68G	RNB020-01MG
.335/(8.51)	.083/(2.11)	.418/(10.62)	RNA020-43G	FNB020-299MG
.335/(8.51)	.095/(2.41)	.430/(10.92)	RNA020-43G	RLNB020-49MG
.335/(8.51)	.120/(3.05)	.455/(11.56)	RNA020-43G	RLNB020-04MG
.379/(9.63)	.083/(2.11)	.462/(11.74)	RNA020-399G	FNB020-299MG
.335/(8.51)	.130/(3.30)	.465/(11.81)	RNA020-43G	RNB020-51MG
.379/(9.63)	.095/(2.41)	.474/(12.04)	RNA020-399G	RLNB020-49MG
.379/(9.63)	.120/(3.05)	.499/(12.68)	RNA020-399G	RLNB020-04MG
.335/(8.51)	.165/(4.19)	.500/(12.70)	RNA020-48G	RNB020-01MG
.379/(9.63)	.130/(3.30)	.509/(12.93)	RNA020-399G	RNB020-51MG
.379/(9.63)	.165/(4.19)	.544/(13.82)	RNA020-399G	RNB020-01MG
.500/(12.70)	.083/(2.11)	.583/(14.81)	RNA020-185G	FNB020-299MG
.500/(12.70)	.095/(2.41)	.595/(15.11)	RNA020-185G	RLNB020-49MG
.500/(12.70)	.120/(3.05)	.620/(15.75)	RNA020-185G	RLNB020-04MG
.500/(12.70)	.130/(3.30)	.630/(16.00)	RNA020-185G	RNB020-51MG
.500/(12.70)	.165/(4.19)	.665/(16.89)	RNA020-185G	RNB020-01MG
.585/(14.86)	.083/(2.11)	.668/(16.87)	RNA020-42G	FNB020-299MG
.585/(14.86)	.095/(2.41)	.680/(17.27)	RNA020-42G	RLNB020-49MG
.585/(14.86)	.120/(3.05)	.705/(17.91)	RNA020-42G	RLNB020-04MG
.585/(14.86)	.130/(3.30)	.715/(18.16)	RNA020-42G	RNB020-51MG
.585/(14.86)	.165/(4.19)	.750/(19.05)	RNA020-42G	RLNB020-01MG
.679/(17.25)	.083/(2.11)	.762/(19.36)	RNA020-398G	FNB020-299MG
.679/(17.25)	.095/(2.41)	.774/(19.66)	RNA020-398G	RLNB020-49MG
.679/(17.25)	.120/(3.05)	.799/(20.30)	RNA020-398G	RLNB020-04MG
.679/(17.25)	.130/(3.30)	.809/(20.55)	RNA020-398G	RNB020-51MG
.750/(19.06)	.083/(2.11)	.833/(21.17)	RNA020-403G	FNB020-299MG
.679/(17.25)	.165/(4.19)	.844/(21.44)	RNA020-398G	RNB020-01MG
.750/(19.06)	.095/(2.41)	.845/(21.47)	RNA020-403G	RLNB020-49MG
.750/(19.06)	.120/(3.05)	.870/(22.11)	RNA020-403G	RLNB020-04MG
.750/(19.06)	.130/(3.30)	.880/(22.36)	RNA020-403G	RNB020-51MG
.750/(19.06)	.165/(4.19)	.915/(23.25)	RNA020-403G	RNB020-01MG
.835/(21.21)	.083/(2.11)	.918/(23.32)	RNA020-71G	FNB020-299MG
.835/(21.21)	.095/(2.41)	.930/(23.62)	RNA020-71G	RLNB020-49MG
.835/(21.21)	.120/(3.05)	.955/(24.26)	RNA020-71G	RLNB020-04MG
.835/(21.21)	.130/(3.30)	.965/(24.51)	RNA020-71G	RNB020-51MG
.835/(21.21)	.165/(4.19)	1.000/(25.40)	RNA020-71G	RLNB020-01MG

20 position single row part numbers shown. See How To Order section for ordering information.

If required "A" dimension is not shown, consult factory.



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inch/(mm)

## Dimensional Information

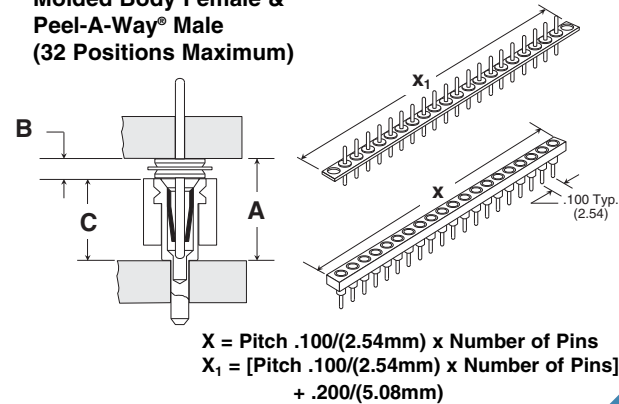
Order one each Male & Female to get the required "A" dim.

B	C	A	Male Part #	Female Part #	Fig.
.030/(.76)	.015/(.38)	.045/(1.14)	KSA020-79G	KSS020-210MG	3
.030/(.76)	.030/(.76)	.060/(1.52)	KSA020-79G	KSS020-85MG	3
.070/(1.78)	.015/(.38)	.085/(2.16)	KSA020-80G	KSS020-210MG	3
.085/(2.16)	.015/(.38)	.100/(2.54)	KSA020-81G	KSS020-210MG	3
.070/(1.78)	.030/(.76)	.100/(2.54)	KSA020-80G	KSS020-85MG	3
.030/(.76)	.083/(2.11)	.113/(2.87)	KSA020-79G	FNB020-299MG	1
.085/(2.16)	.030/(.76)	.115/(2.92)	KSA020-81G	KSS020-85MG	3
.030/(.76)	.095/(2.41)	.125/(3.18)	KSA020-79G	KSS020-49MG	3
.030/(.76)	.120/(3.05)	.150/(3.81)	KSA020-79G	KSS020-04MG	3
.070/(1.78)	.083/(2.11)	.153/(3.89)	KSA020-80G	FNB020-299MG	1
.030/(.76)	.130/(3.30)	.160/(4.06)	KSA020-79G	KSS020-51MG	3
.070/(1.78)	.095/(2.41)	.165/(4.19)	KSA020-80G	KSS020-49MG	3
.085/(2.16)	.083/(2.11)	.168/(4.27)	KSA020-81G	FNB020-299MG	1
.155/(3.94)	.015/(.38)	.170/(4.32)	RNA020-444G	KSS020-210MG	2
.085/(2.16)	.095/(2.41)	.180/(4.57)	KSA020-81G	KSS020-49MG	3
.155/(3.94)	.031/(.79)	.186/(4.72)	RNA020-444G	KSS020-85MG	2
.070/(1.78)	.120/(3.05)	.190/(4.83)	KSA020-80G	KSS020-04MG	3
.030/(.76)	.165/(4.19)	.195/(4.95)	KSA020-79G	KSS020-33MG	3
.070/(1.78)	.130/(3.30)	.200/(5.08)	KSA020-80G	KSS020-51MG	3
.085/(2.16)	.120/(3.05)	.205/(5.21)	KSA020-81G	KSS020-04MG	3
.085/(2.16)	.130/(3.30)	.216/(5.47)	KSA020-81G	KSS020-51MG	3
.210/(5.33)	.015/(.38)	.225/(5.72)	RNA020-68G	KSS020-210MG	2
.070/(1.78)	.165/(4.19)	.235/(5.97)	KSA020-80G	KSS020-33MG	3
.210/(5.33)	.031/(.79)	.241/(6.12)	RNA020-68G	KSS020-85MG	2
.085/(2.16)	.165/(4.19)	.250/(6.35)	KSA020-81G	KSS020-33MG	3
.335/(8.51)	.015/(.38)	.350/(8.89)	RNA020-43G	KSS020-210MG	2
.379/(9.63)	.015/(.38)	.364/(9.25)	RNA020-399G	KSS020-210MG	2
.335/(8.51)	.031/(.79)	.366/(9.30)	RNA020-43G	KSS020-85MG	2
.379/(9.63)	.031/(.79)	.410/(10.42)	RNA020-399G	KSS020-85MG	2
.500/(12.70)	.015/(.38)	.515/(13.08)	RNA020-185G	KSS020-210MG	2
.500/(12.70)	.031/(.79)	.531/(13.79)	RNA020-185G	KSS020-85MG	2
.585/(14.86)	.015/(.38)	.600/(15.24)	RNA020-42G	KSS020-210MG	2
.585/(14.86)	.031/(.79)	.616/(15.65)	RNA020-42G	KSS020-85MG	2
.679/(17.25)	.015/(.38)	.694/(17.63)	RNA020-398G	KSS020-210MG	2
.679/(17.25)	.031/(.79)	.710/(18.04)	RNA020-398G	KSS020-85MG	2
.750/(19.06)	.015/(.38)	.765/(19.44)	RNA020-403G	KSS020-210MG	2
.750/(19.06)	.031/(.79)	.781/(19.85)	RNA020-403G	KSS020-85MG	2
.835/(21.21)	.015/(.38)	.850/(21.59)	RNA020-71G	KSS020-210MG	2
.835/(21.21)	.031/(.79)	.866/(22.00)	RNA020-71G	KSS020-85MG	2

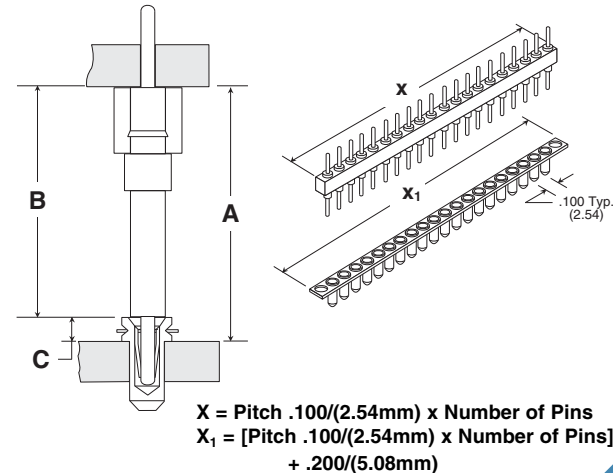
20 position single row part numbers shown. See How To Order section for ordering information.

If required "A" dimension is not shown, consult factory.

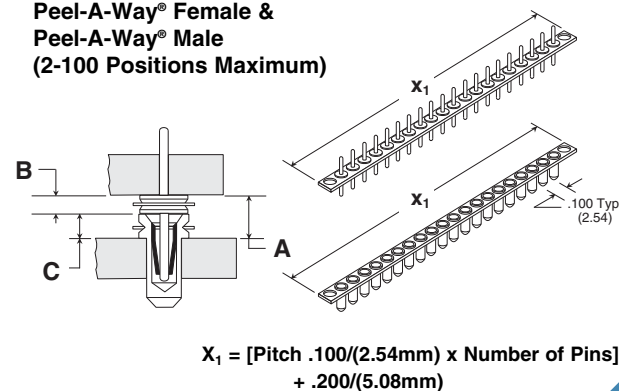
**Figure 1**  
Molded Body Female & Peel-A-Way® Male (32 Positions Maximum)



**Figure 2**  
Peel-A-Way® Female & Molded Body Male (32 Positions Maximum)



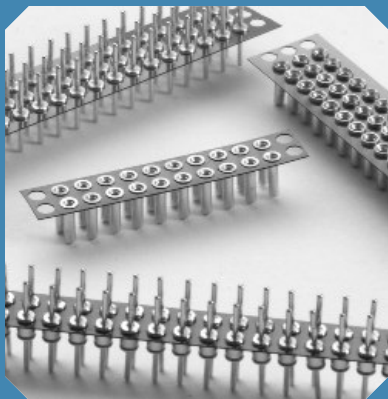
**Figure 3**  
Peel-A-Way® Female & Peel-A-Way® Male (2-100 Positions Maximum)



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# Board to Board Connectors



## Features:

- Supplied in high temperature Peel-A-Way® removable terminal carrier.
- Male and female connectors are designed in mating pairs.
- .079/(2.00mm) row to row pitch.
- High reliability screw-machined terminals with closed-end construction for 100% anti-wicking of solder.
- For surface mount board to board options consult factory.
- Reliable mechanical support.
- Custom configurations available.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194


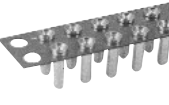




### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

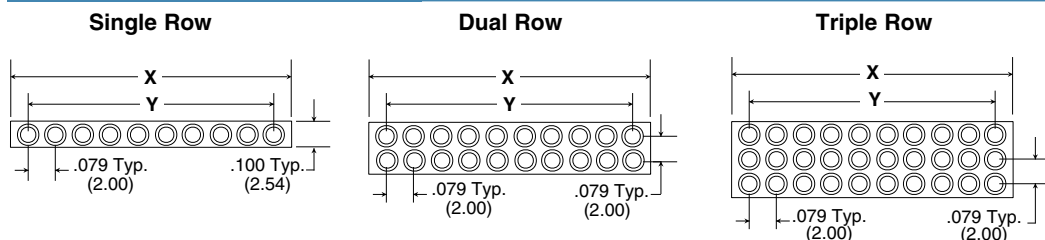
Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

# .079/(2.00mm) Pitch Board to Board Connectors Peel-A-Way® Insulators

## Table of Models

	Single Row	Dual Row	Triple Row	Description: Peel-A-Way® (KMS, KMD, KMT) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)
Female	 KMS	 KMD	 KMT	
Male	 KMA	 KMB	 KMC	Description: Peel-A-Way® (KMA, KMB, KMC) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)

## Dimensional Information

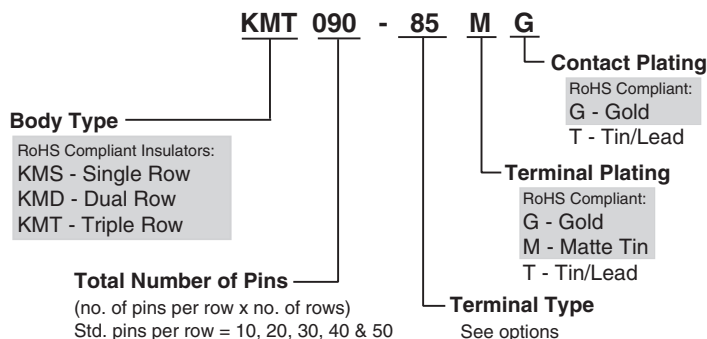


Total # of Pins per Connector			# of Pins Per Row	X in. (mm)	Y in. (mm)
Single	Dual	Triple			
010	020	030	10	.866/(22.00)	.709/(18.00)
020	040	060	20	1.654/(42.00)	1.496/(38.00)
030	060	090	30	2.441/(62.00)	2.283/(58.00)
040	080	120	40	3.228/(82.00)	3.071/(78.00)
050	100	150	50	4.016/(102.00)	3.858/(98.00)

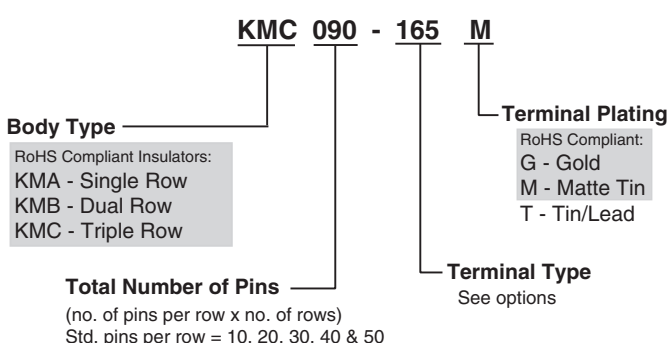
Multiply number of rows by number of pins per row for total pin count in part number.

## How To Order

### Female



### Male



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Catalog 16A

Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

# .079/(2.00mm) Pitch Board to Board Connectors

## Peel-A-Way® Insulators

### Standard Female Terminals

Additional standard and custom terminals available.  
See Terminals section or consult factory.

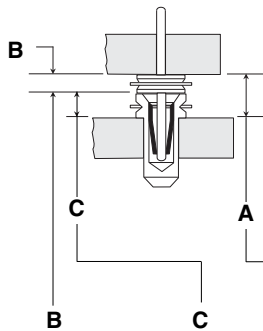
Type -85	Type -176	Type -210	Type -95
Peel-A-Way® only	Peel-A-Way® only	Peel-A-Way® only	Peel-A-Way® only

### Standard Male Terminals

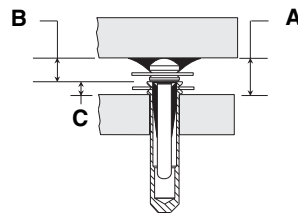
Type -165	Type -339	Type -340	Type -525
Peel-A-Way® only	Peel-A-Way® only	Peel-A-Way® only	Peel-A-Way® only

### Dimensional Information

**Figure 1**  
Thru-Hole



**Figure 2**  
Surface Mount



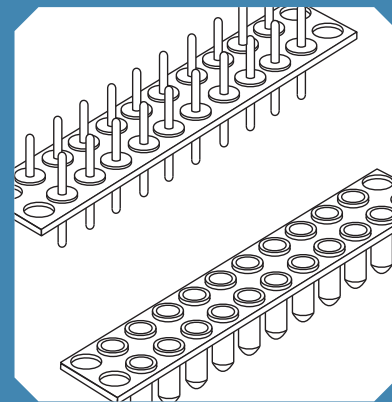
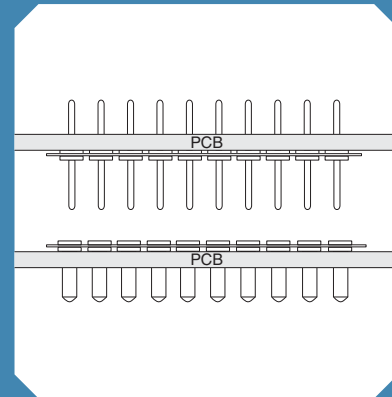
Order one each Male & Female  
to get the required "A" dim.

in./ (mm)	in./ (mm)	in./ (mm)	Male Part #	Female Part #	Fig. #
.031/(.79)	.015/ (.38)	.046/(1.17)	KMB020-165G	KMD020-210MG	1
.031/(.79)	.015/ (.38)	.046/(1.17)	KMB020-525G	KMD020-210MG	2
.031/(.79)	.031/(.79)	.062/(1.57)	KMB020-165G	KMD020-85MG	1
.031/(.79)	.031/(.79)	.062/(1.57)	KMB020-525G	KMD020-85MG	2
.031/(.79)	.031/(.79)	.062/(1.57)	KMB020-165G	KMD020-176MG	1
.031/(.79)	.031/(.79)	.062/(1.57)	KMB020-525G	KMD020-176MG	2
.070/(1.78)	.015/ (.38)	.085/(2.16)	KMB020-321G	KMD020-210MG	1
.085/(2.16)	.015/ (.38)	.100/(2.54)	KMB020-322G	KMD020-210MG	1
.070/(1.78)	.031/(.79)	.101/(2.57)	KMB020-321G	KMD020-85MG	1
.070/(1.78)	.031/(.79)	.101/(2.57)	KMB020-321G	KMD020-176MG	1
.085/(2.16)	.031/(.79)	.116/(2.95)	KMB020-322G	KMD020-85MG	1
.085/(2.16)	.031/(.79)	.116/(2.95)	KMB020-322G	KMD020-176MG	1
.031/(.79)	.155/(3.94)	.186/(4.72)	KMB020-165G	KMD020-95MG	1
.031/(.79)	.155/(3.94)	.186/(4.72)	KMB020-525G	KMD020-95MG	2
.070/(1.78)	.155/(3.94)	.225/(5.72)	KMB020-321G	KMD020-95MG	1
.085/(2.16)	.155/(3.94)	.240/(6.10)	KMB020-322G	KMD020-95MG	1

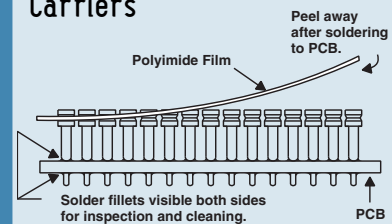
20 position dual row part numbers shown. See How To Order section for ordering information.

If required "A" dimension is not shown, consult factory.

## Board to Board Connectors



### Peel-A-Way® Removable Carriers



1. Place socket on PC board.
2. Send PC board and socket through soldering operation.
3. Peel away polyimide film carrier for complete solder joint visibility or leave in place for added stability.

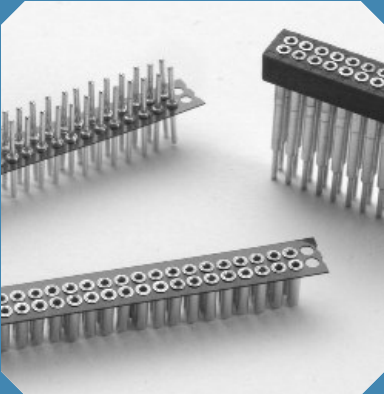
### Available Online:

- RoHS Qualification Test Report



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Catalog 16A

# Board to Board Connectors

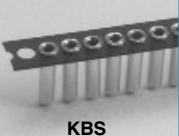

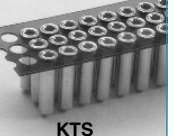
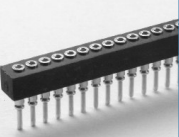
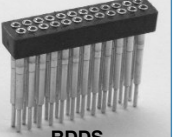





### Features:

- Male and female connectors are designed in mating pairs.
- .050/(1.27mm) row to row pitch.
- High reliability screw-machined terminals with closed-end construction for 100% anti-wicking of solder.
- For surface mount options, consult factory.
- Reliable mechanical support.
- Custom configurations available.

## .050/(1.27mm) Pitch Board to Board Connectors Molded and Peel-A-Way® Insulators

Table of Models

	Single Row	Dual Row	Triple Row	
Female	 KBS	 KNS	 KTS	Description: <b>Peel-A-Way®</b> (KBS, KNS, KTS) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)
	 FSDS	 RDDS (RDD*)		Description: <b>FR-4 (FSDS)</b> Mat'l: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F) Description: <b>Molded (RDDS, RDD)</b> Mat'l: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)
Male	 KBA	 KNA (KDA*)	 KTA	Description: <b>Peel-A-Way®</b> (KBA, KNA, KDA, KTA) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)

\* RDD and KDA have .100/(2.54mm) pitch between rows.

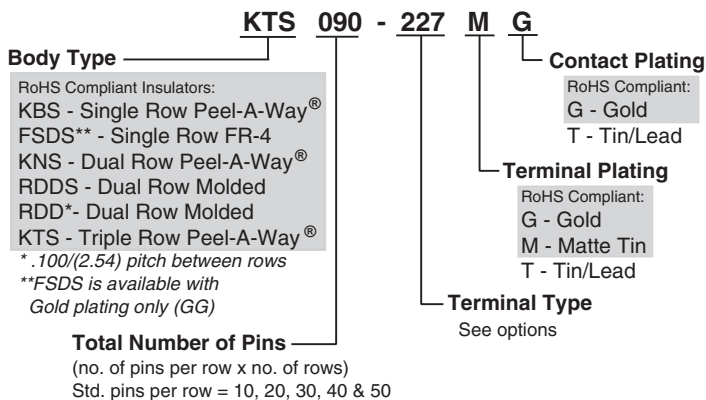
Note: FSDS replaces SDS, HSDS, and RSDS.

RDDS replaces DDS and HDDS.

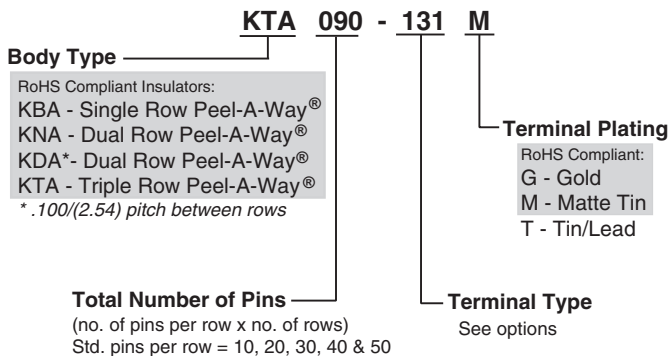
RDD replaces DD.

### How To Order

#### Female



#### Male



Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)



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# .050/(1.27mm) Pitch Board to Board Connectors

## Molded and Peel-A-Way® Insulators

### Standard Female Terminals

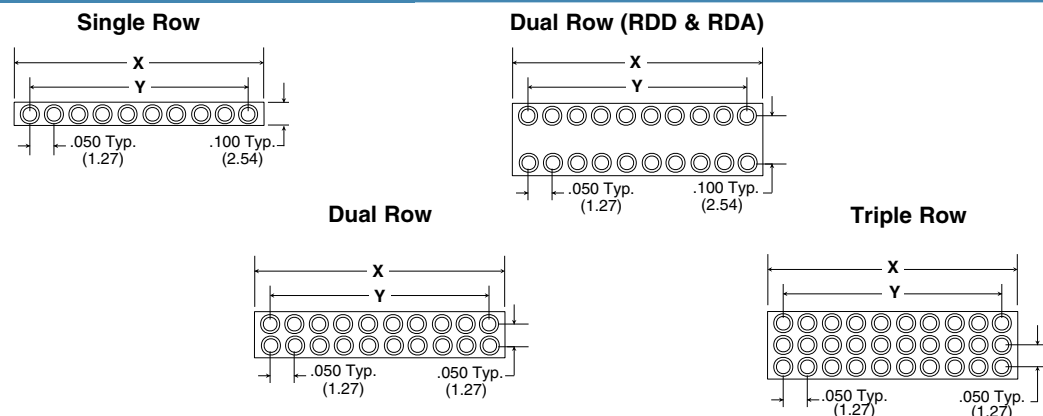
Additional standard and custom terminals available.  
See Terminals section or consult factory.

Type -168 Molded or FR-4 only	Type -347 Molded or FR-4 only	Type -205 Molded or FR-4 only	Type -227 Peel-A-Way® only

### Standard Male Terminals - Thru-Hole

Type -131 Peel-A-Way® only	Type -322 Peel-A-Way® only	Type -321 Peel-A-Way® only

### Dimensional Information



#### Molded or FR-4

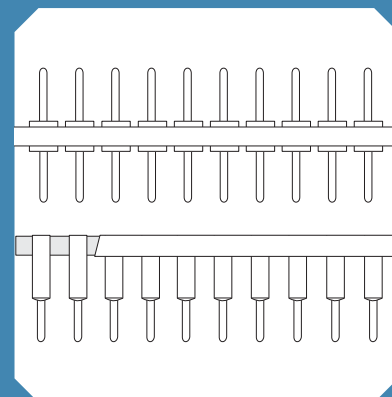
Total # of Pins per Connector			# of Pins Per Row	X in. (mm)	Y in. (mm)
Single	Dual	Triple			
010	020	030	10	.550 (13.97)	.450 (11.43)
020	040	060	20	1.050 (26.67)	.950 (24.13)
030	060	090	30	1.550 (39.37)	1.450 (36.83)
040	080	120	40	2.050 (52.07)	1.950 (49.53)
050	100	150	50	2.550 (64.77)	2.450 (62.23)

#### Peel-A-Way®

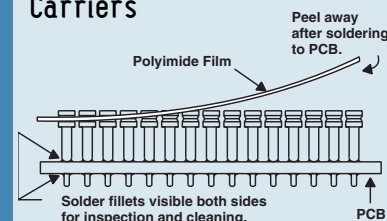
Total # of Pins per Connector			# of Pins Per Row	X in. (mm)	Y in. (mm)
Single	Dual	Triple			
010	020	030	10	.650 (16.51)	.450 (11.43)
020	040	060	20	1.150 (29.21)	.950 (24.13)
030	060	090	30	1.650 (41.91)	1.450 (36.83)
040	080	120	40	2.150 (54.61)	1.950 (49.53)
050	100	150	50	2.650 (67.31)	2.450 (62.23)

Multiply number of rows by number of pins per row for total pin count in part number.

## Board to Board Connectors



### Peel-A-Way® Removable Carriers



1. Place socket on PC board.
2. Send PC board and socket through soldering operation.
3. Peel away polyimide film carrier for complete solder joint visibility or leave in place for added stability.

#### Available Online:

- RoHS Qualification Test Report

See following pages for typical board to board spacing configuration and additional dimensional information.



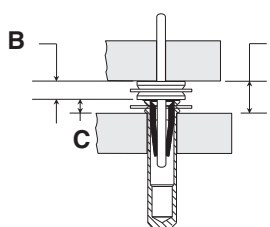
5 Energy Way, West Warwick, RI 02893 USA  
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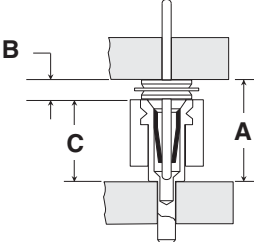
### Dimensional Information

#### Thru-Hole Female & Male

**Figure 1**  
Peel-A-Way® Female &  
Peel-A-Way® Male

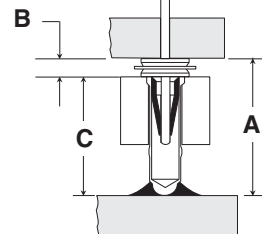


**Figure 2**  
Molded or FR-4 Female  
& Peel-A-Way® Male



#### Surface Mount Female & Thru-Hole Male

**Figure 3**  
Molded or FR-4 Female  
& Peel-A-Way® Male



Order one each Male & Female  
to get the required "A" dim.

B	C	A	Male Part #	Female Part #	Fig.
.031/(.79)	.015/(.38)	.046/(1.17)	KBA020-131G	KBS020-227MG	1
.070/(1.78)	.015/(.38)	.085/(2.16)	KBA020-321G	KBS020-227MG	1
.085/(2.16)	.015/(.38)	.100/(2.54)	KBA020-322G	KBS020-227MG	1
.031/(.79)	.118/(3.00)	.190/(4.83)	KBA020-131G	FSDS020-551GG	3
.070/(1.78)	.118/(3.00)	.188/(4.78)	KBA020-321G	FSDS020-551GG	3
.030/(.76)	.161/(4.09)	.192/(4.88)	KBA020-131G	FSDS020-553GG	3
.031/(.79)	.165/(4.19)	.196/(4.98)	KBA020-131G	FSDS020-168GG	2
.085/(2.16)	.118/(3.00)	.203/(5.16)	KBA020-322G	FSDS020-551GG	3
.070/(1.78)	.161/(4.09)	.231/(5.87)	KBA020-321G	FSDS020-553GG	3
.070/(1.78)	.165/(4.19)	.235/(5.97)	KBA020-321G	FSDS020-168GG	2
.085/(2.16)	.165/(4.19)	.250/(6.35)	KBA020-322G	FSDS020-168GG	2
.085/(2.16)	.161/(4.09)	.246/(6.25)	KBA020-322G	FSDS020-553GG	3
.031/(.79)	.278/(7.06)	.309/(7.85)	KBA020-131G	FSDS020-205GG	2
.070/(1.78)	.278/(7.06)	.348/(8.84)	KBA020-321G	FSDS020-205GG	2
.085/(2.16)	.278/(7.06)	.363/(9.22)	KBA020-322G	FSDS020-205GG	2

20 position single row part numbers shown.

See How To Order section for ordering information.

If required "A" dimension is not shown, consult factory.

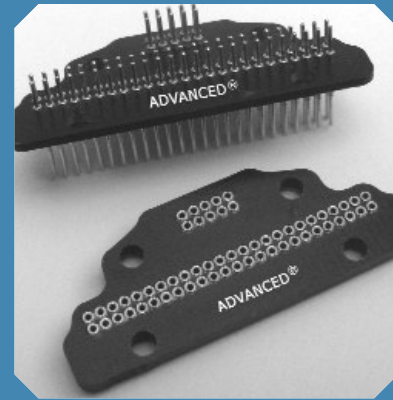
## Custom Interconnect Solutions

### Custom Board to Board and Cable to Board Connectors

With in-house technology from precision drilling and routing to CNC screw machining, combined with 25+ years of interconnect engineering, Advanced can quickly design a customized solution for your next connector application.

- Unique shapes to maximize board space
- Board to Board and Cable to Board solutions
- Customized screw-machined pins
- Multi-finger contacts for reliability
- Innovative designs can reduce overall connector count and associated assembly costs
- Easily transition to molded designs as volumes ramp-up
- Military, medical, industrial . . . anywhere that high reliability is needed
- Options such as pick-up covers, keying/polarization, integrated signal and power, special plating, etc.
- We specialize in solutions for blind mating, harsh environments, and tight board space restrictions

## Custom Connectors

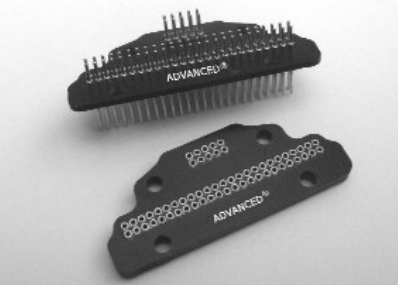


### Custom Solutions



#### Product: [SMT Perimeter Connector](#)

Description: To reduce space when connecting two circular PC boards, we designed a unique semi-circle insulator using existing 1.0mm pitch BGA Socket Adapter terminals. The prototype SMT connector was created in less than 5 days from FR-4 on our in-house precision driller/routing machine and features lead-free solder ball terminals on both the male header and the mating female connector (socket). The semi-circle design maximizes space when stacking circular printed circuit boards.



#### Product: [Application-specific Connector System](#)

Description: This military application required a robust solution to replace a stamped-and-formed connector while reducing overall costs. By reviewing the whole application, we reduced the overall connector count from 6 to 3 using a unique FR-4 insulator with high reliability screw-machined terminals (pins) that met stringent G-force requirements while providing a more robust, screw-machined solution at a lower total cost.



#### Product: [Connector for Blind Mating](#)

Description: This keyed and polarized, cylindrical connector is designed to mate up to 5 PC boards in a harsh environment military application. FR-4 was selected to reduce tooling costs and provide fast prototypes. The shroud protects the pins and facilitates mating. This unique design reduced assembly time and increased the overall system reliability and performance.



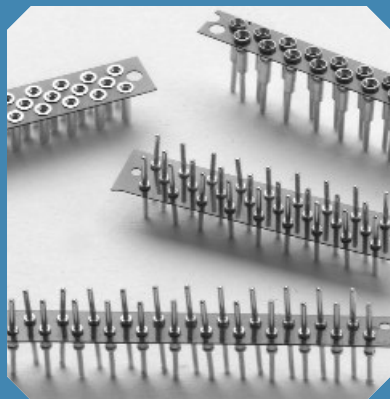
#### Product: [Custom B2B SMT Connector](#)

Description: Our line of B2B SMT Connectors can be easily customized to provide robust SMT board to board mating in a variety of applications. This example is an 80 position connector made from FR-4 with a mated height of only 6.0mm. The surface mount design reduces the required PC board layers. Available in leaded or lead-free designs.



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Catalog 16A

# Board to Board Connectors



## Features:

- Supplied in high temperature Peel-A-Way® removable terminal carrier.
- Female and male connectors are designed in mating pairs.
- .050/(1.27mm) row to row pitch.
- High reliability screw-machined terminals with closed-end construction for 100% anti-wicking of solder.
- Custom configurations available.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

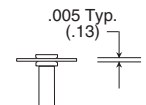
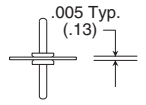
### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

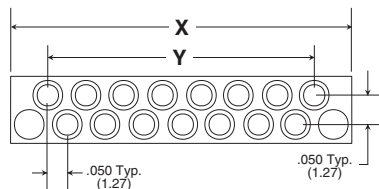
# Staggered .050/(1.27mm) Pitch Board to Board Connectors Peel-A-Way® Insulators

## Table of Models

Female	Dual Row	Triple Row	Description: Peel-A-Way® (KES, HKS) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)	
	KES	HKS		
Male	KEA	HKA	Description: Peel-A-Way® (KEA, HKA) Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)	

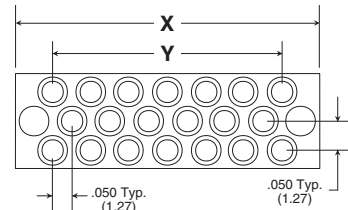
## Dimensional Information

### Dual Row (ex. KES015-)



# of Pins Total	X in. (mm)	Y in. (mm)
5	.400 (10.16)	.200 (5.08)
9	.600 (15.24)	.400 (10.16)
15	.900 (22.86)	.700 (17.78)
19	1.100 (27.94)	.900 (22.86)
25	1.400 (35.56)	2.450 (30.48)

### Triple Row (ex. HKS020-)



# of Pins Total	X in. (mm)	Y in. (mm)
8	.400 (10.16)	.200 (5.08)
14	.600 (15.24)	.400 (10.16)
20	.800 (20.32)	.600 (15.24)
26	1.000 (25.40)	.800 (20.32)
35	1.300 (33.02)	1.100 (27.94)

## How To Order

### Female

**KES 015 -85 M G**

**Body Type**  
RoHS Compliant Insulators:  
KES - Dual Row  
HKS - Triple Row

**Total Number of Pins**  
5 - 25 Positions Dual Row  
8 - 35 Positions Triple Row  
(See Tables above for standard pin counts)

**Contact Plating**  
RoHS Compliant:  
G - Gold  
T - Tin/Lead

**Terminal Plating**  
RoHS Compliant:  
G - Gold  
M - Matte Tin  
T - Tin/Lead

**Terminal Type**  
See options

### Male

**KEA 015 -131 M**

**Body Type**  
RoHS Compliant Insulators:  
KEA - Dual Row  
HKA - Triple Row

**Total Number of Pins**  
5 - 25 Positions Dual Row  
8 - 35 Positions Triple Row

**Terminal Plating**  
RoHS Compliant:  
G - Gold  
M - Matte Tin  
T - Tin/Lead

**Terminal Type**  
See options

Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)



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# Staggered .050/(1.27mm) Pitch Board to Board Connectors Peel-A-Way® Insulators

Additional standard and custom terminals available.  
See Terminals section or consult factory.

## Standard Female Terminals

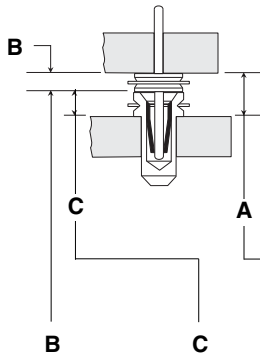
Type -85	Type -210	Type -246 (mates with -526 only)

## Standard Male Terminals

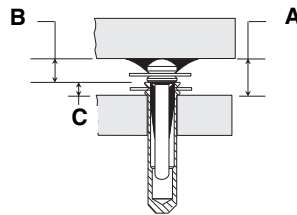
Type -131	Type -322	Type -321	Type -526

## Dimensional Information

**Figure 1**  
**Thru-Hole**



**Figure 2**  
**Surface Mount**



Order one each Male & Female  
to get the required "A" dim.

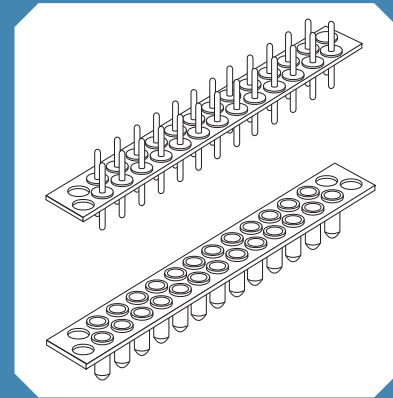
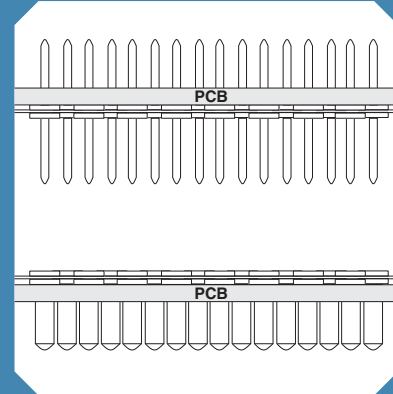
B	C	A	Male Part #	Female Part #	Fig. #
.031/(.79)	.015/(.38)	.046/(1.17)	KEA015-131G	KES015-210MG	1
.031/(.79)	.015/(.38)	.046/(1.17)	KEA015-525G	KES015-210MG	2
.031/(.79)	.031/(.79)	.062/(1.57)	KEA015-131G	KES015-85MG	1
.031/(.79)	.031/(.79)	.062/(1.57)	KEA015-525G	KES015-85MG	2
.050/(1.27)	.015/(.38)	.065/(1.65)	KEA015-526G	KES015-210MG	2
.050/(1.27)	.031/(.79)	.081/(2.06)	KEA015-526G	KES015-85MG	2
.070/(1.78)	.015/(.38)	.085/(2.16)	KEA015-321G	KES015-210MG	1
.050/(1.27)	.043/(1.09)	.093/(2.36)	KEA015-526G	KES015-246MG	2
.085/(2.16)	.015/(.38)	.100/(2.54)	KEA015-322G	KES015-210MG	1
.070/(1.78)	.031/(.79)	.101/(2.57)	KEA015-321G	KES015-85MG	1
.085/(2.16)	.031/(.79)	.116/(2.95)	KEA015-322G	KES015-85MG	1

15 position dual row part numbers shown.

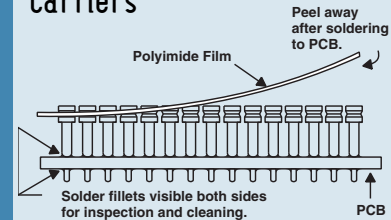
See How To Order section for ordering information.

If required "A" dimension is not shown, consult factory.

## Board to Board Connectors



## Peel-A-Way® Removable Carriers



1. Place socket on PC board.
2. Send PC board and socket through soldering operation.
3. Peel away polyimide film carrier for complete solder joint visibility or leave in place for added stability.

## Available Online:

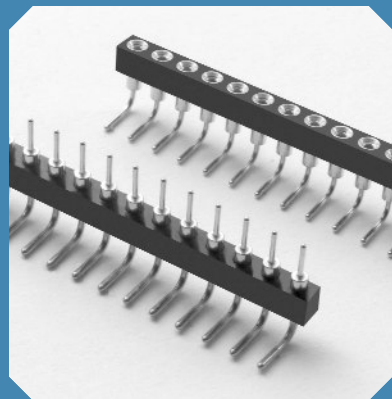
- RoHS Qualification Test Report



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# Board to Board Connectors



## Features:

- High reliability method of interconnecting PCB to PCB.
- .018/(.46mm) diameter male pins.
- Screw-machined terminals with multi-finger contacts.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

# Single Row Right Angle Board to Board Connectors .100/(2.54mm) Pitch • Molded Insulators

## Table of Models

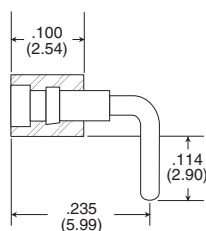
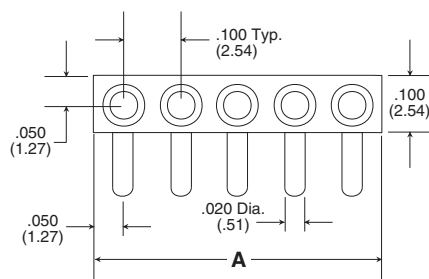
<p>Female</p>	<p>Description: <b>FR-4 Single Row (FLSS)</b> Material: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F)</p>	
<p>Male</p>	<p>Description: <b>FR-4 Single Row (FLSA)</b> Material: FR-4 Fiberglass Epoxy Board Index: -40°C to 140°C (-40°F to 284°F)</p>	

FLSS replaces RLSS and FLSA replaces RLSA.

## Dimensional Information

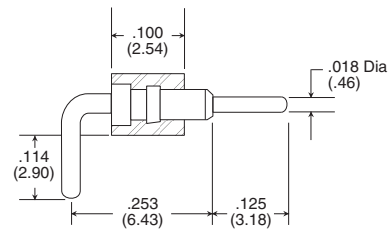
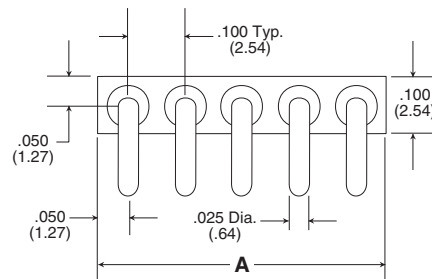
### Female

#### FLSSXXX-160XX



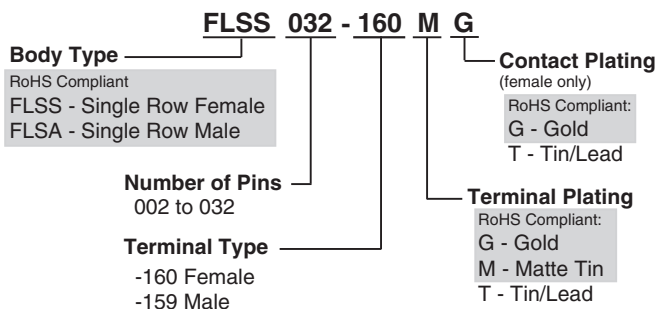
### Male

#### FLSAXXX-159X



$$A = \text{Pitch } .100/(2.54\text{mm}) \times \text{Number of Terminals in Row}$$

## How To Order



Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

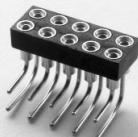
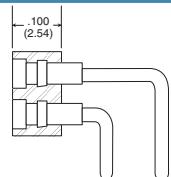
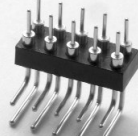
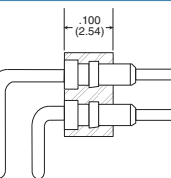
inch/(mm)



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# Dual Row Right Angle Board to Board Connectors .100/(2.54mm) Pitch • Molded Insulators

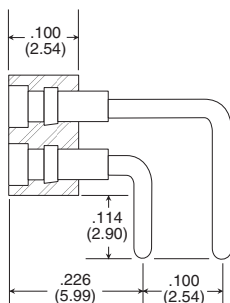
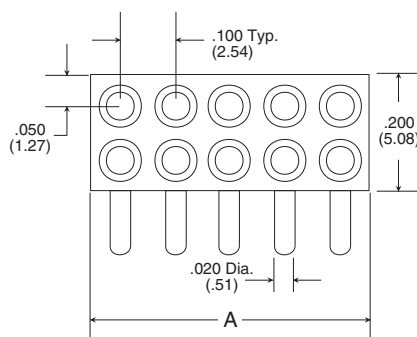
## Table of Models

<p>Female</p> 	<p>Description: <b>Molded Dual Row (RLSS)</b> Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)</p>	
<p>Male</p> 	<p>Description: <b>Molded Dual Row (RLSA)</b> Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)</p>	

## Dimensional Information

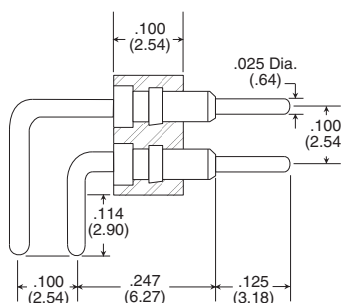
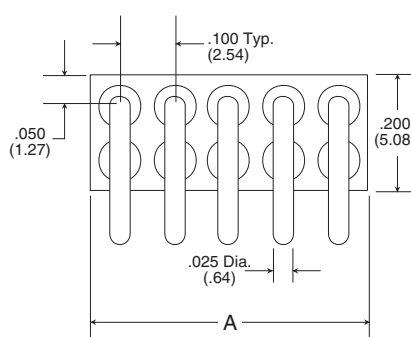
### Female

#### RLSSXXX-162XX



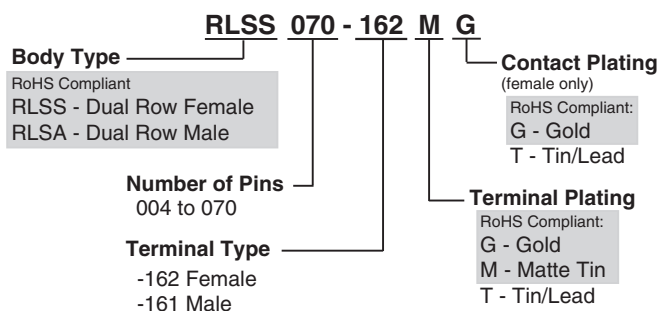
### Male

#### RLSAXXX-161X



A = Pitch .100/(2.54mm) x Number of Terminals in Row

## How To Order

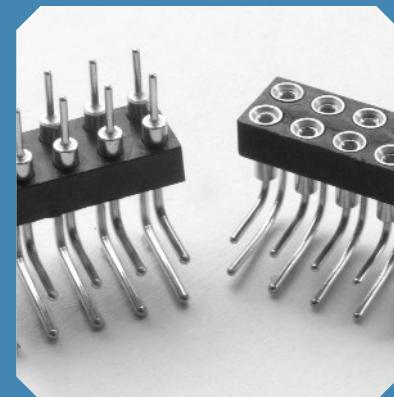


Note: Terminals plated with Matte Tin are available only with Gold plated contacts.

inch/(mm)

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

# Board to Board Connectors



## Features:

- High reliability method of interconnecting PCB to PCB.
- .025/(.64mm) diameter male pins.
- .100/(2.54mm) row to row pitch.
- Screw-machined terminals with multi-finger contacts.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290



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Catalog 16A

# Board to Board Connectors



## Features:

- Robust, shrouded design with screw-machined terminals and multi-finger contacts can withstand the rigorous demands of blind mating and mating/unmating cycles.
- At 3 amps per pin, more contacts can be assigned to data/signal transfer (fewer pins needed to handle power and ground).
- High density - over 400 contacts per square inch.
- Industry standard footprints in four mated heights.
- Precision molded with integral polarization keying features.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Solder Ball:



Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

### Plating:

G - Gold over Nickel  
Gold per ASTM-B-488  
Nickel per QQ-N-290

## B2B® High Density SMT Connectors .050/(1.27mm) Pitch

### Table of Models

Female	 <p>Description: <b>Molded B2B® Connector (BB)</b> Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)</p>
Male	 <p>Description: <b>Molded B2B® Connector (BA)</b> Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)</p>

### Performance

Mated Height	Differential Insertion Loss	Differential Return Loss
6.00mm	-20dB @ 1.70 GHz -50dB @ 3.30 GHz	-10dB @ 3.30 GHz -15dB @ 1.70 GHz
8.00mm	-15dB @ 1.30 GHz -50dB @ 2.50 GHz	-10dB @ 2.50 GHz -15dB @ 1.30 GHz
12.70mm	-20dB @ 1.70 GHz -51dB @ 3.40 GHz	-10dB @ 3.40 GHz -15dB @ 1.70 GHz
19.05mm	-60dB @ 2.20 GHz -20dB @ 1.40 GHz	-10dB @ 2.20 GHz -15dB @ 1.40 GHz

**Insertion Force (6.00mm, 300 position):**  
50g average (per pin)

**Durability (mated cycles):**  
500 cycles (<10mΩ change in resistance)

**Extraction Force (6.00mm, 300 position):**  
45g average (per pin)

Additional performance and test data available online.

### How To Order

#### Female

**BB XXX - XXX G G -TR**

**Body Type** — **BB**  
RoHS Compliant Insulator:  
BB = Female

**Number of Positions** — **XXX - XXX**  
240, 300, 400, 500\* standard  
(Consult factory for custom)

**SMT Terminal Type** — **G G**  
For mated height of .236/(6.00):  
Sn/Pb Solder Ball: **-783** Lead-free Solder Ball: **-794**  
For mated height of .315/(8.00), .500/(12.70), or .750/(19.05):  
Sn/Pb Solder Ball: **-739** Lead-free Solder Ball: **-793**

**Packaging Options\*\***  
TR - Tape and Reel  
(includes pick-up dot)

**Contact Plating**  
RoHS Compliant:  
G - Gold

**Terminal Plating**  
RoHS Compliant:  
G - Gold

\*500 pos. available in 6mm mated height only.

\*\*If no packaging code is indicated, female connectors are supplied with pick-up dots in standard trays.

#### Male

**BA XXX - XXX G -TR**

**Body Type** — **BA**  
RoHS Compliant Insulator:  
BA = Male

**Number of Positions** — **XXX - XXX**  
240, 300, 400, 500\* standard  
(Consult factory for custom)

**SMT Terminal Type** — **G**  
Connector Mated Height Solder Ball Lead-free Solder Ball  
.236/(6.00) **-741** **-795**  
.315/(8.00) **-742** **-796**  
.500/(12.70) **-743** **-797**  
.750/(19.05) **-748** **-798**

**Packaging Option\*\***  
TR - Tape and Reel  
(includes pick-up cap)

**Terminal Plating**  
RoHS Compliant:  
G - Gold

\*500 pos. available in 6mm mated height only.

\*\*If no packaging code is indicated, male connectors are supplied with pick-up caps in standard trays.



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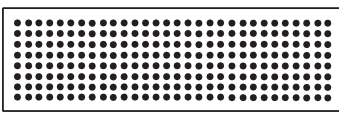
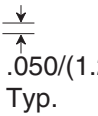
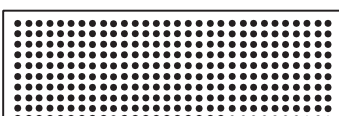
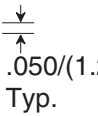
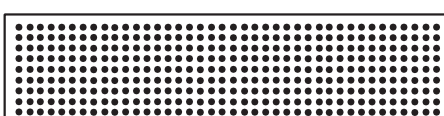
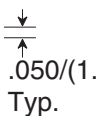
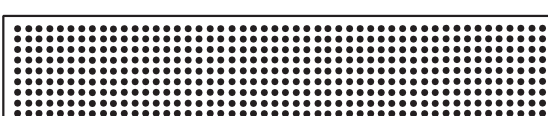
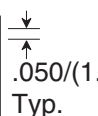
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

# B2B® High Density SMT Connectors .050/(1.27mm) Pitch

## Standard Footprints

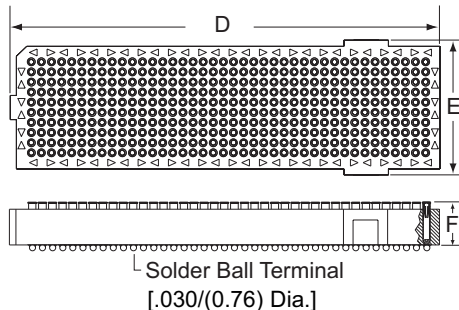
1.27mm Pitch

 → ←.050/(1.27) Typ.	 ↑↓.050/(1.27) Typ.	<ul style="list-style-type: none"> <li>• 240 Positions</li> <li>• 30x8 Rows</li> </ul>
 → ←.050/(1.27) Typ.	 ↑↓.050/(1.27) Typ.	<ul style="list-style-type: none"> <li>• 300 Positions</li> <li>• 30x10 Rows</li> </ul>
 → ←.050/(1.27) Typ.	 ↑↓.050/(1.27) Typ.	<ul style="list-style-type: none"> <li>• 400 Positions</li> <li>• 40x10 Rows</li> </ul>
 → ←.050/(1.27) Typ.	 ↑↓.050/(1.27) Typ.	<ul style="list-style-type: none"> <li>• 500 Positions</li> <li>• 50x10 Rows</li> </ul>

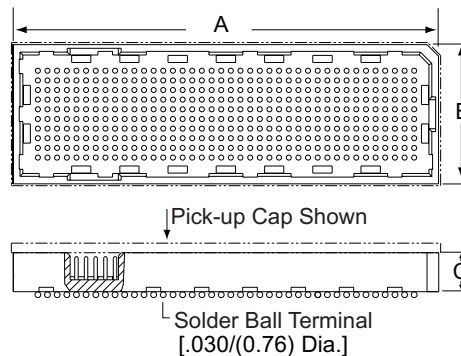
Consult factory for custom sizes.

## Dimensional Information

### Female



### Male



Mated Board to Board Height*	A in./ (mm)	B in./ (mm)	C^ in./ (mm)	D^ in./ (mm)	E^ in./ (mm)	F^ in./ (mm)
.236/(6.00)	1.704/(43.28)	.622/(15.80)	.202/(5.13)	1.626/(41.30)	.567/(14.40)	.136/(3.45)
.315/(8.00)	1.704/(43.28)	.622/(15.80)	.273/(6.93)	1.626/(41.30)	.567/(14.40)	.211/(5.36)
.500/(12.70)	1.704/(43.28)	.622/(15.80)	.462/(11.73)	1.626/(41.30)	.567/(14.40)	.211/(5.36)
.750/(19.05)	1.704/(43.28)	.622/(15.80)	.712/(18.09)	1.626/(41.30)	.567/(14.40)	.211/(5.36)
.236/(6.00)	1.704/(43.28)	.722/(18.34)	.202/(5.13)	1.626/(41.30)	.667/(16.94)	.136/(3.45)
.315/(8.00)	1.704/(43.28)	.722/(18.34)	.273/(6.93)	1.626/(41.30)	.667/(16.94)	.211/(5.36)
.500/(12.70)	1.704/(43.28)	.722/(18.34)	.462/(11.73)	1.626/(41.30)	.667/(16.94)	.211/(5.36)
.750/(19.05)	1.704/(43.28)	.722/(18.34)	.712/(18.09)	1.626/(41.30)	.667/(16.94)	.211/(5.36)
.236/(6.00)	2.204/(55.98)	.722/(18.34)	.202/(5.13)	2.126/(54.00)	.667/(16.94)	.136/(3.45)
.315/(8.00)	2.204/(55.98)	.722/(18.34)	.273/(6.93)	2.126/(54.00)	.667/(16.94)	.211/(5.36)
.500/(12.70)	2.204/(55.98)	.722/(18.34)	.462/(11.73)	2.126/(54.00)	.667/(16.94)	.211/(5.36)
.750/(19.05)	2.204/(55.98)	.722/(18.34)	.712/(18.09)	2.126/(54.00)	.667/(16.94)	.211/(5.36)
.236/(6.00)	2.704/(68.68)	.722/(18.34)	.202/(5.13)	2.626/(66.70)	.667/(16.94)	.136/(3.45)

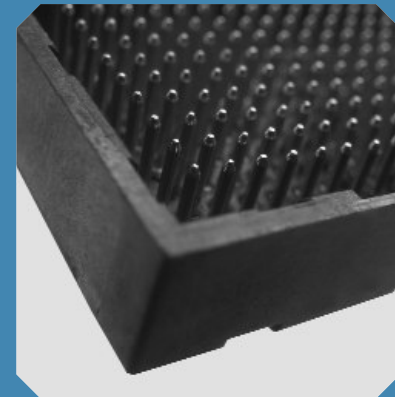
Additional mated heights coming soon. Consult factory.

\*Approximate dimension after soldering. ^Dimensions do not include solder ball height.

inch/(mm)

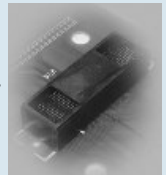
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

## Board to Board Connectors



### Packaging & Options:

**Male connectors** - supplied with a pick-up cap to protect male pins and facilitate automated pick-and-place. Pick-up cap remains in place during reflow.



**Female connectors** - supplied with a polyimide dot to facilitate automated pick-and-place.

**Tape and Reel** - Add -TR to end of part number for Tape and Reel packaging.

**Standard Trays** - If no packaging code is indicated, connectors are shipped in standard trays (Note: Trays are not suitable for automated pick-and-place processes.)

### Available Online:

- RoHS Qualification Test Report
- Product Specification
- Test data
- Signal Integrity Data
- CAD Drawings



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# Board to Board Connectors



## Features:

- Low profile connector system for 1.00mm pitch cable to board or board to board applications - only .100/(2.54mm) tall on female (socket) side.
- Robust design features screw-machined terminals and multi-finger contacts rated at 3 amps.
- Fits within existing board layouts.
- Over-molded lead frame seals surface mount pins to prevent solder wicking.
- SMT and thru-hole designs available.
- Passed 20-Day MFG test.

## Specifications:

### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

### Contacts:

Beryllium Copper  
(C17200) ASTM-B-194

### Lead Frame:

Beryllium Copper  
(CA 172)

### Plating:

G - Gold over Nickel  
GH - Heavy Gold over Nickel  
M - Matte Tin over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Nickel per QQ-N-290

# Mezza-pede® Low Profile SMT Connectors .039/(1.00mm) Pitch • For Cable to Board or Board to Board Applications

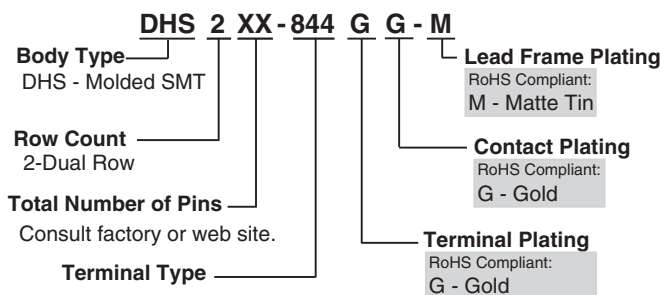
## Table of Models

Female		Description: <b>Molded SMT Socket (DHS)</b> Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)	
		Description: <b>Molded SMT Header (DHAM)</b> Material: High Temp. Liquid Crystal Polymer (LCP) Index: -40°C to 260°C (-40°F to 500°F)	
Male		Description: <b>Flexible Thru-hole Header (DHA)</b> Material: Polyimide Film Index: -269°C to 400°C (-452°F to 752°F)	

## How To Order

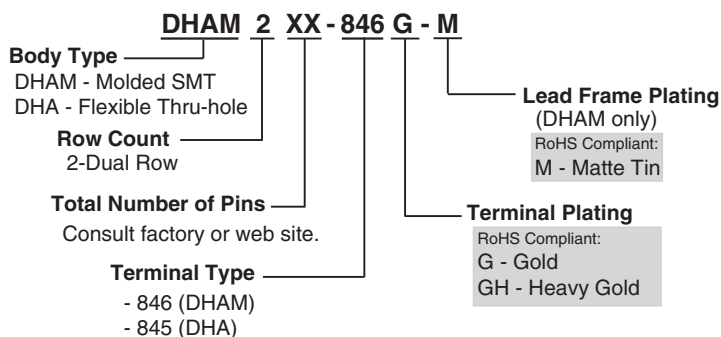


### Female



Packaging: DHS is supplied in tape and reel packaging.

### Male



Packaging: DHAM is supplied with pick-and-place cover in tape and reel packaging.  
DHA is supplied in standard trays. (Trays are not suitable for automated pick-and-place processes).



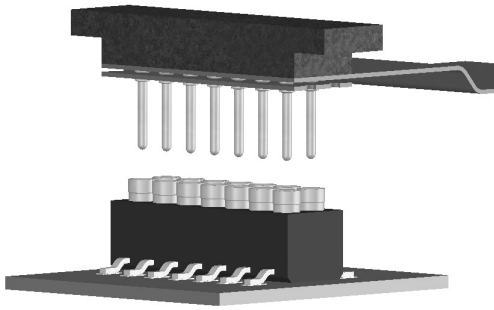
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inch/(mm)

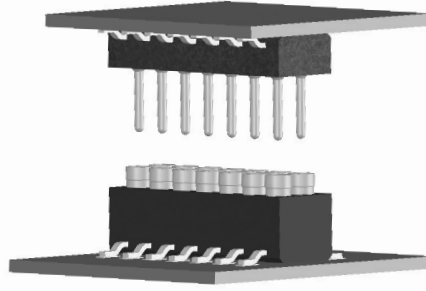
# Mezza-pede® Low Profile SMT Connectors .039/(1.00mm) Pitch • For Cable to Board or Board to Board Applications

## How It Works



### Thru-hole Flex Cable Application

1. The male terminals are supplied in a polyimide film carrier to facilitate handling.
2. A stiffener with a recommended thickness of .020 inches should be used between the terminal pins and the flex circuit. (Stiffener not supplied)
3. The recommended maximum hole in the stiffener is .018 diameter.
4. The flex circuit should have a minimum diameter plated through hole of .016. Standard practices for flex circuit thru-hole and annular rings should apply.
5. An FR-4 cover can be used to protect the top solder joints if required. (not supplied)

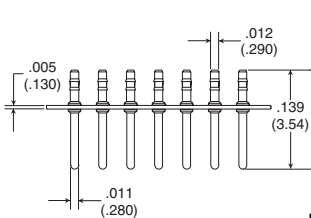
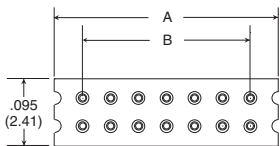


### SMT Board to Board Application

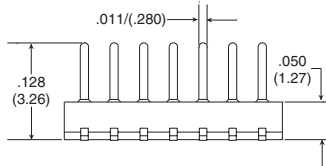
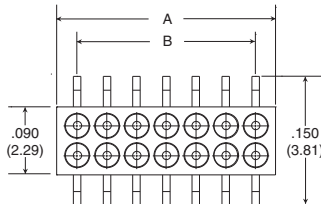
1. In an SMT application, the SMT socket (DHS) or either header (DHA, DHAM) can be used on PC boards, rigid flex or flex circuits.
2. SMT pad size should meet IPC standards for surface mount components.
3. See lead dimension and foot size on applicable CAD drawing for reference.
4. Tape and reel packaging is provided for SMT assembly.

## Dimensional Information

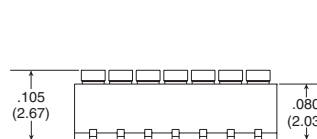
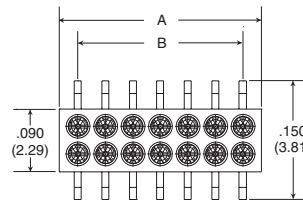
DHA



DHAM



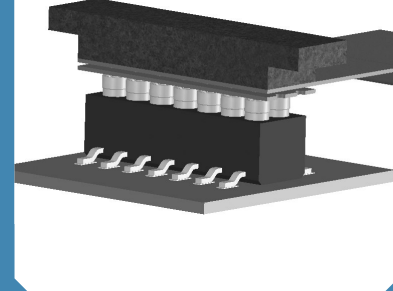
DHS



Part Number	Number of Pins	Row Count Configuration	A	B
DHS/DHAM	8	2 x 4	.171/(4.34)	.118/(3.00)
DHS/DHAM	14	2 x 7	.290/(7.36)	.236/(6.00)
DHS/DHAM	36	2 x 18	.722/(18.34)	.669/(17.00)
DHA	8	2 x 4	.197/(5.00)	.118/(3.00)
DHA	14	2 x 7	.315/(8.00)	.236/(6.00)
DHA	36	2 x 18	.748/(19.00)	.669/(17.00)

Note: Pin to pin spacing is .039/(1.00). Lead frame width is .010/(0.25).

## Board to Board Connectors



### Typical Applications

- Tunable Laser power connector (flex cable to board)
- Tunable Laser connector (board to board)
- Signal connector (flex cable to board)
- Low profile board to board connector

### Test Data:

#### High Reliability Contact System Passes:

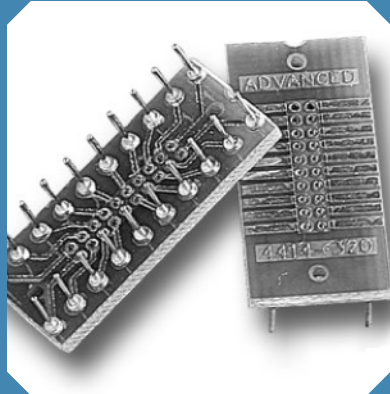
- Passes 20-Day Mixed Flowing Gas (MFG)
- Thermal cycle: 100 cycles 125°C to -40°C.

### Available Online:

- Additional test data and reports
- CAD Drawings



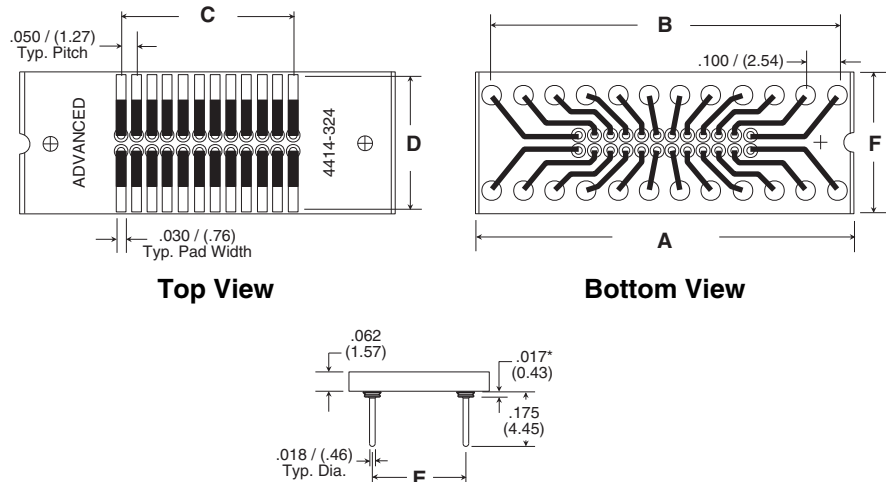
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### Table of Models

	<p><b>Description:</b> SOIC to DIP Adapter (4414)  <b>Material:</b> Copper Clad FR-4  <b>Index:</b> -40°C to 140°C (-40°F to 284°F)  <b>Device attach service available.</b></p>	
--	--	--

### Dimensional Information



**Side View**

\* .050/(1.27) on LF models



Standard Part Numbers	Lead-free Part Numbers	# of Pins	Pkg. <sup>1</sup> Qty.	A	B	C	D	E	F
4414-308	4414-308LF	8	70	.400 (10.16)	.300 (7.62)	.150 (3.81)	.429 (10.90)	.300 (7.62)	.450 (11.43)
4414-314	4414-314LF	14	42	.700 (17.78)	.600 (15.24)	.300 (7.62)	.429 (10.90)	.300 (7.62)	.450 (11.43)
4414-316	4414-316LF	16	35	.800 (20.32)	.700 (17.78)	.350 (8.89)	.429 (10.90)	.300 (7.62)	.450 (11.43)
4414-320	4414-320LF	20	28	1.000 (25.40)	.900 (22.86)	.450 (11.43)	.429 (10.90)	.300 (7.62)	.450 (11.43)
4414-324	4414-324LF	24	21	1.200 (30.48)	1.100 (27.94)	.550 (13.97)	.429 (10.90)	.300 (7.62)	.450 (11.43)
4414-328	4414-328LF*	28	21	1.390 (35.31)	1.300 (33.02)	.650 (16.51)	.429 (10.90)	.300 (7.62)	.450 (11.43)
4414-628*	4414-628LF*	28	18	1.400 (35.56)	1.300 (33.02)	.650 (16.51)	.650 (16.51)	.600 (15.24)	.750 (19.05)
4414-632*	4414-632LF*	32	10	1.600 (40.64)	1.500 (38.10)	.750 (19.05)	.650 (16.51)	.600 (15.24)	.750 (19.05)

\* Consult factory for availability.

<sup>1</sup> Please order in multiples of stated package quantity.

### Features:

- Adapter allows present Gull Wing devices to be solderable or socketable in a thru-hole application.
- Pin spacing allows space for conductor runs on PCB.
- Saves space (X, Y & Z) when used with Advanced sockets.
- Radius ends of adapter pins to improve socketing.
- Allows testing with standard test clips.
- RoHS Compliant designs available.
- Device attach service available.

### Specifications:

#### Body Material:

Copper Clad FR-4  
 U.L. Rated 94V-0

#### Pad Plating:

Standard: Tin/Lead Solder  
 Lead-free: Immersion Gold

#### Terminals:

Brass - Copper Alloy  
 (C36000) ASTM-B-16

#### Terminal Plating:

Standard: Tin/Lead over Nickel  
 Lead-free: Gold over Nickel

Gold per ASTM-B-488

Tin/Lead per MIL-P-81728

Nickel per QQ-N-290



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inch/(mm)

# PLCC Adapters with Murphy Circuits®

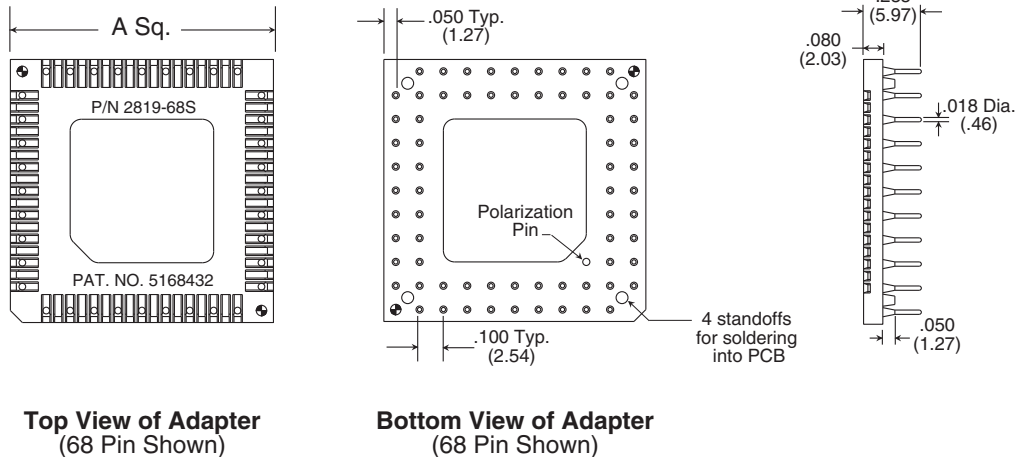
## Adapters for JEDEC .050/(1.27mm) Pitch PLCCs (Leaded Type A)

### Table of Models

	<p>Description: <b>PLCC to PGA Adapter (2819)</b>  Material: High Temp. Glass Filled Thermoplastic*  Index: -60°C to 220°C (-76°F to 428°F)</p> <p>Device attach service available.</p>	
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\*Note: This product is not RoHS Compliant.

### Dimensional Information



**Top View of Adapter**  
(68 Pin Shown)

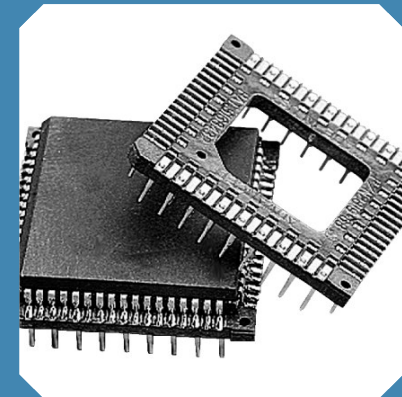
**Bottom View of Adapter**  
(68 Pin Shown)

### Part Numbers

With Standoffs	With Polarization Pin & Standoffs	No. of Positions	A
2819-28S	2819-28SP	28	.500 (12.70)
2819-44S	2819-44SP	44	.800 (20.32)
2819-52S	2819-52SP	52	.900 (22.86)
2819-68S	2819-68SP	68	1.100 (27.94)
2819-84S	2819-84SP	84	1.300 (33.02)
2819-100S	2819-100SP	100	1.500 (38.10)
2819-124S	2819-124SP	124	1.800 (45.72)

Also available without standoff - consult factory.  
Consult factory for RoHS Compliant options.

## Adapters



### Features:

- Adapter allows PLCC devices to be solderable or socketable in a thru-hole application.
- Molded locating ribs aid in device placement.
- Ribs between "J" leads eliminate shorting.
- Adapts JEDEC PLCC packages to standard PGA footprints.
- .100/(2.54mm) pin to pin spacing allows more space for conductor runs on PCB.
- Polarization pin option available.
- Saves space (X, Y, and Z) when used with Advanced PGA (LIF) sockets.
- Allows testing with standard test clips.
- Standoffs aid soldering operation.
- Device attach services available.

### Specifications:

#### Terminals:

Brass - Copper Alloy  
(C36000) ASTM-B-16

#### Plating:

Tin/Lead over Nickel

#### Circuit:

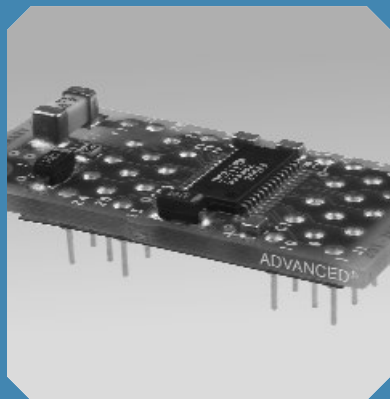
Copper Circuit, Tin/Lead Plated

Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290



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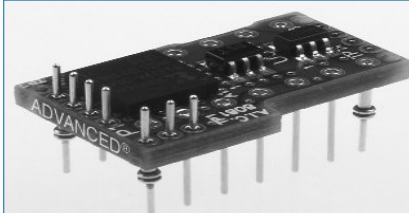
### Features:

- Designed and produced to meet your specific mechanical and electrical requirements.
- Inclusion of passive components improves electrical performance and saves valuable PC board space.
- Enhanced sockets and adapters can be manufactured with single, double, and multi-layer circuitry.
- Standard and custom screw-machined terminals with several plating options.
- RoHS Compliant designs available.

Advanced Interconnections Corp. has been providing custom interconnect solutions for 25 years. We specialize in IC package conversion, custom adapter cards with device correction or enhancements, test fixture boards, and other application-specific solutions. Our experienced application engineers and in-house vertical integration allow for an economical custom solution that often lowers total system design costs by eliminating the need to redesign or scrap existing boards while adding functionality to the end product.

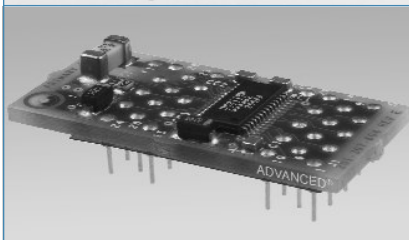
- State-of-the-art in-house Surface Mount Technology (SMT) factory
- Device-attach services available
- In-house tape-and-reel capability
- Automated optical inspection
- Accurate device placement with vision-equipped pick and place equipment
- Testing, packaging, and all other services available
- JIT and ship-to-stock programs available
- Contact customer service for custom design assistance and application support

### Custom Adapters



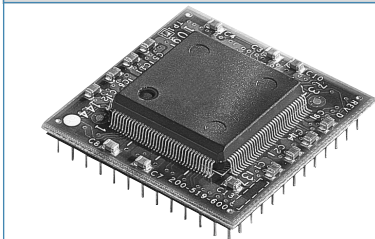
Product: [Enhanced Hybrid Adapter](#)

Description: Adapter features custom pin design with stand-offs, passive and active components, and 0.50mm pitch BGA package device attach.



Product: [Enhanced Hybrid Adapter](#)

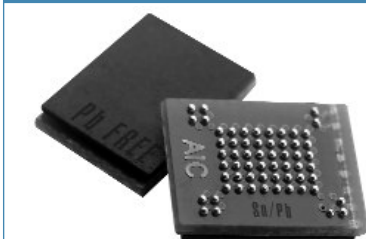
Description: Custom adapter used to terminate lines going from a board to a back panel. Design includes both active and passive components including a custom semiconductor, resistors, and capacitors.



Product: [IC Package Conversion Adapter](#)

Description: PQFP device to PGA footprint adapter designed with resistors and capacitors to add functionality.

### Interposer



Product: [Lead-free to Tin/Lead BGA Interposer](#)

Description: Maintain existing board profiles in RoHS Exempt applications when BGA devices change to lead-free packages. Custom interposer features eutectic Tin/Lead solder ball terminals which match existing board layout and solder profiles.

See page 14 for more information.

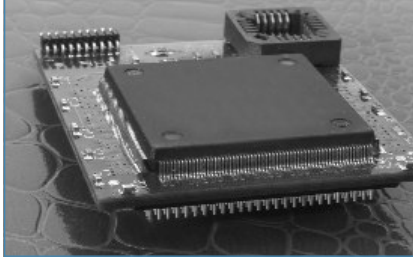


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info@advanced.com | www.advanced.com  
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Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

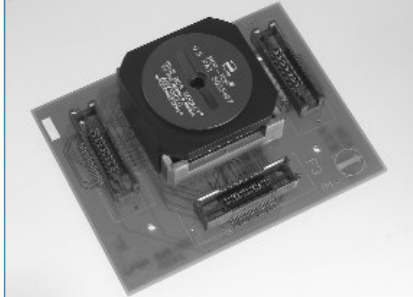
inch/(mm)

### Custom Connectors



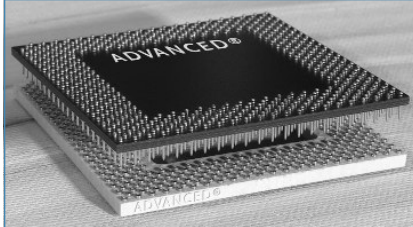
**Product:** Custom Adapter Board

**Description:** This adapter board (daughter card) design includes a controller chip and cable assembly, without modifications to the signal integrity of the original chip. These enhancements allowed existing boards to be modified easily and cost-effectively, both for their original purpose and for new applications, adding options for customers in new target markets.



**Product:** Test Fixture Board

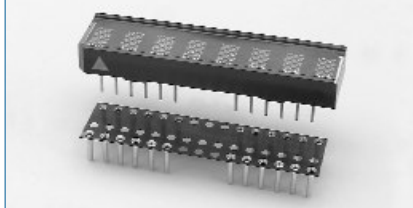
**Description:** To enable faster testing of chips without having to solder them to adapters, Advanced developed an application-specific multilayer FR-4 test fixture board, incorporating a combination of three cable-to-board connectors to interface with the test system and an adaptation of our True BGA Socket™ into which the chip packages are inserted for testing.



**Product:** Surface Mount PGA Connector

**Description:** This surface mount, interstitial pin grid array (PGA) connector enables boards to be produced with fewer layers due to SMT design, eliminates the need for plated through holes, provides a corporate test board solution, and allows for more efficient, cost-effective production.

### Custom Sockets



**Product:** Custom LED Socket

**Description:** Allows LED to be plugged in after board is processed in a lead-free profile.

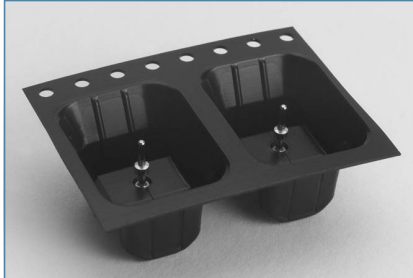
Protects device from damage caused by high temperature processing.



**Product:** Custom 6 Position Peel-A-Way® Socket

**Description:** This custom flex circuit socket features solder preform terminals in our patented Peel-A-Way® Removable Terminal Carrier. The design eliminated the need for hand loading terminals and wave soldering while meeting a low-profile specification and allowing complete solder joint visibility.

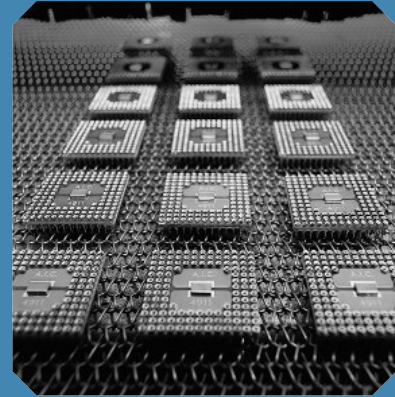
### Custom Terminals



**Product:** Custom Test Point Pins

**Description:** To reduce assembly time and injuries to employees who sometimes pierced their fingers on sharp test pins (square, pointed stick type) during hand loading and subsequent board handling, a leading OEM asked Advanced to design a safer, more cost-effective solution. A custom, screw-machined test point pin featuring a cylindrical design with rounded head and solder preform was supplied in tape and reel packaging.

## Custom Adapters



### State-of-the-Art Design and Manufacturing Capabilities

- Excellon Drilling/Routing Machines
- Star Micronics CNC Swiss Type Screw Machine
- Nissei Precision Injection Molding Machines
- Matsui Dehumidifying Dryer
- Custom Automated Optical Inspection Vision System
- X-Ray Capability
- GenRad Tester



## Features:

- High quality, screw-machined terminals with multi-finger contacts for superior reliability.
- Standard and custom designs available for SMT and thru-hole applications.
- EXPRESS delivery available on select terminals.
- Plating options available for RoHS compliant and exempt applications.
- Patented solder preform terminals eliminate the need for wave soldering in mixed technology applications.
- Complete line of EMC® insulated and non-insulated terminals and test jacks – data sheets available online only.

## Specifications:

### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16  
Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

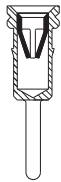
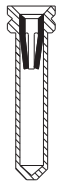
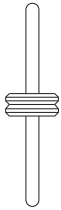
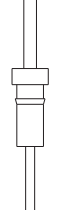
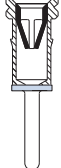

### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

## Advanced® Terminals

		<b>Socket (Female) Terminals</b> <ul style="list-style-type: none"> <li>• Screw-machined terminals with multi-finger contacts</li> <li>• Designed for use in molded, FR-4 or Peel-A-Way® Removable Terminal Carrier insulators</li> <li>• Consult factory for availability of loose terminals</li> <li>• Custom designs available</li> <li>• See pages 63-73</li> </ul>
		<b>Adapter (Male) Terminals</b> <ul style="list-style-type: none"> <li>• Screw-machined terminals</li> <li>• Designed for use in molded, FR-4 or Peel-A-Way® Removable Terminal Carrier insulators</li> <li>• Consult factory for availability of loose terminals</li> <li>• Custom designs available</li> <li>• See pages 74-79</li> </ul>
		<b>Solder Preform Terminals</b> <ul style="list-style-type: none"> <li>• Patented solder preform terminals eliminate the need for wave soldering in mixed technology applications</li> <li>• Designed for use in molded, FR-4 or Peel-A-Way® Removable Terminal Carrier insulators</li> <li>• Available with either standard Tin/Lead preforms or new lead-free Tin/Silver/Copper preforms</li> <li>• Custom designs available</li> <li>• See page 80</li> </ul>

## EMC® Terminals and Test Jacks



### Insulated and Non-Insulated Terminals and Test Jacks

EMC Product Nurl-Loc® Design  
EMC Product Nurl-Loc® Insertion Tools

### Non-Insulated Terminals

MIL-T-55155 (EMC Product NIT Series)  
Nurl-Loc® Design (EMC Product NIT Series)

### Test Jacks

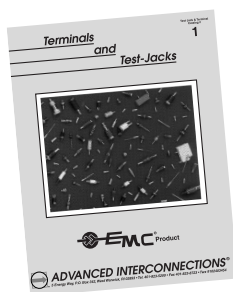
Non-Insulated Test Jacks (EMC Product NIJ Series)  
.040" and .080" Military & Commercial Test Jacks (EMC MTJ Series)  
Molded Banana and .080" Test Jacks (EMC Product BTJ Series)

### Standoffs

Single Turret Standoff Terminals (EMC Product STS Series)  
Double Turret Standoff Terminals (EMC Product DTS Series)  
Straight Pin Standoff Terminals (EMC Product SPS Series)  
Bifurcated Pin Standoff Terminals (EMC Product BPS Series)  
Threaded & Tapped Hole Standoff Terminals (EMC Product TTS Series)  
MIL-T-55155 Standoff Terminals (EMC Product MST Series)

### Feed-Thrus

Single Turret Feed-Thru Terminals (EMC Product STF Series)  
Double Turret Feed-Thru Terminals (EMC Product DTF Series)  
Bifurcated, Threaded and Tapped Hole Feed-Thru Terminals (EMC Product FT Series)  
Straight Pin and Threaded Body Feed-Thru Terminals (EMC Product FT Series)



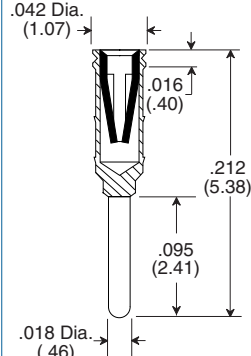
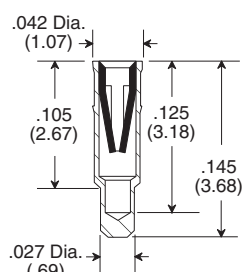
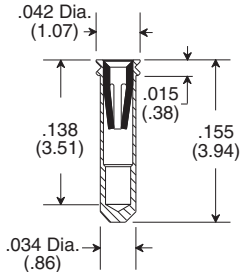
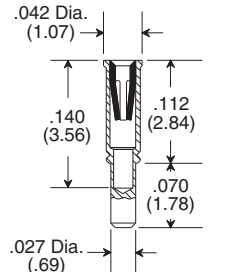
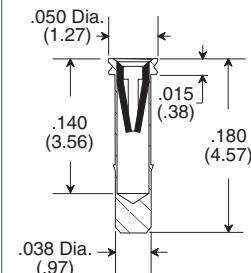
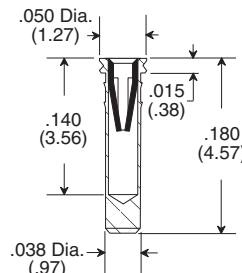
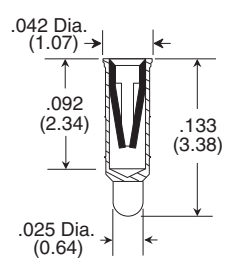
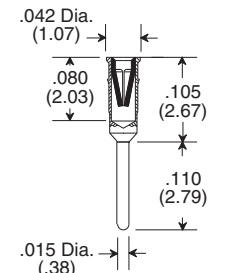
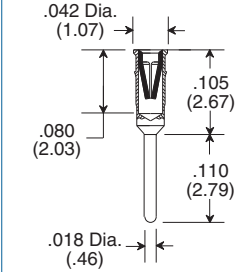
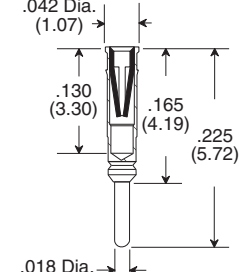
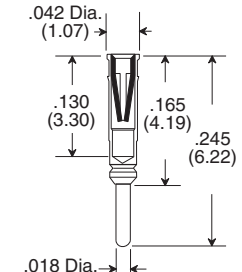
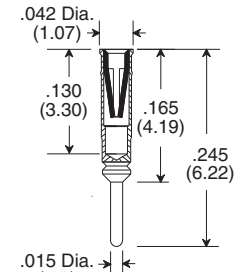
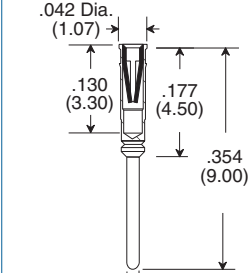
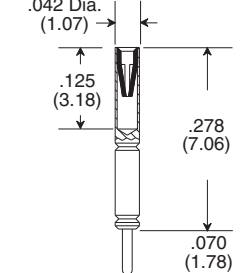
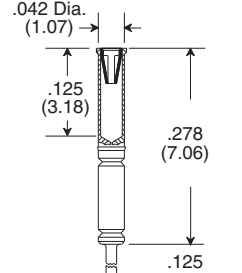
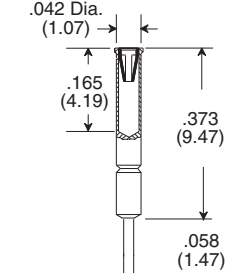
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Online

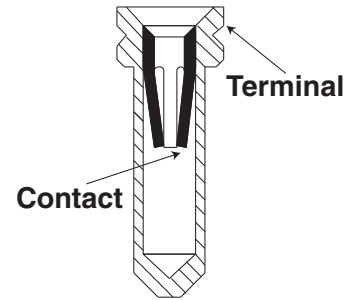


5 Energy Way, West Warwick, RI 02893 USA  
Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
info@advanced.com | www.advanced.com  
Catalog 16A

## Socket (Female) Terminals

Contact Acceptance Range .016/ (.41mm) - .022/ (.56mm) Dia. or .010/ (.25mm) x .018/ (.46mm) Rectangular Lead

<b>Type -674</b> Part Number: 5456 Contact Group: A 	<b>Type -529</b> Part Number: 4573 Contact Group: A 	<b>Type -227</b> Part Number: 2647 Contact Group: A 	<b>Type -281</b> Part Number: 3523 Contact Group: A 
<b>Type -533</b> Part Number: 4592-2 Contact Group: A 	<b>Type -497</b> Part Number: 4463 Contact Group: A 	<b>Type -551</b> Part Number: 4662 Contact Group: A 	<b>Type -385</b> Part Number: 4178 Contact Group: A 
<b>Type -347</b> Part Number: 4040-1 Contact Group: A 	<b>Type -586</b> Part Number: 4793 Contact Group: A 	<b>Type -168</b> Part Number: 3655 Contact Group: A 	<b>Type -386</b> Part Number: 4179 Contact Group: A 
<b>Type -595</b> Part Number: 4858 Contact Group: A 	<b>Type -205</b> Part Number: 2403 Contact Group: A 	<b>Type -474</b> Part Number: 4038 Contact Group: A 	<b>Type -425</b> Part Number: 3503-2 Contact Group: A 



## Specifications:

### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.

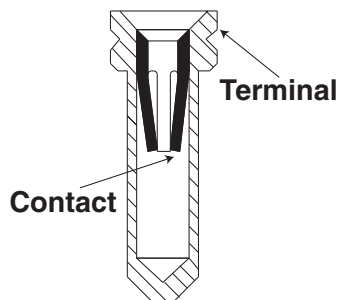


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Catalog 16A



## Socket (Female) Terminals

Contact Acceptance Range .016/(.41mm) - .022/(.56mm) Dia. or .010/(.25mm) x .018/(.46mm) Rectangular Lead



### Specifications:

#### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

#### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

#### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488

Matte Tin per ASTM545-97

Tin/Lead per MIL-P-81728

Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

### EXPRESS Delivery

Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



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Catalog 16A

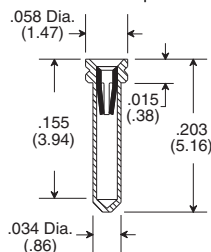
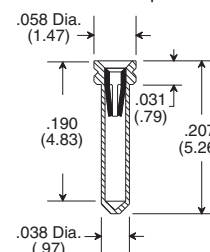
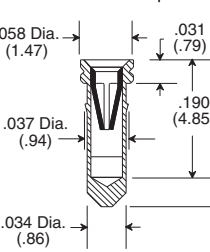
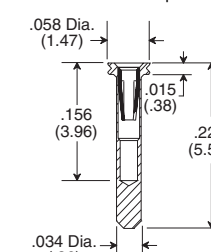
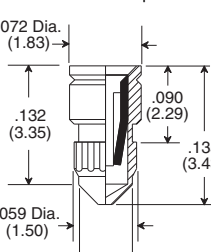
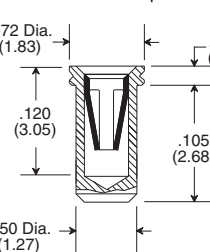
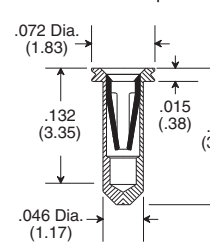
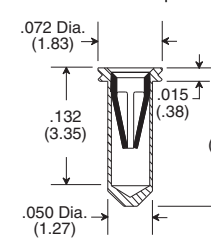
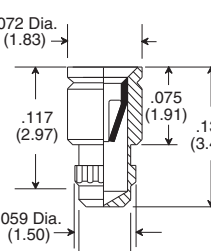
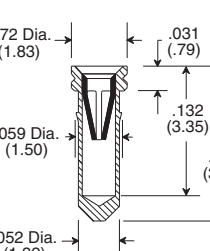
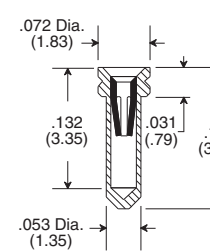
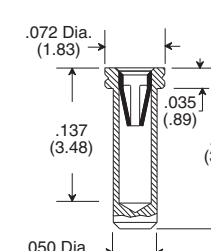
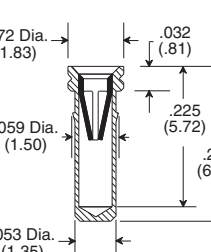
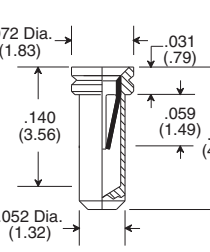
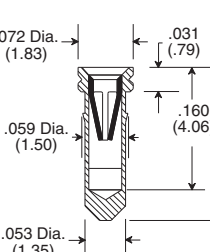
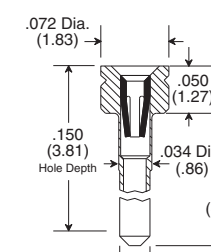
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<b>Type -491</b> Part Number: 4427 Contact Group: A 	<b>Type -246</b> Part Number: 3257 Contact Group: A 	<b>Type -294</b> Part Number: 3784 Contact Group: A 	<b>Type -517</b> Part Number: 4520 Contact Group: A 
<b>Type -290</b> Part Number: 3708 Contact Group: A 	<b>Type -85</b> Part Number: 1371 Contact Group: A 	<b>Type -176</b> Part Number: 2239 Contact Group: A 	<b>Type -210</b> Part Number: 2887 Contact Group: A 
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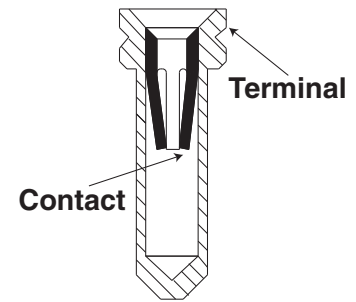
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

## Socket (Female) Terminals

Contact Acceptance Range .016/ (.41mm) - .022/ (.56mm) Dia. or .010/ (.25mm) x .018/ (.46mm) Rectangular Lead

<b>Type -324</b> Part Number: 3208 Contact Group: A 	<b>Type -190</b> Part Number: 2383 Contact Group: A 	<b>Type -259</b> Part Number: 3354 Contact Group: A 	<b>Type -842</b> Part Number: 6832 Contact Group: A 
<b>Type -60</b> Part Number: 1408 Contact Group: C 	<b>Type -335</b> Part Number: 3984 Contact Group: B 	<b>Type -359</b> Part Number: 4076 Contact Group: C 	<b>Type -282</b> Part Number: 3554 Contact Group: C 
<b>Type -70</b> Part Number: 1678 Contact Group: C 	<b>Type -237</b> Part Number: 3129 Contact Group: C 	<b>Type -50</b> Part Number: 1242 Contact Group: C 	<b>Type -353</b> Part Number: 4059 Contact Group: C 
<b>Type -651</b> Part Number: 5242 Contact Group: C 	<b>Type -84</b> Part Number: 1316 Contact Group: C 	<b>Type -25</b> Part Number: 1093 Contact Group: C 	<b>Type -73</b> Part Number: 1654 Contact Group: A 



## Specifications:

### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



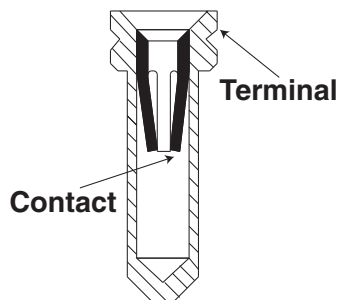
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## Socket (Female) Terminals

Contact Acceptance Range .016/(.41mm) - .022/(.56mm) Dia. or .010/(.25mm) x .018/(.46mm) Rectangular Lead



### Specifications:

#### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

#### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

#### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488

Matte Tin per ASTM545-97

Tin/Lead per MIL-P-81728

Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

### EXPRESS Delivery

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<b>Type -86</b> Part Number: 1379 Contact Group: A 	<b>Type -39</b> Part Number: 1915 Contact Group: A 	<b>Type -400</b> Part Number: 4226 Contact Group: A 	<b>Type -95</b> Part Number: 1589 Contact Group: A 
<b>Type -166</b> Part Number: 2149 Contact Group: A 	<b>Type -392</b> Part Number: 4207 Contact Group: A 	<b>Type -320</b> Part Number: 3964 Contact Group: C 	<b>Type -82</b> Part Number: 4464-1 Contact Group: C 
<b>Type -217</b> Part Number: 2850 Contact Group: C 	<b>Type -234</b> Part Number: 4464-3 Contact Group: C 	<b>Type -235</b> Part Number: 4464-4 Contact Group: C 	<b>Type -581</b> Part Number: 4774 Contact Group: B 
<b>Type -299</b> Part Number: 3805 Contact Group: B 	<b>Type -49</b> Part Number: 1249 Contact Group: B 	<b>Type -208</b> Part Number: 2595 Contact Group: B 	<b>Type -67</b> Part Number: 1365 Contact Group: B 

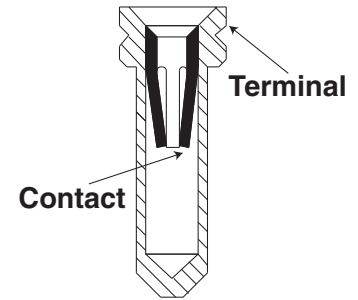
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

## Socket (Female) Terminals

Contact Acceptance Range .016/ (.41mm) - .022/ (.56mm) Dia. or .010/ (.25mm) x .018/ (.46mm) Rectangular Lead

<b>Type -448</b> Part Number: 4417 Contact Group: B 	<b>Type -136</b> Part Number: 1828 Contact Group: B 	<b>Type -04</b> Part Number: 1124 Contact Group: C 	<b>Type -38</b> Part Number: 1104 Contact Group: C 
<b>Type -358</b> Part Number: 4071 Contact Group: C 	<b>Type -500</b> Part Number: 4445 Contact Group: C 	<b>Type -148</b> Part Number: 1922 Contact Group: C 	<b>Type -51</b> Part Number: 1282 Contact Group: C 
<b>Type -364</b> Part Number: 4095 Contact Group: C 	<b>Type -285</b> Part Number: 3578 Contact Group: C 	<b>Type -218</b> Part Number: 3023 Contact Group: C 	<b>Type -243</b> Part Number: 3199 Contact Group: C 
<b>Type -537</b> Part Number: 4613 Contact Group: C 	<b>Type -384</b> Part Number: 4177 Contact Group: C 	<b>Type -242</b> Part Number: 3219 Contact Group: C 	<b>Type -01</b> Part Number: 1003 Contact Group: C 



## Specifications:

### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



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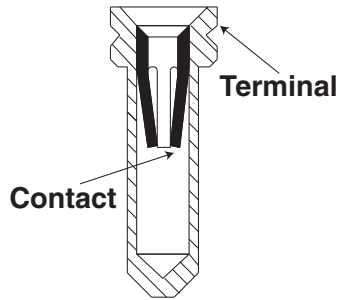


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## Socket (Female) Terminals

Contact Acceptance Range .016/(.41mm) - .022/(.56mm) Dia. or .010/(.25mm) x .018/(.46mm) Rectangular Lead



### Specifications:

#### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

#### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

#### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

### EXPRESS Delivery

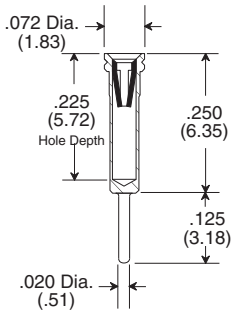
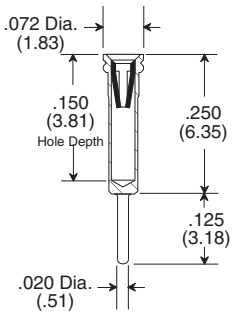
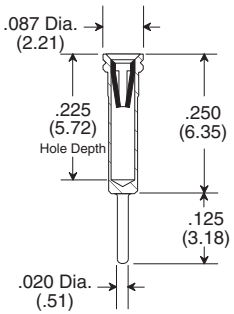
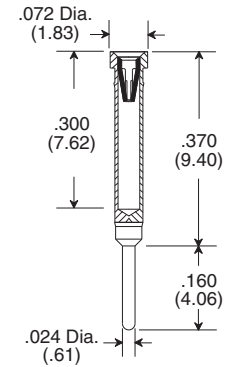
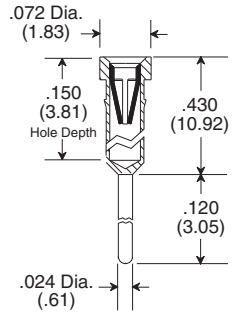
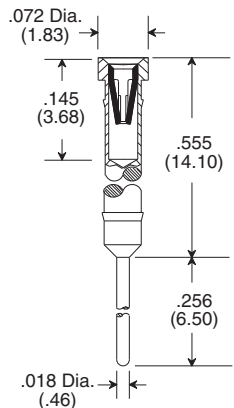
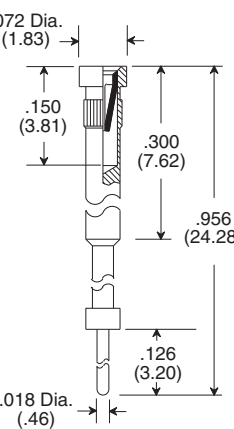
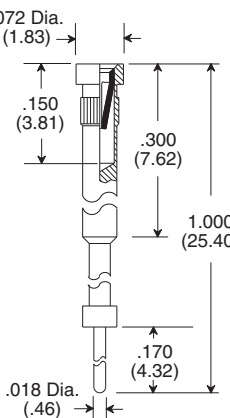
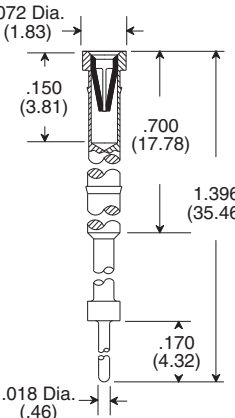
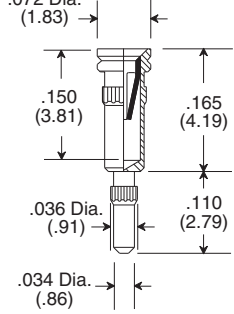
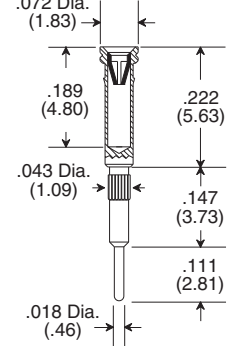
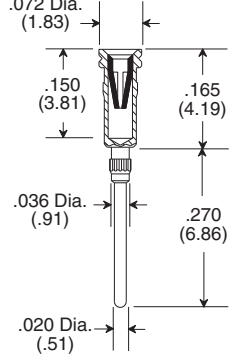
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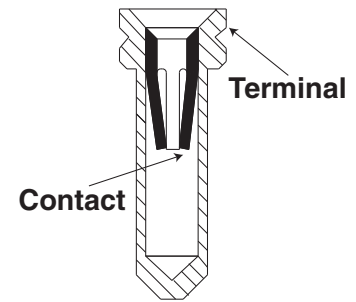


Type -33	Type -29	Type -87	Type -45
Part Number: 1106 Contact Group: C	Part Number: 1094 Contact Group: C	Part Number: 1403 Contact Group: C	Part Number: 1326 Contact Group: C
Type -178	Type -383	Type -487	Type -56
Part Number: 2241 Contact Group: C	Part Number: 4164 Contact Group: C	Part Number: 4420 Contact Group: C	Part Number: 1255 Contact Group: C
Type -30	Type -48	Type -223	Type -333
Part Number: 1125 Contact Group: C	Part Number: 1214 Contact Group: C	Part Number: 2992 Contact Group: C	Part Number: 3715 Contact Group: C

## Socket (Female) Terminals

Contact Acceptance Range .016/ (.41mm) - .022/ (.56mm) Dia. or .010/ (.25mm) x .018/ (.46mm) Rectangular Lead

<b>Type -488</b> Part Number: 4422 Contact Group: C 	<b>Type -90</b> Part Number: 1374 Contact Group: C 	<b>Type -577</b> Part Number: 4689-2 Contact Group: C 	<b>Type -346</b> Part Number: 4036 Contact Group: C 
<b>Type -141</b> Part Number: 1928 Contact Group: C 	<b>Type -373</b> Part Number: 4134 Contact Group: C 	<b>Type -382</b> Part Number: 4163 Contact Group: C 	<b>Type -72</b> Part Number: 1066 Contact Group: C 
<b>Type -372</b> Part Number: 4133 Contact Group: C 	<b>Type -05</b> Part Number: 1028 Contact Group: C 	<b>Type -240</b> Part Number: 3151 Contact Group: C 	<b>Type -191</b> Part Number: 2390 Contact Group: C 



## Specifications:

### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



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## Socket (Female) Terminals

Contact Acceptance Range .016/(.41mm) - .022/(.56mm) Dia. or .010/(.25mm) x .018/(.46mm) Rectangular Lead

Type -343	Type -275	Type -135	Type -74
Part Number: 4024 Contact Group: C	Part Number: 3006 Contact Group: C	Part Number: 1830 Contact Group: C	Part Number: 1129 Contact Group: C

### Specifications:

#### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

#### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

#### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

### EXPRESS Delivery

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## Socket (Female) Terminals

Contact Acceptance Range .022/(.56mm) - .032/(.81mm) Dia.

Type -28	Type -102	Type -301	Type -405
Part Number: 1019 Contact Group: D	Part Number: 1721 Contact Group: D	Part Number: 3818 Contact Group: D	Part Number: 4251 Contact Group: D

Type -563	Type -570	Type -770	Type -843
Part Number: 4634-4 Contact Group: D	Part Number: 4689 Contact Group: D	Part Number: 5902 Contact Group: D1	Part Number: 8031 Contact Group: D



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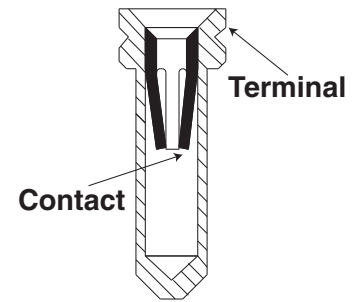
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inch/(mm)

## Socket (Female) Terminals

Contact Acceptance Range .025/(.64mm) - .037/(.94mm) Dia. or .025/(.64mm) Square Lead

<b>Type -284</b> Part Number: 3501 Contact Group: D1 	<b>Type -328</b> Part Number: 3409 Contact Group: D1 	<b>Type -332</b> Part Number: 3844 Contact Group: D1 	<b>Type -351</b> Part Number: 4074 Contact Group: D1 <p>.225/(5.72) Hole Depth</p>
<b>Type -483</b> Part Number: 4079-1 Contact Group: D1 	<b>Type -365</b> Part Number: 4097 Contact Group: D1 <p>.160/(4.06) Hole Depth</p>	<b>Type -585</b> Part Number: 4789 Contact Group: D1 <p>.225/(5.72) Hole Depth</p>	<b>Type -582</b> Part Number: 4775 Contact Group: D1 



### Specifications:

#### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

#### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

#### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

### EXPRESS Delivery



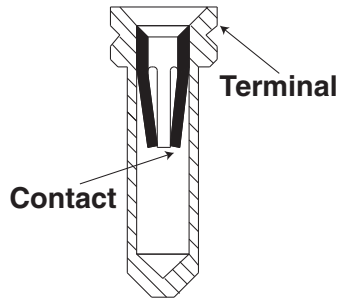
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## Socket (Female) Terminals



### Specifications:

#### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

#### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

#### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



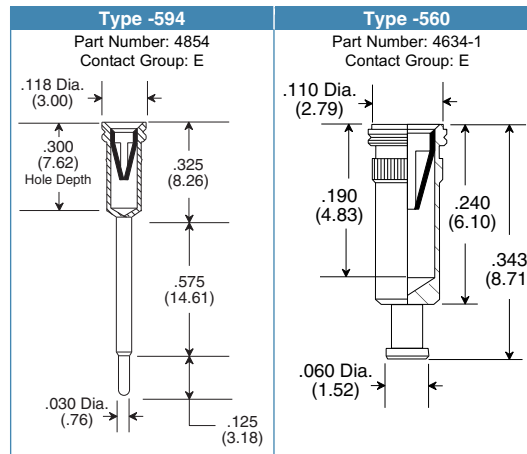
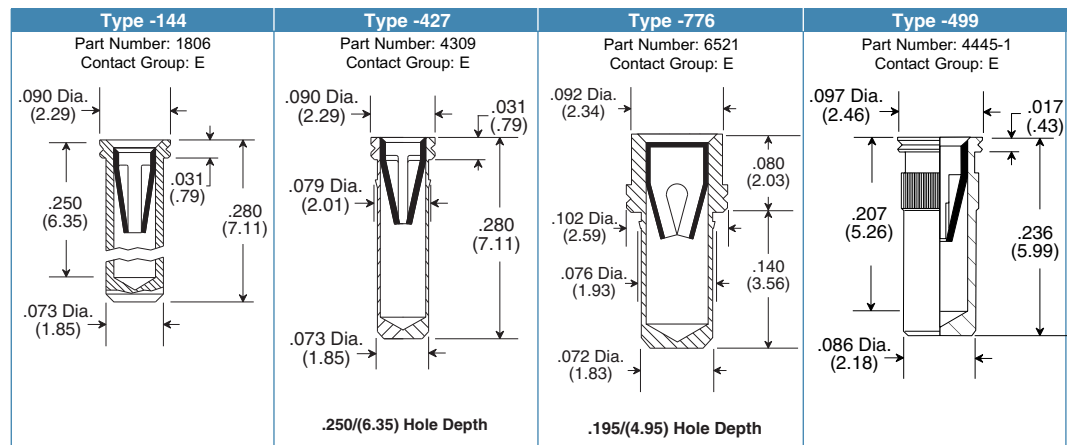
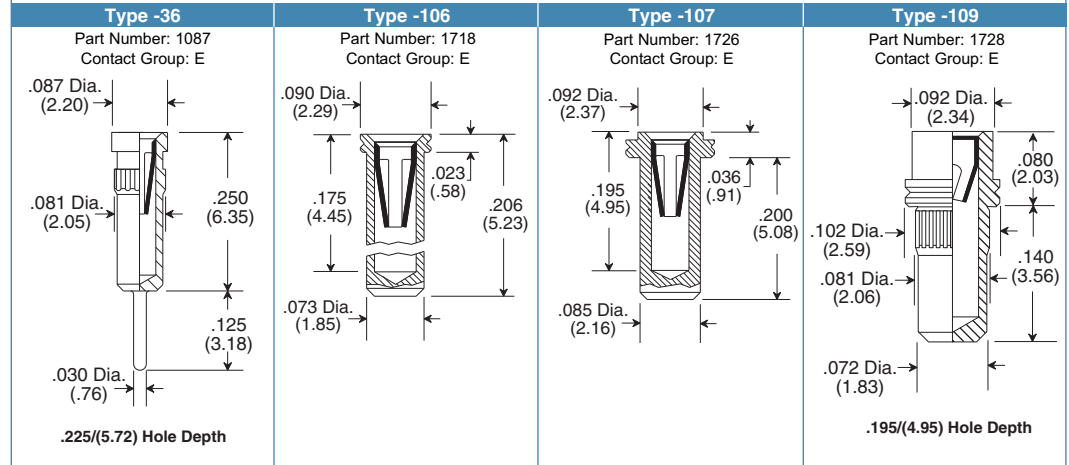
Terminals not drawn to scale.

### EXPRESS Delivery



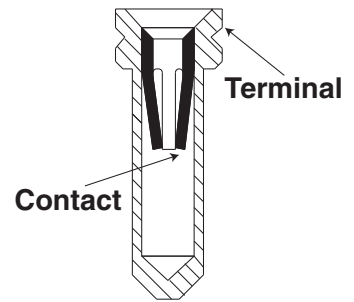
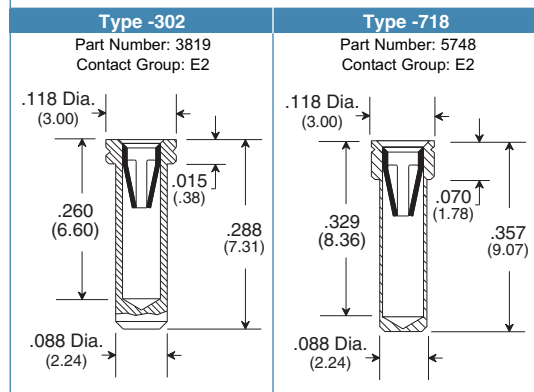
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### Contact Acceptance Range .032/(.81mm) - .047/(1.19mm) Dia.

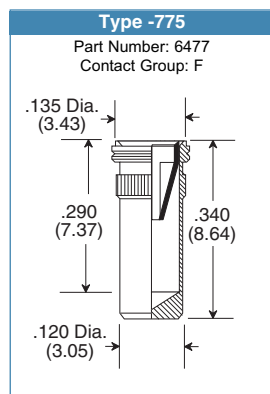
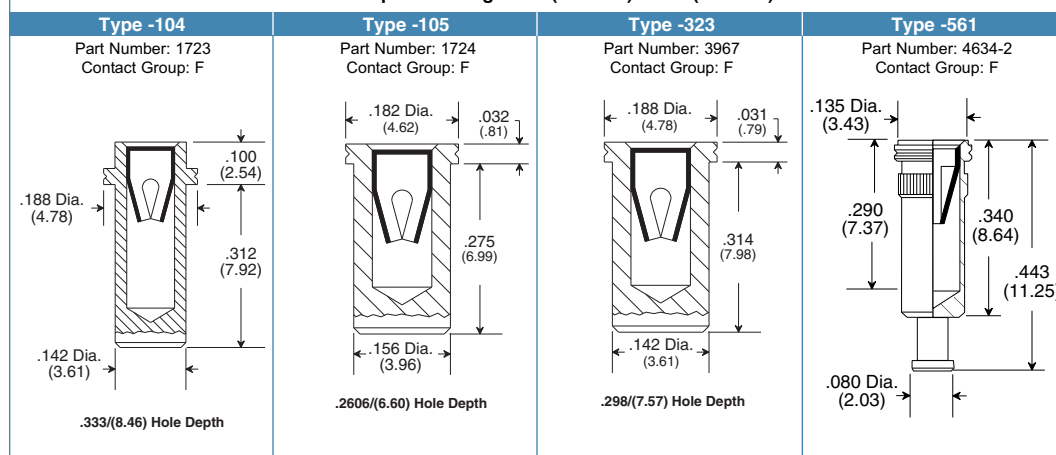


## Socket (Female) Terminals

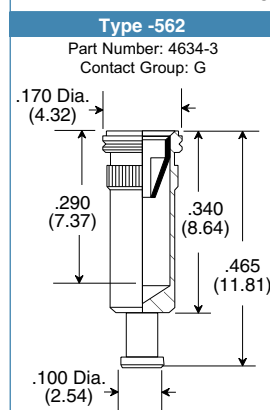
Contact Acceptance Range .040/(1.02mm) - .060/(1.52mm) Dia.



Contact Acceptance Range .065/(1.65mm) - .082/(2.08mm) Dia.



Contact Acceptance Range .084/(2.135mm) - .102/(2.59mm) Dia.



## Specifications:

### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

Contact: Beryllium Copper - Copper Alloy (C17200) ASTM-B-194

### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

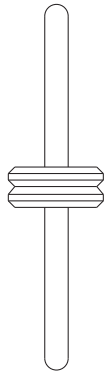
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## Specifications:

### Material:

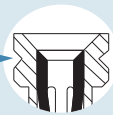
Terminal: Brass - Copper Alloy  
(C36000) ASTM-B-16

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way®  
Removable Terminal  
Carrier body types,  
select a terminal  
with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



Terminals shown with the new EXPRESS  
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body types with fast lead time. Some  
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customer service for availability.

## Adapter (Male) Terminals

Type -147	Type -608	Type -409	Type -394
Part Number: 1582	Part Number: 4975	Part Number: 4269	Part Number: 4212

Type -841	Type -376	Type -772	Type -291
Part Number: 8182	Part Number: 4148	Part Number: 6332	Part Number: 3757

Type -65	Type -140	Type -44	Type -99
Part Number: 1067-2	Part Number: 1743	Part Number: 1067-1	Part Number: 1677

Type -145	Type -101	Type -100	Type -146
Part Number: 1709	Part Number: 1404	Part Number: 1352	Part Number: 1790

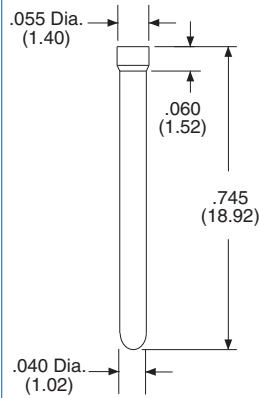
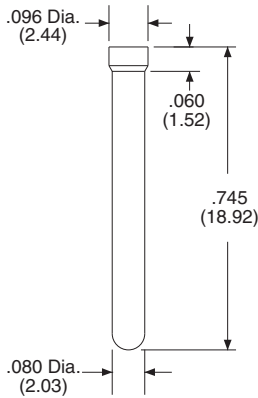
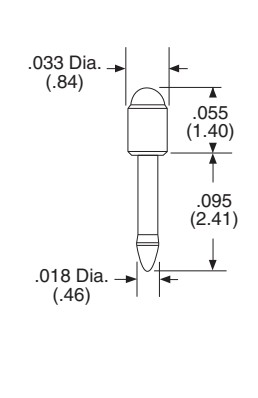
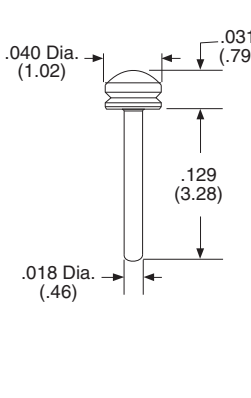
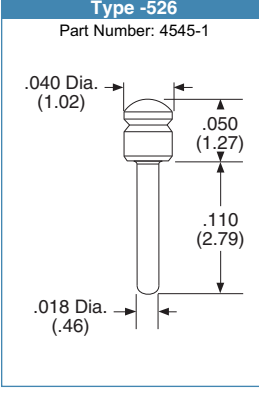
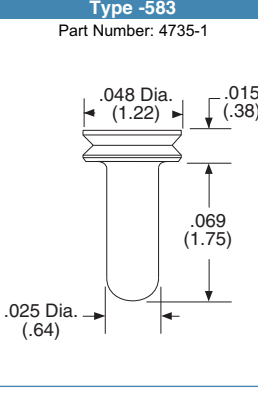
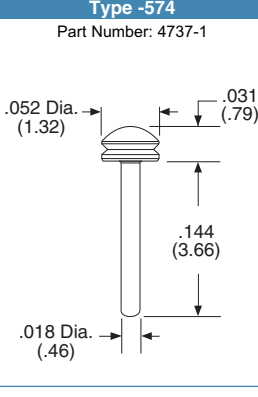
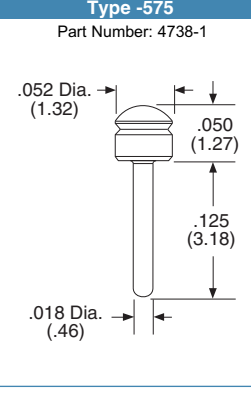
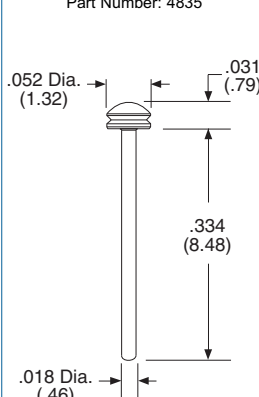
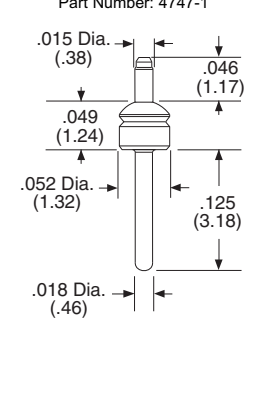
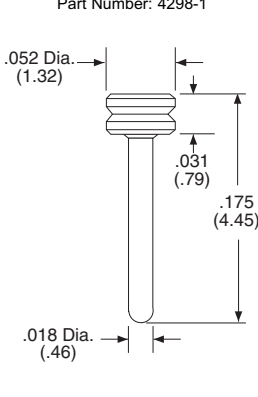
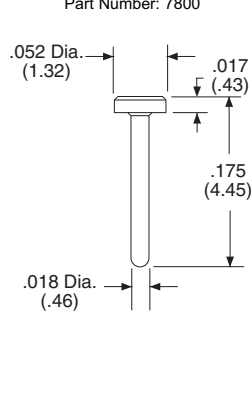
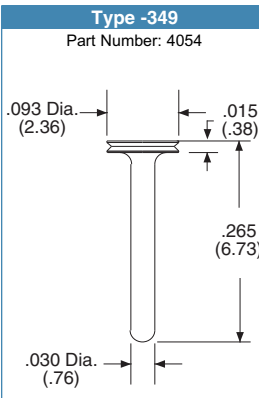
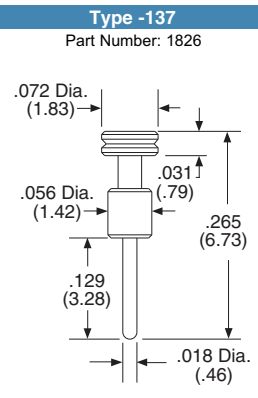
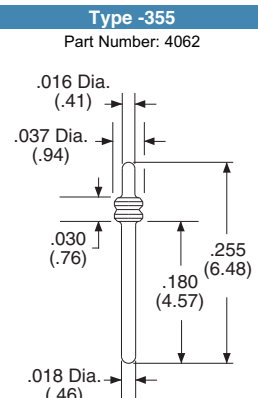
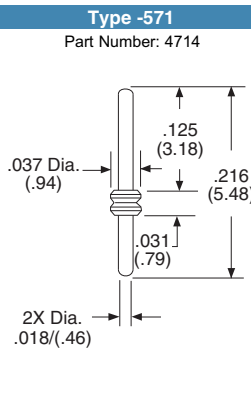
Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

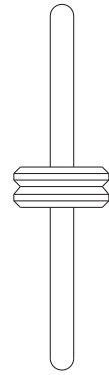
inch/(mm)



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Catalog 16A

## Adapter (Male) Terminals

<b>Type -337</b> Part Number: 3973 	<b>Type -336</b> Part Number: 3972 	<b>Type -603</b> Part Number: 4863 	<b>Type -525</b> Part Number: 4543-1 
<b>Type -526</b> Part Number: 4545-1 	<b>Type -583</b> Part Number: 4735-1 	<b>Type -574</b> Part Number: 4737-1 	<b>Type -575</b> Part Number: 4738-1 
<b>Type -593</b> Part Number: 4835 	<b>Type -576</b> Part Number: 4747-1 	<b>Type -558</b> Part Number: 4298-1 	<b>Type -786</b> Part Number: 7800 
<b>Type -349</b> Part Number: 4054 	<b>Type -137</b> Part Number: 1826 	<b>Type -355</b> Part Number: 4062 	<b>Type -571</b> Part Number: 4714 



## Specifications:

### Material:

Terminal: Brass - Copper Alloy  
(C36000) ASTM-B-16

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel  
  
Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



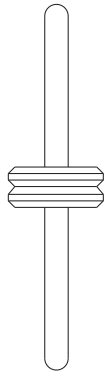
Terminals shown with the new EXPRESS symbol are available in most insulator body types with fast lead time. Some quantity and plating restrictions apply. Search our Distributor inventory online at [www.advanced.com](http://www.advanced.com), or check with customer service for availability.



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## Specifications:

### Material:

Terminal: Brass - Copper Alloy  
(C36000) ASTM-B-16

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way®  
Removable Terminal  
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Catalog 16A

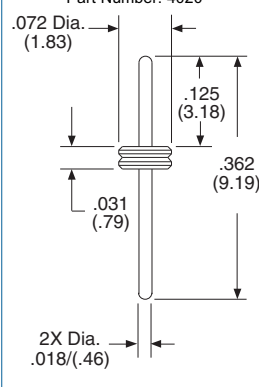
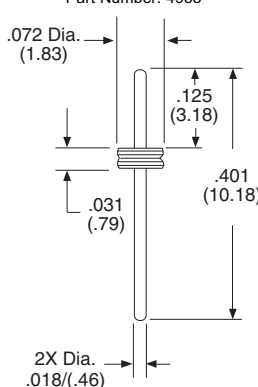
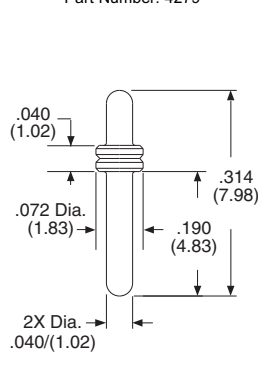
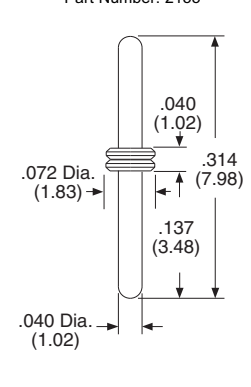
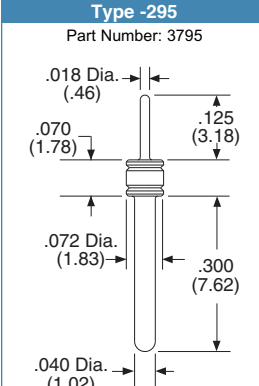
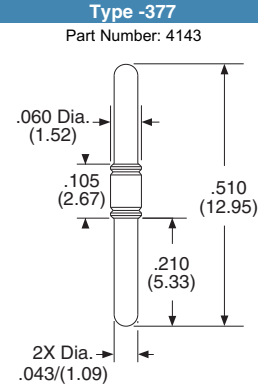
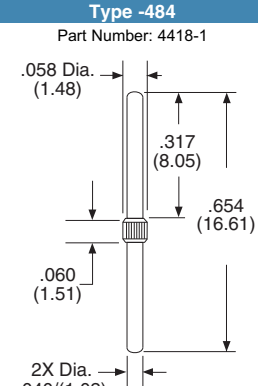
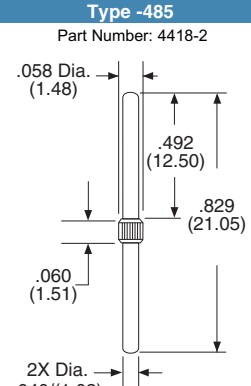
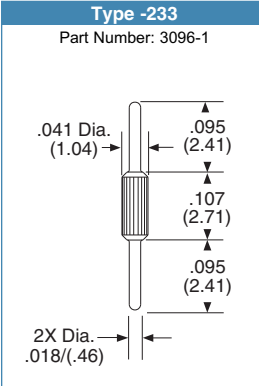
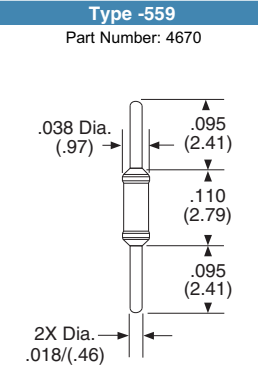
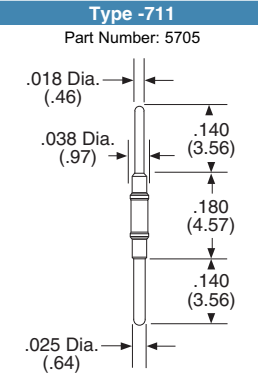
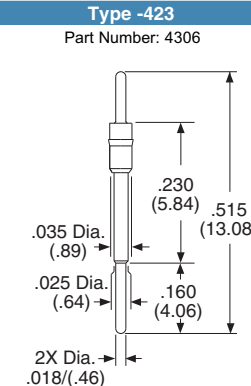
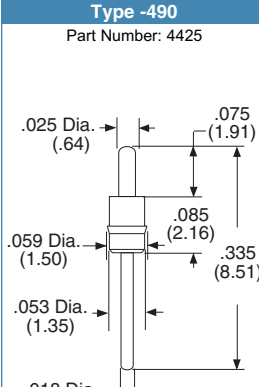
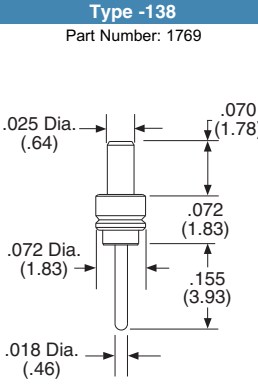
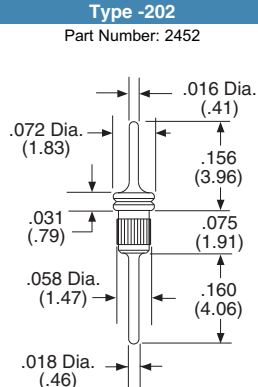
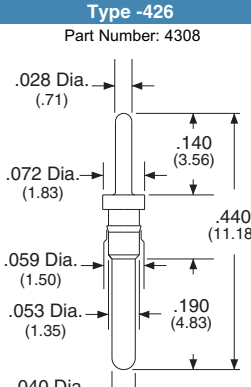
## Adapter (Male) Terminals

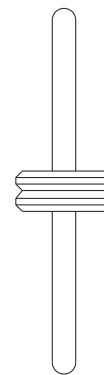
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<b>Type -321</b> Part Number: 2527-2 	<b>Type -322</b> Part Number: 2527-3 	<b>Type -165</b> Part Number: 2184 	<b>Type -339</b> Part Number: 2184-2 
<b>Type -340</b> Part Number: 2184-3 	<b>Type -378</b> Part Number: 1364-6 	<b>Type -79</b> Part Number: 1364-1 	<b>Type -80</b> Part Number: 1364-2 
<b>Type -81</b> Part Number: 1364-3 	<b>Type -186</b> Part Number: 1364-4 	<b>Type -393</b> Part Number: 4227-1 	<b>Type -338</b> Part Number: 3997 

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

## Adapter (Male) Terminals

<b>Type -341</b> Part Number: 4020 	<b>Type -606</b> Part Number: 4953 	<b>Type -413</b> Part Number: 4279 	<b>Type -169</b> Part Number: 2155 
<b>Type -295</b> Part Number: 3795 	<b>Type -377</b> Part Number: 4143 	<b>Type -484</b> Part Number: 4418-1 	<b>Type -485</b> Part Number: 4418-2 
<b>Type -233</b> Part Number: 3096-1 	<b>Type -559</b> Part Number: 4670 	<b>Type -711</b> Part Number: 5705 	<b>Type -423</b> Part Number: 4306 
<b>Type -490</b> Part Number: 4425 	<b>Type -138</b> Part Number: 1769 	<b>Type -202</b> Part Number: 2452 	<b>Type -426</b> Part Number: 4308 



## Specifications:

### Material:

Terminal: Brass - Copper Alloy  
(C36000) ASTM-B-16

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way®  
Removable Terminal  
Carrier body types,  
select a terminal  
with a "V" groove.



Terminals not drawn to scale.

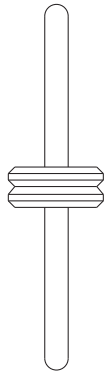
## EXPRESS Delivery

Terminals shown with the new EXPRESS  
symbol are available in most insulator  
body types with fast lead time. Some  
quantity and plating restrictions apply.  
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## Specifications:

### Material:

Terminal: Brass - Copper Alloy  
(C36000) ASTM-B-16

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way®  
Removable Terminal  
Carrier body types,  
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Terminals not drawn to scale.

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## Adapter (Male) Terminals

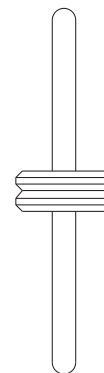
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<b>Type -599</b> Part Number: 4875 <p><b>Hole Depth .045/(1.14)</b></p>	<b>Type -600</b> Part Number: 4876 <p><b>Hole Depth .062/(1.57)</b></p>	<b>Type -188</b> Part Number: 2342 	<b>Type -444</b> Part Number: 4375 
<b>Type -08</b> Part Number: 1077 	<b>Type -09</b> Part Number: 1078 	<b>Type -286</b> Part Number: 3626 	<b>Type -277</b> Part Number: 3359 
<b>Type -804</b> Part Number: 8386 	<b>Type -43</b> Part Number: 1216-2 	<b>Type -278</b> Part Number: 3366 	<b>Type -185</b> Part Number: 1216-5 

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

## Adapter (Male) Terminals

<b>Type -42</b> Part Number: 1216-3 .018 Dia. (.46) .125 (3.18) .585 (14.86) .100 (2.54) .125 (3.18) .018 Dia. (.46)	<b>Type -360</b> Part Number: 1216-6 .018 Dia. (.46) .125 (3.18) .655 (16.64) .055 (1.40) .155 (3.94) .018 Dia. (.46)	<b>Type -71</b> Part Number: 1216-4 .018 Dia. (.46) .125 (3.18) .835 (21.21) .100 (2.54) .125 (3.18) .018 Dia. (.46)	<b>Type -506</b> Part Number: 4522 .100 Dia. (2.54) .015 (.38) .122 (3.10) .060 (1.52)
<b>Type -539</b> Part Number: 4621 .037 Dia. (.94) .100 (2.54) .020 (.51) .577 (14.66) .059 Dia. (1.50)	<b>Type -540</b> Part Number: 4622 .046 Dia. (1.17) .100 (2.54) .020 (.51) .537 (13.64) .059 Dia. (1.50)	<b>Type -771</b> Part Number: 6041 .040 Dia. (1.02) .072 Dia. (1.83) .040 (1.02) .353 (8.97) .230 (5.84) .040 Dia. (1.02)	<b>Type -721</b> Part Number: 5843-1 .018 Dia. (.46) .030 (.76) .125 (3.18) .342 (8.69) .036 Dia. (.91) .125 (3.18) .018 Dia. (.46)
<b>Type -727</b> Part Number: 5926 .030 Dia. (.76) .072 Dia. (1.83) .142 (3.61) .386 (9.80) .209 (5.31) .024 Dia. (.61)	<b>Type -626</b> Part Number: 5030 .015 Dia. (.38) .072 Dia. (1.83) .250 (6.35) .031 (.79) .075 (1.91) .059 Dia. (1.50) .175 (4.45) .018 Dia. (.46)	<b>Type -420</b> Part Number: 4298 .052 Dia. (1.32) .017 (.43) .158 (4.01) .018 Dia. (.46)	<b>Type -68</b> Part Number: 1216-1 .018 Dia. (.46) .125 (3.18) .210 (5.33) .100 (2.54) .125 (3.18) .018 Dia. (.46)



## Specifications:

### Material:

Terminal: Brass - Copper Alloy (C36000) ASTM-B-16

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way® Removable Terminal Carrier body types, select a terminal with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



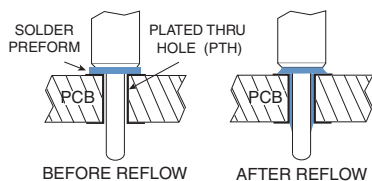
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Catalog 16A





## Specifications:

### Material:

Terminal: Brass - Copper Alloy  
(C36000) ASTM-B-16

### Solder Preform:

Standard: 63Sn/37Pb  
Lead-free: 95.5Sn/4.0Ag/0.5Cu

### Contact Plating:

G - Gold over Nickel  
T - Tin/Lead over Nickel

### Terminal Plating:

G - Gold over Nickel  
M - Matte Tin over Nickel  
T - Tin/Lead over Nickel

Gold per ASTM-B-488  
Matte Tin per ASTM545-97  
Tin/Lead per MIL-P-81728  
Nickel per QQ-N-290

Note: For use in Peel-A-Way®  
Removable Terminal  
Carrier body types,  
select a terminal  
with a "V" groove.



Terminals not drawn to scale.

## EXPRESS Delivery



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## Solder Preform Terminals

Consult factory for additional lead-free terminal type numbers not shown.

<b>Tin/Lead: Type -432</b> <b>Lead-free: Type -815</b> Part Number: 4366 Contact Group: A 	<b>Type -143</b> Part Number: 1862 Contact Group: C 	<b>Type -97</b> Part Number: 1643 Contact Group: C 	<b>Tin/Lead: Type -150</b> <b>Lead-free: Type -811</b> Part Number: 2103 Contact Group: C 
<b>Tin/Lead: Type -151</b> <b>Lead-free: Type -812</b> Part Number: 2105 Contact Group: C 	<b>Tin/Lead: Type -111</b> <b>Lead-free: Type -810</b> Part Number: 1499 Contact Group: A 	<b>Type -154</b> Part Number: 2111 Contact Group: C 	<b>Type -230</b> Part Number: 3006 Contact Group: C 
<b>Type -133</b> Part Number: 1979 Contact Group: C 	<b>Tin/Lead: Type -313</b> <b>Lead-free: Type -814</b> Part Number: 4464-2 Contact Group: C 	<b>Type -316</b> Part Number: 3950 Contact Group: C 	<b>Type -404</b> Part Number: 4256 Contact Group: C 
<b>Tin/Lead: Type -311</b> <b>Lead-free: Type -813</b> Part Number: 4464-3 Contact Group: C 	<b>Type -134</b> Part Number: 1989 	<b>Type -139</b> Part Number: 1831 	<p>If not indicated, terminals are shown with our standard Tin/Lead solder preform. For additional Lead-free preform Terminal Type numbers, consult factory.</p>

Products shown covered by patents issued and/or pending. Specifications subject to change without notice.

inch/(mm)

## Contact Information

Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_ Country: \_\_\_\_\_

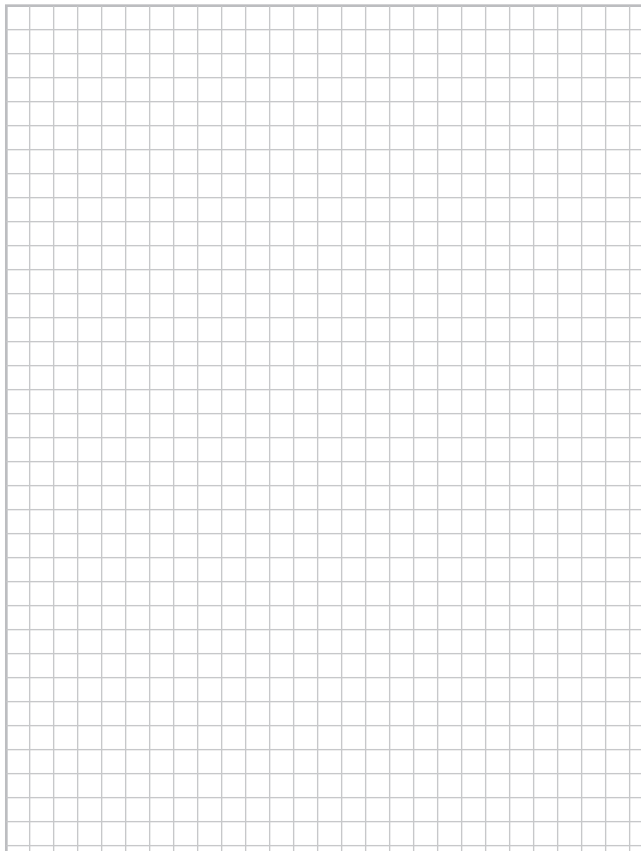
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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

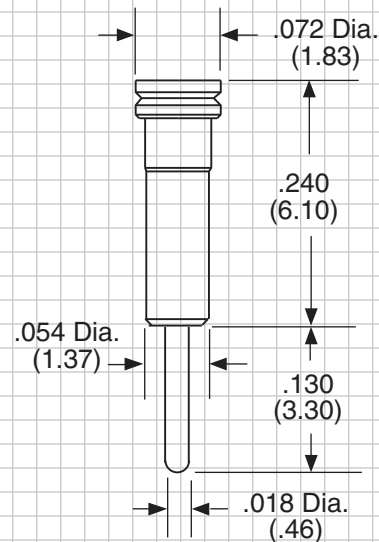
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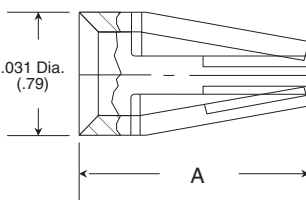
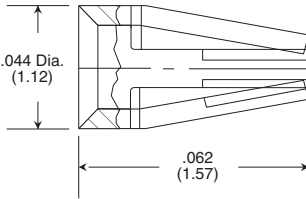
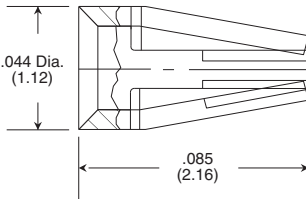
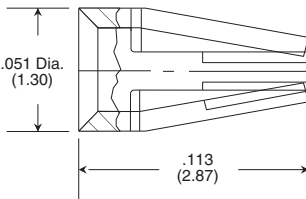
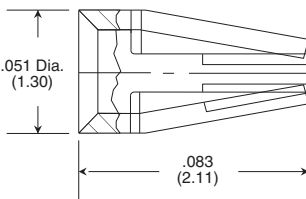
## Terminal Information

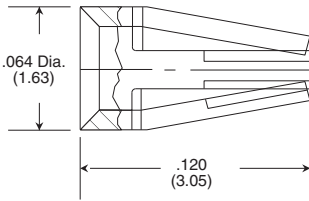
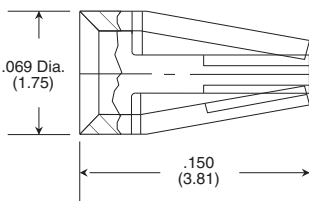
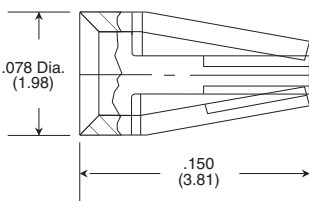
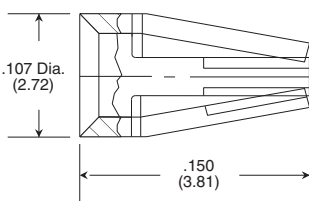
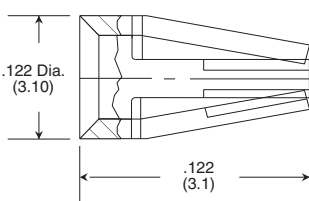
1. **Similar Advanced Part #:** \_\_\_\_\_
2. **Terminal Material:**  
☐ Brass
3. **Terminal Plating:**  
☐ Tin/Lead over Nickel  
☐ Gold over Nickel  
☐ Matte Tin over Nickel
4. **Contact Material:**  
☐ Beryllium Copper
5. **Contact Plating:**  
☐ Tin/Lead over Nickel  
☐ Gold over Nickel
6. **Size of Mating Pin or Component Lead:** \_\_\_\_\_
7. **Length of Mating Pin/Lead:** \_\_\_\_\_
8. **Use Advanced Contact Part:** \_\_\_\_\_  
 (See pages 82-83)
9. **Required Insertion/Extraction Force:**  
☐ Low  
☐ Medium  
☐ High
10. **Outline Sketch:**  
 (Sketch terminal with all critical dimensions. See sample below.)



Sample Sketch



Group A	Lead Size Range  .016-.022 Dia. (.41-.56) ●  .010-.018 Rect. (.25-.46) ■	<p>Contact Acceptance Range .016" - .022" Dia. or .010" x .018" Rectangular Lead (.41mm - .56mm) (.25mm - .46mm)</p>  <table><tr><th>Part Number</th><th>A</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>1427</td><td>.075/(1.91)</td><td>3</td><td>BeCu</td><td>75g</td><td>40g</td><td>3 amp</td></tr><tr><td>1907</td><td>.060/(1.52)</td><td>6</td><td>BeCu</td><td>175g</td><td>50g</td><td>3 amp</td></tr><tr><td>1427-1</td><td>.075/(1.91)</td><td>3</td><td>BeCu</td><td>45g</td><td>20g</td><td>3 amp</td></tr></table> <p>Forces determined with .018/(.46) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	A	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	1427	.075/(1.91)	3	BeCu	75g	40g	3 amp	1907	.060/(1.52)	6	BeCu	175g	50g	3 amp	1427-1	.075/(1.91)	3	BeCu	45g	20g	3 amp		
	Part Number	A	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating																									
1427	.075/(1.91)	3	BeCu	75g	40g	3 amp																										
1907	.060/(1.52)	6	BeCu	175g	50g	3 amp																										
1427-1	.075/(1.91)	3	BeCu	45g	20g	3 amp																										
Group B	Lead Size Range  .016-.022 Dia. (.41-.56) ●  .010-.018 Rect. (.25-.46) ■	<p>Contact Acceptance Range .016" - .022" Dia. or .010" x .018" Rectangular Lead (.41mm - .56mm) (.25mm - .46mm)</p>  <table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>1418</td><td>4</td><td>BeCu</td><td>350g</td><td>150g</td><td>3 amp</td></tr><tr><td>1418-4</td><td>4</td><td>BeCu</td><td>100g</td><td>60g</td><td>3 amp</td></tr><tr><td>2832</td><td>6</td><td>BeCu</td><td>195g</td><td>140g</td><td>3 amp</td></tr></table> <p>Forces determined with .018/(.46) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	1418	4	BeCu	350g	150g	3 amp	1418-4	4	BeCu	100g	60g	3 amp	2832	6	BeCu	195g	140g	3 amp						
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating																										
1418	4	BeCu	350g	150g	3 amp																											
1418-4	4	BeCu	100g	60g	3 amp																											
2832	6	BeCu	195g	140g	3 amp																											
Group C	Lead Size Range  .016-.022 Dia. (.41-.56) ●  .010-.018 Rect. (.25-.46) ■	<p>Contact Acceptance Range .016" - .022" Dia. or .010" x .018" Rectangular Lead (.41mm - .56mm) (.25mm - .46mm)</p>  <table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>1002</td><td>4</td><td>BeCu</td><td>250g</td><td>75g</td><td>3 amp</td></tr><tr><td>1002-2</td><td>4</td><td>BeCu</td><td>55g</td><td>25g</td><td>3 amp</td></tr><tr><td>1465</td><td>6</td><td>BeCu</td><td>75g</td><td>45g</td><td>3 amp</td></tr><tr><td>1465-1</td><td>6</td><td>BeCu</td><td>35g</td><td>20g</td><td>3 amp</td></tr></table> <p>Forces determined with .018/(.46) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	1002	4	BeCu	250g	75g	3 amp	1002-2	4	BeCu	55g	25g	3 amp	1465	6	BeCu	75g	45g	3 amp	1465-1	6	BeCu	35g	20g	3 amp
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating																										
1002	4	BeCu	250g	75g	3 amp																											
1002-2	4	BeCu	55g	25g	3 amp																											
1465	6	BeCu	75g	45g	3 amp																											
1465-1	6	BeCu	35g	20g	3 amp																											
Group D	Lead Size Range  .022-.032 Dia. (.56-.81) ●	<p>Contact Acceptance Range .022" - .032" Dia. (.56mm - .81mm)</p>  <table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>1768</td><td>4</td><td>BeCu</td><td>300g</td><td>125g</td><td>4.5 amp</td></tr></table> <p>Forces determined with .025/(.64) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	1768	4	BeCu	300g	125g	4.5 amp																		
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating																										
1768	4	BeCu	300g	125g	4.5 amp																											
Group D1	Lead Size Range  .025-.037 Dia. (.64-.94) ●  .025 Sq. (.63) ■	<p>Contact Acceptance Range .025" - .037" Dia. or .025" Square Lead (.64mm - .94mm) (.64mm)</p>  <table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>3648</td><td>6</td><td>BeCu</td><td>125g</td><td>40g</td><td>4.5 amp</td></tr><tr><td>3003</td><td>6</td><td>BeCu</td><td>350g</td><td>110g</td><td>4.5 amp</td></tr></table> <p>Forces determined with .025/(.64) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	3648	6	BeCu	125g	40g	4.5 amp	3003	6	BeCu	350g	110g	4.5 amp												
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating																										
3648	6	BeCu	125g	40g	4.5 amp																											
3003	6	BeCu	350g	110g	4.5 amp																											

Group E	Lead Size Range  .032-.047 Dia. (.81-1.19) ●	<b>Contact Acceptance Range .032" - .047" Dia.</b> (.81mm - 1.19mm)  	<table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>2147</td><td>4</td><td>BeCu</td><td>575g</td><td>225g</td><td>8 amp</td></tr></table> <p>Forces determined with .040/(1.02) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	2147	4	BeCu	575g	225g	8 amp
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating									
2147	4	BeCu	575g	225g	8 amp										
Group E1	Lead Size Range  .035-.045 Dia. (.89-1.14) ●	<b>Contact Acceptance Range .035" - .045" Dia.</b> (.89mm - 1.14mm)  	<table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>3970</td><td>4</td><td>BeCu</td><td>300g</td><td>185g</td><td>8 amp</td></tr></table> <p>Forces determined with .040/(1.02) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	3970	4	BeCu	300g	185g	8 amp
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating									
3970	4	BeCu	300g	185g	8 amp										
Group E2	Lead Size Range  .040-.060 Dia. (1.02-1.52) ●	<b>Contact Acceptance Range .040" - .060" Dia.</b> (1.02mm - 1.52mm)  	<table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>2818</td><td>4</td><td>BeCu</td><td>260g</td><td>120g</td><td>11.2 amp</td></tr></table> <p>Forces determined with .050/(1.27) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	2818	4	BeCu	260g	120g	11.2 amp
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating									
2818	4	BeCu	260g	120g	11.2 amp										
Group F	Lead Size Range  .065-.082 Dia. (1.65-2.08) ●	<b>Contact Acceptance Range .065" - .082" Dia.</b> (1.65mm - 2.08mm)  	<table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>1767</td><td>4</td><td>BeCu</td><td>475g</td><td>460g</td><td>15 amp</td></tr></table> <p>Forces determined with .075/(1.91) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	1767	4	BeCu	475g	460g	15 amp
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating									
1767	4	BeCu	475g	460g	15 amp										
Group G	Lead Size Range  .084-.102 Dia. (2.13-2.59) ●	<b>Contact Acceptance Range .084" - .102" Dia.</b> (2.13mm - 2.59mm)  	<table><tr><th>Part Number</th><th># of Fingers</th><th>Materials</th><th>Average Insertion Force</th><th>Average Withdrawal Force</th><th>Current Rating</th></tr><tr><td>4673</td><td>6</td><td>BeCu</td><td>500g</td><td>320g</td><td>18 amp</td></tr></table> <p>Forces determined with .092/(2.34) diameter test pin. All tests are performed with polished steel bullet nose pins.</p>	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating	4673	6	BeCu	500g	320g	18 amp
	Part Number	# of Fingers	Materials	Average Insertion Force	Average Withdrawal Force	Current Rating									
4673	6	BeCu	500g	320g	18 amp										



Part #	Description	Page
2819	PLCC to PGA Adapters	.59
4414	SOIC to DIP Adapters	.58
8125	BGA Extraction Tool	.6-9
8794	BGA Extraction Tool	.4-5
BA	B2B® SMT Connectors (Male 1.27mm pitch)	.54-55
BB	B2B® SMT Connectors (Female 1.27mm pitch)	.54-55
DHA	Flexible Thru-Hole Male Connector (1.00mm pitch)	.56-57
DHAM	Molded SMT Male Connector (1.00mm pitch)	.56-57
DHS	Molded SMT Female Connector (1.00mm pitch)	.56-57
DKA	Board to Board Connector (Male Dual Row Peel-A-Way®)	.40-43
DKS	Board to Board Connector (Female Dual Row Peel-A-Way®)	.40-43
FAPC	Image Sensor Socket (Open Body 2.54mm pitch)	.26-27
FAPF	Image Sensor Socket (Full Body 2.54mm pitch)	.26-27
FBPC	Image Sensor Socket (Open Body 1.78mm pitch)	.26-27
FBPF	Image Sensor Socket (Full Body 1.78mm pitch)	.26-27
FCPC	Image Sensor Socket (Open Body 1.27mm pitch)	.26-27
FCPF	Image Sensor Socket (Full Body 1.27mm pitch)	.26-27
FGA	Standard BGA Adapter (1.27mm pitch)	.6-7
FGAG	Guide Box BGA Adapter (1.27mm pitch)	.10-11
FGAX	Extraction Slot BGA Adapter (1.27mm pitch)	.6-7
FGSG	Guide Box BGA Socket (1.27mm pitch)	.10-11
FHA	Standard BGA Adapter (1.00mm pitch)	.6-7
FHAG	Guide Box BGA Adapter (1.00mm pitch)	.10-11
FHAX	Extraction Slot BGA Adapter (1.00mm pitch)	.6-7
FHSG	Guide Box BGA Socket (1.00mm pitch)	.10-11
FIS	PGA Socket (FR-4 Insulator)	.20-21
FJA	Standard BGA Adapter (0.80mm pitch)	.6-7
FJAG	Guide Box BGA Adapter (0.80mm pitch)	.10-11
FJS	Standard BGA Socket (0.80mm pitch)	.8-9
FJSG	Guide Box BGA Socket (0.80mm pitch)	.10-11
FLA	Fine Pitch BGA Adapter (0.65mm pitch)	.4-5
FLS	Fine Pitch BGA Socket (0.65mm pitch)	.4-5
FMA	Fine Pitch BGA Adapter (0.50mm pitch)	.4-5
FMS	Fine Pitch BGA Socket (0.50mm pitch)	.4-5
FRG	Flip-Top™ BGA Socket (1.27mm pitch)	.12-13
FRH	Flip-Top™ BGA Socket (1.00mm pitch)	.12-13



<b>Part #</b>	<b>Description</b>	<b>Page</b>
FSDS	Board to Board Connector (Female Single Row Molded)	46-49
HKA	Board to Board Connector (Male Triple Row Peel-A-Way®)	50-51
HKS	Board to Board Connector (Female Triple Row Peel-A-Way®)	50-51
KA	PGA Adapter (Peel-A-Way® Insulator)	19
KBA	Board to Board Connector (Male Single Row Peel-A-Way®)	46-49
KBS	Board to Board Connector (Female Single Row Peel-A-Way®)	46-49
KDA	Board to Board Connector (Male Dual Row Peel-A-Way®)	46-49
KEA	Board to Board Connector (Male Dual Row Peel-A-Way®)	50-51
KES	Board to Board Connector (Female Dual Row Peel-A-Way®)	50-51
KIS	PGA Socket (Peel-A-Way® Insulator)	20-21
KMA	Board to Board Connector (Male Single Row Peel-A-Way®)	44-45
KMB	Board to Board Connector (Male Dual Row Peel-A-Way®)	44-45
KMC	Board to Board Connector (Male Triple Row Peel-A-Way®)	44-45
KMD	Board to Board Connector (Female Dual Row Peel-A-Way®)	44-45
KMS	Board to Board Connector (Female Single Row Peel-A-Way®)	44-45
KMT	Board to Board Connector (Female Triple Row Peel-A-Way®)	44-45
KNA	Board to Board Connector (Male Dual Row Peel-A-Way®)	46-49
KNS	Board to Board Connector (Female Dual Row Peel-A-Way®)	46-49
KS	DIP Socket (Peel-A-Way® Insulator)	30-31
KSA	Board to Board Connector (Male Single Row Peel-A-Way®)	40-43
KSA	SIP Adapter (Peel-A-Way® Insulator)	38-39
KSS	Board to Board Connector (Female Single Row Peel-A-Way®)	40-43
KSS	SIP Socket (Peel-A-Way® Insulator)	36-37
KSX	PGA Socket (Peel-A-Way® Insulator)	22-23
KTA	Board to Board Connector (Male Triple Row Peel-A-Way®)	46-49
KTS	Board to Board Connector (Female Triple Row Peel-A-Way®)	46-49
MDC	Decoupling Capacitor DIP Socket with Murphy Circuits®	34
MGAG	Guide Box BGA Adapter (1.27mm pitch)	10-11
MGSG	Guide Box BGA Socket (1.27mm pitch)	10-11
MHAG	Guide Box BGA Adapter (1.00mm pitch)	10-11
MHS	Standard BGA Socket (1.00mm pitch)	8-9
MHSB	Extraction BGA Socket (1.00mm pitch)	8-9
MHSG	Guide Box BGA Socket (1.00mm pitch)	10-11
RCA	PGA Adapter (Molded Insulator)	19
RDA	DIP Adapter (Molded Insulator)	32-33
RDD	Board to Board Connector (Female Dual Row Molded)	46-49

Part #	Description	Page
RDL	Closed Frame LED Sockets	.35
RDDS	Board to Board Connector (Female Dual Row Molded)	.46-49
RDRA	Board to Board Connector (Male Dual Row Molded)	.40-43
RDRS	Board to Board Connector (Female Dual Row Molded)	.40-43
RDS	DIP Socket (Closed Frame Molded Insulator)	.28-29
RGS	Standard BGA Socket (1.27mm pitch)	.8-9
RGSB	Extraction BGA Socket (1.27mm pitch)	.8-9
RIS	PGA Socket (Molded Insulator)	.20-21
RLNB	Board to Board Connector (Female Single Row Molded)	.40-43
RLNB	SIP Socket (Molded Solid Strip - Head Flush)	.36-37
RLS	DIP Socket (Open Frame Molded Insulator)	.28-29
RLSA	Right Angle Connector (Male Single Row Molded)	.52
RLSA	Right Angle Connector (Male Dual Row Molded)	.53
RLSS	Right Angle Connector (Female Single Row Molded)	.52
RLSS	Right Angle Connector (Female Dual Row Molded)	.53
RLSS	SIP Socket (Molded Snap Strip - Head Flush)	.36-37
RNA	Board to Board Connector (Male Single Row Molded)	.40-43
RNA	SIP Adapter (Molded Solid Strip)	.38-39
RNB	Board to Board Connector (Female Single Row Molded)	.40-43
RNB	SIP Socket (Molded Solid Strip - Head Above)	.36-37
RSA	SIP Adapter (Molded Snap Strip)	.38-39
RSS	SIP Socket (Molded Snap Strip - Head Above)	.36-37
RSX	PGA Socket (Molded Insulator)	.22-23



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1066	-72	69	1589	-95	66	2403	-205	63
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1093	-25	65	1718	-106	72	2647	-227	63
1094	-29	68	1721	-102	70	2850	-217	66
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## Material Specifications

Note: All materials listed, with the exception of Tin/Lead plating and PPS insulators are RoHS Compliant and compatible with high temperature processing.

### Insulators:

- LCP** Liquid Crystal Polymer, 30% Glass Reinforced.  
U.L. Rated 94V-0. Color: Black. Thermal Index to 260°C.
- FR-4** Fiberglass Epoxy Board. U.L. Rated 94V-0.  
Color: Black. Thermal Index to 140°C.
- Polyimide Film** (Peel-A-Way®). U.L. Rated 94V-0.  
Thermal Index to 400°C.
- PPS** Polyphenylene Sulfide Glass Reinforced. U.L. Rated 94V-0. Color Natural. Thermal Index to 260° C. (Note: Not compatible with high temperature processing.)

### Terminals:

Brass - Copper Alloy (C36000) per ASTM-B-16.

### Contacts:

Beryllium Copper (BeCu) (C17200) per ASTM-B-194.

### Standard Contact Plating Specifications:

- G:** 30 micro inches Gold per MIL-G-45204 over 50 micro inches of Nickel per QQ-N-290.
- T:** 150 micro inches of 90/10 Tin/Lead per MIL-P-81728 over 50 micro inches of Nickel per QQ-N-290.

### Standard Terminal Shell Plating Specifications:

- G:** 10 micro inches Gold per ASTM-B-488 over 50 micro inches Nickel per QQ-N-290.
- GH:** 30 micro inches Gold per ASTM-B-488 over 50 micro inches Nickel per QQ-N-290.
- T:** 200 micro inches of 90/10 Tin/Lead per MIL-P-81728 over 50 micro inches Nickel per QQ-N-290.
- M:** 100 micro inches of Matte Tin per ASTM545-97 over 50 micro inches Nickel per QQ-N-290.

### Optional Plating Specifications:

(consult factory for availability)

Contact: 10 micro inches Gold per ASTM-B-488 over 50 micro inches Nickel per QQ-N-290.

Contact: Gold Flash over 50 micro inches Nickel per QQ-N-290.

Terminal Shell: Gold Flash over 50 micro inches Nickel per QQ-N-290.

Terminal Shell: 200 micro inches of 90/10 Tin/Lead per MIL-P-81728 over 100 micro inches Copper.

### Solder Spheres and Solder Preforms:

- Standard:** Eutectic Tin/Lead, 63Sn/37Pb. 183°C (361°F)
- Lead-free:** Tin/Silver/Copper, 95.5Sn/4.0Ag/0.5Cu or 96.5Sn/3.0Ag/0.5Cu. 218°C (424°F)

### Tape Seal:

Silicone backed Polyimide film. Temperature range: -74°C to 260°C (-100°F to 500°F), Intermittent to 371°C (700°F).

Tolerances: Unless otherwise noted all dimensions are +/- .005 (0.13mm)

Custom designs available upon request.

ISO 9001:2008 Certified  
(Certificate No. 7566)



Federal I.D. #: 05-0394638  
Federal Supply #: 61638

Bellcore Mfg. Code: ADVI  
SIC Code: 3678

### A Note About Our RoHS Compliant Part Numbers

When insulator or plating materials changed, new part numbers have been established to assist our customers with inventory and documentation control. For existing products that already met RoHS requirements, such as Peel-A-Way® Sockets with Gold plating, part numbers have not changed.

All RoHS Compliant part numbers will be clearly indicated on data sheets and package labels. Look for our "RoHS Compliant Pb Free" symbol and easy-to-use How to Order tables throughout this catalog to assist with selecting RoHS Compliant interconnect products. For complete product information, including RoHS Compliance Test Reports, visit our web site at [www.advanced.com](http://www.advanced.com) or contact one of our experienced Manufacturer's Representatives or Distributors in your area.



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Tel: 800.424.9850 | 401.823.5200  
Fax: 401.823.8723  
[info@advanced.com](mailto:info@advanced.com) | [www.advanced.com](http://www.advanced.com)  
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Our Distributer for Germany:



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5 Energy Way  
West Warwick, Rhode Island 02893 USA

Tel: 800.424.9850 | 401.823.5200

Fax: 401.823.8723

E-mail: [info@advanced.com](mailto:info@advanced.com)

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