

CATALOG

BIVAR

2004

INNOVATIVE PACKAGING &
ASSEMBLY SOLUTIONS

COMPACT PCI ACCESSORIES
PRINTED CIRCUIT BOARD PACKAGING HARDWARE
COMPONENT MOUNTS AND SPACERS
LED MOUNTS AND HOLDERS

 **ACFComponents**
1-800227-2901 & Fasteners, Inc.

PACKAGING & ASSEMBLY SOLUTIONS

Being a market leader in PCB packaging and assembly solutions, Bivar is still one of the most trusted names in electronic PCB assembly hardware today. That's because we stay in tune with designers' challenges and work hard to create the finest selection of PCB packaging and assembly products in the industry. By keeping pace with the dynamic changes in electronics design and manufacturing, Bivar consistently creates innovative product "firsts," and continues to forge the way with superior technological solutions around the world.

LOWERING COSTS, IMPROVING QUALITY

All of Bivar's PCB packaging and assembly products provide cost-effectiveness through trouble-free installation, outstanding versatility and proven reliability in a multitude of applications and operating conditions. Many Bivar products offer the added benefit of being interchangeable with other brands, giving customers the solid assurance of low cost and availability.

UNPARALLELED QUALITY, CONSISTENT UNIFORMITY

Bivar is world-renown for providing low cost products that deliver accurate component alignment, precise elevation and consistent uniformity. By using our high-quality products, manufacturers can experience lower assembly costs, less rework, fewer rejects and greater control of the assembly process.

MORE CHOICES, NEW GROUNDING IDEAS

From PCB card guides and ejectors to inserter/extractors and handles, Bivar offers a selection of PCB hardware that is virtually unparalleled in the industry. In fact, many new product designs have evolved from Bivar's close relationship with engineers, designers and manufacturers in our pursuit to create low-cost solutions of superior value.

GLOBAL CITIZENSHIP, LONG-TERM COMMITMENT

Every product in this catalog is Pb Free and compliant with the RoHS directive (2002/95/EC) two years ahead of the deadline. Bivar takes our Global Citizenship seriously and goes to extreme lengths to minimize our impact on the environment through aggressive recycling programs and efficient use of natural resources. We believe that we can contribute to not only the quality of your product, but to our shared quality of life.



CLM SERIES

Bivar introduces Co-Extruded, Self-Retaining LED and Discrete Component Mounts that withstand higher operating and processing temperatures. CLM™ Series, patented technology employ bi-material process to create low cost design alternative to injection molded spacers. CLM™ Series designed to answer increasing demand for the use of mounts for LEDs and discrete components in applications where higher operating and process temperatures create problems for traditional mounts and components alike. CLM™ Series are capable of withstanding temperatures to 300°F (150°C)

COMPACT PCI

Bivar provides one of the industry's widest selections of IEEE 1101.10 compliant, Compact PCI® accessories including cutting edge, push button, locking ejector for Compact PCI® Assemblies. cPCI-E3 and cPCI-E2 was introduced in 2000 to meet the upgraded and stringent requirements of IEEE 1101.10 and PICMG 2.0 Compact PCI specifications. The cPCI-E3 provides a smaller more refined footprint with ample room for label application or hot stamping. The cPCI-E2 provides a simpler and more economical locking ejector. An asymmetrical precision molded spring made with Norel™, an engineering polymer, assures years of reliable use and positive locking.



CPCL PRODUCTS:

PCB Ejectors / Handles	1
Faceplate Assemblies	5
Compact PCI Card Guides	7
Solder Side Covers	9

CARD GUIDES:

Button Style Card Guides	12
Conductive Card Guides	13
Deep Channel Card Guides	14
Narrow Card Guides	15
Anti-Static Card Guides	16
Standard Card Guides	17
Flame Retardant Card Guides	18
Horizontal Card Guides	21
Vertical Card Guides	22

PCB EJECTORS / HANDLES:

Insertor / Extractors	24
PCB Handles	28

CUT-OUT COVERS:

Cut-Out Covers	34
----------------	----

LED MOUNTS / SPACERS:

Clips and Rings	35
Co-Extruded Self-Retaining LED and Discrete Mounts	39
Extruded Self-Retaining LED Mounts	40
Molded Self-Retaining LED Mounts	44
Rectangular LED Holders	47
Rectangular LED Spacers	48
Standard LED Spacers	49
T-1 1/4 Right Angle LED Holders	51
T-1 Right Angle LED Holders	56
Vertical Strip Mounts	63
Nylon Tubular Spacers	65
Self-Retaining PVC Screw Spacers	67
Universal Spacers for Discrete Components	70

COMPONENT MOUNTS / SPACERS:

Molded Power Transistor Mounts	73
Shoulder Washers	75
Capacitor Mounts	77
Integrated Circuit Mounts	81
Electrolytic Capacitor Mounts	82
TO-18 Mounts	83
TO-5 Mounts	87
Vertical Mounts	93

CRYSTAL MOUNTS / INSULATIONS:

Molded Mounts	94
Mylar Mounts	95

WASH-AWAY SPACERS:

Axial	96
General Purpose	96
On-End / Cordwood	97
General Purpose	97
Solid	97
Rectangular	98
Radial and Axial	98

PCB ASSEMBLY AIDS:

PCB Assembly Aids	99
-------------------	----

CPCI-E3 SERIES™

Cutting Edge, Push Button, Locking Ejector for CompactPCI® Assemblies

- IEEE 1101.10 and PICMG 2.0 Compliant
- Compact size and unique aesthetics
- Innovative positive locking, simple push button release
- Supports ESD contact and Hot Swap (optional micro-switch)
- Custom colors and labels available (subject to minimum order)

CPCI-E3™ was introduced to meet the upgraded and stringent requirements of IEEE 1101.10 and PICMG 2.0 CompactPCI specifications. The CPCI-E3 provides a smaller more refined footprint with ample room for label application or hot stamping. An asymmetrical precision molded spring made with Norel™, an engineering polymer, assures years of reliable use and positive locking. There are no special tools or fixtures required for installation.

Mounting Information:

Extrusions or Face Plates: 0.090" - 0.110" (2.3mm - 2.8mm) thick
All required hardware for installation is provided

Material Specifications:

Handle: UL Rated 94V-0, Black, 10% Glass Filled ABS
Push Button: UL Rated 94V-0, Red, Norel™
Oxygen Index: +28%
Hinge Block: Die-cast zinc alloy

Application Notes:

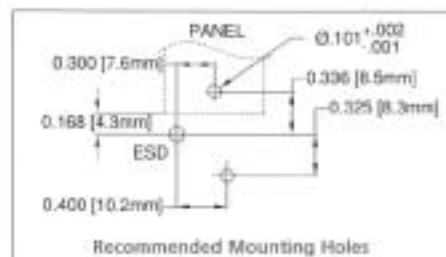
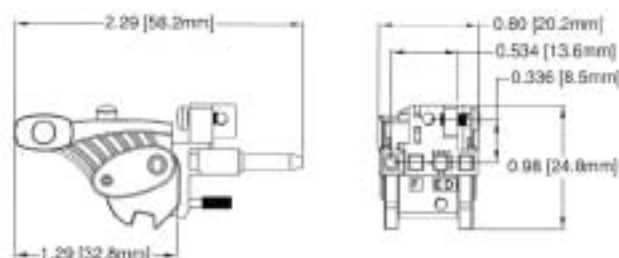
Compatible with 6U and 3U cards of both 4HP and 8HP widths
See pages 5 through 6 for recommended faceplate dimensions and mounting.

Ordering Instructions:

Part Number: CPCI-E3- X

Replace "X" with one of the following suffixes:

- | | |
|------|---|
| T | Top position ejector |
| B | Bottom position ejector |
| B-HS | Bottom Hot Swap micro-switch ejector with cable |



ACFComponents
1-800-227-2901 & Fasteners, Inc.

CPCI-E2 SERIES™

Large Push Button, Locking Ejector for CompactPCI® Assemblies

- IEEE 1101.10 and PICMG 2.0 Compliant
- Innovative positive locking, simple push button release
- Ergonomically designed for maximum functionality
- Supports ESD contact and Hot Swap (optional micro-switch)
- Custom colors available (subject to minimum order)



cPCI-E2™ was introduced to meet the upgraded and stringent requirements of IEEE 1101.10 and PICMG 2.0 Compact PCI specifications. The CPCI-E2 provides a simpler and more economical locking ejector assembly by incorporating an integral leaf spring made from Norel™, an engineering polymer. The locking mechanism construction assures years of reliable use and positive locking. There are no special tools or fixtures required for installation.

Mounting Information:

Extrusions or Face Plates: 0.090" - 0.110" (2.3mm - 2.8mm) thick.
All required hardware for installation is provided

Material Specifications:

Handle: UL Rated 94V-0, Black, Norel™
Push Button: UL Rated 94V-0, Blue, 10% Glass Filled ABS
Oxygen Index: +28%
Hinge Block: Die-cast zinc alloy

Application Notes:

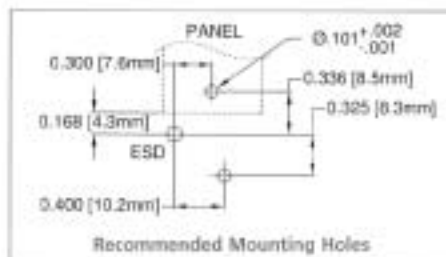
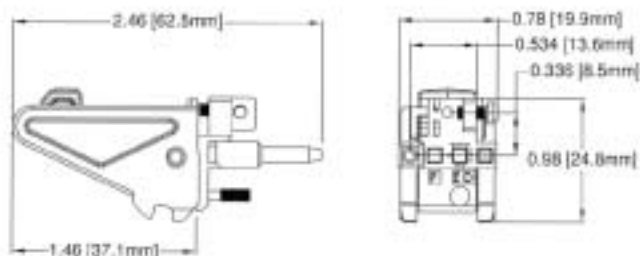
Compatible with 6U and 3U cards of both 4HP and 8HP widths
See pages 5 through 6 for recommended faceplate dimensions and mounting.

Ordering Instructions:

Part Number: CPCI-E2- X

Replace "X" with one of the following suffixes:

T	Top position ejector
B	Bottom position ejector
B-HS	Bottom Hot Swap micro-switch ejector w/ cable



CPCI-E1 SERIES™

Industry Standard Ejector for CompactPCI® Assemblies

- IEEE 1101.10 and PICMG 2.0 Compliant
- Industry standard configuration, mechanical locking
- Generous surface area for hot stamping
- Supports ESD contact and Hot Swap (optional micro-switch)
- Compatible with many manufacturers standard devices

CPCI-E1™ was introduced to meet the requirements of IEEE 1101.10 and PICMG 2.0 CompactPCI specifications. The CPCI-E1 provides a simple mechanical lock with the full width of the handle seating with the full width of the die-cast hinge block. The locking mechanism construction assures years of reliable use and positive locking. There are no special tools or fixtures required for installation.

Mounting Information:

Extrusions or Face Plates: 0.090" - 0.110" (2.3mm - 2.8mm) thick.
All required hardware for installation is provided

Material Specifications:

Handle: UL Rated 94V-0, Black, Nylon
Oxygen Index: +28%
Hinge Block: Die-cast zinc alloy

Application Notes:

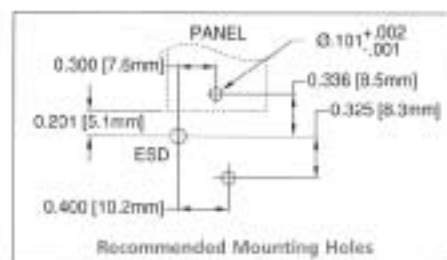
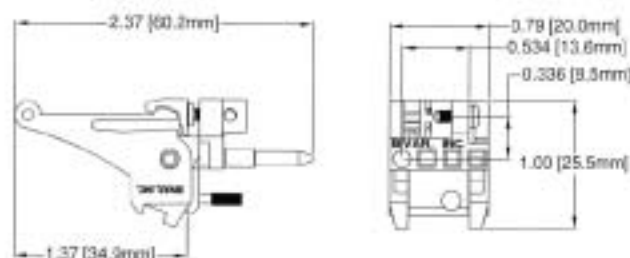
Compatible with 6U and 3U cards of both 4HP and 8HP widths
See pages 5 through 6 for recommended faceplate dimensions and mounting.

Ordering Instructions:

Part Number: CPCI-E1- X

Replace "X" with one of the following suffixes:

- | | |
|------|---|
| T | Top position ejector |
| B | Bottom position ejector |
| B-HS | Bottom Hot Swap micro-switch ejector w/ cable |

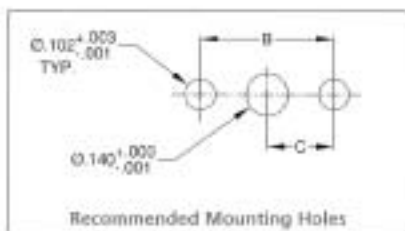
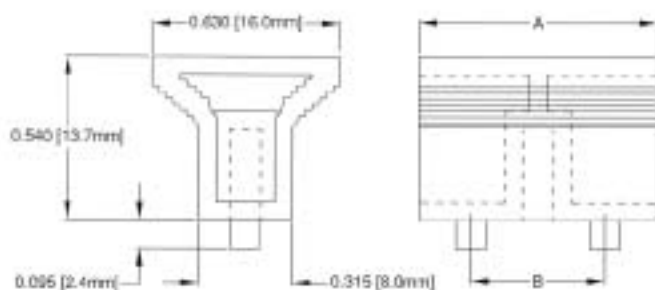


ACFComponents
1-800-227-2901
& Fasteners, Inc.

CP-XHP SERIES™

Handles for CompactPCI®, VME® and Eurocard Faceplates

- Compatible with CompactPCI® and VME® faceplates
- Innovative single fastener design reduces labor cost
- Generous surface area for hot stamping
- 3HP through 6HP in 1HP increment widths
- Compatible with many manufacturers standard devices
- Custom colors and hot stamping available (*subject to minimum orders*)



CP-XHP™ was introduced to meet the requirements of IEEE 1101.10, PICMG 2.0 CompactPCI as well as VME and EUROCARD specifications. The CP-XHP provides a simple single fastener mounting method that lowers assembly cost and component count. Dual locating pins assure accurate horizontal and vertical alignment on a wide range of faceplates. There are no special tools or fixtures required for installation.

Mounting Information:

Extrusions or Face Plates: 0.047" - 0.125" (1.2mm - 3.2mm) thick
All required hardware for installation is provided including a self-tapping metal screw

Material Specifications:

Handle: UL Rated 94V-0, Black, ABS
Oxygen Index: +28%

Application Notes:

Compatible with all cards of 3HP through 6HP widths

STS-6-P38

Phillips Pan Head Stainless Steel Screw provided with each handle

Part No.	A	B
CP-3HP	.600 (15.2)	.450 (11.4)
CP-4HP	.800 (20.3)	.450 (11.4)
CP-5HP	1.000 (25.4)	.450 (11.4)
CP-6HP	1.200 (30.5)	.800 (20.3)

ACFComponents
1-800-227-2901 & Fasteners, Inc.

CPCI-3U4-XX SERIES™

Complete 3U x 4HP Faceplate Assemblies for CompactPCI®

- IEEE 1101.10 and PICMG 2.0 Compliant
- Wide selection of ejectors
- Full EMI shielding, garter spring
- 3U x 4HP standard faceplate
- Hot swap, ESD and polarity keying compatible
- Custom punched and screened options available *(subject to quotation)*

CPCI-3U4 Series™ was introduced to meet the requirements of IEEE 1101.10 and PICMG 2.0 CompactPCI specifications. The CPCI-3U4 provides a completely assembled front panel solution for the demanding peripheral designer looking to meet the stringent requirements of CompactPCI. Full EMI shielding, PCB retainers and ejector systems are supplied ready for assembly with 3U PCBs. There are no special tools or fixtures required for installation.

Material Specifications:

Face Plate: Aluminum

EMI Shielding: Beryllium Copper Garter Spring

Ejectors: See pages 1-3

Application Notes:

Custom punched and screened panels are available. Please contact Bivar at 1-800-SPACERS for additional information and Design Your Own work sheets.

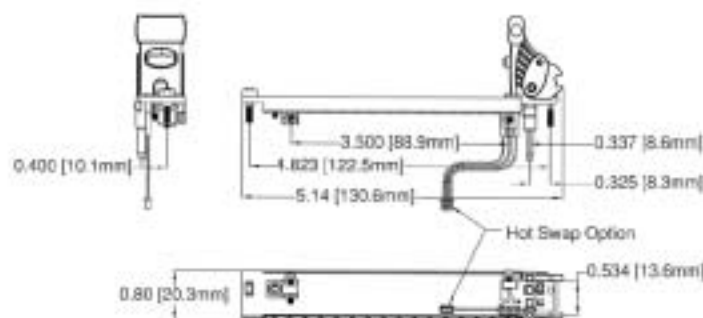
Ordering Instructions:

Part Number: CPCI-3U4-XX

Replace "XX" with one of the following suffixes:

- | | |
|-------|---|
| E1 | Ejector style 1 see page 3 |
| E1-HS | Ejector style 1 hot-swap micro-switch with cable (see page 3) |
| E2 | Ejector style 2 see page 2 |
| E2-HS | Ejector style 2 hot-swap micro-switch with cable (see page 2) |
| E3 | Ejector style 3 see page 1 |
| E3-HS | Ejector style 3 hot-swap micro-switch with cable (see page 1) |

No Suffix indicates a blank "Filler" panel with EMI shielding



ACFComponents
1-800-227-2901 & Fasteners, Inc.

CPCI-6U4-XX SERIES™

Complete 6U x 4HP Faceplate Assemblies for CompactPCI®

- IEEE 1101.10 and PICMG 2.0 Compliant
- Wide selection of ejectors
- Full EMI shielding, garter spring
- 6U x 4HP standard faceplate
- Hot swap, ESD and polarity keying compatible
- Custom punched and screened options available *(subject to quotation)*

CPCI-6U4 Series was introduced to meet the requirements of IEEE 1101.10 and PICMG 2.0 CompactPCI specifications. The CPCI-6U4 provides a completely assembled front panel solution for the demanding designer looking to meet the stringent requirements of CompactPCI. Full EMI shielding, PCB retainers and ejector systems are supplied ready for assembly with 6U PCBs. There are no special tools or fixtures required for installation.

Material Specifications:

Face Plate: Aluminum

EMI Shielding: Beryllium Copper Garter Spring

Ejectors: See pages 1-3

Application Notes:

Custom punched and screened panels are available. Please contact Bivar at 1-800-SPACERS for additional information and Design Your Own work sheets.

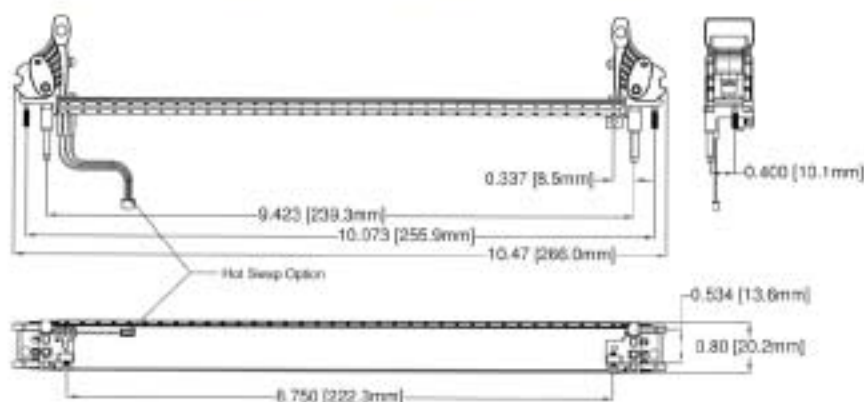
Ordering Instructions:

Part Number: CPCI-6U4-XX

Replace "XX" with one of the following suffixes:

- | | |
|-------|---|
| E1 | Ejector style 1 (see page 3) |
| E1-H5 | Ejector style 1 hot-swap micro-switch with cable (see page 3) |
| E2 | Ejector style 2 (see page 2) |
| E2-H5 | Ejector style 2 hot-swap micro-switch with cable (see page 2) |
| E3 | Ejector style 3 (see page 1) |
| E3-H5 | Ejector style 3 hot-swap micro-switch with cable (see page 1) |

No Suffix indicates a blank "Filler" panel with EMI shielding



CPCI-2000™

Universal Snap-in Card Guides for Compact PCI® Application

- IEEE 1101.10 and PICMG 2.0 Compliant 150mm card guide
- Simple snap-in installation in industry standard extrusions
- Polarity keying compatible for proprietary or standard schemes
- Grounding clip available for ESD, Hot Swap and polarity compatibility
- Available in white and red for easy identification of systems slot
- Available with 10% glass-filled ABS for added rigidity (subject to minimum order)

CPCI-2000™, introduced to meet the upgraded and stringent requirements of IEEE 1101.10 and PICMG 2.0 CompactPCI specifications. Rigid, strong and economical, CPCI-2000™ provide the specification compliance and installed reliability that your most demanding rack-mounted products require. Retention is firm and there are no special tools or fixtures required for installation.

Mounting Information:

Extrusions or Metal Plates: 0.047" - 0.090"

(1.2mm - 2.3mm) thick

Hole Size: 0.125" (3.2mm) diameter + 0.003"

(0.08mm) - 0.001" (0.03mm) on 0.200" (5.08mm) centers

Material Specifications:

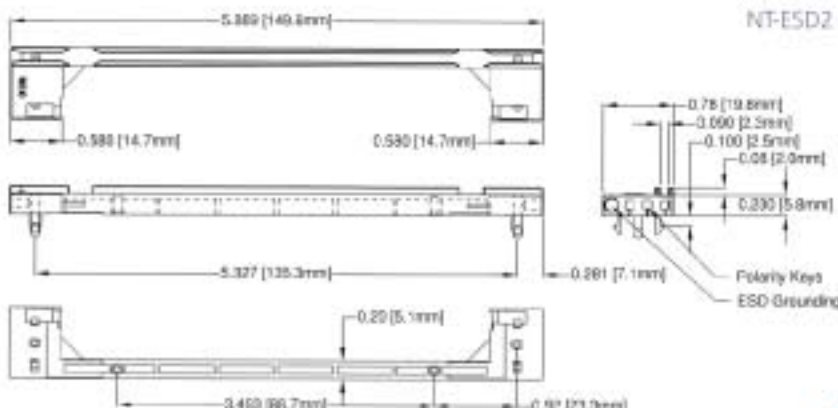
UL Rated 94V-O, Natural, ABS

Clip: Phosphor bronze, tin plated

Oxygen Index: +28%

Application Notes:

Compatible with 6U and 3U cards of both 4HP and 8HP widths. Blind holes are provided as standard for additional mounting screws if desired. Guides are keyed for top and bottom mounting, ambidextrously. Transition guides are available for rear I/O and non-compliant designs using CompactPCI form factors and hardware see page 8.



Ordering Instructions:

Part Number: CPCI-2000 XX Replace "XX" with one of the following suffixes to complete part number:

RD	Red color
NT	Natural/White color
RD-ESD1	Bottom Red color with ESD grounding clip
RD-ESD2	Top Red color with ESD grounding clip
NT-ESD1	Bottom Natural/White color with ESD grounding clip
NT-ESD2	Top Natural/White color with ESD grounding clip

ACFComponents
1-800-227-2901
& Fasteners, Inc.

CPCI-TX SERIES™

Transition Guides for CompactPCI® Applications

- IEEE 1101.10 and PICMG 2.0 Compliant transition guide
- Simple snap-in installation in industry standard extrusions
- Polarity keying compatible for proprietary or standard schemes
- Conductive inserts available for ESD, Hot Swap and polarity compatibility
- Available in white and red for easy identification of systems slot
- Available with 10% glass-filled ABS for added rigidity (*subject to minimum order*)



cPCI-Tx Series™ introduced to meet the upgraded and stringent requirements of IEEE 1101.10 and PICMG 2.0 CompactPCI specifications. Supports rear I/O and modified architectures. Rigid, strong and economical, CPCI-Tx's provide the specification compliance and installed reliability that your most demanding rack-mounted products require. Retention is firm and there are no special tools or fixtures required for installation. Hot Swap compatible, ESD grounding and IEEE 1101.10 compliant ejectors are available on pages 1 through 3.

Mounting Information:

Extrusions or Metal Plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick
Hole Size: 0.125" (3.2mm) diameter + 0.003 (0.08mm) - 0.001 (0.03mm) on 0.200" (5.08mm) centers

Material Specifications:

UL Rated 94V-0, ABS
Oxygen Index: +28%

Application Notes:

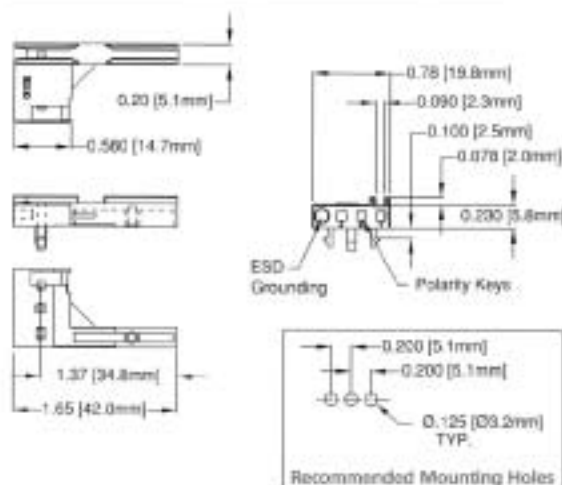
Blind holes are provided as standard for additional self-tapping mounting screws if desired

Ordering Instructions:

Part Number: CPCI-T XX

Replace "XX" with the following suffix to complete part number:

- RD-T Red, Top (ABC)
- NT-T Natural / White color, Top (ABC)
- RD-B Red, Bottom (DEF)
- NT-B Natural / White, Bottom (DEF)
- RD-T-ESD Red, Top (ABC) with ESD grounding clip
- NT-T-ESD Natural / White Top (ABC) with ESD grounding clip
- RD-B-ESD Red, Bottom (DEF) with ESD grounding clip
- NT-B-ESD Natural / White, Bottom (DEF) with ESD grounding clip



ACFComponents
1-800-227-2901 & Fasteners, Inc.

SSC-3X SOLDER SIDE COVERS™

Solder Side Covers for Host Swappable PCBs

- Meets Bell Core SpecGR-1421-CORE, EIA-541 and MIL-PRF-81705D
- Full protection for the Solder Side of PCBs
- ESD dissipative PVC provides protection from accidental ESD and accidental contact with Solder Side of PCBs
- 3U and 6U standard sizes
- Custom punched or application specific protection available (*subject to minimum order and quotation*)

SSC Series was introduced to meet the emerging hot swapping and removable PCB requirements. Manufactured from AntiStat® certified material, the SSC series easily mounts to existing PCBs via four small screws at the corners of the PCB.

Mounting Information:

Four #4 size panhead screws required for each Solder Side Cover
Hole Size: 0.125" (3.2mm) diameter + 0.003" (0.08mm) - 0.001" (0.03mm)

Material Specifications:

VPI Mirrex 7004 AntiStat® PVC Film

Bell Core GR-1421-CORE

EIA-541

MIL-PRF-81705D

ESD Association ADV2-0-1994 @ 12% Humidity

Oxygen Index: +28%

Application Notes:

Additional configurations and custom punched through holes and slots are available. Contact Bivar at 1-800-SPACERS for additional information or use the Design Your Own work sheets on page 10-11.

Note:

There are only two standard part numbers:

6U = SSC-36

3U = SSC-33



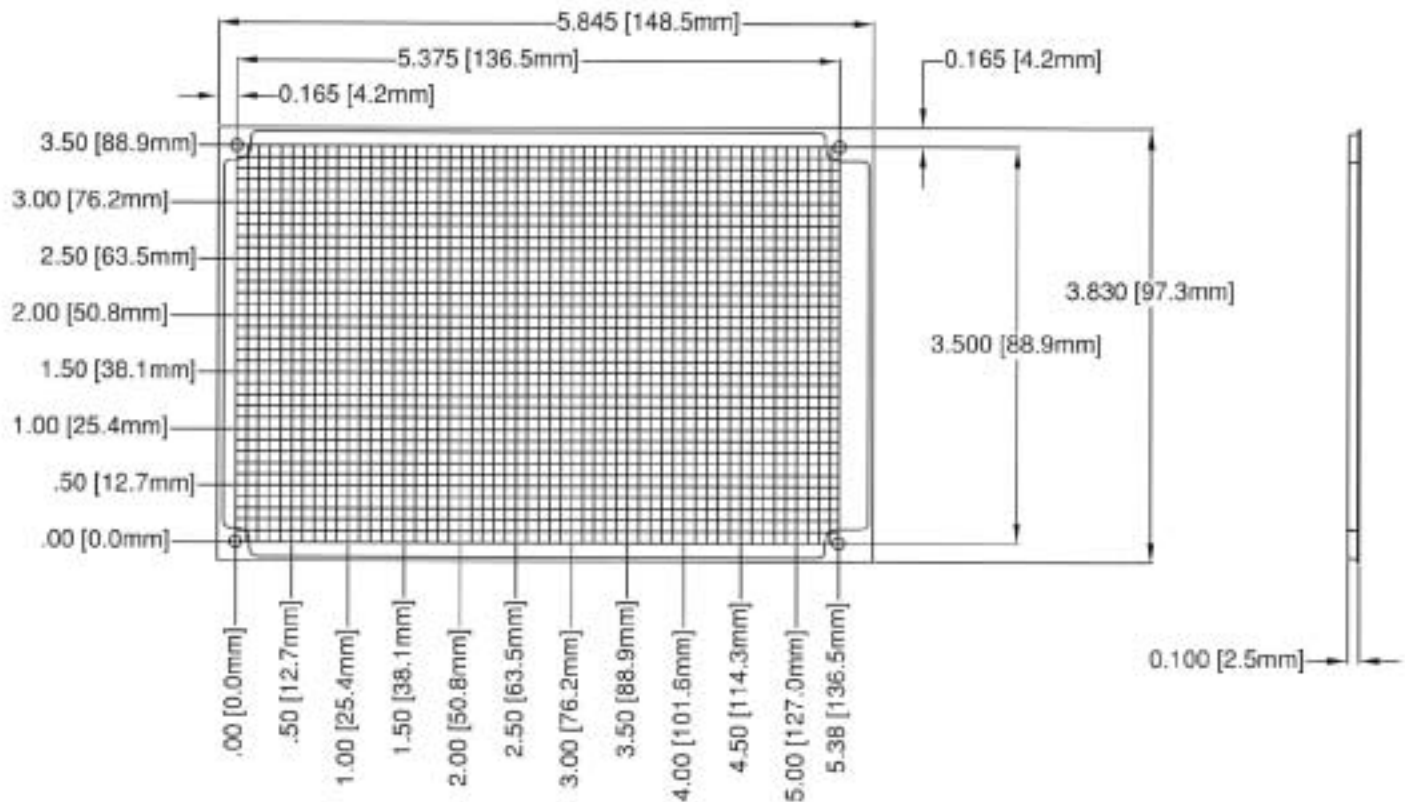
 **ACFComponents**
1-800-227-2901 & Fasteners, Inc.

SOLDER SIDE COVER

Design Your Own Solder Side Cover

- The appropriate drawing with your application-specific slots and holes
- Fax back to Bivar Engineering at 949.951.3974
- Bivar will contact you with price and delivery

SSC-33-XXXX For 3U



Company:

Name:

Fax:

Phone:

Application:

Quantities to be quoted:

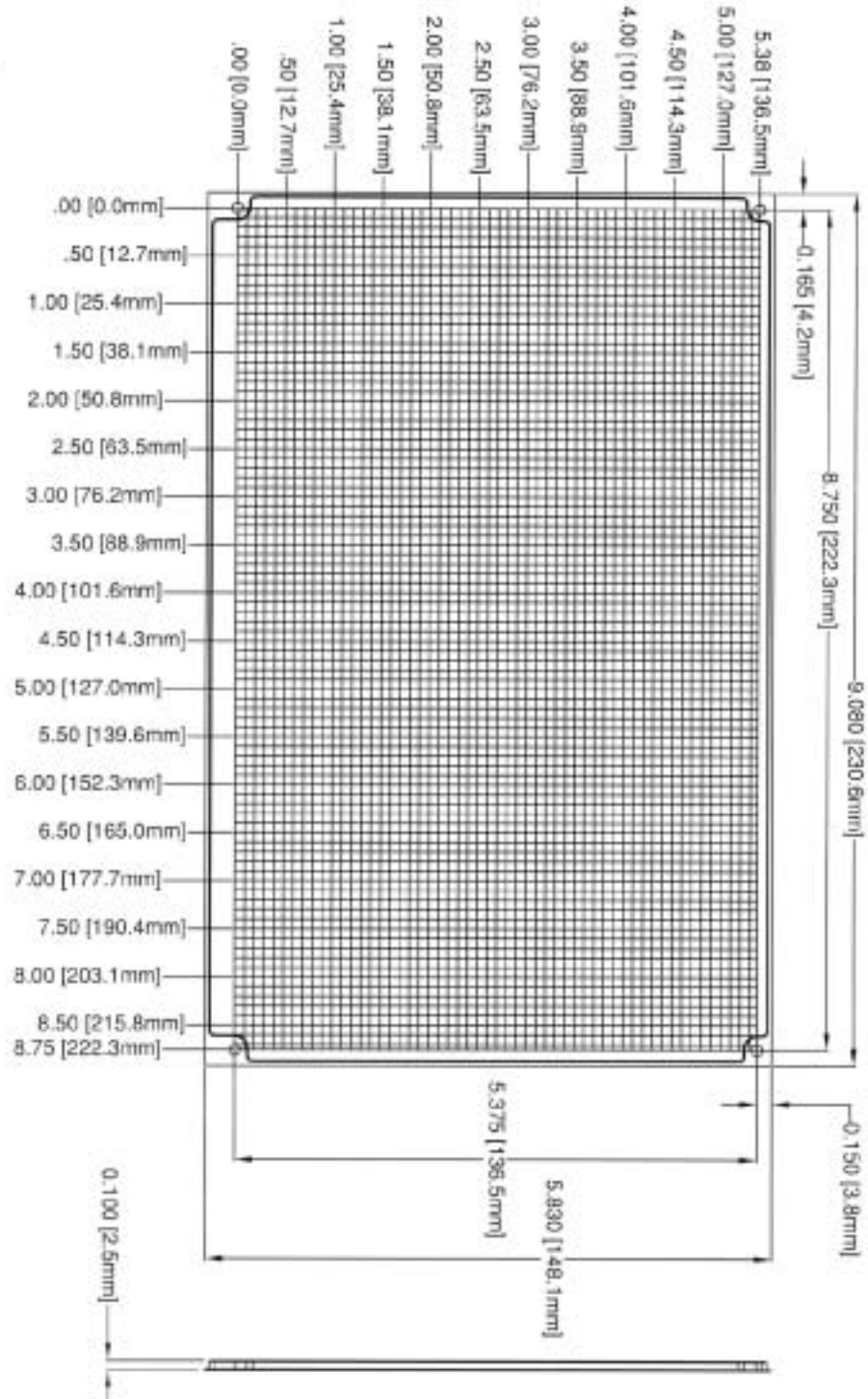
SOLDER SIDE COVER

Design Your Own Solder Side Cover

- The appropriate drawing with your application-specific slots and holes
- Fax back to Bivar Engineering at 949.951.3974
- Bivar will contact you with price and delivery



SSC-36-XXXX		For 6U
Company: _____		
Name: _____		
Fax: _____		Phone: _____
Application: _____		
Quantities to be quoted: _____		



CIRC-O-GIDE™ Snap-In Button-Style Card Guides

- 35 Standard configurations
- Precision Molded for rigidity, strength and heat resistance from 94V-O UL rated materials
- Improves PCB and system cooling
- Supports any spacing, any length and any PCB thickness



CIRC-O-GIDEs provide the ultimate design flexibility and installed reliability by eliminating the continuous length of the conventional card guide. Retention is firm and there are no special tools or fixtures required for installation.

Mounting Information:

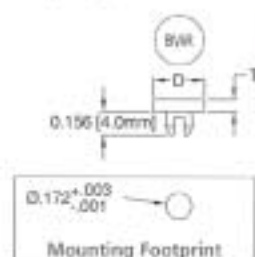
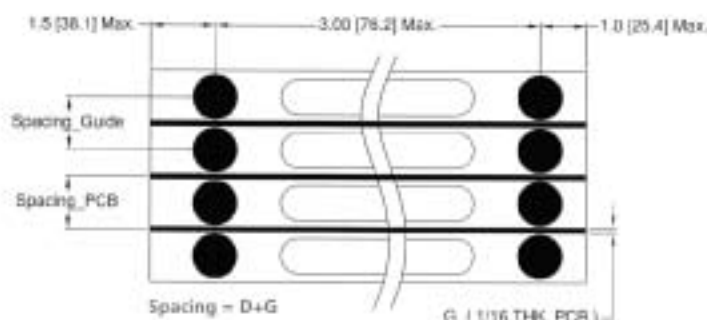
Snap-in metal plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick
Hole Size: 0.172" (4.4mm) diameter +0.003"
(0.08mm), - 0.001" (0.03mm), 11/64th drill

Material Specifications:

UL Rated 94V-O, Black, 10% Glass Filled 6 Nylon
per ASTM D4066 PA210G10
Oxygen Index: +28%
UL File #E84658

Application Notes:

Spacing equals the CIRC-O-GIDE™ diameter plus the channel gap of 0.076" (1.9mm) for 1/16th PCBs, 0.102" (2.6mm) for 3/32nd PCBs and 0.130" (3.3mm) for 1/8th PCBs.



Circ-O-Gide

Part No.	PCB Spacing*	T ±.005 (.13)	D ±.003 (.08)	Price Code
312-078	.312 (7.9)	.078 (2.0)	.236 (6.0)	I
312-109	.312 (7.9)	.109 (2.8)	.236 (6.0)	I
312-125	.312 (7.9)	.125 (3.2)	.236 (6.0)	I
312-156	.312 (7.9)	.156 (4.0)	.236 (6.0)	G
312-187	.312 (7.9)	.187 (4.8)	.236 (6.0)	G
400-078	.400 (10.2)	.078 (2.0)	.324 (8.2)	G
400-109	.400 (10.2)	.109 (2.8)	.324 (8.2)	G
400-125	.400 (10.2)	.125 (3.2)	.324 (8.2)	G
400-156	.400 (10.2)	.156 (4.0)	.324 (8.2)	H
400-187	.400 (10.2)	.187 (4.8)	.324 (8.2)	H
500-078	.500 (12.7)	.078 (2.0)	.424 (10.8)	H
500-109	.500 (12.7)	.109 (2.8)	.424 (10.8)	H
500-125	.500 (12.7)	.125 (3.2)	.424 (10.8)	H
500-156	.500 (12.7)	.156 (4.0)	.424 (10.8)	I
500-187	.500 (12.7)	.187 (4.8)	.424 (10.8)	I
600-078	.600 (15.2)	.078 (2.0)	.524 (13.3)	I
600-109	.600 (15.2)	.109 (2.8)	.524 (13.3)	I
600-125	.600 (15.2)	.125 (3.2)	.524 (13.3)	I

*Spacing for 1/16" (1.6) PCBs

Circ-O-Gide

Part No.	PCB Spacing*	T ±.005 (.13)	D ±.003 (.08)	Price Code
600-156	.600 (15.2)	.156 (4.0)	.524 (13.3)	I
600-187	.600 (15.2)	.187 (4.8)	.524 (13.3)	I
750-078	.750 (19.1)	.078 (2.0)	.674 (17.1)	I
750-109	.750 (19.1)	.109 (2.8)	.674 (17.1)	I
750-125	.750 (19.1)	.125 (3.2)	.674 (17.1)	I
750-156	.750 (19.1)	.156 (4.0)	.674 (17.1)	I
750-187	.750 (19.1)	.187 (4.8)	.674 (17.1)	K
800-078	.800 (20.3)	.078 (2.0)	.724 (18.4)	I
800-109	.800 (20.3)	.109 (2.8)	.724 (18.4)	I
800-125	.800 (20.3)	.125 (3.2)	.724 (18.4)	I
800-156	.800 (20.3)	.156 (4.0)	.724 (18.4)	K
800-187	.800 (20.3)	.187 (4.8)	.724 (18.4)	K
1000-078	1.00 (25.4)	.078 (2.0)	.924 (23.5)	K
1000-109	1.00 (25.4)	.109 (2.8)	.924 (23.5)	K
1000-125	1.00 (25.4)	.125 (3.2)	.924 (23.5)	K
1000-156	1.00 (25.4)	.156 (4.0)	.924 (23.5)	K
1000-187	1.00 (25.4)	.187 (4.8)	.924 (23.5)	K

*Spacing for 1/16" (1.6) PCBs

CONDUCTIVE INSERTS™

Stainless Steel Channel Inserts for Card Guides

- Stainless steel per MIL-S-5059
- Fully conductive with less than 10Ω resistance over 8.0" (203mm)
- Compatible with most of Bivar's standard card guides
- Retrofit compatible, does not require new foot print

0.006" stainless steel channel inserts are available to convert all Nylon card guides to fully conductive grounding planes. Inserts snap over the mounting pylon and form a 0.075" wide conductive floor in all Bivar card guides.

The conductive Insert is an excellent way to answer growing concerns in EMI (electromagnetic interference), RFI (radio frequency interference), and EMC (electromagnetic contamination) grounding applications. Bivar's Conductive Insert card guides offer a very efficient and cost-effective alternative to metal and metalized card guides. Stainless steel will not corrode or oxidize, has a long shelf life, and will not react with most chemicals and solvents used in the assembly process.

Material Specifications:

301 Stainless steel per MIL-S-5059
1/2 Hard, Rockwell 36.0

Application Notes:

Compatible with:

ECON-O-GIDE®
TEMP-O-GIDE®
GRIP-O-GIDE®
COMP-O-GIDE™
NARR-O-GIDE™
STAT-O-GIDE™

Ordering Instructions:

Add suffix "CI" to any standard Bivar card guide part number to indicate the fully conductive version:

Standard	With Conductive Insert
E-650	E-650-CI
FR-750	FR-750-CI
DC-800	DC-800-CI
SSD-300	SSD-300-CI
SDC-300	SDC-300-CI
N-450-2	N-450-2-CI
S-450	S-450-CI



 **ACF Components**
1-800-227-2901 & Fasteners, Inc.

GRIP-O-GIDE™

Deep Channel Card guides for $\frac{1}{16}$ "th, $\frac{3}{32}$ "nd and $\frac{1}{8}$ "th PCBs

- Deep Channel (0.200") for severe duty, high shock and vibration environments
- Precision Molded for rigidity, strength and heat resistance from 94V-O UL rated materials
- Stainless Steel Conductive Inserts available for all sizes (see page 13)
- Three channels widths for $\frac{1}{16}$ "th, $\frac{3}{32}$ "nd and $\frac{1}{8}$ "th PCBs
- Available in a Static Dissipative 94V-O rated material



Rigid, strong and economical, GRIP-O-GIDEs provide the installed reliability that your most demanding products require. Retention is firm and there are no special tools or fixtures required for installation. Static dissipative materials are available by special order with surface resistivity of 105-109.

Mounting Information:

Snap-in metal plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick
Hole Size: Front - 0.187" (4.7mm) diameter +0.003" (0.08mm) - 0.001" (0.03mm), 3/16th drill.
Rear & Center - 0.250" (6.35mm) x 0.182" (4.62mm) + 0.003" (0.08mm), - 0.001" (0.03mm)

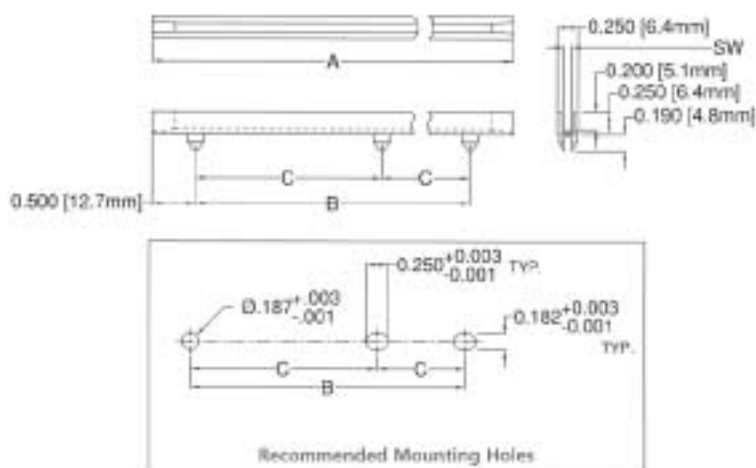
Material Specifications:

Handle: UL Rated 94V-O, Black, 10% Glass Filled 6 Nylon per ASTM D4066 PA21DG10
Oxygen Index: +28%
UL File #E84658

Application Notes:

Slotting or elongating of the second and third mounting hole is recommended to allow for length variations and to provide for easier assembly.

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended. Open sealed vapor barrier bags at the time of production to assure optimum shelf life.



Grip-O-Gide

2-1/2" thru 8" Lengths

Part No.	A + .002 (1.6)	B + .012 (.31)	C + .015 (.38)	S.W. + .005 (.13)	PCB Thickness	DESC DWG NO.
DC-250	2.5 (63.5)	1.5 (38.1)	—	—	1/16 (1.6)	84101-01
DC-450	4.5 (114.3)	3.5 (88.9)	—	880 (2.0)	—	84101-02
DC-600	6.0 (152.4)	5.0 (127.0)	—	—	3/32 (2.4)	84101-03
DC-800	8.0 (203.2)	7.0 (177.8)	3.5 (88.9)	—	—	84101-04
DC-450-102	4.5 (114.3)	3.5 (88.9)	—	102 (2.6)	—	—
DC-600-102	6.0 (152.4)	5.0 (127.0)	—	—	—	—
DC-800-102	8.0 (203.2)	7.0 (177.8)	3.5 (88.9)	—	—	—
DC-450-130	4.5 (114.3)	3.5 (88.9)	—	132 (3.4)	1/8 (3.2)	84101-22
DC-600-130	6.0 (152.4)	5.0 (127.0)	—	—	—	84101-23
DC-800-130	8.0 (203.2)	7.0 (177.8)	3.5 (88.9)	—	—	84101-24

NARR-O-GIDE™

Narrow Width Press in Card guides

- 17 Standard Lengths from 2-1/2" to 8-1/2" in 1/2" increments
- Precision Molded for strength and rigidity
- Stainless Steel Conductive Inserts available for all lengths (see page 13)
- Narrow width allows for higher densities and optimum air flow

NARR-O-GIDE, was introduced to meet the demand for tighter PCB packaging densities in modern card cages. Rigid, strong and economical, NARR-O-GIDES provide the design flexibility and installed reliability that your most demanding products require. Retention is firm via a simple press-fit application and there are no special tools or fixtures required.

Mounting Information:

Snap-in metal plates: 0.047" - 0.085" (1.2mm - 2.2mm) thick
Hole Size: Front - 0.125" (3.2mm) diameter + 0.003 (0.08mm)
- 0.001 (0.03mm) Rear & Center - 0.120 (3.0mm) x 0.218 (5.50mm)

Standard Material Specifications:

UL Rated 94V-2 Natural, 6/6 Nylon per ASTM D4066 PA111
Oxygen Index: +28%
UL File #EB4658

Optional 94V-0 Material Specifications:

UL Rated 94V-0, White (suffix 94V-0 WE) or Black (suffix 94V-0 BK), 6/6 Nylon per ASTM D4066 PA111. Subject to minimum order.
Oxygen Index: +28%
UL File #EB4658

Application Notes:

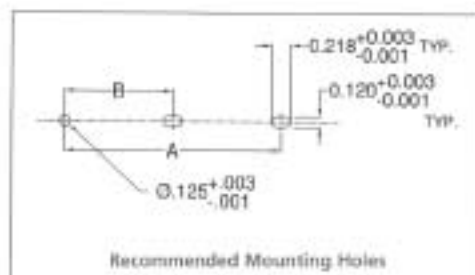
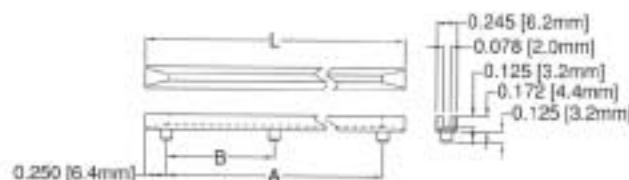
Slotting or elongating of the second and third mounting hole is recommended to allow for length variations and to provide for easier assembly.

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended. Open sealed vapor barrier bags at the time of production to assure optimum shelf life.



Narr-O-Gide 2-1/2" thru 8-1/2" Lengths

Part No.	L ±0.020 (.76)	A ±0.024 (.61)	B ±0.016 (.41)
N-250-2	2.5 (63.5)	2.0 (50.8)	—
N-300-2	3.0 (76.2)	2.5 (63.5)	—
N-350-2	3.5 (88.9)	3.0 (76.2)	—
N-400-2	4.0 (101.6)	3.5 (88.9)	—
N-450-2	4.5 (114.3)	4.0 (101.6)	—
N-500-2	5.0 (127.0)	4.5 (114.3)	—
N-550-2	5.5 (139.7)	5.0 (127.0)	—
N-600-2	6.0 (152.4)	5.5 (139.7)	—
N-650-2	6.5 (165.1)	6.0 (152.4)	—
N-700-2	7.0 (177.8)	6.5 (165.1)	—
N-700-3	7.0 (177.8)	6.5 (165.1)	3.25 (82.5)
N-750-2	7.5 (190.5)	7.0 (177.8)	—
N-750-3	7.5 (190.5)	7.0 (177.8)	3.50 (88.9)
N-800-2	8.0 (203.2)	7.5 (190.5)	—
N-800-3	8.0 (203.2)	7.5 (190.5)	3.75 (95.2)
N-850-2	8.5 (215.9)	8.0 (203.2)	—
N-850-3	8.5 (215.9)	8.0 (203.2)	4.00 (101.6)



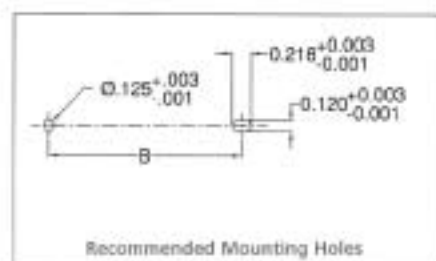
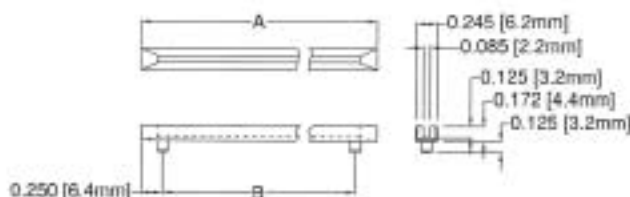
STAT-O-GIDE™

Anti-Static Press-In Card Guides

- Static Dissipative. Surface Resistivity of $10^5 - 10^9$ ohms/square (ASTM D257)
- Narrow width (less than 1/4") allows maximum density and optimum air flow

0.001 (0.025mm)

0.001 (0.025mm)



STAT-O-GIDES™ Precision molded to tight tolerances from static dissipative material as defined by the Department of Defense Handbook 263 (DOD-HDBK-263), these guides are specifically designed to prevent ESD in applications requiring protection for static-sensitive devices.

Mounting Information:

Press-in metal plates: 0.048" / 0.085" (1.2) / (2.2) thick. U.S. sheet metal gauges 18/14
Hole size: Front - 0.125 (3.2) dia. + 0.003 (0.08) - 0.001 (0.3),
Rear - 0.218" (5.5) x 0.120" (3.0) + 0.003 (0.08) - 0.001 (0.3)

Material Specifications:

6/6 Nylon with permanently bound-in electrical grade PAN fibers which prevent sluffing or transfer of conductive material. Gray in color. Static decay performance meets or exceeds both NFPA and MIL-B-81705B requirements.

Oxygen Rating Index:

Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (.40) XX = $\pm .010$ (.254)

X = $\pm 1/64$ (.40) XXX = $\pm .005$ (.127)

Note:

Slotting or elongating of 2nd mounting holes is recommended to allow for length variations in molding and assembly ease.

Stat-O-Gide 2-1/2" thru 8-1/2" lengths
Color: Gray

Part No.	A: $\pm .030$ (.76)	B: $\pm .024$ (.61)
S-250	2.538 (63.5)	2.030 (51.6)
S-300	3.045 (75.2)	2.538 (64.5)
S-350	3.553 (88.0)	3.045 (77.3)
S-400	4.060 (101.6)	3.553 (90.2)
S-450	4.568 (114.3)	4.060 (103.1)
S-500	5.075 (127.0)	4.568 (116.0)
S-550	5.583 (139.7)	5.075 (129.0)
S-600	6.090 (152.4)	5.583 (141.8)
S-650	6.598 (165.1)	6.090 (154.7)
S-700	7.105 (178.0)	6.598 (167.6)
S-750	7.613 (193.4)	7.105 (180.5)
S-800	8.120 (206.2)	7.613 (193.4)
S-850	8.628 (219.2)	8.120 (205.2)

ACFComponents
1-800-227-2901 & Fasteners, Inc.

ECON-O-GIDE®

Standard Snap-in Card Guides for 1/16" PCBs

- 25 Standard Lengths from 2"-14" in 1/2" increments
- Precision Molded for rigidity, strength and heat resistance from 94V-0 UL rated materials
- Stainless Steel Conductive Inserts available for all lengths (see page 13)

ECON-O-GIDE is the industry standard by which all other snap-in card guides are judged. Rigid, strong and economical, ECON-O-GIDES provide the design flexibility and installed reliability that your most demanding products require. Retention is firm and there are no special tools or fixtures required for installation. Locking ejectors can be used for positive PCB retention and insertion/extraction ease (see page 33 for details).

Mounting Information:

Snap-in metal plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick
Hole Size: Front - 0.172" (4.4mm) diameter + 0.003" (0.08mm) - 0.001" (0.03mm) 11/64th drill
Center - 0.220" x 0.168" + 0.003" - 0.001"
Rear - 0.235" x 0.168" + 0.003" - 0.001"

Material Specifications:

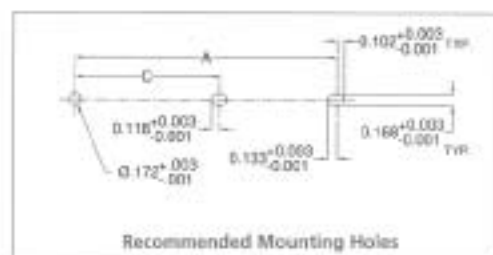
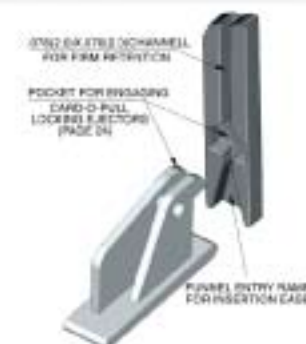
UL Rated 94V-0, Black, 10% Glass-Filled 6 Nylon
per ASTM D4066 PA210G10
Oxygen Index: +28%
UL File #E84658

Application Notes:

Slotting or elongating of the second and third mounting hole is recommended to allow for length variations and to provide for easier assembly. Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended. Open sealed vapor barrier bags at the time of production to assure optimum shelf life.

0.20 (5.1mm)

0.003 (0.08mm)



Recommended Mounting Holes

Econ-O-Gide 2" thru 8" Lengths

Part No.	L ±.062 (1.6)	A +.016 (.41) -.032 (.81)	DESC DWG. NO.
E-200	2.0 (50.8)	1.016 (25.8)	-
E-250	2.5 (63.5)	-	84006-01
E-300	3.0 (76.2)	1.516 (38.5)	84006-02
E-350	3.5 (88.9)	-	84006-03
E-400	4.0 (101.6)	-	84006-04
E-450	4.5 (114.3)	3.016 (76.6)	84006-05
E-500	5.0 (127.0)	-	84006-06
E-550	5.5 (139.7)	-	84006-07
E-600	6.0 (152.4)	5.016 (127.4)	84006-08
E-650	6.5 (165.1)	-	84006-09
E-700	7.0 (177.8)	-	84006-10
E-750	7.5 (190.5)	6.031 (153.2)	84006-11
E-800	8.0 (203.2)	-	84006-12

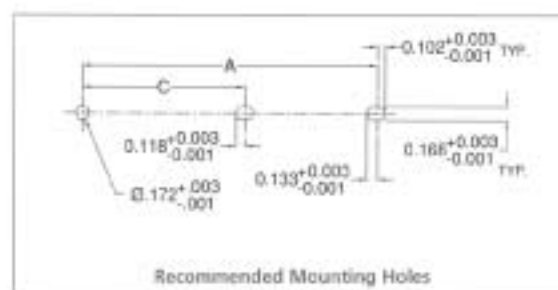
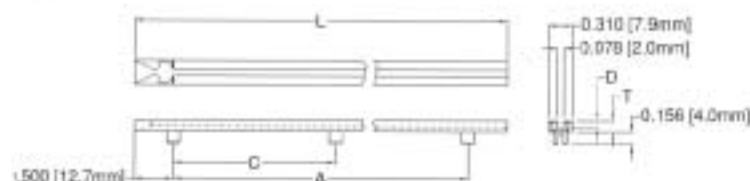
Econ-O-Gide 8-1/2" thru 14" Lengths

Part No.	L ±.062 (1.6)	A +.016 (.41) -.047 (1.2)	C +.016 (.41) -.032 (.81)	D ±.005 (.13)	T ±.007 (.18)	DESC DWG. NO.
E-850	8.5 (215.9)	-	-	-	-	84006-13
E-900	9.0 (228.6)	7.531 (191.3)	3.766 (95.7)	.078 (2.0)	.141 (3.6)	84006-14
E-950	9.5 (241.3)	-	-	-	-	84006-15
E-1000	10.0 (254.0)	-	-	-	-	84006-16
E-1050	10.5 (266.7)	9.031 (229.4)	4.516 (114.7)	.078 (2.0)	.141 (3.6)	84006-17
E-1100	11.0 (279.4)	-	-	-	-	84006-18
E-1150	11.5 (292.1)	-	-	-	-	84006-19
E-1200	12.0 (304.8)	10.547 (267.9)	5.274 (134.0)	.093 (2.4)	.156 (4.0)	84006-20
E-1250	12.5 (317.5)	-	-	-	-	84006-21
E-1300	13.0 (330.2)	-	-	-	-	84006-22
E-1350	13.5 (342.9)	12.047 (306.0)	6.024 (153.0)	.093 (2.4)	.156 (4.0)	84006-23
E-1400	14.0 (355.6)	-	-	-	-	84006-24

TEMP-O-GIDE™

Flame Retardant Card Guides for 1/16" PCBs

- 25 Standard Lengths from 2" - 14" in 1/2" increments
- Precision Molded for rigidity, strength and heat resistance from flame retardant 94V-0 UL rated materials
- Stainless Steel Conductive Inserts available for all lengths (see page 13)



Rigid, strong and economical, TEMP-O-GIDES provide the design flexibility and installed reliability that your most demanding products require. Retention is firm and there are no special tools or fixtures required for installation. Locking ejectors can be used for positive PCB retention and insertion/extraction ease (see page 12-14 for details).

Mounting Information:

Snap-in metal plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick
Hole Size: 0.172" (4.4mm) diameter + 0.003" (0.08mm) - 0.002" (0.06mm) x 0.232" (5.9mm) 1/64" drill
Center - 0.220" x 0.168" + 0.003" - 0.001"
Rear - 0.235" x 0.168" + 0.003" - 0.001"

Material Specifications:

UL Rated 94V-0, Rust colored, Flame Retardant 6/6 Nylon
Oxygen Index: +28%
UL File #E84658

Application Notes:

Slotting or elongating of the second and third mounting hole is recommended to allow for length variations and to provide for easier assembly.

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended. Open sealed vapor barrier bags at the time of production to assure optimum shelf life.

Temp-O-Gide 2" thru 8" Lengths

Part No.	L ± 0.062 (1.6)	A ± 0.032 (.81)
FR-200	1.969 (50.0)	.984 (25.0)
FR-250	2.489 (62.7)	
FR-300	2.969 (75.4)	1.484 (37.7)
FR-350	3.489 (88.1)	
FR-400	3.929 (100.0)	
FR-450	4.438 (112.7)	2.969 (75.4)
FR-500	4.938 (125.4)	
FR-550	5.438 (138.1)	
FR-600	5.906 (150.0)	4.953 (125.8)
FR-650	6.406 (162.7)	
FR-700	6.875 (174.6)	
FR-750	7.375 (187.3)	5.969 (151.6)
FR-800	7.875 (200.0)	

Temp-O-Gide 8-1/2" thru 14" Lengths

Part No.	L ± 0.062 (1.6)	A ± 0.032 (.81) ± 0.047 (1.2)	C ± 0.016 (.41) ± 0.032 (.81)	D ± 0.005 (.13)	T ± 0.007 (.18)
FR-850	8.375 (212.7)				
FR-900	8.875 (225.4)	7.466 (189.7)	3.735 (94.9)	.078 (2.0)	.141 (3.6)
FR-950	9.375 (238.1)				
FR-1000	9.875 (250.8)				
FR-1050	10.375 (263.5)	8.936 (227.0)	4.469 (113.5)	.078 (2.0)	.141 (3.6)
FR-1100	10.875 (276.2)				
FR-1150	11.344 (288.1)				
FR-1200	11.844 (300.8)	10.406 (264.3)	5.203 (132.2)	.093 (2.4)	.156 (4.0)
FR-1250	12.344 (313.5)				
FR-1300	12.812 (325.4)				
FR-1350	13.312 (338.1)	11.906 (302.4)	5.953 (151.2)	.093 (2.4)	.156 (4.0)
FR-1400	13.812 (350.8)				

COMP-O-GIDE™

Industry Standard Snap-in Card Guides for 1/16" PCBs

- 52 Configurations to meet most standard requirements
- Precision Molded for rigidity, strength and heat resistance from 94V-2 UL rated materials
- Stainless Steel Conductive Inserts available for all sizes (see page 13)
- Two channel depths and two channel widths available to accommodate 1/16" - 1/32" PCBs
- Common industry standards interchange with competitive devices

COMP-O-GIDE, was introduced to provide second sources for previously single source card guides. The series has expanded to offer wider selection and application specific function. Rigid, strong and economical, COMP-O-GIDES provide the installed reliability that your most demanding products require. Retention is firm and there are no special tools or fixtures required for installation.

Mounting Information:

Snap-in metal plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick
Hole Size: 0.180" (4.6mm) diameter + 0.003" (0.08mm),
- 0.001" (0.03mm) 3/16th drill
Rear - 0.225" x 0.176" + 0.003" - 0.001"

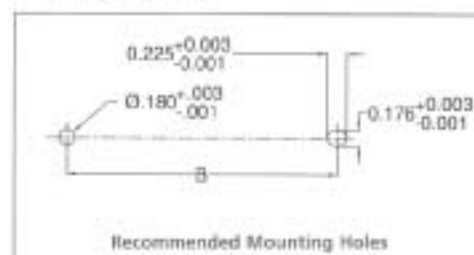
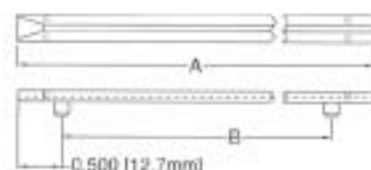
Material Specifications:

UL Rated 94V-2, natural, 6/6 Nylon per ASTM D4066 PA111
Oxygen Index: +28%
UL File #E135532

Application Notes:

Slotting or elongating of the second mounting hole is recommended to allow for length variations and to provide for easier assembly.

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended. Open sealed vapor barrier bags at the time of production to assure optimum shelf life.



SDC Series

For 1/16" PCBs, 2-1/2" thru 8" Lengths

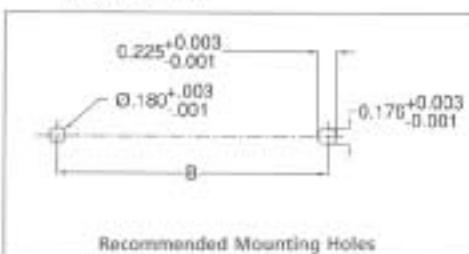
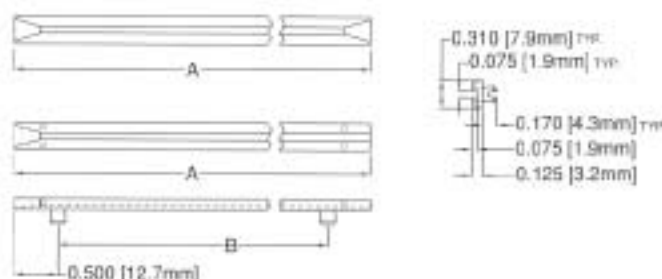
Part No.	A ±.001 (.76)	B ±.016 (.41)
SDC-250	2.5 (63.5)	1.5 (38.1)
SDC-300	3.0 (76.2)	2.0 (50.8)
SDC-350	3.5 (88.9)	2.5 (63.5)
SDC-400	4.0 (101.6)	3.0 (76.2)
SDC-450	4.5 (114.3)	3.5 (88.9)
SDC-500	5.0 (127.0)	4.0 (101.6)
SDC-550	5.5 (139.7)	4.5 (114.3)
SDC-600	6.0 (152.4)	5.0 (127.0)
SDC-650	6.5 (165.1)	5.5 (139.7)
SDC-700	7.0 (177.8)	6.0 (152.4)
SDC-750	7.5 (190.5)	6.5 (165.1)
SDC-800	8.0 (203.2)	7.0 (177.8)

ACFComponents
1-800-227-2901 & Fasteners, Inc.

COMP-O-GIDE™

Industry Standard Snap-in Card Guides for 1/16" and 1/32" PCBs

- 52 Configurations to meet most standard requirements
- Precision Molded for rigidity, strength and heat resistance from 94V-2 UL rated materials
- Stainless Steel Conductive Inserts available for all sizes (see page 13)
- Two channel depths and two channel widths available to accommodate 1/16" 1/32" PCBs
- Common industry standards interchange with competitive devices



Recommended Mounting Holes

COMP-O-GIDE, was introduced to provide second sources for previously single source card guides. The series has expanded to offer wider selection and application specific function. Rigid, strong and economical, COMP-O-GIDES provide the installed reliability that your most demanding products require. Retention is firm and there are no special tools or fixtures required for installation.

Mounting Information:

Snap-in metal plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick
Hole Size: 0.180" (4.6mm) diameter + 0.003" (0.08mm),
- 0.001" (0.03mm) 3/16th drill
Rear - 0.225" x 0.176" + 0.003" - 0.001"

Material Specifications:

UL Rated 94V-2, natural, 6/6 Nylon per ASTM D4066 PA111
Oxygen Index: +28%
UL File #E135532

Application Notes:

Slotting or elongating of the second mounting hole is recommended to allow for length variations and to provide for easier assembly.

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended. Open sealed vapor barrier bags at the time of production to assure optimum shelf life.

SSD Series

For 1/16" and 1/32", 2-1/2" thru 8" Lengths

Part No.	A ±.031(.79)	B ±.016(.41)	SW* -.102(.26)
SSD-250	2.5 (62.5)	1.5 (38.1)	0.102 (2.6)
SSD-300	3.0 (76.2)	2.0 (50.8)	0.102 (2.6)
SSD-350	3.5 (88.9)	2.5 (63.5)	0.102 (2.6)
SSD-400	4.0 (101.6)	3.0 (76.2)	0.102 (2.6)
SSD-450 3X	4.5 (114.3)	3.0 (76.2)	0.102 (2.6)
SSD-450	4.5 (114.3)	3.5 (88.9)	0.102 (2.6)
SSD-500	5.0 (127.0)	4.0 (101.6)	0.102 (2.6)
SSD-550	5.5 (139.7)	4.5 (114.3)	0.102 (2.6)
SSD-600	6.0 (152.4)	5.0 (127.0)	0.102 (2.6)
SSD-650	6.5 (165.1)	5.5 (139.7)	0.102 (2.6)
SSD-700	7.0 (177.8)	6.0 (152.4)	0.102 (2.6)
SSD-750	7.5 (190.5)	6.5 (165.1)	0.102 (2.6)
SSD-800	8.0 (203.2)	7.0 (177.8)	0.102 (2.6)

Notes:

Standard slot width is .075 (1.9) for 1/16" PCBs

* For slot width of .102 (2.6) for 1/32" PCBs, add -.102 suffix to part number.

ACFComponents
1-800-227-2901 & Fasteners, Inc.

HORIZONTAL CARD GUIDES

Snap-in Card Guides for Horizontally Mounting $\frac{1}{16}$ " PCBs

- 18 Standard parts with single and double channel configurations
- Tapered entry ramps for PCB insertion ease
- Fixed center line of 0.165" (4.2mm) (other centerlines available subject to minimum orders)

Horizontal Card Guides, introduced to meet the growing requirements for secondary daughter cards and parallel mounting of peripheral devices, provide an innovative mounting method for a variety of applications. Rigid, strong and economical, Horizontal Card Guides provide the design flexibility and installed reliability that your most demanding products require. Retention is firm and there are no special tools or fixtures required for installation.

Mounting Information:

Snap-in metal plates: 0.047" - 0.090" (1.2mm - 2.3mm) thick

Hole Size: 0.172" (4.4mm) diameter + 0.003" (0.08mm) -

0.001" (0.03mm) 1/64" drill

Rear - 0.212" x 0.172" + 0.003" - 0.001"

Material Specifications:

UL Rated 94V-0, Black, 6/6 Nylon per ASTM D4066 PA111

Oxygen Index: +28%

UL File #E84658

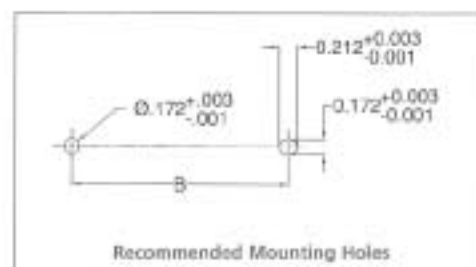
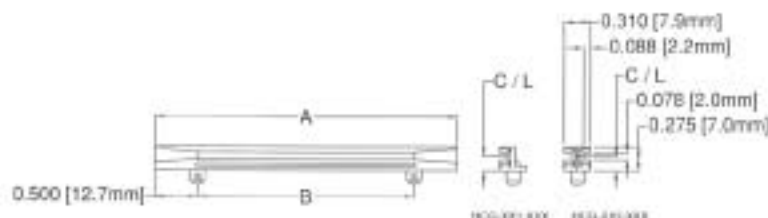
Application Notes:

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance.

Storage in a cool dry place is recommended. Open sealed vapor barrier bags at the time of production to assure optimum shelf life.

Custom centerlines are available subject to minimum orders. Contact Bivar at 1-800-SPACERS for additional information.

Slotting of the rear mounting hole is not recommended for this series.



HCG Series Double Sided Card Guides

2" thru 6" Lengths

Part No.	A ±.016 (.40)	B ±.016 (.40)	C/L ±.005 (.127)
HCG-202-165	2.0 (50.8)	1.0 (25.4)	165 (4.2)
HCG-252-165	2.5 (63.5)	1.5 (38.1)	165 (4.2)
HCG-302-165	3.0 (76.2)	2.0 (50.8)	165 (4.2)
HCG-352-165	3.5 (88.9)	2.5 (63.5)	165 (4.2)
HCG-402-165	4.0 (101.6)	3.0 (76.2)	165 (4.2)
HCG-452-165	4.5 (114.3)	3.5 (88.9)	165 (4.2)
HCG-502-165	5.0 (127.0)	4.0 (101.6)	165 (4.2)
HCG-552-165	5.5 (139.7)	4.5 (114.3)	165 (4.2)
HCG-602-165	6.0 (152.4)	5.0 (127.0)	165 (4.2)

HCG Series Single Sided Card Guides

2" thru 6" Lengths

Part No.	A ±.016 (.40)	B ±.016 (.40)	C/L ±.005 (.127)
HCG-201-165	2.0 (50.8)	1.0 (25.4)	165 (4.2)
HCG-251-165	2.5 (63.5)	1.5 (38.1)	165 (4.2)
HCG-301-165	3.0 (76.2)	2.0 (50.8)	165 (4.2)
HCG-351-165	3.5 (88.9)	2.5 (63.5)	165 (4.2)
HCG-401-165	4.0 (101.6)	3.0 (76.2)	165 (4.2)
HCG-451-165	4.5 (114.3)	3.5 (88.9)	165 (4.2)
HCG-501-165	5.0 (127.0)	4.0 (101.6)	165 (4.2)
HCG-551-165	5.5 (139.7)	4.5 (114.3)	165 (4.2)
HCG-601-165	6.0 (152.4)	5.0 (127.0)	165 (4.2)

VERT-O-GIDE™

Vertical Guides for $\frac{1}{16}^{\text{th}}$, $\frac{3}{32}^{\text{nd}}$ and $\frac{1}{8}^{\text{th}}$ PCBs

- Two styles with 31 variations that mount with industry standard fasteners
- Can eliminate the need for card cages
- Allows for vertical installations of PCBs in limitless widths
- Compatible with $\frac{1}{8}^{\text{th}}$ PCBs



VERT-O-GIDES™ provide the design flexibility and allow the ganging or tandem mounting of multiple PCBs. Retention is firm and there are no special tools or fixtures required for installation.

Mounting Information:

Standard #6 fasteners 0.146 [3.7mm] (#27 drill) hole for locating pin / anti-rotation hole

Material Specifications:

UL Rated 94V-0, Black, 10% Glass Filled 6 Nylon per ASTM D4066 PA210G10
Oxygen Index: +28%
UL File #E84658

Application Notes:

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended.

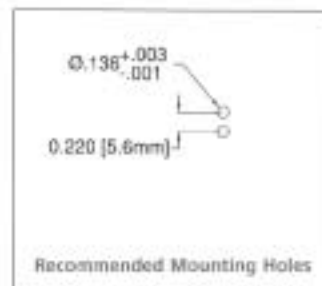
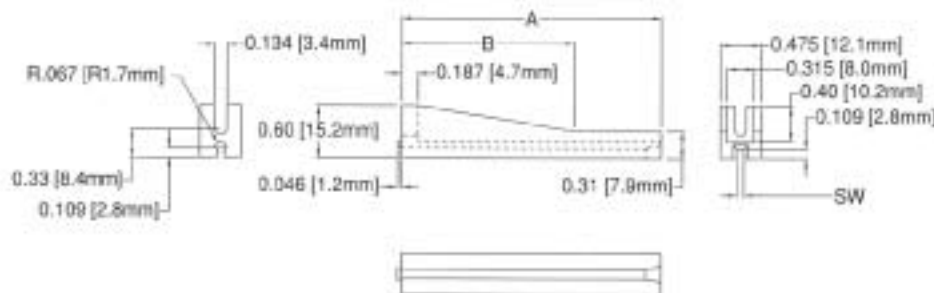
Tops of guides converge slightly to grip boards.

Vert-O-Gide VG 2 Series

2" thru 6" Lengths

Dash No.	A	B	SW 1/16" PCB
VG2-2	2.0 (50.8)	1.5 (38.1)	.076 (1.9)
VG2-2S	2.5 (63.5)	1.5 (38.1)	.076 (1.9)
VG2-3	3.0 (76.2)	2.0 (50.8)	.076 (1.9)
VG2-3S	3.5 (88.9)	2.0 (50.8)	.076 (1.9)
VG2-4	4.0 (101.6)	2.0 (50.8)	.076 (1.9)
VG2-4S	4.5 (114.3)	2.0 (50.8)	.076 (1.9)
VG2-5	5.0 (127.0)	2.0 (50.8)	.076 (1.9)
VG2-5S	5.5 (139.7)	2.0 (50.8)	.076 (1.9)
VG2-6	6.0 (152.4)	2.0 (50.8)	.076 (1.9)

*For slot widths other than .076" (1.9), add size e.g. VG2-4-1.34 is a VG2-4 guide with a slot width of .134" (3.4)



ACFComponents
1-800-227-2901
& Fasteners, Inc.

VERT-O-GIDE™

Dual Channel Vertical Guides for 1/16" PCBs

- Two styles with 31 variations that mount with industry standard fasteners
- Can eliminate the need for card cages
- Allows for vertical installations of PCBs in limitless widths
- Compatible with 1/16" PCBs

Mounting Information:

Standard #6 fasteners 0.146 [3.7mm] (#27 drill) hole for locating pin / anti-rotation hole

Material Specifications:

UL Rated 94V-0, Black, 10% Glass Filled 6 Nylon per

ASTM D4066 PA210G10

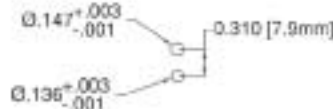
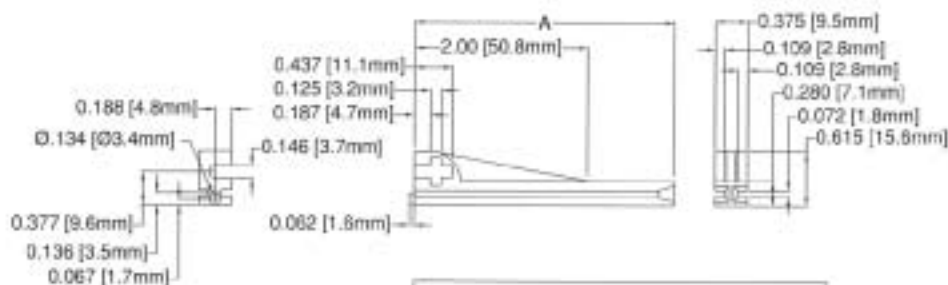
Oxygen Index: +28%

UL File #E84658

Application Notes:

Prolonged pre-assembly exposure to high humidity can cause molded Nylon components to "grow" out of tolerance. Storage in a cool dry place is recommended.

Tops of guides converge slightly to grip boards.



Recommended Mounting Holes

Vert-O-Gide VG 3 Series

3" thru 6" Lengths

Dash No.	A
VG3-3	3.0 (76.2)
VG3-3S	3.5 (88.9)
VG3-4	4.0 (101.6)
VG3-4S	4.5 (114.3)
VG3-5	5.0 (127.0)
VG3-5S	5.5 (139.7)
VG3-6	6.0 (152.4)

ACFComponents
1-800-227-2901
& Fasteners, Inc.

CARD-O-PULLS™

Value-Added Options for Card-O-Pulls Series

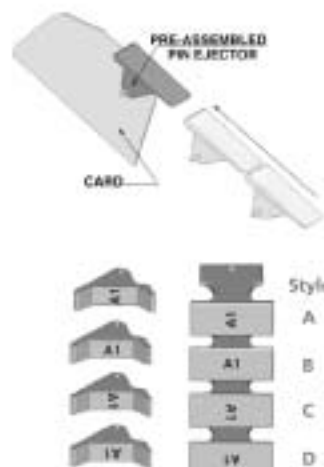
- Protect components, circuitry, connectors, PCBs and system from damage
- Designed for $\frac{1}{16}$ ", $\frac{3}{32}$ " and $\frac{1}{8}$ " PCBs. Can be used in most systems
- Aids insertion and extraction of PCBs—eliminates extraction tools
- Available in locking versions
- Available with pre-assembled mounting pins



By using a simple lever action CARD-O-PULLS can eliminate your $\frac{1}{16}$ ", $\frac{3}{32}$ " and $\frac{1}{8}$ " card problems by preventing undue stresses on your components, circuitry, connectors and PCBs and support system.

Locking versions are available to prevent accidental release of cards from connectors. Easy to use and install, choose from 18 standard designs which can be color coded and/or permanently marked for you.

DESC DWG. No.	Part No.	Page No.
83023-01	CP-36	30
83023-02	CP-08	29
83023-03	CP-26	30
83023-04	CP-06	32
83023-05	CP-29	30
83023-06	CP-09	29
83023-07	CP-29	30
83023-08	CP-09	32
83023-09	1107-062	26
83023-10	11073-125	26
83023-11	110710-062	26
83023-12	LP-36	33
83023-19W	1209-062	27
83023-20W	1209-093	27
83023-21W	1209-125	27



Pre-Assembled Pin Ejectors:

All ejectors & inserter/extractors can be ordered with pre-assembled mounting pins to save assembly time and labor costs. To order, add PA as a suffix to part number, e.g. CP-06PA

Marking:

Card-O-Pulls & Inserter/Extractors can be marked numerically, alphabetically or both to code circuit boards. The hot stamping method is used and its durability is accepted by both military and commercial users. See below. Specify size 1 or 2, and marking style A, B, C or D.

Color Coding:

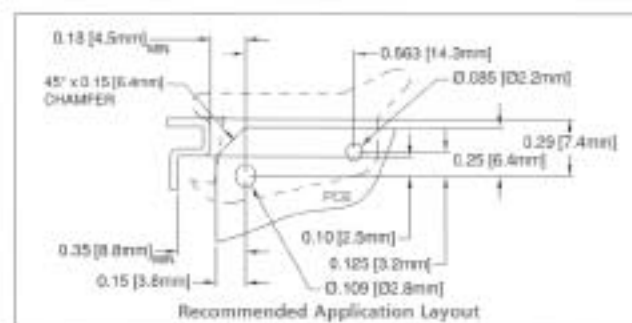
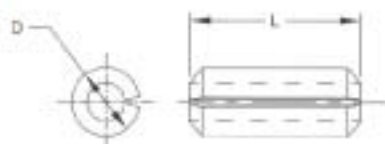
Card-O-Pulls & Inserter/ Extractors can be colored in a variety of colors to code your circuit board for quick identification.

White is standard, unless a color is specified.

RD=RED	PK=PINK	BE=BLUE
GY=GRAY	OE=ORANGE	VT=VIOLET
GN=GREEN	BN=BROWN	YW=YELLOW
AA=AQUA	LE=LIME	BK=BLACK

Spring Pin

Part No.	L	D
RP-250	1/4 (6.4)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-375	3/8 (9.5)	1/8 (3.2)



CARD-O-PULLS™

Printed Circuit Board Inserters/Extractors

- Select from 14 standard stock styles for $\frac{1}{16}$ ", $\frac{1}{32}$ " and $\frac{1}{8}$ " PCBs.
- Strong and rigid with optimum leverages to assist in both insertion and extraction
- Directly interchangeable with competitive styles; widest selection of standards
- Large areas for hot stamping
- Special colors available

1001 Series

Inserters/Extractor

Material Specifications:

1001 series: 6/6 Nylon per ASTM D4066
PA111, UL Rated 94V-2

Oxygen Rating Index:

Over 28%

Color: Natural or Black

Part No.	S	PdvB
1001-062	.075 (1.9)	.062 (1.6)
1002-093	.100 (2.5)	.093 (2.4)
1003-125	.140 (3.6)	.125 (3.2)

Furnished with Spring Pins RP-250

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4)

X = ± 0.10 (2.5)

XX = ± 0.01 (0.25)

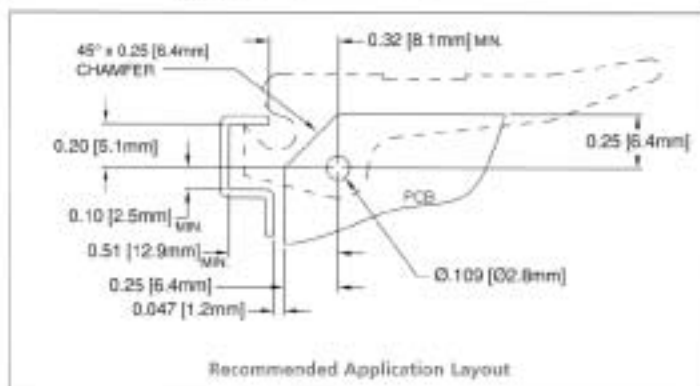
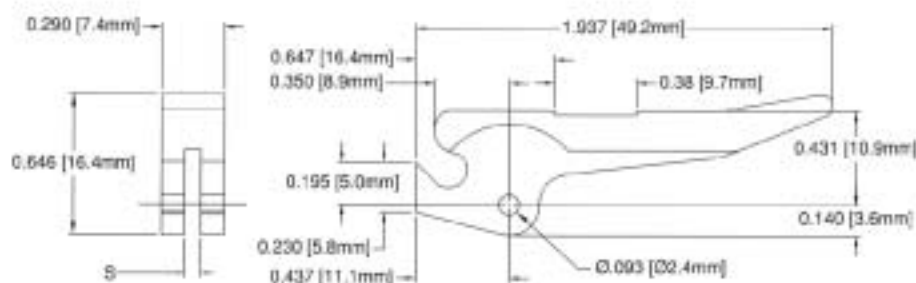
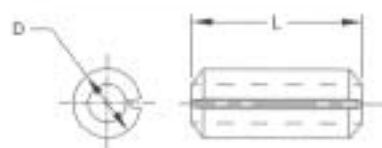
XXX = ± 0.005 (0.13)

Note: Passivated Stainless Steel Spring Pins per MIL-P-10971 furnished with each Ejector or Inserter/Extractor.



Spring Pin

Part No.	L	D
RP-250	1.8 (4.6)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-325	3/8 (9.5)	1/8 (3.2)



ACF Components
1-800-227-2901 & Fasteners, Inc.

CARD-O-PULLS™

Printed Circuit Board Inserters/Extractors

- Select from 14 standard stock styles for $\frac{1}{16}$ ", $\frac{1}{32}$ " and $\frac{1}{8}$ " PCBs.
- Strong and rigid with optimum leverages to assist in both insertion and extraction.
- Directly interchangeable with competitive styles; widest selection of standards
- Large areas for hot stamping
- Special colors available



1107 Series Inserter/Extractor

Material Specifications:

1107 series: 30% glass filled Nylon per ASTM D4066 PA111 G30FD4, UL Rated 94V-0

Oxygen Rating Index:

Over 28%

Color: Natural (Off White) or Black

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4)

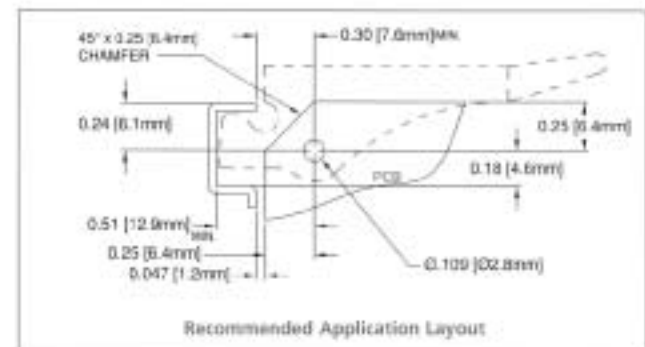
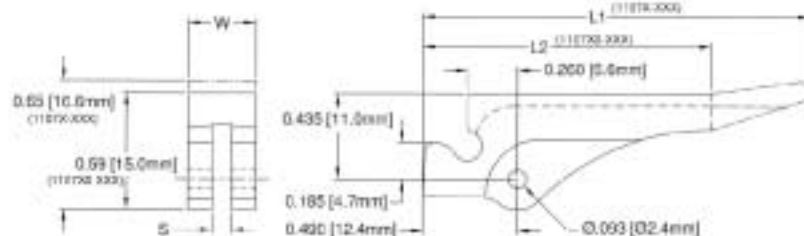
.X = ± 0.10 (2.5)

.XX = ± 0.01 (0.25)

.XXX = ± 0.005 (0.13)

Note: Passivated Stainless Steel Spring Pins per MIL-P-10971 furnished with each Ejector or Inserter/Extractor.

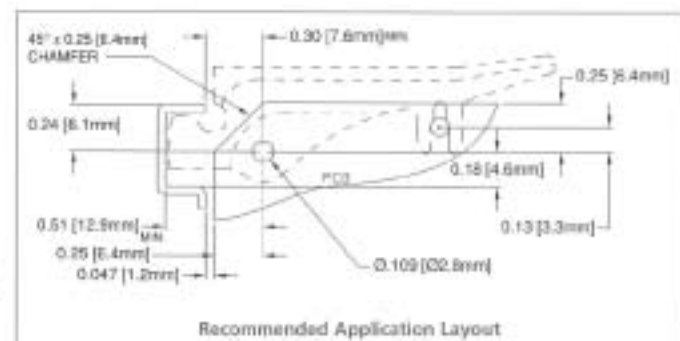
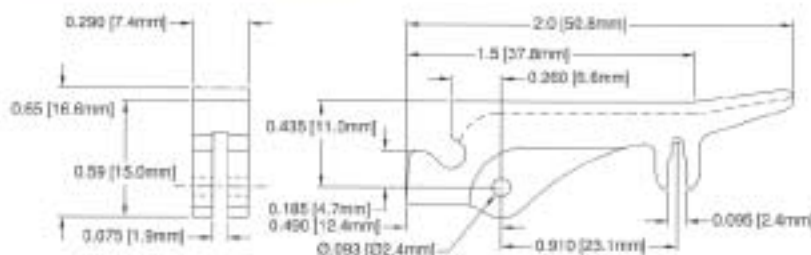
Part No.	S	W	L1	L2	PCB	Roll Pin	DESC
1107-062	.075 (1.9)	.290 (7.4)	2.0 (50.8)	-	.062 (1.6)	RP-250	83023-09
11073-062	.075 (1.9)	.350 (8.9)	2.0 (50.8)	-	.062 (1.6)	RP-312	-
11073-093	.100 (2.5)	.350 (8.9)	2.0 (50.8)	-	.093 (2.4)	RP-312	-
11073-125	.140 (3.6)	.350 (8.9)	2.0 (50.8)	-	.125 (3.2)	RP-312	83023-10
110710-062	.075 (1.9)	.290 (7.4)	-	1.5 (38.1)	.062 (1.6)	RP-250	83023-11
1107310-062	.075 (1.9)	.350 (8.9)	-	1.5 (38.1)	.062 (1.6)	RP-312	-
1107310-093	.100 (2.5)	.350 (8.9)	-	1.5 (38.1)	.093 (2.4)	RP-312	-
1107310-125	.140 (3.6)	.350 (8.9)	-	1.5 (38.1)	.125 (3.2)	RP-312	-



LP-1107 Series Inserter/Extractor

LP-1107 BK | Black
LP-1107 NT | Natural

Furnished with Spring Pins RP-250



CARD-O-PULLS™

Printed Circuit Board Inserters/Extractors

- Select from 14 standard stock styles for $\frac{1}{16}$ ", $\frac{1}{32}$ " and $\frac{1}{8}$ " PCBs.
- Strong and rigid with optimum leverages to assist in both insertion and extraction
- Directly interchangeable with competitive styles; widest selection of standards
- Large areas for hot stamping
- Special colors available

1209 Series

Inserters/Extractors

Material Specifications:

1209 series: 6/6 Nylon per ASTM D4066
PA111, UL Rated 94V-2

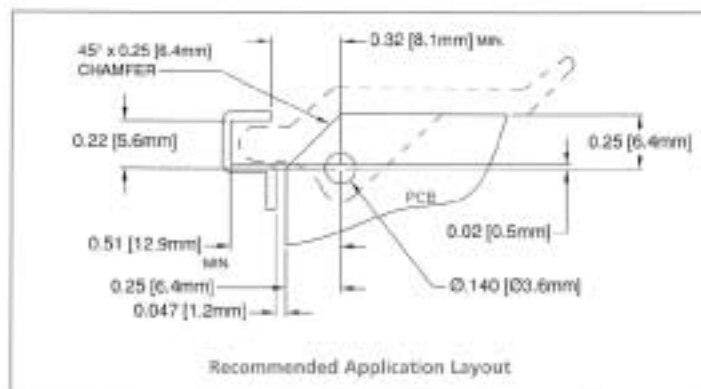
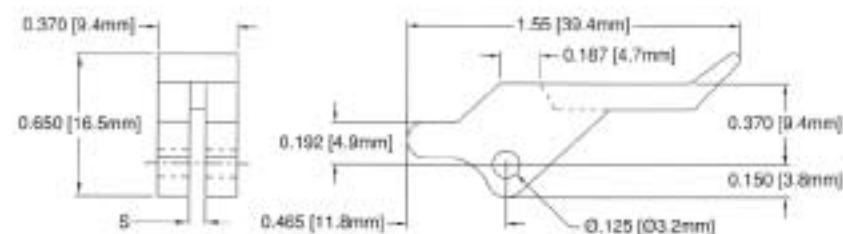
Oxygen Rating Index:

Over 28%

Color: Natural (Off White) or Black

Part No.	S	PCB	DESC
1209-062	.075 (1.9)	.062 (1.6)	83C23-19W
1209-093	.100 (2.5)	.093 (2.4)	83C23-20W
1209-125	.140 (3.6)	.125 (3.2)	83C23-21W

Furnished with Spring Pins RP-375



Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4)

.X = ± 0.10 (2.5)

.XX = ± 0.01 (0.25)

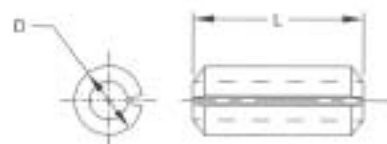
.XXX = ± 0.005 (0.13)

Note: Passivated Stainless Steel Spring Pins per MIL-P-10971 furnished with each Ejector or Inserter/Extractor.



Spring Pin

Part No.	L	D
RP-250	1/8 (6.4)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-375	3/8 (9.5)	1/8 (3.2)



ACFComponents
1-800-227-2901
& Fasteners, Inc.

CARD-O-PULLS™

Printed Circuit Board Card Ejectors & Handles



Material Specifications:
White Nylon, per ASTM D 4066 PA111
U.L. Rated 94V-2

Oxygen Rating Index:
Over 28%

Standard Drawing Tolerances:
(unless otherwise indicated)

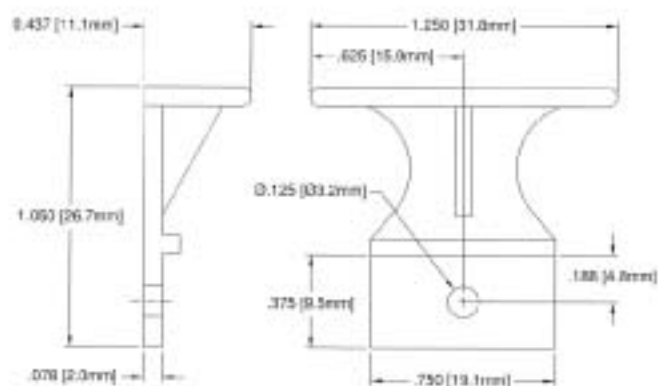
Fractions: $\pm 1/64$ (0.4)
X = ± 0.10 (2.5)
XX = ± 0.01 (0.25)
XXX = ± 0.005 (0.13)

Ordering Information:

CP-XX GN
Color (WE for White)
Base Part

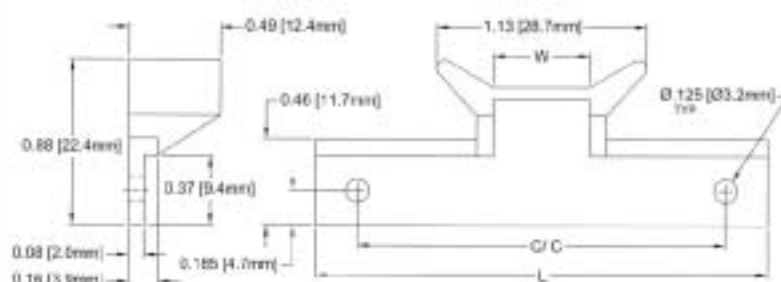
CP-00 Series

No pin WE for white or specify color



CP-01, 02 Series

No pins WE for white or specify color



ACFComponents
1-800-227-2901
& Fasteners, Inc.

CARD-O-PULLS™

Printed Circuit Board Card Ejectors & Handles

Material Specifications:

White Nylon, per ASTM D 4066 PA111
U.L. Rated 94V-2

Oxygen Rating Index:

Over 28%

Ordering Information:

CP-XX GN PA
Pre-Assembled Pin
Color (WE for White)
Base Part

Standard Drawing Tolerances:

(unless otherwise indicated)

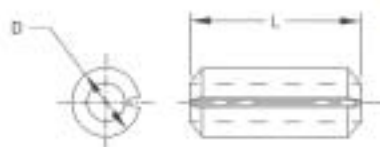
Fractions: $\pm 1/64$ (0.4)

.X = ± 0.10 (2.5)

.XX = ± 0.01 (0.25)

.XXX = ± 0.005 (0.13)

Note: Passivated Stainless Steel Spring Pins per MIL-P-10971 furnished with each Ejector or Insert/Extractor.

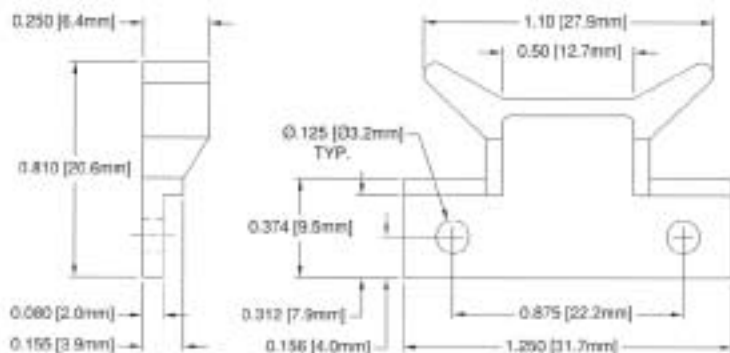


Spring Pin

Part No.	L	D
RP-250	1/4 (5.4)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-375	3/8 (9.5)	1/8 (3.2)

CP-03 Series

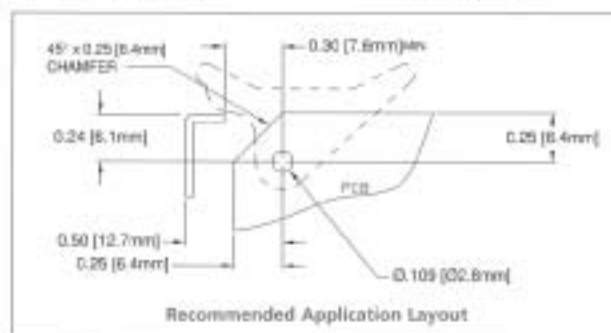
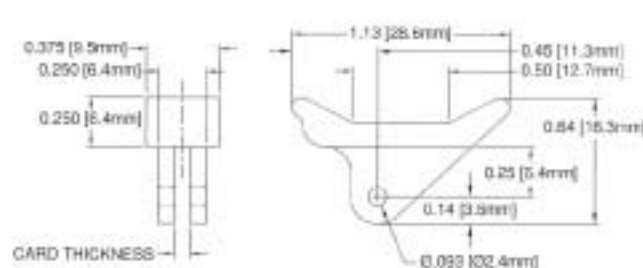
No pin WE for white or specify color



CP-06, 09 Series

RP-250 Pin, WE for white or specify color

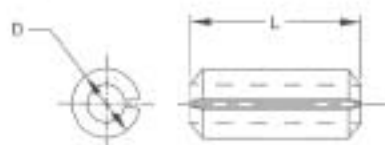
Part No.	Card Thick
CP-06	1/16 (1.6)
CP-09	3/32 (2.4)



ACFComponents
1-800-227-2901
& Fasteners, Inc.

Spring Pin

Part No.	L	D
RP-250	1/4 (6.4)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-375	3/8 (9.5)	1/8 (3.2)



Material Specifications:

White Nylon, per ASTM D 4066 PA111
U.L. Rated 94V-2

Oxygen Rating Index:

Over 28%

Note: Passivated Stainless Steel Spring Pins per MIL-P-10971 furnished with each Ejector or Insertor/Extractor.

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4)

.X = ± 0.10 (2.5)

.XX = ± 0.01 (0.25)

.XXX = ± 0.005 (0.13)

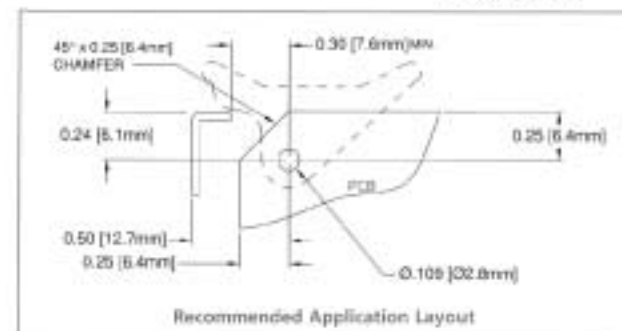
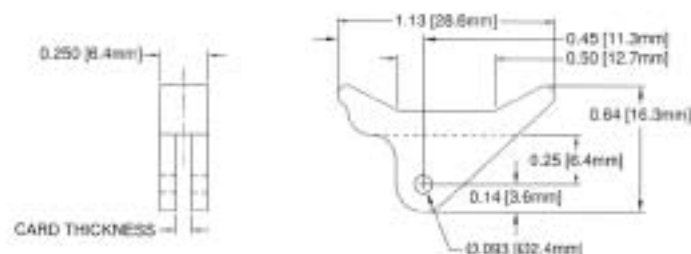
Ordering Information:

CP-XX GN PA
Pre-Assembled Pin
Color (WE for White)
Base Part

CP-26, 29 Series

RP-250 Fin. WE for white or specify color

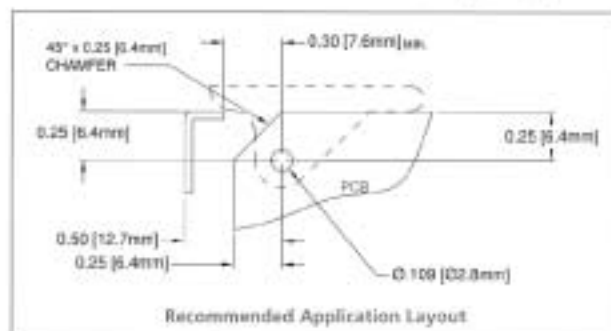
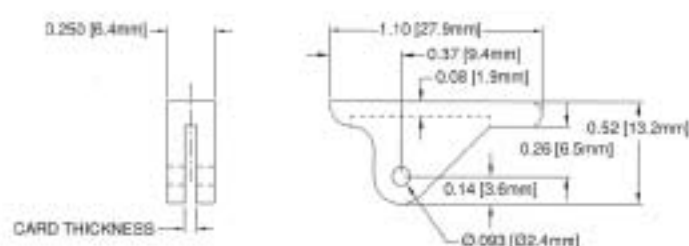
Part No.	Card Thick
CP-26	1/16 (1.6)
CP-29	3/32 (2.4)



CP-36, 39 Series

RP-250 Fin. WE for white or specify color

Part No.	Card Thick
CP-36	1/16 (1.6)
CP-39	3/32 (2.4)



CARD-O-PULLS™

Printed Circuit Board Card Ejectors & Handles

Material Specifications:

White Nylon, per ASTM D 4066 PA111
U.L. Rated 94V-2

Oxygen Rating Index:

Over 28%

Ordering Information:

CP-XX GN PA
Pre-Assembled Pin
Color (WE for White)
Base Part

Standard Drawing Tolerances:

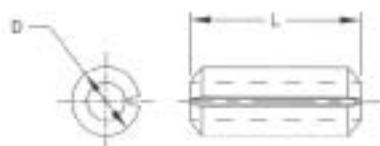
(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4)
.X = ± 0.10 (2.5)
.XX = ± 0.01 (0.25)
.XXX = ± 0.005 (0.13)

Note: Passivated Stainless Steel Spring Pins per MIL-P-10971 furnished with each Ejector or Insertor/Extractor.



Spring Pin

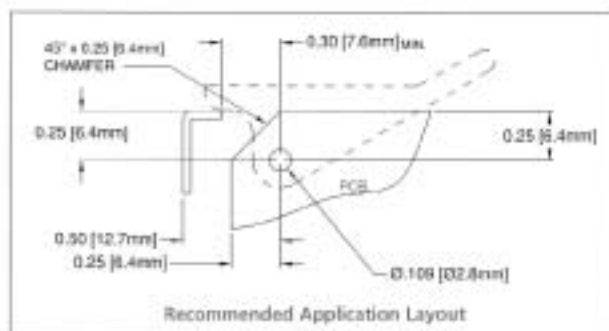
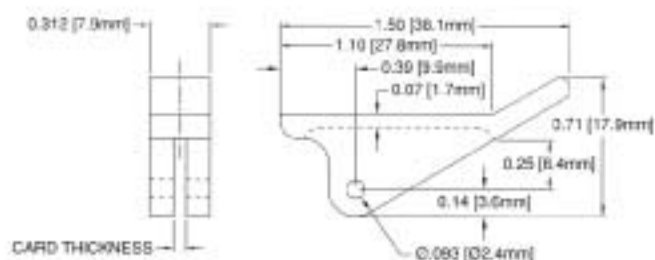


Part No.	L	D
RP-250	1/4 (5.4)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-375	3/8 (9.5)	1/8 (3.2)

CP-46, 49, 413 Series

RP-312 Pin WE for white or specify color

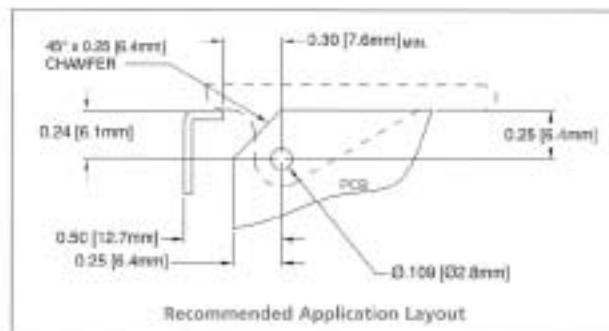
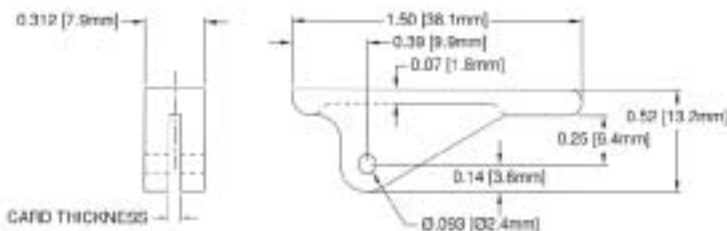
Part No.	Card Thick
CP-46	1/16 (1.6)
CP-49	3/32 (2.4)
CP-413	1/8 (3.2)



CP-56, 59, 513 Series

RP-312 Pin WE for white or specify color

Part No.	Card Thick
CP-56	1/16 (1.6)
CP-59	3/32 (2.4)
CP-513	1/8 (3.2)



CARD-O-PULLS™

Printed Circuit Board Card Ejectors & Handles

Spring Pin

Part No.	L	D
RP-250	1/4 (6.4)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-375	3/8 (9.5)	1/8 (3.2)

Material Specifications:

White Nylon, per ASTM D 4066 PA111
U.L. Rated 94V-2

Oxygen Rating Index:

Over 28%

Note: Passivated Stainless Steel Spring Pins
per MIL-P-10971 furnished with each
Ejector or Insertor/Extractor.

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4)

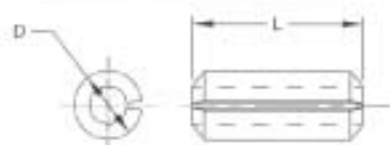
.X = ± 0.10 (2.5)

.XX = ± 0.01 (0.25)

.XXX = ± 0.005 (0.13)

Ordering Information:

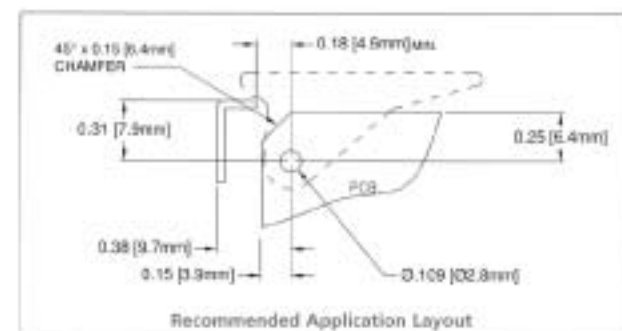
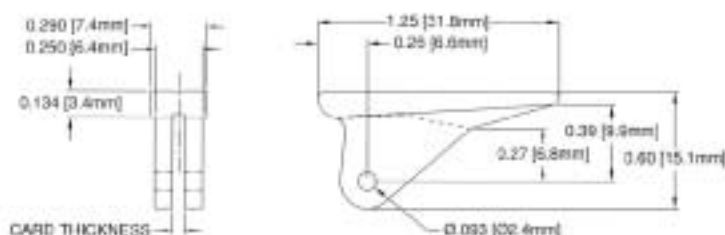
CP-XX GN PA
Pre-Assembled Pin
Color (WE for White)
Base Part



CP-66, 69 Series

RP-250 Pin: WE for white or specify color

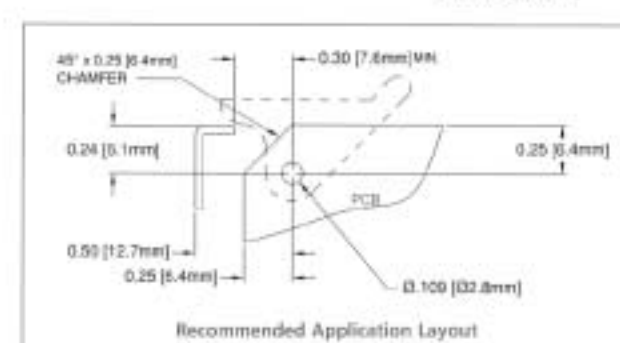
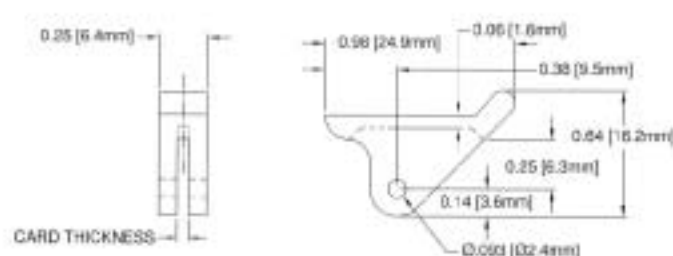
Part No.	Card Thick
CP-66	1/16 (1.6)
CP-69	3/32 (2.4)



CP-86, 89 Series

RP-250 Pin: WE for white or specify color

Part No.	Card Thick
CP-86	1/16 (1.6)
CP-89	3/32 (2.4)



CARD-O-PULLS™

Printed Circuit Board Card Ejectors & Handles

Material Specifications:

White Nylon, per ASTM D 4066 PA111
U.L. Rated 94V-2

Oxygen Rating Index:

Over 28%

Ordering Information:

CP-XX GN PA

Pre-Assembled Pin
Color (WE for White)
Base Part

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4)

.X = ± 0.10 (2.5)

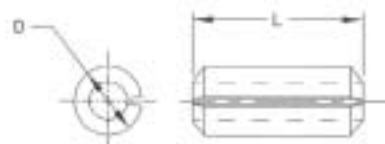
.XX = ± 0.01 (0.25)

.XXX = ± 0.005 (0.13)

Note: Passivated Stainless Steel Spring Pins per MIL-P-10971 furnished with each Ejector or Insert/Extractor.

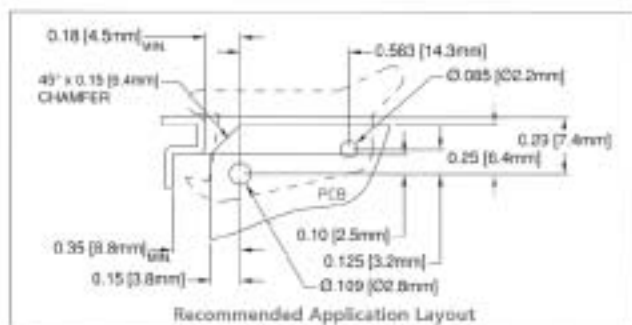
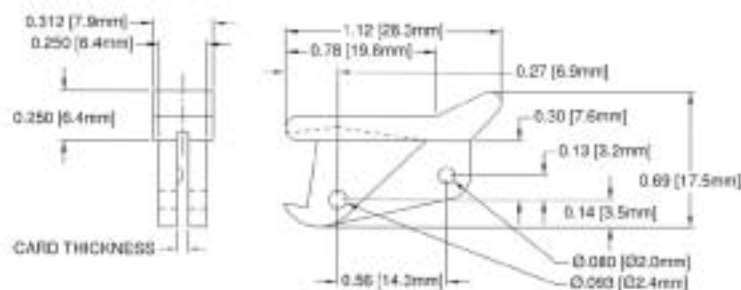
Spring Pin

Part No.	L	D
RP-250	1/4 (6.4)	3/32 (2.4)
RP-312	5/16 (8.0)	3/32 (2.4)
RP-375	3/8 (9.5)	1/8 (3.2)



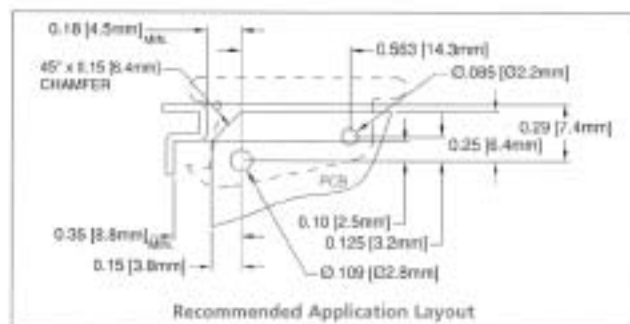
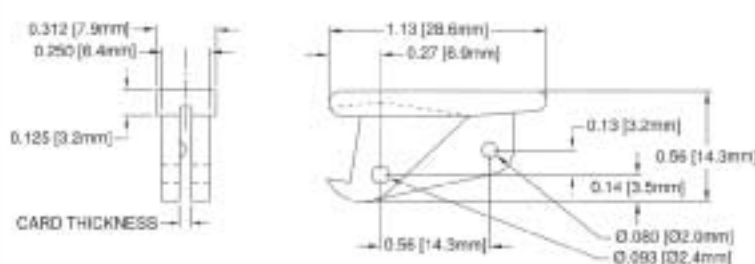
LP-06 Series

RP-250 Pin. WE for white or specify color.



LP-36 Series

RP-250 Pin. WE for white or specify color.



CUT-OUT COVERS™

Connector Cut-Out Covers

- 20 Standard sizes and styles accommodate most industry standard connectors
- Fast, easy assembly with push-on stainless steel clips furnished with each cover
- Provides an attractive finished look to panels
- For use with CPC, VME, Eurocard and other panels



Mounting Information:

Attaches with provided stainless steel, push-on clips

Material Specifications:

UL Rated 94V-0, Black, ABS

Oxygen Index: +28%

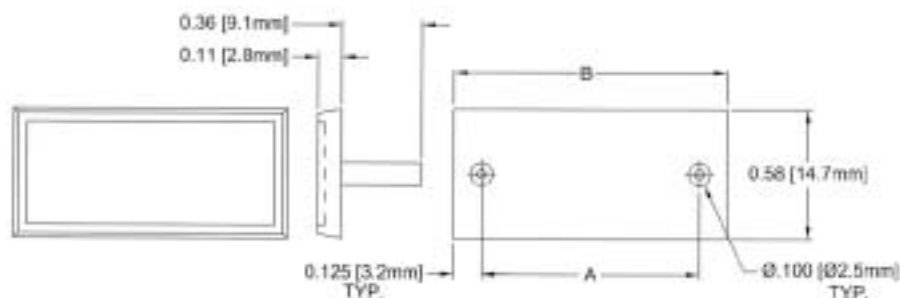
UL File #E121562

Application Notes:

Cut-Out covers can be hot stamped and/or labeled for easy identification

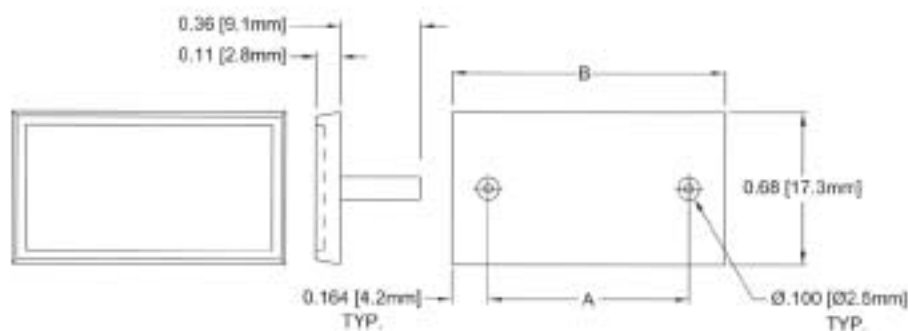
Series 10

Part No.	A	B	Clip No.	Price Code
10-9	.984 (25.0)	1.23 (31.2)	SSC-1	BB
10-15	1.312 (33.3)	1.56 (39.6)	SSC-1	DD
10-25	1.852 (47.0)	2.10 (53.3)	SSC-1	FF
10-37	2.500 (63.5)	2.75 (69.9)	SSC-1	HH
10-50	2.406 (61.1)	2.66 (67.6)	SSC-1	JJ



Series 12

Part No.	A	B	Clip No.	Price Code
12-14R	1.417 (36.0)	1.745 (44.3)	SSC-1	FF
12-24R	1.842 (46.8)	2.170 (55.1)	SSC-1	GG
12-36R	2.352 (59.7)	2.680 (68.1)	SSC-1	JJ
12-50R	2.947 (74.9)	3.275 (83.2)	SSC-1	KK
12-64R	3.542 (90.0)	3.875 (98.4)	SSC-1	NN



ACFComponents
1-800-227-2901
& Fasteners, Inc.

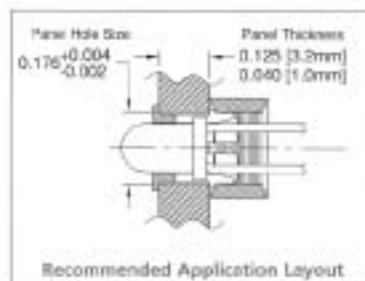
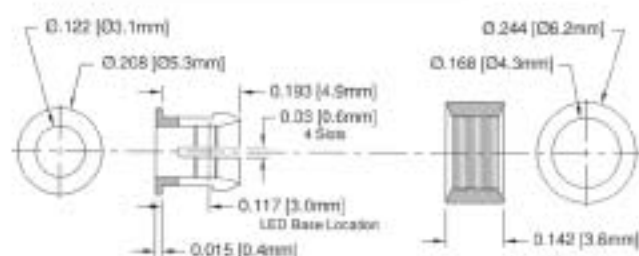
LED MOUNTS/SPACERS

Clips and Rings

- Securely and Uniformly Positions Panel Mounted LEDs
- Molded from Black Nylon per ASTM D-4066 unless noted
- Precision Molded, Improves and Enhances Display Appearance

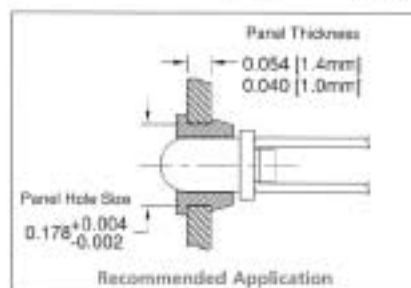
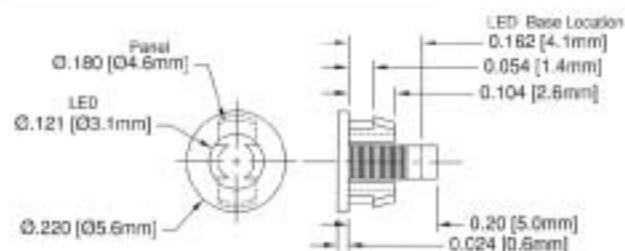
CR-100 Series Clip and Ring Set

Molded T-1 (3mm) Snap-in Panel Mount
Color: Black, Price Code: G
Material: Polypropylene



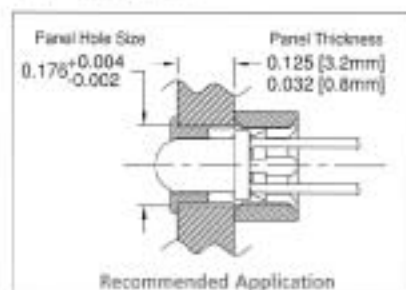
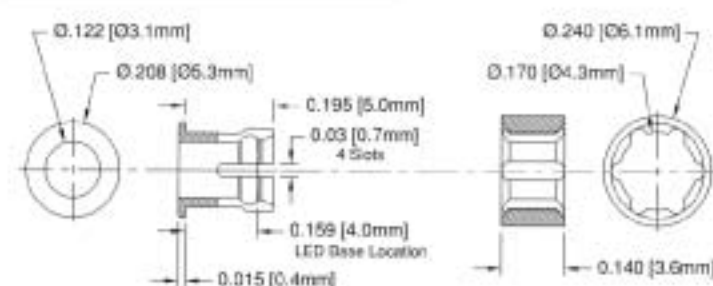
C-103-SR Series

Self-retaining Clip for T-1 (3mm) Flanged LED
Color: Black, Price Code: G
Material: Nylon
Clip made from 94V-0 material



CR-104 Series Clip and Ring Set

Molded T-1 (3mm) Snap-in Panel Mount
Color: Black, Price Code: G
Material: Nylon
Clip made from 94V-0 material



LED MOUNTS/SPACERS

Clips and Rings

- Securely and Uniformly Positions Panel Mounted LEDs
- Molded from Black Nylon per ASTM D-4066 unless noted
- Precision Molded, Improves and Enhances Display Appearance



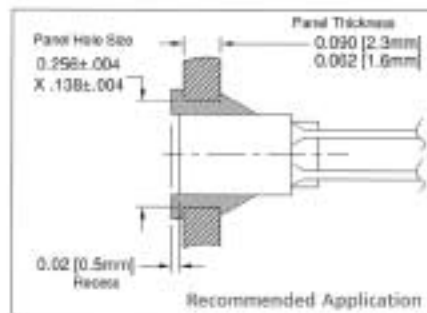
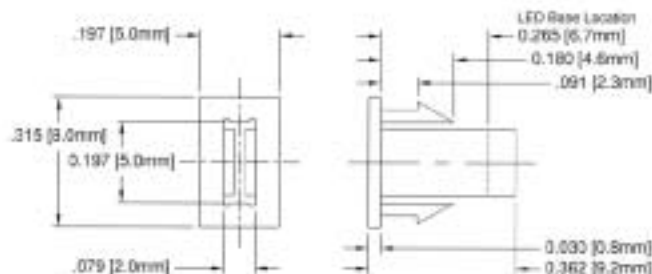
C-R25-SR Series

Self-retaining Clip for 2mm x 5mm Rectangular LED with Small Flange

Color: Black, Price Code: G

Material: Nylon

Clip made from 94V-0 material



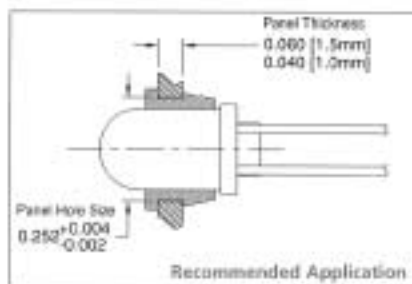
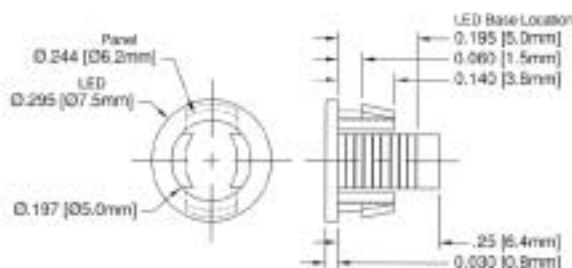
C-105-SR Series

Self-retaining Clip for T-1 3/4 (5mm) Flanged LED

Color: Black, Price Code: G

Material: Nylon

Clip made from 94V-0 material



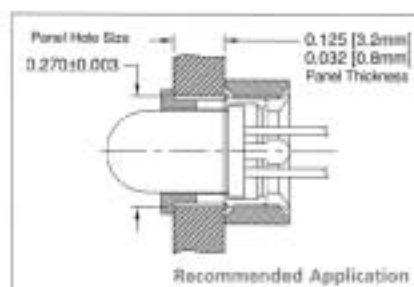
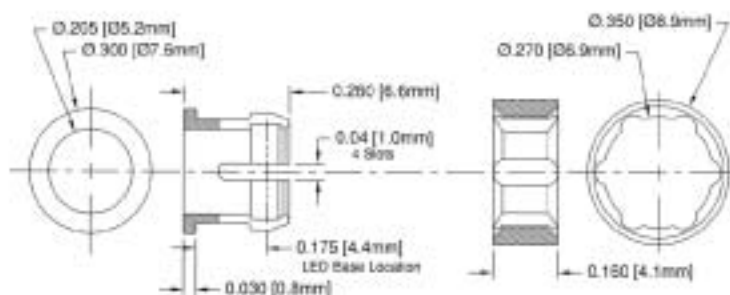
LED MOUNTS/SPACERS

Clips and Rings

- Securely and Uniformly Positions Panel Mounted LEDs
- Molded from Black Nylon per ASTM D-4066 unless noted
- Precision Molded, Improves and Enhances Display Appearance

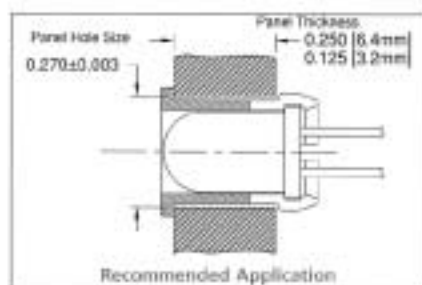
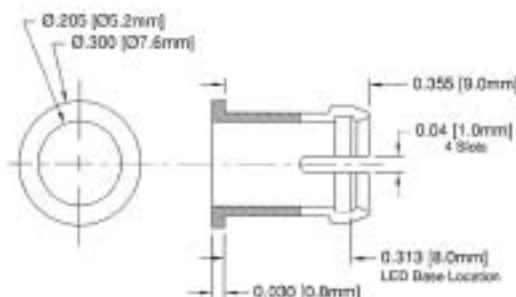
CR-174 Series Clip and Ring Set

Molded T-1 1/4 (5mm) Snap-in Panel Mount
Color: Black, Price Code: G
Material: Nylon
Clip made from 94V-2 material



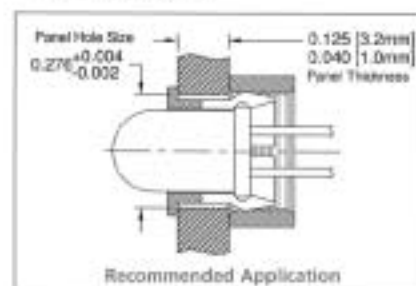
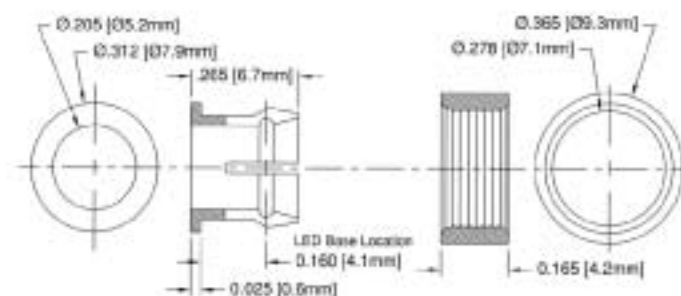
CR-174L Series Clip and Ring Set

Molded T-1 1/4 (5mm) Snap-in Panel Mount
Color: Black, Price Code: I
Material: Nylon
Clip made from 94V-2 material



CR-175 Series Clip and Ring Set

Clip and Ring Set for small Flange T-1 1/4 (5mm) LEDs
Color: Black, Price Code: C
Material: Polypropylene



LED MOUNTS/SPACERS

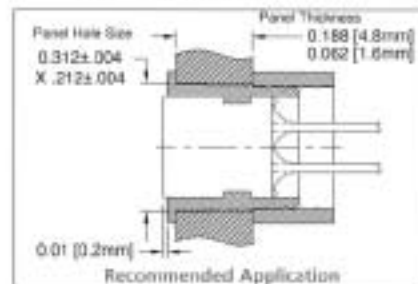
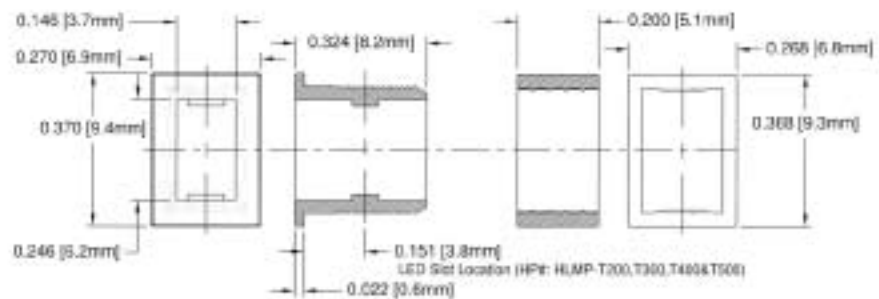
Clips and Rings

- Securely and Uniformly Positions Panel Mounted LEDs
- Molded from Black Nylon per ASTM D-4066 unless noted
- Precision Molded, Improves and Enhances Display Appearance



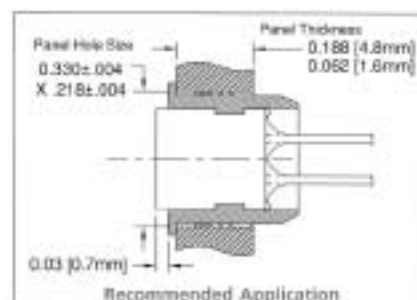
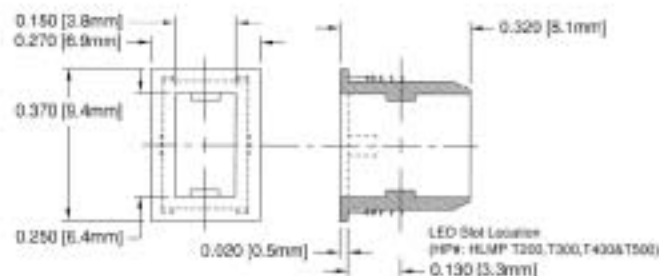
CR-300 Series

Clip and Ring Set for Bivar Rectangular RWXD Series LEDs
 Color: Black, Price Code: C
 Material: Polypropylene



C-301-1 Series

Clip Only, Self-Retaining Panel Mount
 for Bivar Rectangular RWXD Series LEDs
 Color: Black, Price Code: C
 Material: Nylon
 Clip made from 94V-0 material



LED MOUNTS/SPACERS

Co-Extruded, Self-Retaining LED and Discrete Component Mounts

- Capable of withstanding temperatures to 150°C
- Ideally suited for use particularly with two-leaded LEDs
- Low-Cost alternative to injection molded mounts and spacers
- Patented Technology

CLM Series

Designed to answer increasing demand for the use of mounts for LEDs and discrete components in applications where higher operating and process temperatures create problems for traditional mounts and components alike, Bivar, Inc. introduces the CLM™ Series of Co-Extruded, Self-Retaining Mounts, capable of withstanding temperatures to 150°C (300°F).

Capable of exceeding the typical operating temperature limits of LEDs and many discrete components themselves, the CLM Series employs bi-materials co-extruded under a patented technology process, combining engineering polymers developed specifically for use in high temperature applications. A rigid outer shell with a softer, shock absorbing inner lining provides the precision qualities of a rigid mount, while the self-retaining softer lining adapts to and simultaneously protects leads.

The CLM Series is ideally suited for use particularly with two-leaded LEDs, including T-1 (3mm), T-1^{3/4} (5mm), rectangular, square and custom LED configurations, assuring accurate, uniform elevation and precision vertical positioning with a footprint no larger than the LED itself. They provide a low-cost alternative to injection molded mounts and spacers, accepting all industry standard 0.100" (2.54mm) pitch leads devices, including a wide variety of discrete components such as resistors, capacitors and inductors.



Ordering Information:

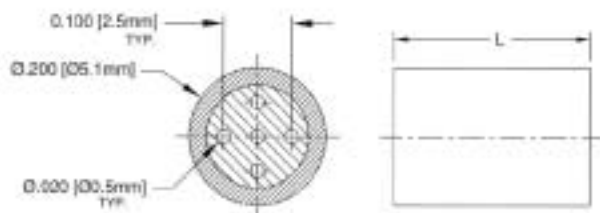
CLM XXX

Length Expressed in Thousandths
(in .005" increments) or whole
millimeters (example: 2mm)

0.040 = 040 0.750 = 750

0.100 = 100 1.250 = 1,250

Series: CLM



ACFComponents
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

Extruded, Self-Retaining LED Mounts

- Self Retaining feature for auto insertion & pre-assembly
- Universal fit for all through-hole LEDs
- Available in standard and metric sizes
- Operating temperature range -40°C~ +85°C



Standard Tolerances Extruded LED Mounted:

Tolerances: O.D. ± 0.005 (.13), I.D. ± 0.005 (.13)
 "L" Dim: .030 - .500 (1.0 - 12.7) is ± 0.005 (.13)
 "L" Dim: .505 - .750 (12.8 - 19.1) is ± 0.008 (.20)
 "L" Dim: .750 - 1.250 (19.2 - 31.8) is ± 0.015 (.38)

UL Rated 94V-0 PVC Alloy

Oxygen Index: +28%

UL File #E179500

Ordering Information:

ELM | XXX

Length Expressed in Inches
 (Must be even multiples of .005")
 or whole millimeters (example: 2mm)

0.030 = 030 0.750 = 750
 0.100 = 100 1.250 = 1250

Series

Price Code Chart

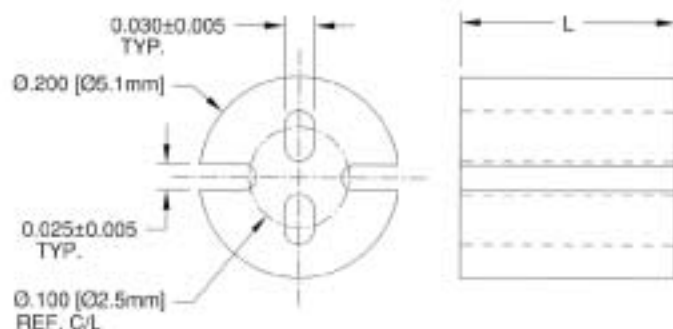
"L" Dimensions	ELM 1	ELM 2, ELM 4 ELM 5, ELM 7	ELM 3	CLM
.030 - .075 (1.0 - 1.9)	V	U	W	W
.080 - .150 (2.0 - 3.8)	W	V	W	W
.155 - .230 (4.0 - 5.8)	X	W	X	X
.235 - .310 (6.0 - 7.9)	Z	X	Y	Y
.315 - .380 (8.0 - 9.7)	Z	Y	Z	Z
.385 - .495 (9.8 - 12.6)	ZZ	Z	ZZ	ZZ
.500 - .750 (12.7 - 19.1)	ZZZ	ZZZ	ZZZ	ZZZ
.755 - 1.250 (19.2 - 31.8)	ZZZZ	ZZZZ	ZZZZ	ZZZZ

Examples:

ELM 3-050 is price code W
 ELM 1-410 is price code ZZ
 ELM 2-400 is price code Z

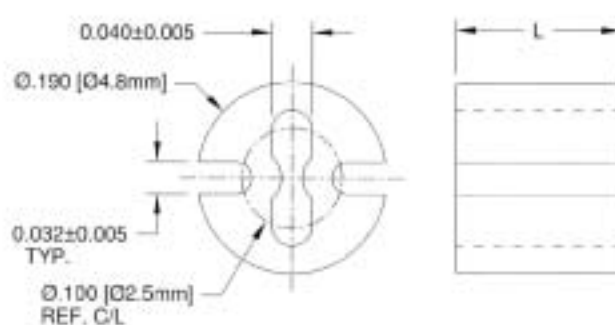
ELM 1 Series

T-1-1/4 (5mm) LED Mount -2 Leads
 Color: Black



ELM 2 Series

T-1 (3mm) LED Mount -2 Leads
 Color: Black



ACFComponents
 1-800-227-2901
 & Fasteners, Inc.

LED MOUNTS/SPACERS

Extruded, Self-Retaining LED Mounts

- Self Retaining feature for auto insertion & pre-assembly
- Universal fit for all through-hole LEDs
- Available in standard and metric sizes
- Operating temperature range -40°C~ +85°C

UL Rated 94V-0 PVC Alloy
Oxygen Index: +28%
 UL File #E179500

Ordering Information:

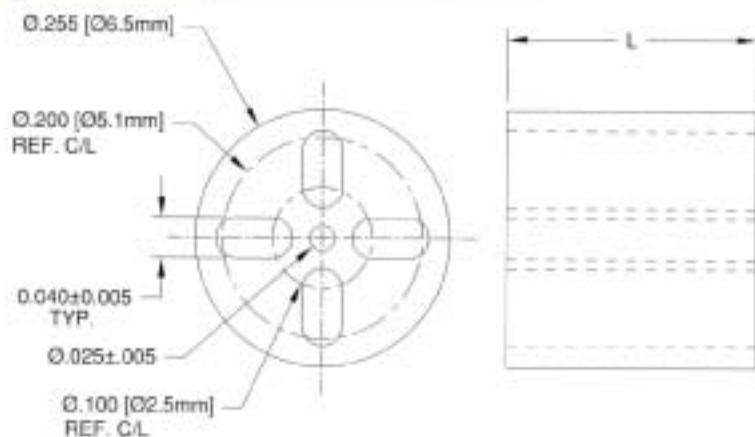
ELM | XXX

Length Expressed in Inches (Must be even multiples of .005")
 or whole millimeters (example: 2mm)

Series

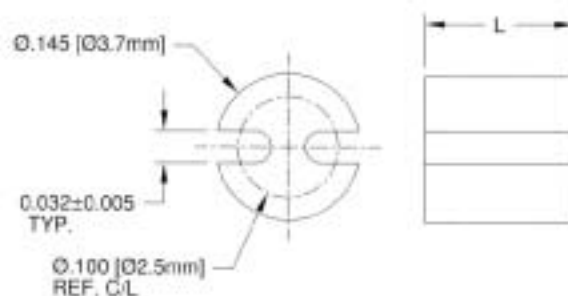
ELM 3 Series

T-1 1/4 (5mm) LED Mount -3 Leads
 Color: Black



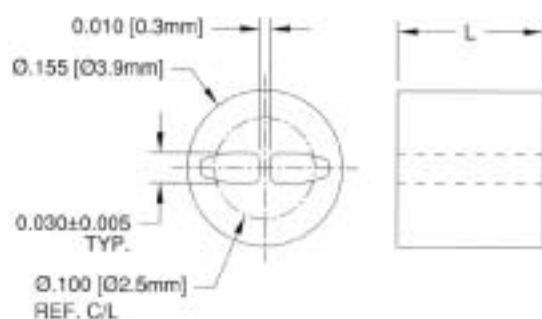
ELM 4 Series

T-1 (3mm) LED Mount -2 Leads
 Color: Black



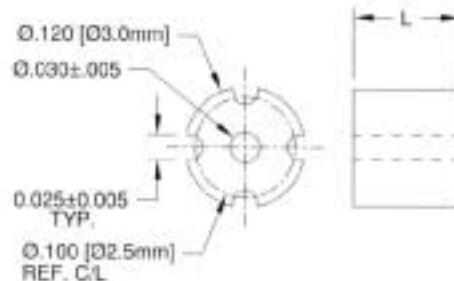
ELM 5 Series

T-1 (3mm) LED Mount -2 Leads
 Color: Black
 Material: PVC Alloy, UL 94V-0



ELM 7 Series

T-1 (3mm) LED Mount -2 Leads
 Color: Black
 Material: PVC Alloy, UL 94V-0



LED MOUNTS/SPACERS

Extruded, Self-Retaining LED Mounts

- Self Retaining feature for auto insertion & pre-assembly
- Universal fit for all through-hole LEDs
- Available in standard and metric sizes
- Operating temperature range -40°C~ +85°C

Price Code Chart

"L" Dimensions	ERB	ERC	ERM-1
.030 - .075 (1.0 - 1.9)	U	U	U
.080 - .150 (2.0 - 3.8)	V	V	V
.155 - .230 (4.0 - 5.8)	W	W	W
.235 - .310 (6.0 - 7.9)	X	X	X
.315 - .380 (8.0 - 9.7)	Y	Y	Y
.385 - .495 (9.8 - 12.6)	Z	Z	Z
.500 - .750 (12.7 - 19.1)	ZZ	ZZ	ZZ
.755 - 1.250 (19.2 - 31.8)	ZZZ	ZZZ	ZZZ

Standard Tolerances:

Profile: ± 0.05 (.13)

"L" Dim: .030 - .500 (1.0 - 12.7) is ± 0.05 (.13)

"L" Dim: .505 - .750 (12.8 - 19.1) is ± 0.08 (.20)

"L" Dim: .755 - 1.250 (19.2 - 21.8) is ± 0.15 (.38)

UL Rated 94V-0 PVC Alloy

Oxygen Index: +28%

UL File #E179500

Examples:

ERB-400 is price code Z

ERC-050 is price code U

ERM-150 is price code V

Ordering Information:

ERB XXX

Length Expressed in Thousandths
(in .005" increments)

(Must be even multiples of .005")
or whole millimeters (example:
2mm)

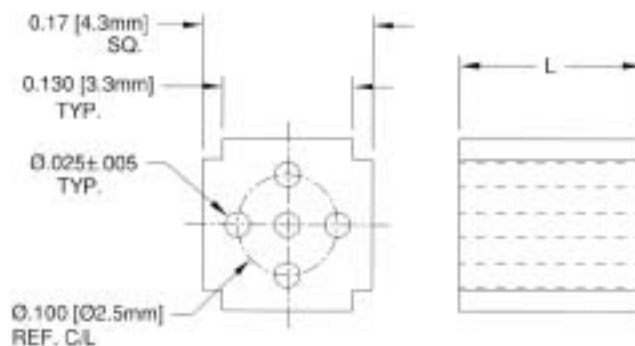
0.040 = 040 0.750 = 750

0.100 = 100 1.250 = 1,250

Series: ERC
ERB
ERM-1

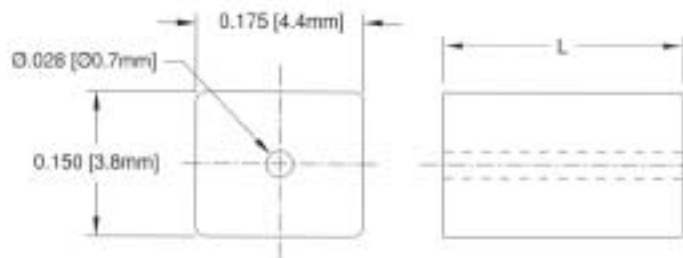
ERB Series

Universal 5 Hole LED Mount
2 and 3 Lead LEDs
Color: Black



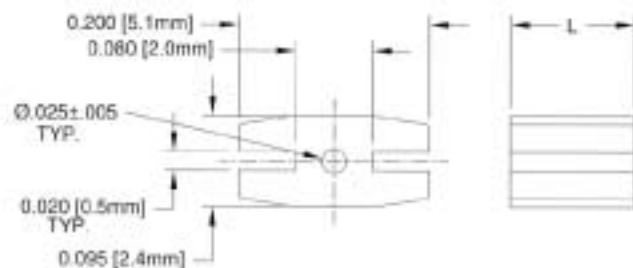
ERC Series

Universal Single Hole LED
Mount Tri-Lead LEDs
Color: Black



ERM-1 Series

Rectangular LED Mount
2 and 3 Lead LEDs
Color: Black



LED MOUNTS/SPACERS

Extruded, Self-Retaining LED Mounts

- Self Retaining feature for auto insertion & pre-assembly
- Universal fit for all through-hole LEDs
- Available in standard and metric sizes
- Operating temperature range -40°C~ +85°C

Price Code Chart

L Dimensions	ERB	ERC	ERM 1
.030 - .075 (1.0 - 1.9)	U	U	U
.080 - .150 (2.0 - 3.8)	V	V	V
.155 - .230 (4.0 - 5.8)	W	W	W
.235 - .310 (6.0 - 7.9)	X	X	X
.315 - .380 (8.0 - 9.7)	Y	Y	Y
.385 - .495 (9.8 - 12.6)	Z	Z	Z
.500 - .750 (12.7 - 19.1)	ZZZ	ZZZ	ZZZ
.755 - 1.250 (19.2 - 31.8)	ZZZZ	ZZZZ	ZZZZ

Examples:

ERB-400 is price code Z

ERC-050 is price code U

ERM-150 is price code V



ERC, ERB, and ERM-1 Series Metric Conversion

mm	Inch	Part No.	Price Code
1	.039	ERB-1mm	V
2	.079	ERB-2mm	V
3	.118	ERB-3mm	W
4	.158	ERB-4mm	X
5	.197	ERB-5mm	X
6	.236	ERB-6mm	Y
7	.276	ERB-7mm	Y
8	.315	ERB-8mm	Z
9	.354	ERB-9mm	Z
10	.394	ERB-10mm	ZZ
11	.433	ERB-11mm	ZZ
12	.472	ERB-12mm	ZZ
13	.512	ERB-13mm	ZZZ
14	.551	ERB-14mm	ZZZ
15	.591	ERB-15mm	ZZZ
16	.630	ERB-16mm	ZZZ
17	.669	ERB-17mm	ZZZ
18	.709	ERB-18mm	ZZZ
19	.748	ERB-19mm	ZZZ
20	.787	ERB-20mm	ZZZZ
21	.827	ERB-21mm	ZZZZ
22	.866	ERB-22mm	ZZZZ
23	.906	ERB-23mm	ZZZZ
24	.945	ERB-24mm	ZZZZ
25	.984	ERB-25mm	ZZZZ
26	1.024	ERB-26mm	ZZZZ

mm	Inch	Part No.	Price Code
1	.039	ERC-1mm	V
2	.079	ERC-2mm	V
3	.118	ERC-3mm	W
4	.158	ERC-4mm	X
5	.197	ERC-5mm	X
6	.236	ERC-6mm	Y
7	.276	ERC-7mm	Y
8	.315	ERC-8mm	Z
9	.354	ERC-9mm	Z
10	.394	ERC-10mm	ZZ
11	.433	ERC-11mm	ZZ
12	.472	ERC-12mm	ZZ
13	.512	ERC-13mm	ZZZ
14	.551	ERC-14mm	ZZZ
15	.591	ERC-15mm	ZZZ
16	.630	ERC-16mm	ZZZ
17	.669	ERC-17mm	ZZZ
18	.709	ERC-18mm	ZZZ
19	.748	ERC-19mm	ZZZ
20	.787	ERC-20mm	ZZZZ
21	.827	ERC-21mm	ZZZZ
22	.866	ERC-22mm	ZZZZ
23	.906	ERC-23mm	ZZZZ
24	.945	ERC-24mm	ZZZZ
25	.984	ERC-25mm	ZZZZ
26	1.024	ERC-26mm	ZZZZ

mm	Inch	Part No.	Price Code
1	.039	ERM-1mm	V
2	.079	ERM-2mm	V
3	.118	ERM-3mm	W
4	.158	ERM-4mm	X
5	.197	ERM-5mm	X
6	.236	ERM-6mm	Y
7	.276	ERM-7mm	Y
8	.315	ERM-8mm	Z
9	.354	ERM-9mm	Z
10	.394	ERM-10mm	ZZ
11	.433	ERM-11mm	ZZ
12	.472	ERM-12mm	ZZ
13	.512	ERM-13mm	ZZZ
14	.551	ERM-14mm	ZZZ
15	.591	ERM-15mm	ZZZ
16	.630	ERM-16mm	ZZZ
17	.669	ERM-17mm	ZZZ
18	.709	ERM-18mm	ZZZ
19	.748	ERM-19mm	ZZZ
20	.787	ERM-20mm	ZZZZ
21	.827	ERM-21mm	ZZZZ
22	.866	ERM-22mm	ZZZZ
23	.906	ERM-23mm	ZZZZ
24	.945	ERM-24mm	ZZZZ
25	.984	ERM-25mm	ZZZZ
26	1.024	ERM-26mm	ZZZZ

ACFComponents
1-800-227-2901
& Fasteners, Inc.

LED MOUNTS/SPACERS

Molded Self-Retaining LED Mounts

- One Universal Style for Both T-1 (3mm) and T-1 $\frac{3}{4}$ (5mm) LEDs
- Internal Tapered Divider Prevents Leads from Shorting
- 54 Standard Stock Lengths from .120" - .900" (3.1 - 22.9)



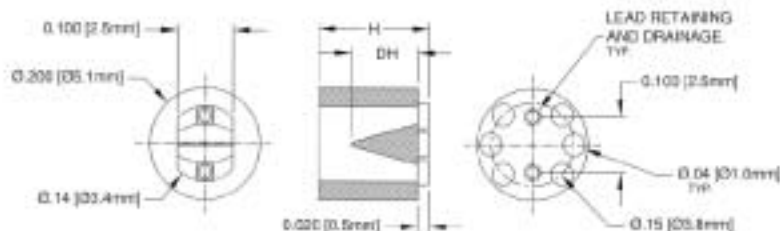
Bivar's molded, self-retaining LED mounts allow easier assembly and handling while internal dividers prevent leads from shorting in the field. The LTM Series is also ideal for severe duty environments where temperature extremes are a concern.

Material Specifications:

UL Rated 94V-0 Dow Questra Black Crystalline Polymer

Oxygen Index: +28%

UL File #E161817



Note: A thin film of flash is allowed for improved retention

LTM Series

Crystalline Polymer UL Rated 94V-0
Color: Black

Part No.	H	Price Code
LTM-120	120 (3.1)	A
LTM-130	130 (3.3)	A
LTM-140	140 (3.6)	A
LTM-150	150 (3.8)	A
LTM-160	160 (4.1)	A
LTM-170	170 (4.3)	A
LTM-180	180 (4.6)	A
LTM-190	190 (4.8)	A
LTM-200	200 (5.1)	A
LTM-210	210 (5.3)	A
LTM-220	220 (5.6)	A
LTM-240	240 (6.1)	A
LTM-260	260 (6.6)	B
LTM-280	280 (7.1)	B
LTM-300	300 (7.6)	B
LTM-320	320 (8.1)	B
LTM-340	340 (8.6)	B
LTM-360	360 (9.1)	B
LTM-380	380 (9.7)	F

Part No.	H	Price Code
LTM-390	390 (9.9)	F
LTM-400	400 (10.2)	F
LTM-410	410 (10.4)	F
LTM-420	420 (10.7)	F
LTM-430	430 (10.9)	F
LTM-440	440 (11.2)	F
LTM-450	450 (11.4)	F
LTM-460	460 (11.7)	F
LTM-480	480 (12.2)	F
LTM-490	490 (12.5)	F
LTM-500	500 (12.7)	G
LTM-520	520 (13.2)	G
LTM-540	540 (14.0)	G
LTM-560	560 (14.5)	G
LTM-600	600 (15.2)	G
LTM-620	620 (15.8)	G
LTM-640	640 (16.5)	H
LTM-670	670 (17.0)	H
LTM-700	700 (17.8)	H
LTM-720	720 (18.3)	H
LTM-750	750 (19.1)	I
LTM-770	770 (19.6)	I
LTM-800	800 (20.3)	I
LTM-820	820 (20.8)	I
LTM-850	850 (21.6)	I
LTM-870	870 (22.1)	I
LTM-900	900 (22.9)	I

ACFComponents
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

Molded Self-Retaining LED Mounts

- One Universal Style for Both T-1 (3mm) and T-1 $\frac{3}{4}$ (5mm) LEDs
- Internal Tapered Divider Prevents Leads from Shorting
- 54 Standard Stock Lengths from .120" - .900" (3.1 - 22.9)

Bivar's molded NTM LED mounts are a cost effective alternative to the industry standard. Available in a wide range of colors they may be dyed for a small additional charge.

Material Specifications:

UL Rated 94V-2 Natural 6/6 Nylon per ASTM D4066 PA111

Oxygen Index: +28%

UL File #E135532

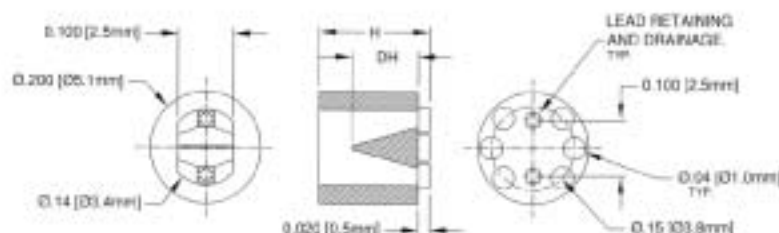


NTM Series

6/6 Nylon 5TM D4066
Color: Natural

Part No.	H	Price Code
NTM-120	.120 (3.1)	A
NTM-130	.130 (3.3)	A
NTM-140	.140 (3.6)	A
NTM-150	.150 (3.8)	A
NTM-160	.160 (4.1)	A
NTM-170	.170 (4.3)	A
NTM-180	.180 (4.6)	A
NTM-190	.190 (4.8)	A
NTM-200	.200 (5.1)	A
NTM-210	.210 (5.3)	A
NTM-220	.220 (5.6)	A
NTM-230	.230 (5.8)	A
NTM-240	.240 (6.1)	A
NTM-250	.250 (6.4)	A
NTM-260	.260 (6.6)	A
NTM-270	.270 (6.9)	A
NTM-280	.280 (7.1)	A
NTM-290	.290 (7.4)	A
NTM-300	.300 (7.6)	A
NTM-310	.310 (7.9)	A
NTM-320	.320 (8.1)	A
NTM-330	.330 (8.4)	A
NTM-340	.340 (8.6)	A
NTM-350	.350 (8.9)	A
NTM-360	.360 (9.1)	A
NTM-370	.370 (9.4)	A
NTM-380	.380 (9.7)	B

Part No.	H	Price Code
NTM-390	.390 (9.9)	B
NTM-400	.400 (10.2)	B
NTM-410	.410 (10.4)	B
NTM-420	.420 (10.7)	B
NTM-430	.430 (10.9)	B
NTM-440	.440 (11.2)	B
NTM-450	.450 (11.4)	B
NTM-460	.460 (11.7)	B
NTM-480	.480 (12.2)	B
NTM-490	.490 (12.5)	B
NTM-500	.500 (12.7)	C
NTM-520	.520 (13.3)	C
NTM-550	.550 (14.0)	C
NTM-570	.570 (14.5)	C
NTM-600	.600 (15.2)	C
NTM-620	.620 (15.8)	C
NTM-650	.650 (16.5)	D
NTM-670	.670 (17.0)	D
NTM-700	.700 (17.8)	D
NTM-720	.720 (18.3)	D
NTM-750	.750 (19.1)	H
NTM-770	.770 (19.5)	H
NTM-800	.800 (20.3)	H
NTM-820	.820 (20.8)	H
NTM-850	.850 (21.6)	H
NTM-870	.870 (22.1)	H
NTM-900	.900 (22.9)	H



Note: A thin film of flash is allowed for improved retention

ACFComponents
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

Molded Self-Retaining LED Mounts

- Optional Locator Pin
- Molded of Black Nylon per ASTM D-4066
- Self-Retaining Design Ideal for Automatic Insertion
- Housing Made from 94V-0 Rated Nylon



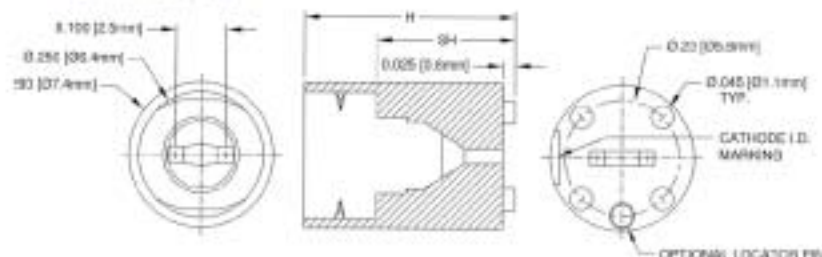
Bivar's SLM Series of Self-Retaining LED mounts are ideal for environments where high shock and vibration are a concern, such as: portable equipment, telecommunication equipment, and automotive applications.

Material Specifications:

UL Rated 94V-0 Black 6/6 Nylon per ASTM D4066 PA111

Oxygen Index: +28%

UL File #E84658



SLM Series

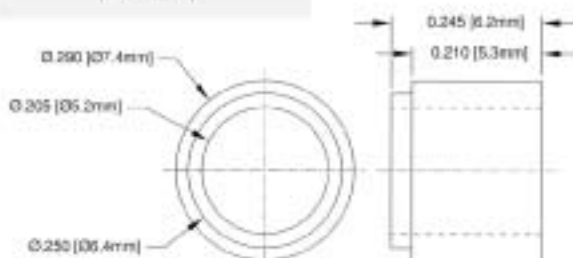
Material: Nylon 6/6 94V-0
Color: Black

Part No.	SH (ref.)	H	Price Code
SLM-140	140 (3.6)	285 (7.1)	B
SLM-150	150 (3.8)	295 (7.2)	B
SLM-160	160 (4.1)	305 (7.7)	B
SLM-170	170 (4.3)	315 (8.0)	B
SLM-180	180 (4.6)	325 (8.3)	B
SLM-190	190 (4.8)	335 (8.5)	B
SLM-200	200 (5.1)	345 (8.8)	B
SLM-210	210 (5.3)	355 (9.0)	B
SLM-220	220 (5.6)	365 (9.3)	B
SLM-230	230 (5.8)	375 (9.5)	B
SLM-240	240 (6.1)	385 (9.8)	F
SLM-250	250 (6.4)	395 (10.0)	F
SLM-260	260 (6.6)	405 (10.3)	F
SLM-270	270 (6.9)	415 (10.5)	F
SLM-280	280 (7.1)	425 (10.8)	F
SLM-290	290 (7.4)	435 (11.0)	F
SLM-300	300 (7.6)	445 (11.3)	F
SLM-310	310 (7.9)	455 (11.6)	F
SLM-320	320 (8.1)	465 (11.8)	F
SLM-330	330 (8.4)	475 (12.1)	F
SLM-340	340 (8.6)	485 (12.3)	F
SLM-350	350 (8.9)	495 (12.6)	F
SLM-360	360 (9.1)	505 (12.8)	F
SLM-370	370 (9.4)	515 (13.1)	G
SLM-380	380 (9.7)	525 (13.3)	G
SLM-390	390 (9.9)	535 (13.6)	G
SLM-400	400 (10.2)	545 (13.8)	G

Part No.	SH (ref.)	H	Price Code
SLM-410	410 (10.4)	555 (14.1)	G
SLM-420	420 (10.7)	565 (14.3)	G
SLM-430	430 (10.9)	575 (14.6)	G
SLM-440	440 (11.2)	585 (14.9)	G
SLM-450	450 (11.4)	595 (15.1)	G
SLM-470	470 (11.9)	615 (15.6)	G
SLM-490	490 (12.4)	635 (16.1)	H
SLM-510	510 (13.0)	655 (16.6)	H
SLM-530	530 (13.5)	675 (17.1)	H
SLM-550	550 (14.0)	695 (17.7)	H
SLM-570	570 (14.5)	715 (18.2)	H
SLM-590	590 (15.0)	735 (18.6)	H
SLM-610	610 (15.5)	755 (19.2)	I
SLM-630	630 (16.0)	775 (19.7)	I
SLM-650	650 (16.5)	795 (20.2)	I
SLM-670	670 (17.0)	815 (20.7)	I
SLM-690	690 (17.5)	835 (21.2)	I
SLM-710	710 (18.0)	855 (21.7)	I
SLM-730	730 (18.5)	875 (22.2)	I
SLM-750	750 (19.1)	895 (22.7)	I
SLM-770	770 (19.6)	915 (23.2)	I
SLM-790	790 (20.1)	935 (23.7)	I
SLM-810	810 (20.6)	955 (24.3)	I
SLM-830	830 (21.1)	975 (24.8)	I
SLM-850	850 (21.6)	995 (25.3)	I
SLM-870	870 (22.1)	1,015 (25.8)	I
SLM-890	890 (22.6)	1,035 (26.3)	I

Light Shield

Part No.	LED	Price Code
LS-1	T-1 3/4 (5mm)	A



Note: Consult factory for details regarding option locator pin. To order the optional LS-1 (Light Shield), please refer to the SLM Series Chart.

LED MOUNTS/SPACERS

Rectangular LED Holders

- 2 x 4mm and 2 x 5mm, 2 and 3 Lead Compatibility
- Locator Pin Holds Component Firmly in Place
- Molded from Black Nylon per ASTM D-4066
- Housing Made from 94V-0 Rated Nylon

Material Specifications:

UL Rated 94V-0 Black 6/6 Nylon per ASTM D4066 PA111

Oxygen Index: +28%

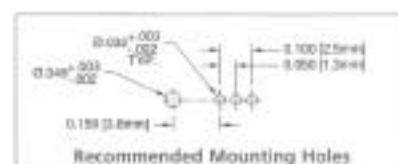
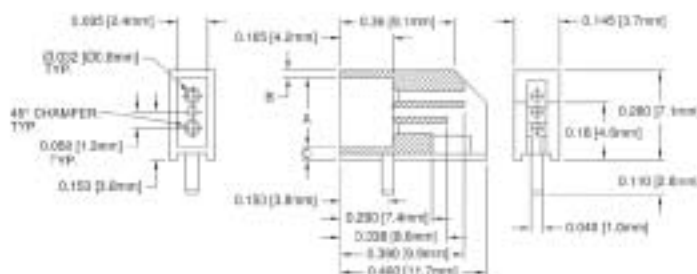
UL File #E84658



H-2RV Series

Single Rectangular 90° Holder
Color: Black

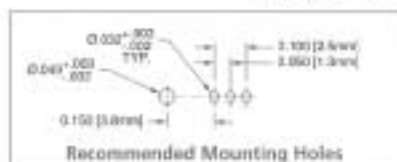
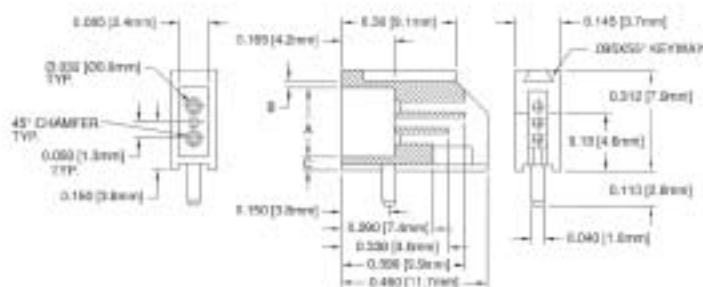
Part No.	A	Price Code
H-2RV-4	160 (4.1)	D
H-2RV-5	215 (5.5)	D



H-3RV Series

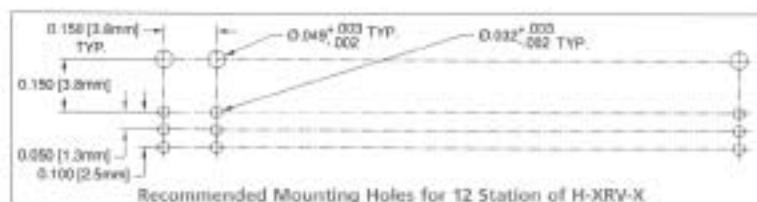
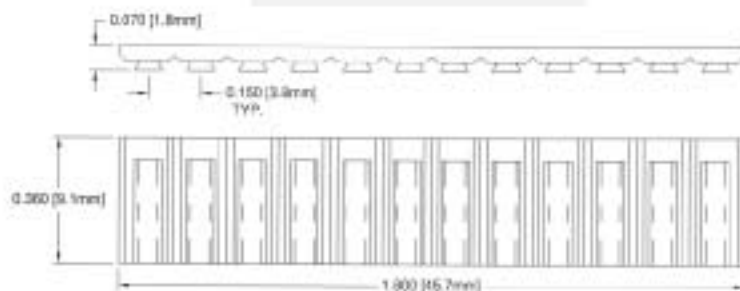
Interlocking Rectangular 90° Holder
Color: Black

Part No.	A	Price Code
H-3RV-4	160 (4.1)	D
H-3RV-5	215 (5.5)	D



H-3RVC Series

Coupling Bar for H-3RV Series Easily
Trimmed to Length
Color: Black
Price Code: E



LED MOUNTS/SPACERS

Rectangular LED Spacers

- Molded from White Nylon per ASTM D-4066
- RL1 and RL2 Suitable for Automatic Insertion
- Feet Facilitate Cleaning and Inspection
- Made from 94V-0 Rated Nylon

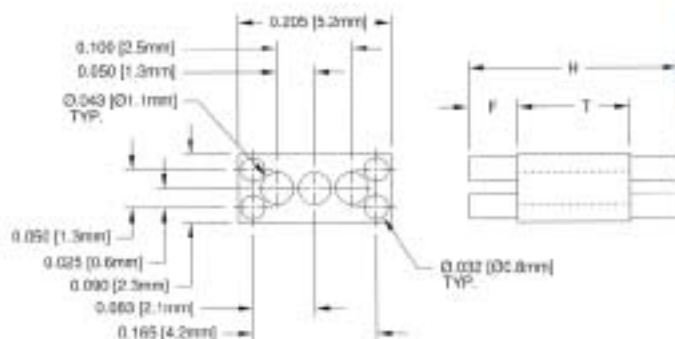
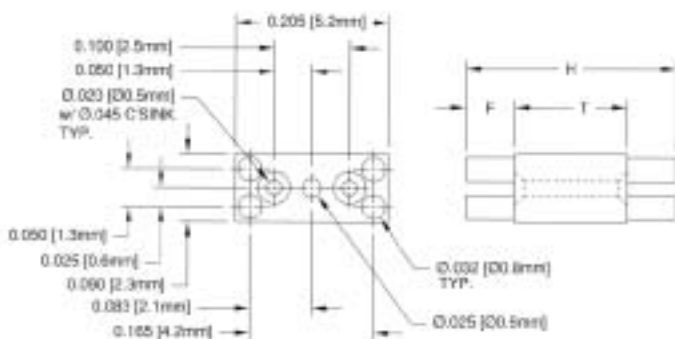


Material Specifications:

UL Rated 94V-2 White Nylon per ASTM D4066 PA111

Oxygen Index: +28%

UL File #E78964



RL 1 Series Self-retaining

Color: White
Price Code: B

Part No.	H	T	F
RL1-060	.060 (1.5)	.040 (1.0)	.010 (.25)
RL1-070	.070 (1.8)	.040 (1.0)	.015 (.38)
RL1-080	.080 (2.0)	.040 (1.0)	.020 (.51)
RL1-090	.090 (2.3)	.040 (1.0)	.025 (.64)
RL1-100	.100 (2.5)	.040 (1.0)	.030 (.76)
RL1-110	.110 (2.8)	.040 (1.0)	.035 (.89)
RL1-120	.120 (3.0)	.040 (1.0)	.040 (1.0)
RL1-130	.130 (3.3)	.040 (1.0)	.045 (1.1)
RL1-140	.140 (3.5)	.040 (1.0)	.050 (1.3)
RL1-150	.150 (3.8)	.040 (1.0)	.055 (1.4)
RL1-160	.160 (4.1)	.040 (1.0)	.060 (1.5)
RL1-170	.170 (4.3)	.040 (1.0)	.065 (1.7)
RL1-180	.180 (4.5)	.040 (1.0)	.070 (1.8)
RL1-190	.190 (4.8)	.040 (1.0)	.075 (1.9)
RL1-200	.200 (5.1)	.040 (1.0)	.080 (2.0)
RL1-210	.210 (5.3)	.040 (1.0)	.085 (2.2)

RL 2 Series Self-retaining

Color: White
Price Code: B

Part No.	H	T	F
RL2-200	.200 (5.1)	.150 (3.8)	.025 (.64)
RL2-210	.210 (5.3)	.150 (3.8)	.030 (.76)
RL2-220	.220 (5.6)	.150 (3.8)	.035 (.89)
RL2-230	.230 (5.8)	.150 (3.8)	.040 (1.0)
RL2-240	.240 (6.1)	.150 (3.8)	.045 (1.1)
RL2-250	.250 (6.4)	.150 (3.8)	.050 (1.3)
RL2-260	.260 (6.6)	.150 (3.8)	.055 (1.4)
RL2-270	.270 (6.9)	.150 (3.8)	.060 (1.5)
RL2-280	.280 (7.1)	.150 (3.8)	.065 (1.7)
RL2-290	.290 (7.4)	.150 (3.8)	.070 (1.8)
RL2-300	.300 (7.6)	.150 (3.8)	.075 (1.9)
RL2-310	.310 (7.9)	.150 (3.8)	.080 (2.0)
RL2-320	.320 (8.1)	.150 (3.8)	.085 (2.2)
RL2-330	.330 (8.4)	.150 (3.8)	.090 (2.3)
RL2-340	.340 (8.6)	.150 (3.8)	.095 (2.4)
RL2-350	.350 (8.9)	.150 (3.8)	.100 (2.5)

RL 3 Series

Color: White
Price Code: G

Part No.	H	T	F
RL3-360	.360 (9.1)	.340 (8.6)	.010 (.25)
RL3-380	.380 (9.7)	.340 (8.6)	.020 (.51)
RL3-400	.400 (10.2)	.340 (8.6)	.030 (.76)
RL3-420	.420 (10.7)	.340 (8.6)	.040 (1.0)
RL3-440	.440 (11.2)	.340 (8.6)	.050 (1.3)
RL3-460	.460 (11.7)	.340 (8.6)	.060 (1.5)
RL3-480	.480 (12.2)	.340 (8.6)	.070 (1.8)
RL3-500	.500 (12.7)	.340 (8.6)	.080 (2.0)
RL3-520	.520 (13.2)	.340 (8.6)	.090 (2.3)
RL3-540	.540 (13.7)	.340 (8.6)	.100 (2.5)

RL 4 Series

Color: White
Price Code: H

Part No.	H	T	F
RL4-560	.560 (14.2)	.540 (13.7)	.010 (.25)
RL4-580	.580 (14.7)	.540 (13.7)	.020 (.51)
RL4-600	.600 (15.2)	.540 (13.7)	.030 (.76)
RL4-620	.620 (15.7)	.540 (13.7)	.040 (1.0)
RL4-640	.640 (16.3)	.540 (13.7)	.050 (1.3)
RL4-660	.660 (16.8)	.540 (13.7)	.060 (1.5)
RL4-680	.680 (17.3)	.540 (13.7)	.070 (1.8)
RL4-700	.700 (17.8)	.540 (13.7)	.080 (2.0)
RL4-720	.720 (18.3)	.540 (13.7)	.090 (2.3)
RL4-740	.740 (18.8)	.540 (13.7)	.100 (2.5)
RL4-760	.760 (19.3)	.540 (13.7)	.110 (2.8)

LED MOUNTS/SPACERS

Molded Vertical LED Holders

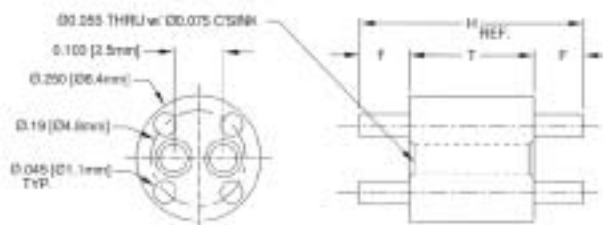
- Funnel Shaped Lead Entry Holes for Assembly Ease
- Feet Facilitate Cleaning and Inspection
- Molded of White Nylon per ASTM D-4066
- Made from 94V-2 Rated Nylon

Material Specifications:

UL Rated 94V-2 White Nylon
per ASTM D4066 PA111

Oxygen Index: +28%

UL File #E135532



450 Series

Color: White
Price Code: A

Part No.	H	T	F
450-050	050 (1.3)	030 (1.76)	010 (1.25)
450-060	060 (1.5)	030 (1.76)	015 (1.58)
450-070	070 (1.8)	030 (1.76)	020 (1.51)
450-080	080 (2.0)	030 (1.76)	025 (1.64)
450-090	090 (2.3)	030 (1.76)	030 (1.75)
450-100	100 (2.5)	030 (1.76)	035 (1.89)
450-110	110 (2.8)	030 (1.76)	040 (1.0)
450-120	120 (3.0)	030 (1.76)	045 (1.1)
450-130	130 (3.3)	030 (1.76)	050 (1.3)
450-140	140 (3.6)	030 (1.76)	055 (1.4)
450-150	150 (3.8)	030 (1.76)	060 (1.5)
450-160	160 (4.1)	030 (1.76)	065 (1.7)
450-170	170 (4.3)	030 (1.76)	070 (1.8)
450-180	180 (4.6)	030 (1.76)	075 (1.9)
450-190	190 (4.8)	030 (1.76)	080 (2.0)
450-200	200 (5.1)	030 (1.76)	085 (2.2)

455 Series

Color: White
Price Code: A

Part No.	H	T	F
455-200	200 (5.1)	150 (3.8)	025 (1.64)
455-210	210 (5.3)	150 (3.8)	030 (1.75)
455-220	220 (5.6)	150 (3.8)	035 (1.89)
455-230	230 (5.8)	150 (3.8)	040 (1.0)
455-240	240 (6.1)	150 (3.8)	045 (1.1)
455-250	250 (6.4)	150 (3.8)	050 (1.3)
455-260	260 (6.6)	150 (3.8)	055 (1.4)
455-270	270 (6.9)	150 (3.8)	060 (1.5)
455-280	280 (7.1)	150 (3.8)	065 (1.7)
455-290	290 (7.4)	150 (3.8)	070 (1.8)
455-300	300 (7.6)	150 (3.8)	075 (1.9)
455-310	310 (7.9)	150 (3.8)	080 (2.0)
455-320	320 (8.1)	150 (3.8)	085 (2.2)
455-330	330 (8.4)	150 (3.8)	090 (2.3)
455-340	340 (8.6)	150 (3.8)	095 (2.4)
455-350	350 (8.9)	150 (3.8)	100 (2.5)

456 Series

Color: White
Price Code: B

Part No.	H	T	F
456-350	350 (8.9)	300 (7.6)	025 (1.64)
456-360	360 (9.1)	300 (7.6)	030 (1.75)
456-370	370 (9.4)	300 (7.6)	035 (1.89)
456-380	380 (9.7)	300 (7.6)	040 (1.0)
456-390	390 (9.9)	300 (7.6)	045 (1.1)
456-400	400 (10.2)	300 (7.6)	050 (1.3)
456-410	410 (10.4)	300 (7.6)	055 (1.4)
456-420	420 (10.7)	300 (7.6)	060 (1.5)
456-430	430 (10.9)	300 (7.6)	065 (1.7)
456-440	440 (11.2)	300 (7.6)	070 (1.8)
456-450	450 (11.4)	300 (7.6)	075 (1.9)
456-460	460 (11.7)	300 (7.6)	080 (2.0)
456-470	470 (11.9)	300 (7.6)	085 (2.2)
456-480	480 (12.2)	300 (7.6)	090 (2.3)
456-490	490 (12.4)	300 (7.6)	095 (2.4)
456-500	500 (12.7)	300 (7.6)	100 (2.5)

457 Series

Color: White
Price Code: F

Part No.	H	T	F
457-510	510 (13.0)	490 (12.4)	010 (1.25)
457-530	530 (13.5)	490 (12.4)	020 (1.51)
457-550	550 (14.0)	490 (12.4)	030 (1.75)
457-570	570 (14.5)	490 (12.4)	040 (1.0)
457-590	590 (15.0)	490 (12.4)	050 (1.3)
457-610	610 (15.5)	490 (12.4)	060 (1.5)
457-630	630 (16.0)	490 (12.4)	070 (1.8)
457-650	650 (16.5)	490 (12.4)	080 (2.0)
457-670	670 (17.0)	490 (12.4)	090 (2.3)
457-690	690 (17.5)	490 (12.4)	100 (2.5)

458 Series

Color: White
Price Code: G

Part No.	H	T	F
458-700	700 (17.8)	680 (17.3)	010 (1.25)
458-720	720 (18.3)	680 (17.3)	020 (1.51)
458-740	740 (18.8)	680 (17.3)	030 (1.75)
458-760	760 (19.3)	680 (17.3)	040 (1.0)
458-780	780 (19.8)	680 (17.3)	050 (1.3)
458-800	800 (20.3)	680 (17.3)	060 (1.5)
458-820	820 (20.8)	680 (17.3)	070 (1.8)
458-840	840 (21.3)	680 (17.3)	080 (2.0)
458-860	860 (21.8)	680 (17.3)	090 (2.3)
458-880	880 (22.4)	680 (17.3)	100 (2.5)

459 Series

Color: White
Price Code: H

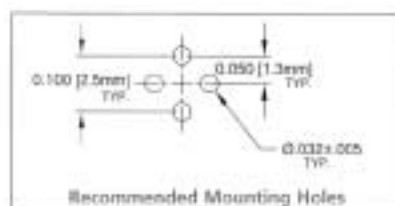
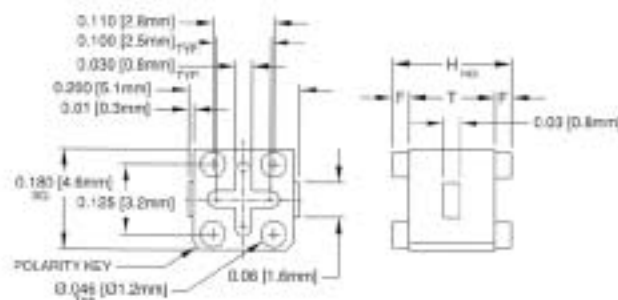
Part No.	H	T	F
459-900	900 (22.9)	880 (22.4)	010 (1.25)
459-920	920 (23.4)	880 (22.4)	020 (1.51)
459-940	940 (23.9)	880 (22.4)	030 (1.75)
459-960	960 (24.4)	880 (22.4)	040 (1.0)
459-980	980 (24.9)	880 (22.4)	050 (1.3)
459-1000	1,000 (25.4)	880 (22.4)	060 (1.5)
459-1020	1,020 (25.9)	880 (22.4)	070 (1.8)
459-1040	1,040 (26.4)	880 (22.4)	080 (2.0)
459-1060	1,060 (26.9)	880 (22.4)	090 (2.3)
459-1080	1,080 (27.4)	880 (22.4)	100 (2.5)

LED MOUNTS/SPACERS

T-1 (3mm) and T-1³/₄ (5mm) Individual LED Mounts

- 53 Different Sizes and Elevations
- Vertical Mounts Assure Accurate LED Positioning
- Compatible with 3mm or 5mm LEDs
- Molded from Natural Nylon per ASTM D-4066
- Made from 94V-2 Rated Nylon

Perfectly suited for in-line or grid alignment of LEDs, these T-1 (3mm) or T-1³/₄ (5mm) individual mounts provide a simple, effective solution to accurate LED placement, while standoffs on top and bottom allow for board cleaning and inspection.



460 Series

Color: Natural
Price Code: A

Part No.	H	T	F
460-060	.060 (1.5)	.040 (1.0)	.010 (.25)
460-070	.070 (1.8)	.040 (1.0)	.015 (.38)
460-080	.080 (2.0)	.040 (1.0)	.020 (.51)
460-090	.090 (2.3)	.040 (1.0)	.025 (.64)
460-100	.100 (2.5)	.040 (1.0)	.030 (.76)
460-110	.110 (2.8)	.040 (1.0)	.035 (.89)
460-120	.120 (3.0)	.040 (1.0)	.040 (1.0)
460-130	.130 (3.3)	.040 (1.0)	.045 (1.1)
460-140	.140 (3.6)	.040 (1.0)	.050 (1.3)
460-150	.150 (3.8)	.040 (1.0)	.055 (1.4)
460-160	.160 (4.1)	.040 (1.0)	.060 (1.5)
460-170	.170 (4.3)	.040 (1.0)	.065 (1.7)
460-180	.180 (4.6)	.040 (1.0)	.070 (1.8)
460-190	.190 (4.8)	.040 (1.0)	.075 (1.9)
460-200	.200 (5.1)	.040 (1.0)	.080 (2.0)
460-210	.210 (5.3)	.040 (1.0)	.085 (2.2)

461 Series

Color: Natural
Price Code: B

Part No.	H	T	F
461-360	.360 (9.1)	.340 (8.6)	.010 (.25)
461-380	.380 (9.7)	.340 (8.6)	.020 (.51)
461-400	.400 (10.2)	.340 (8.6)	.030 (.76)
461-420	.420 (10.7)	.340 (8.6)	.040 (1.0)
461-440	.440 (11.2)	.340 (8.6)	.050 (1.3)
461-460	.460 (11.7)	.340 (8.6)	.060 (1.5)
461-480	.480 (12.3)	.340 (8.6)	.070 (1.8)
461-500	.500 (12.7)	.340 (8.6)	.080 (2.0)
461-520	.520 (13.2)	.340 (8.6)	.090 (2.3)
461-540	.540 (13.7)	.340 (8.6)	.100 (2.5)

462 Series

Color: Natural
Price Code: F

Part No.	H	T	F
462-560	.560 (14.2)	.540 (13.7)	.010 (.25)
462-580	.580 (14.7)	.540 (13.7)	.020 (.51)
462-600	.600 (15.2)	.540 (13.7)	.030 (.76)
462-620	.620 (15.7)	.540 (13.7)	.040 (1.0)
462-640	.640 (16.3)	.540 (13.7)	.050 (1.3)
462-660	.660 (16.8)	.540 (13.7)	.060 (1.5)
462-680	.680 (17.3)	.540 (13.7)	.070 (1.8)
462-700	.700 (17.8)	.540 (13.7)	.080 (2.0)
462-720	.720 (18.3)	.540 (13.7)	.090 (2.3)
462-730	.730 (18.5)	.540 (13.7)	.095 (2.4)
462-740	.740 (18.8)	.540 (13.7)	.100 (2.5)

465 Series

Color: Natural
Price Code: B

Part No.	H	T	F
465-200	.200 (5.1)	.150 (3.8)	.025 (.64)
465-210	.210 (5.3)	.150 (3.8)	.030 (.76)
465-220	.220 (5.6)	.150 (3.8)	.035 (.89)
465-230	.230 (5.8)	.150 (3.8)	.040 (1.0)
465-240	.240 (6.1)	.150 (3.8)	.045 (1.1)
465-250	.250 (6.4)	.150 (3.8)	.050 (1.3)
465-260	.260 (6.6)	.150 (3.8)	.055 (1.4)
465-270	.270 (6.9)	.150 (3.8)	.060 (1.5)
465-280	.280 (7.1)	.150 (3.8)	.065 (1.7)
465-290	.290 (7.4)	.150 (3.8)	.070 (1.8)
465-300	.300 (7.6)	.150 (3.8)	.075 (1.9)
465-310	.310 (7.9)	.150 (3.8)	.080 (2.0)
465-320	.320 (8.1)	.150 (3.8)	.085 (2.2)
465-330	.330 (8.4)	.150 (3.8)	.090 (2.3)
465-340	.340 (8.6)	.150 (3.8)	.095 (2.4)
465-350	.350 (8.9)	.150 (3.8)	.100 (2.5)

LED MOUNTS/SPACERS

Bi-Level T-1 3/4 (5mm) Holders for 90° Display

- Two Different Inside Diameters Accept Most Industry Standard T-1 3/4 LEDs
- Molded from Black Nylon per ASTM D-4066
- Housing Made from 94V-0 Rated Material

H-175C Series

Interlocking T-1 3/4 (5mm) Holder
Color: Black, Price Code: I

H-176C Series

Left end T-1 3/4 (5mm) Holder
Color: Black, Price Code: I

H-177C Series

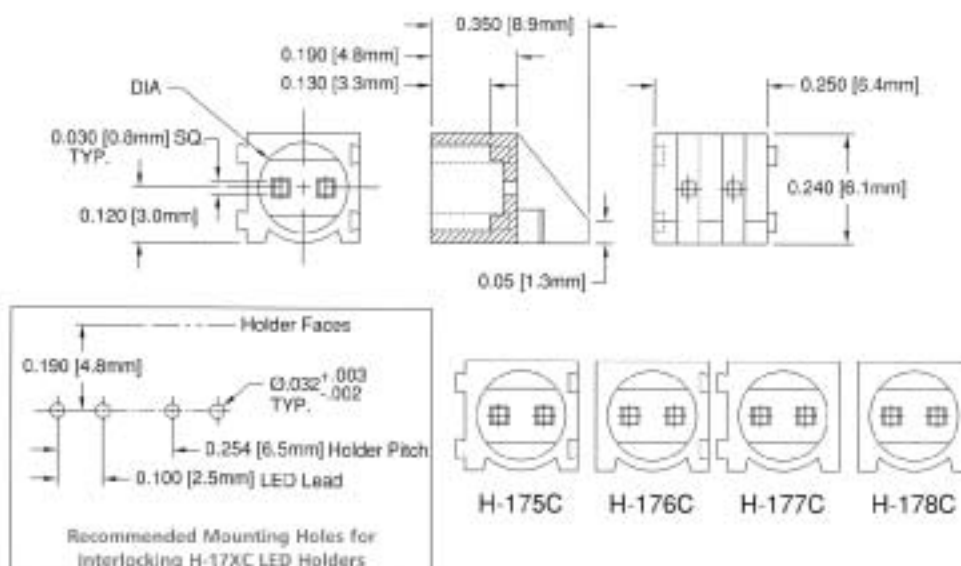
Right end T-1 3/4 (5mm) Holder
Color: Black, Price Code: I

H-178C Series

Single T-1 3/4 (5mm) Holder
Color: Black, Price Code: I



Part No.				DIA
H-175C Series	H-176C Series	H-177C Series	H-178C Series	
H-175C	H-176C	H-177C	H-178C	.197 (5.0)
H-175C-1	H-176C-1	H-177C-1	H-178C-1	.220 (5.6)



ACFComponents
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

Bi-Level T-1 3/4 (5mm) Holders for 90° Display

- Two Different Inside Diameters Accept Most Industry Standard T-1 3/4 LEDs
- Molded from Black Nylon per ASTM D-4066
- Housing Made from 94V-0 Rated Material



H-275C Series

Interlocking T-1 3/4 (5mm) Holder
Color: Black, Price Code: D

H-276C Series

Left end T-1 3/4 (5mm) Holder
Color: Black, Price Code: D

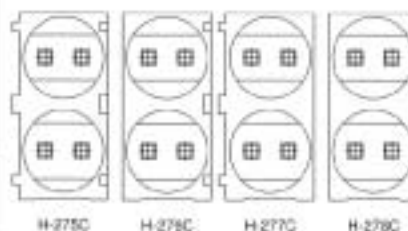
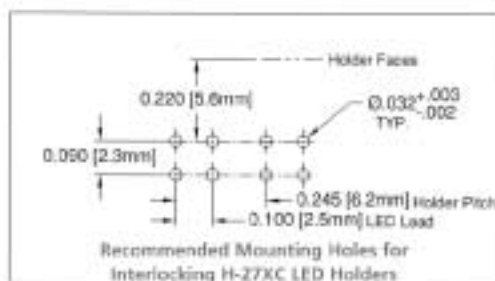
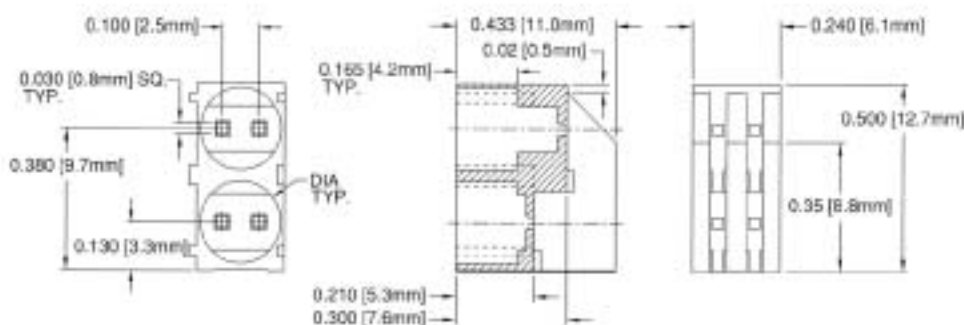
H-277C Series

Right end T-1 3/4 (5mm) Holder
Color: Black, Price Code: D

H-278C Series

Single T-1 3/4 (5mm) Holder
Color: Black, Price Code: D

Part No.				DIA
H-275C Series	H-276C Series	H-277C series	H-278C Series	
H-275C	H-276C	H-277C	H-278C	.157 (3.98)
H-275C-1	H-276C-1	H-277C-1	H-278C-1	.220 (5.6)



ACFComponents
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

Special LED Holders

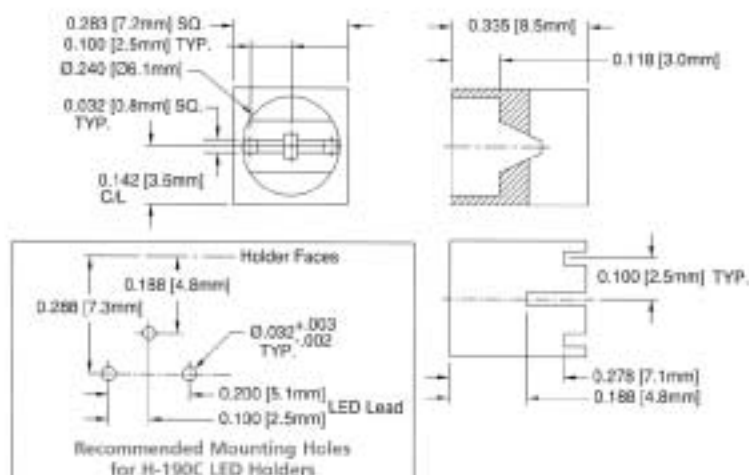
- Unique LED Holders
- Positive Lead Retention
- Lower Assembly Cost and Improved Quality



H-190C-3

T-1 1/2 (5mm) Tri-Lead Holder
Color: Black, Price Code: D

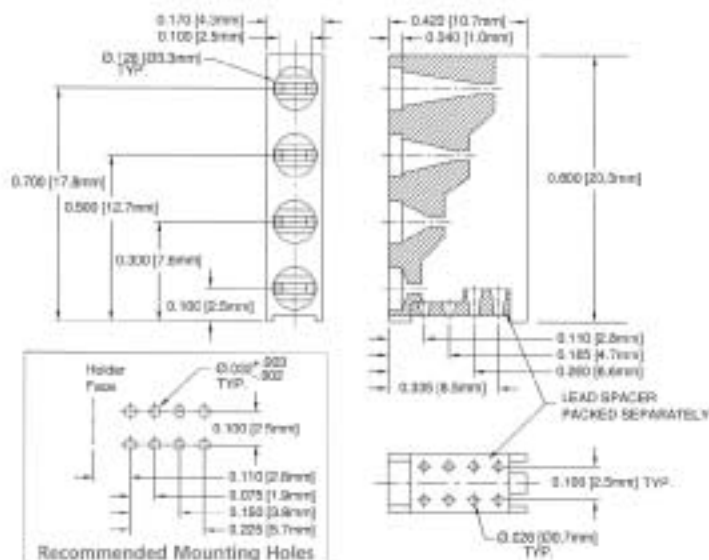
Note:
• Staggered Leads Allow for Precision Alignment



H-420C

T-1 (3mm) Quad Level two piece Holder
Color: Black, Price Code: D

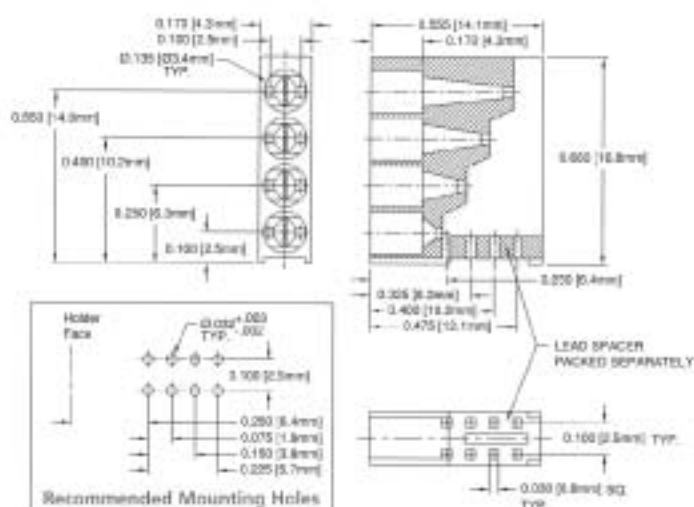
Note:
• Precision Lead Alignment
• Extended LED Protrusion



H-455C

T-1 (3mm) Quad Level two piece Holder
Color: Black, Price Code: D

Note:
• Precision Lead Alignment
• Recessed LED Pocket



LED MOUNTS/SPACERS

Quad-Level LED Holders

- Unique LED Holders
- Positive Lead Retention
- Lower Assembly Cost and Improved Quality



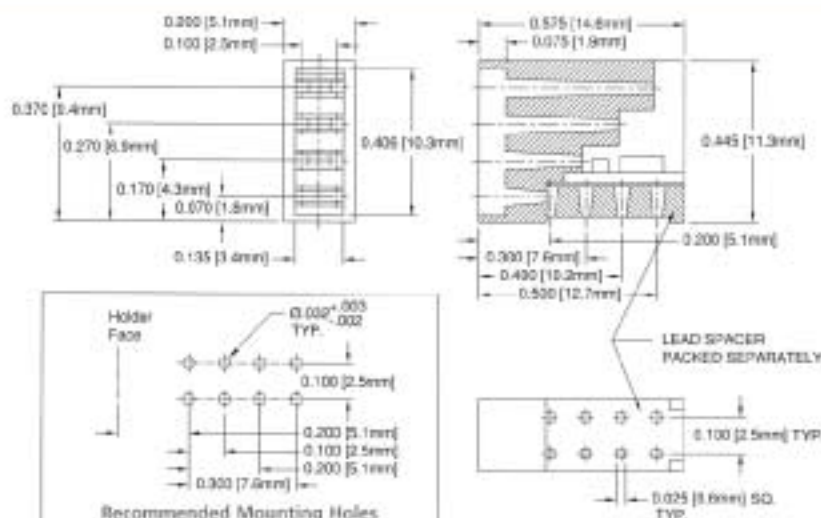
H-441C

94V-0 Nylon Holder

Color: Black, Price Code: D

Note:

- Compatible with 2mm Radial Lead LED
- Precision Lead Retention



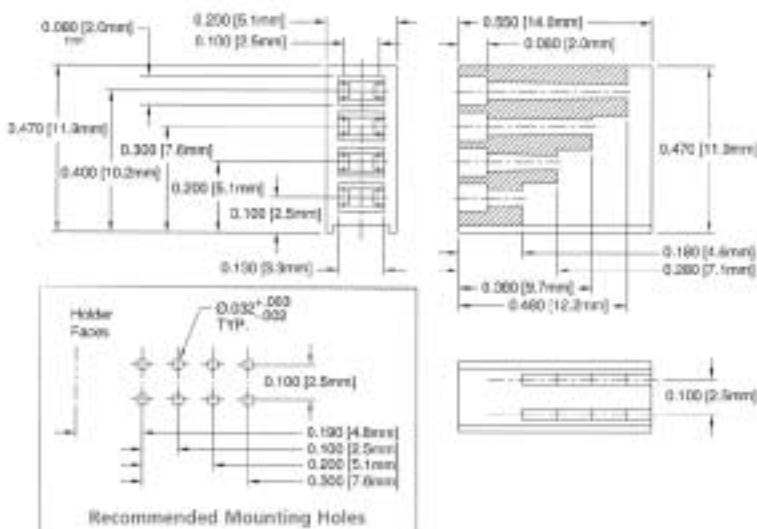
H-480C

94V-0 Nylon Holder

Color: Black, Price Code: D

Note:

- Compatible with 2x3mm Radial Lead LED
- Low Profile/High Density Design



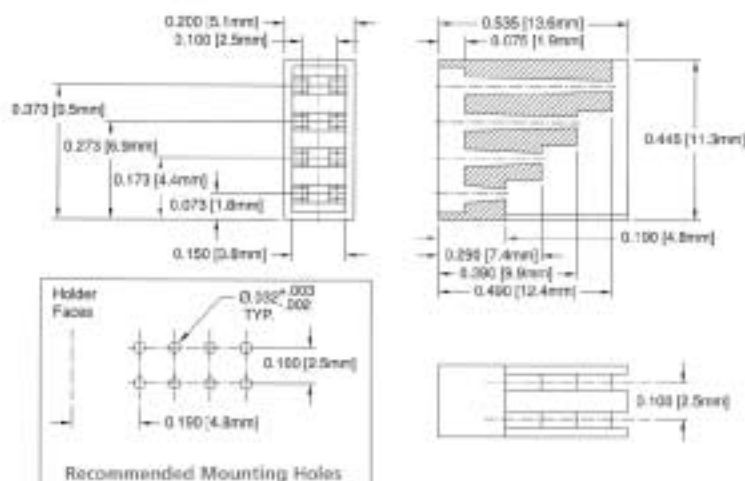
H-485C

94V-0 Nylon Holder

Color: Black, Price Code: D

Note:

- Compatible with 2mm Radial Lead LED



LED MOUNTS/SPACERS

90° Tri-Lead Holders

- Unique LED Holders
- Positive Lead Retention
- Lower Assembly Cost and Improved Quality



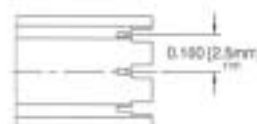
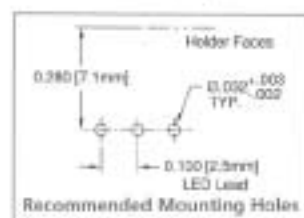
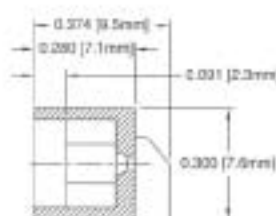
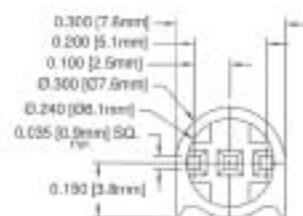
H-178C-3

94V-0 Material Nylon

Color: Black, Price Code: D

Note:

- Works with Flanged and Unflanged T-1 1/4 (5mm) Three-Leaded LEDs
- Tapered Lead Entries Speed Assembly Time and Assure Proper Lead Alignment



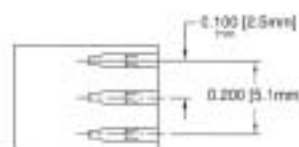
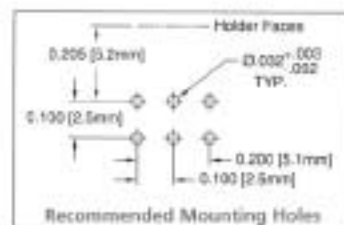
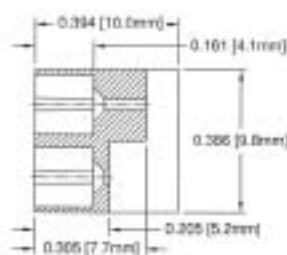
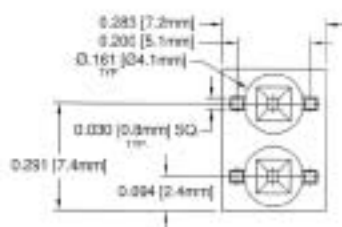
H-280C

94V-0 Material Nylon

Color: Black, Price Code: D

Note:

- Works with Flanged and Unflanged T-1 (3mm) Three-Leaded LEDs



LED MOUNTS/SPACERS

T-1 (3mm) Holders for 90° Mounting

- Two Different Inside Diameters Accepts Most Industry Standard T-1 LEDs
- Molded from Black Nylon Per ASTM D-4066
- Housing Made from 94V-0 Rated Nylon

H-100C Series

Interlocking T-1 (3mm) Holder
Color: Black, Price Code: I

H-101C Series

Single T-1 (3mm) Holder
Color: Black, Price Code: I

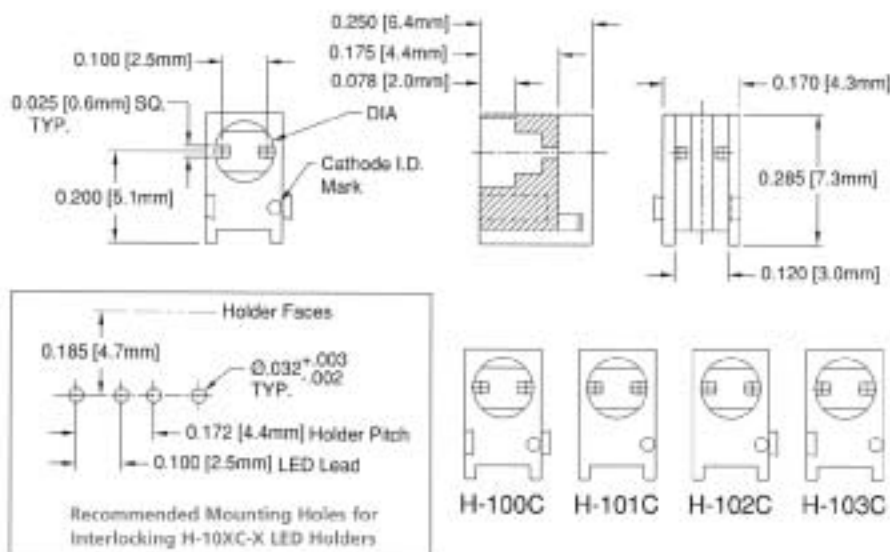
H-102C Series

Let End T-1 (3mm) Holder
Color: Black, Price Code: I

H-103C Series

Right End T-1 (3mm) Holder
Color: Black, Price Code: I

Part No.				DIA.
H-100C Series	H-101C Series	H-102C series	H-103C Series	
H-100C	H-101C	H-102C	H-103C	.132 (3.4)
H-100C-1	H-101C-1	H-102C-1	H-103C-1	.150 (3.8)



ACFComponents
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

T-1 (3mm) Holders for 90° Mounting

- Two Different Inside Diameters Accepts Most Industry Standard T-1 LEDs
- Molded from Black Nylon Per ASTM D-4066
- Housing Made from 94V-0 Rated Nylon

H-130C Series

Interlocking Variable Centerline
T-1 (3mm) Holder
Color: Black, Price Code: C

H-131C Series

Single Variable Centerline
T-1 (3mm) Holder
Color: Black, Price Code: C

H-132C Series

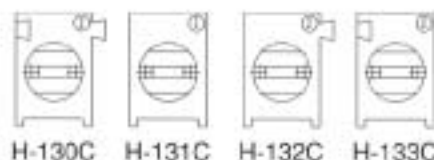
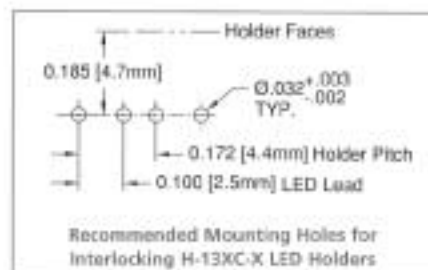
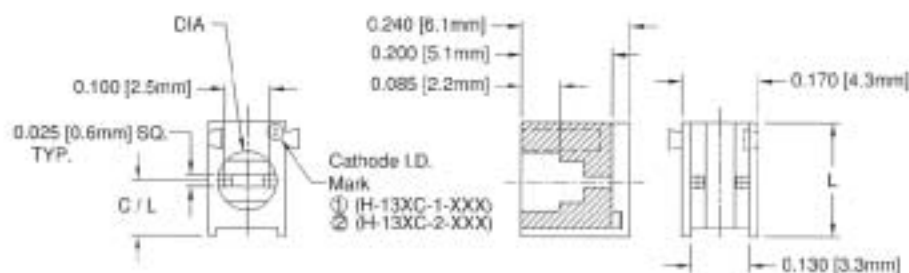
Left End Variable Centerline
T-1 (3mm) Holder
Color: Black, Price Code: C

H-133C Series

Right End Variable Centerline
T-1 (3mm) Holder
Color: Black, Price Code: C



Part No.				I.D. Mark	DIA	C/L	L
H-130C Series	H-131C Series	H-132C Series	H-133C Series				
H-130C-1-120	H-131C-1-120	H-132C-1-120	H-133C-1-120	1	128 (3.3)	120 (3.0)	250 (6.4)
H-130C-2-120	H-131C-2-120	H-132C-2-120	H-133C-2-120	2	150 (3.8)	120 (3.0)	250 (6.4)
H-130C-1-140	H-131C-1-140	H-132C-1-140	H-133C-1-140	1	128 (3.3)	140 (3.6)	270 (6.9)
H-130C-2-140	H-131C-2-140	H-132C-2-140	H-133C-2-140	2	150 (3.8)	140 (3.6)	270 (6.9)
H-130C-1-160	H-131C-1-160	H-132C-1-160	H-133C-1-160	1	128 (3.3)	160 (4.1)	290 (7.4)
H-130C-2-160	H-131C-2-160	H-132C-2-160	H-133C-2-160	2	150 (3.8)	160 (4.1)	290 (7.4)
H-130C-1-180	H-131C-1-180	H-132C-1-180	H-133C-1-180	1	128 (3.3)	180 (4.6)	310 (7.9)
H-130C-2-180	H-131C-2-180	H-132C-2-180	H-133C-2-180	2	150 (3.8)	180 (4.6)	310 (7.9)



ACFComponents
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

Bi-Level T-1 (3mm) Holders

- Two Different Inside Diameters Accepts Most Industry Standard T-1 LEDs
- Molded from Black Nylon Per ASTM D-4066
- Housing Made from 94V-0 Rated Nylon



H-200C Series

Interlocking Bi-Level Holder
Color: Black, Price Code: D

H-201C Series

Single T-1(3mm) Bi-Level Holder
Color: Black, Price Code: D

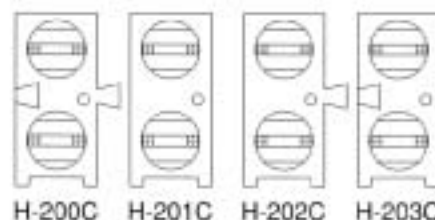
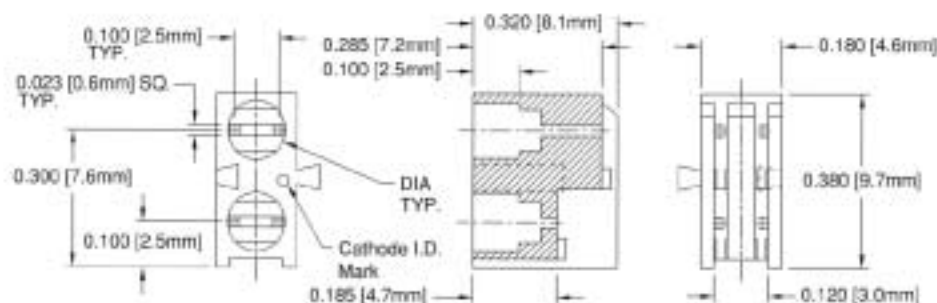
H-202C Series

Left End Bi-Level Holder
Color: Black, Price Code: D

H-203C Series

Right End T-1 (3mm) Holder
Color: Black, Price Code: D

Part No.				DIA.
H-200C Series	H-201C Series	H-202C series	H-203C Series	
H-200C	H-201C	H-202C	H-203C	.126 [3.2]
H-200C-1	H-201C-1	H-202C-1	H-203C-1	.150 [3.8]



ACF Components
1-800-227-2901 & Fasteners, Inc.

LED MOUNTS/SPACERS

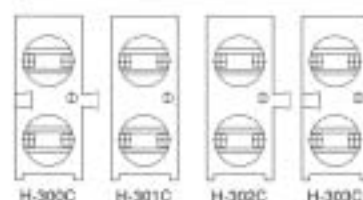
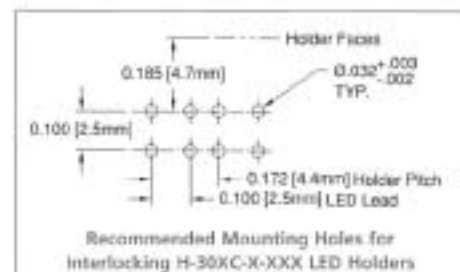
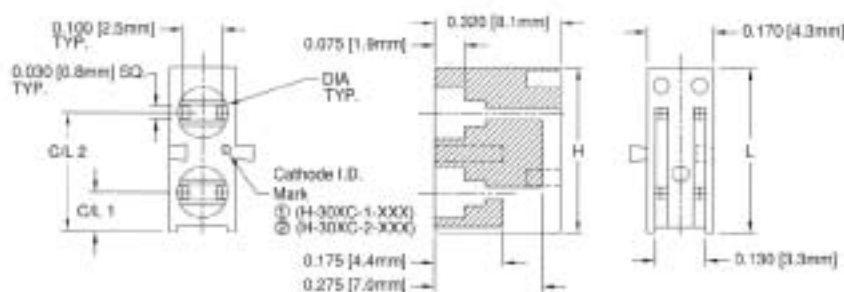
Bi-Level T-1 (3mm) Holders

- Two Different Inside Diameters Accepts Most Industry Standard T-1 LEDs
- Molded from Black Nylon Per ASTM D-4066
- Housing Made from 94V-0 Rated Nylon

H-30XC Series

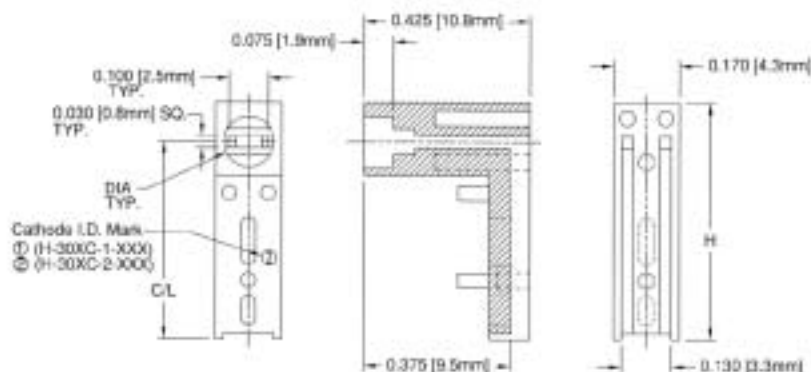
Double and Triple T-1 (3mm) Holders
Color: Black, Price Code: D

Part No.				I.D. Mark	DIA	C/L 1	C/L 2	L
H-300C Series	H-301C Series	H-302C Series	H-303C Series					
H-300C-1-100	H-301C-1-100	H-302C-1-100	H-303C-1-100	1	128 (3.3)	100 (2.5)	300 (7.6)	415 (10.6)
H-300C-2-100	H-301C-2-100	H-302C-2-100	H-303C-2-100	2	150 (3.8)	100 (2.5)	300 (7.6)	415 (10.6)
H-300C-1-120	H-301C-1-120	H-302C-1-120	H-303C-1-120	1	128 (3.3)	120 (3.0)	320 (8.1)	435 (11.0)
H-300C-2-120	H-301C-2-120	H-302C-2-120	H-303C-2-120	2	150 (3.8)	120 (3.0)	320 (8.1)	435 (11.0)
H-300C-1-140	H-301C-1-140	H-302C-1-140	H-303C-1-140	1	128 (3.3)	140 (3.6)	340 (8.6)	455 (11.6)
H-300C-2-140	H-301C-2-140	H-302C-2-140	H-303C-2-140	2	150 (3.8)	140 (3.6)	340 (8.6)	455 (11.6)
H-300C-1-160	H-301C-1-160	H-302C-1-160	H-303C-1-160	1	128 (3.3)	160 (4.1)	360 (9.1)	475 (12.1)
H-300C-2-160	H-301C-2-160	H-302C-2-160	H-303C-2-160	2	150 (3.8)	160 (4.1)	360 (9.1)	475 (12.1)
H-300C-1-180	H-301C-1-180	H-302C-1-180	H-303C-1-180	1	128 (3.3)	180 (4.6)	380 (9.7)	495 (12.6)
H-300C-2-180	H-301C-2-180	H-302C-2-180	H-303C-2-180	2	150 (3.8)	180 (4.6)	380 (9.7)	495 (12.6)



H-300-X-XXX

Part No.	C/L	DIA	D	H
H-300-1-500	500 (12.7)	128 (3.3)	585 (14.9)	600 (15.2)
H-300-2-500	500 (12.7)	150 (3.8)	585 (14.9)	600 (15.2)
H-300-1-520	520 (13.2)	128 (3.3)	605 (15.4)	620 (15.7)
H-300-2-520	520 (13.2)	150 (3.8)	605 (15.4)	620 (15.7)
H-300-1-540	540 (13.7)	128 (3.3)	625 (15.9)	640 (16.3)
H-300-2-540	540 (13.7)	150 (3.8)	625 (15.9)	640 (16.3)
H-300-1-560	560 (14.2)	128 (3.3)	645 (16.4)	660 (16.8)
H-300-2-560	560 (14.2)	150 (3.8)	645 (16.4)	660 (16.8)
H-300-1-580	580 (14.7)	128 (3.3)	665 (16.9)	680 (17.3)
H-300-2-580	580 (14.7)	150 (3.8)	665 (16.9)	680 (17.3)



LED MOUNTS/SPACERS

Tri-Level and Quad T-1 (3mm) LED Mounts

- Tri-Level and Quad Level Design Conserves Board Space
- Interlocking Versions Form Rigid Arrays
- Recessed Cavities Prevent Light Bleeding
- Molded from Black Nylon per ASTM D-4066
- Housing Made from 94V-0 Rated Material

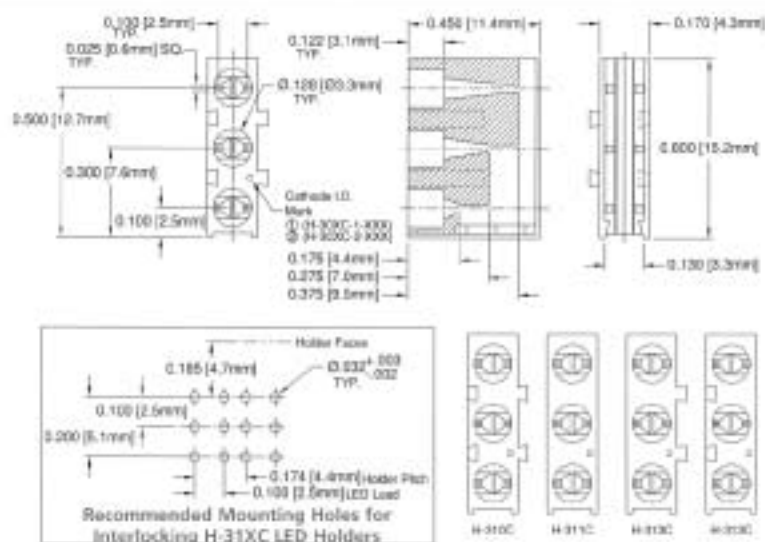
BivarOpto Tri-Level (H-310C Series) and Quad-Level (H-400C Series) T-1 LED Holders accurately position industry's popular T-1 LEDs in 90° tiered displays, assuring uniform elevation and a reliable, narrow fixture that conserves valuable board space.

Recessed cavities allow secure seating of LEDs, minimizing parallax and prevent light bleeding for enhanced display brightness.



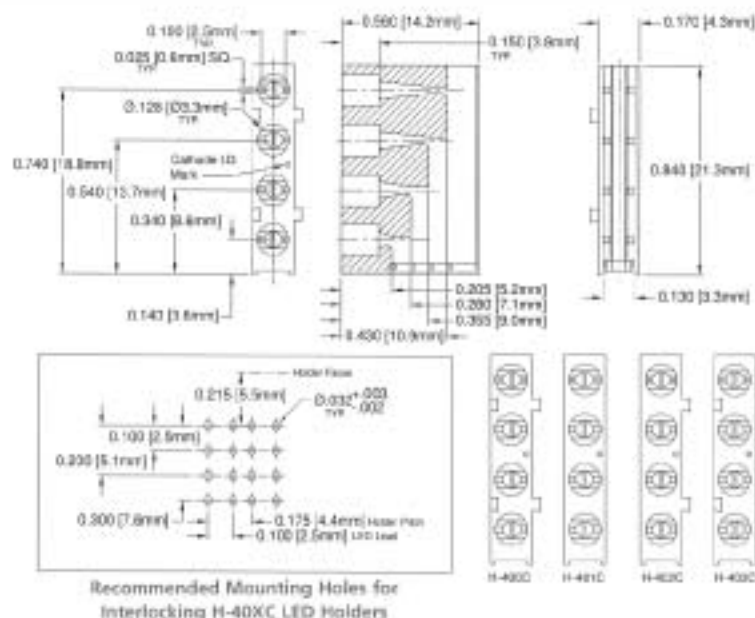
H-310 Series

Color: Black, Price Code: L



H-400C Series

Color: Black, Price Code: M



LED MOUNTS/SPACERS

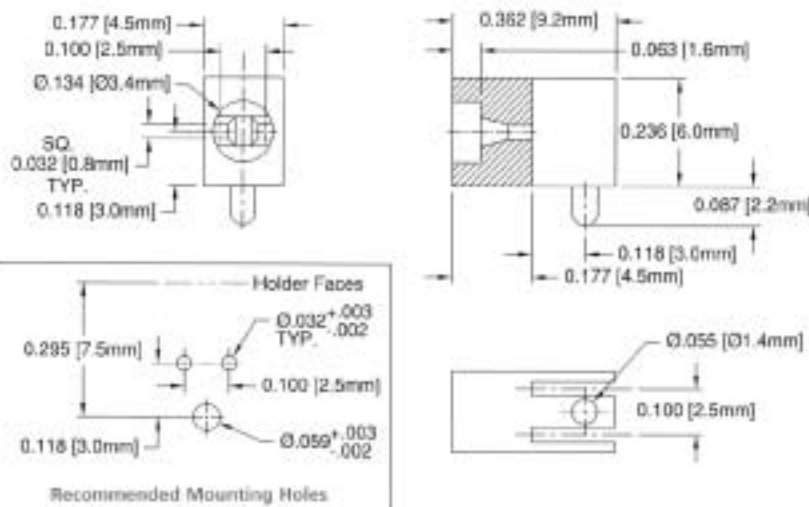
Locating Pin Series Holders

- Locator Pin for Added PCB Retention



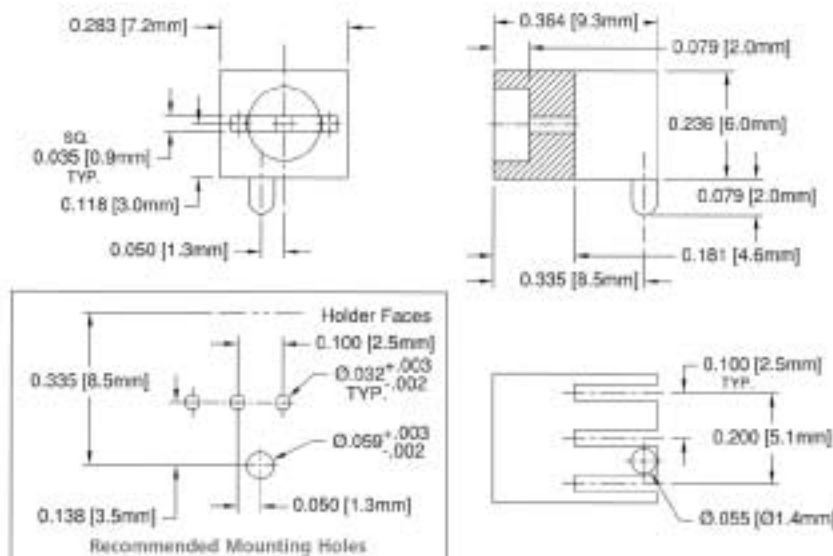
H-125C-LP

Single Level T-1 (3mm)
Color: Black, Price Code: D



H-180C-LP

Single Level T-1 (3mm) TH-Lead Version
Color: Black, Price Code: D



LED MOUNTS/SPACERS

Locating Pin Series Holders

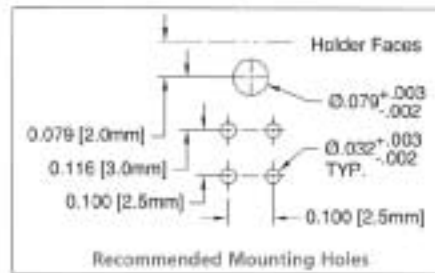
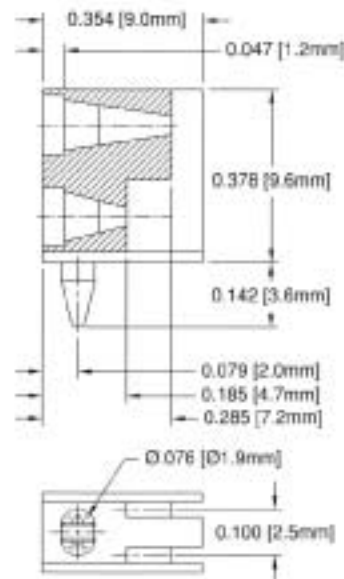
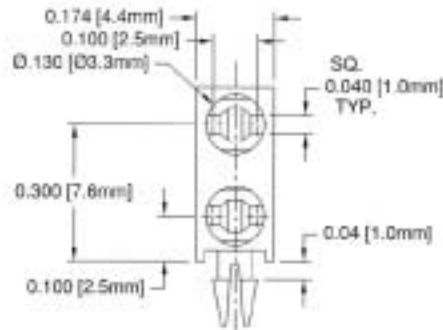
- Locator Pin for Added PCB Retention



H-220C-LP

Bi-Level T-1 (3mm)

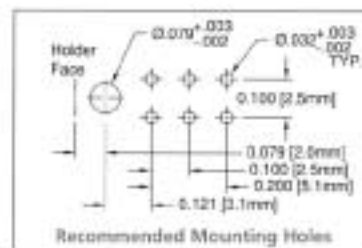
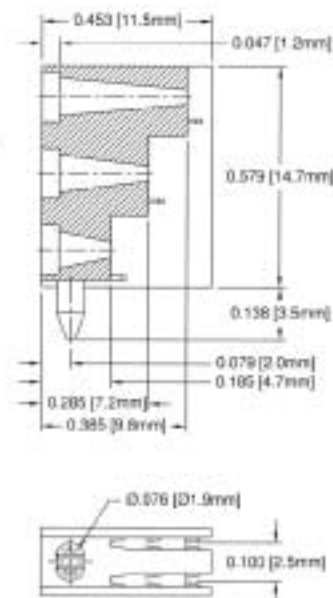
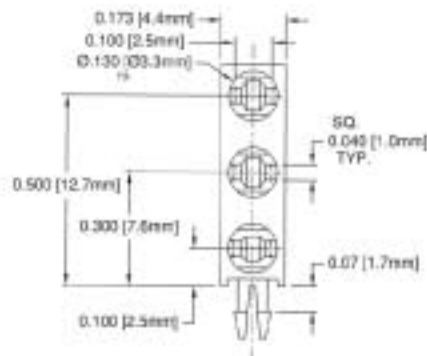
Color: Black, Price Code: D



H-320C-LP

Tri-Level T-1 (3mm)

Color: Black, Price Code: D



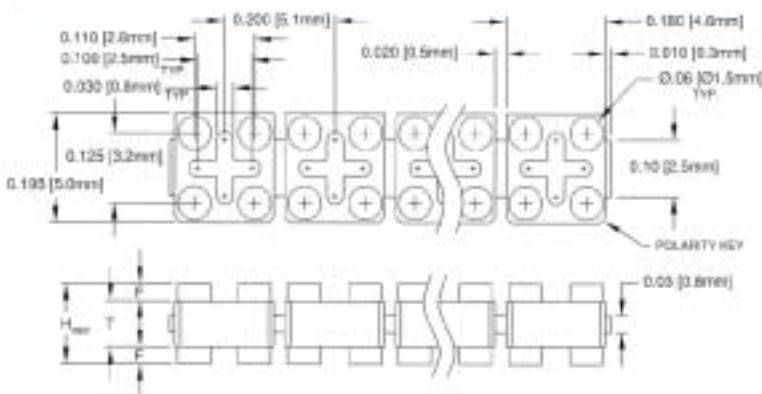
LED MOUNTS/SPACERS

T-1 (3mm) and T-1³/₄ (5mm) Nylon Strip Mounts

- Station Mounts Assure Even Spacing and Elevation
- Provides Entire Array Positioning
- May be Cut for Use from 2 to 15 Stations
- Molded from Natural Nylon per ASTM D-4066
- Housing Made from 94V-2 Rated Nylon

Bivar Strip-Mounts are available in 2 body thicknesses and 30 different elevations. Spacing styles available from .060" (1.5mm) through .350" (8.9) in .010" (.25) increments. Strip-Mounts have polarity keys for controlled component orientation. Standoffs on both sides allow for board cleaning and inspection.

15 Station Mount for T-1 (3mm) and Flangeless T-1³/₄ (5mm) LEDs



T-100 Series

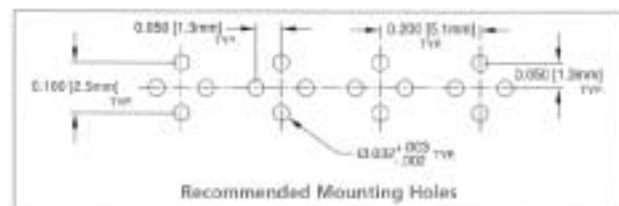
Color: Natural, Price Code: D

Part No.	H	T	F
T-100-060	.060 (1.5)	.040 (1.0)	.010 (.25)
T-100-070	.070 (1.8)	.040 (1.0)	.015 (.38)
T-100-080	.080 (2.0)	.040 (1.0)	.020 (.51)
T-100-090	.090 (2.3)	.040 (1.0)	.025 (.64)
T-100-100	.100 (2.5)	.040 (1.0)	.030 (.76)
T-100-110	.110 (2.8)	.040 (1.0)	.035 (.89)
T-100-120	.120 (3.0)	.040 (1.0)	.040 (1.0)
T-100-130	.130 (3.3)	.040 (1.0)	.045 (1.1)
T-100-140	.140 (3.6)	.040 (1.0)	.050 (1.3)
T-100-150	.150 (3.8)	.040 (1.0)	.055 (1.4)
T-100-160	.160 (4.1)	.040 (1.0)	.060 (1.5)
T-100-170	.170 (4.3)	.040 (1.0)	.065 (1.7)
T-100-180	.180 (4.6)	.040 (1.0)	.070 (1.8)
T-100-190	.190 (4.8)	.040 (1.0)	.075 (1.9)
T-100-200	.200 (5.1)	.040 (1.0)	.080 (2.0)
T-100-210	.210 (5.3)	.040 (1.0)	.085 (2.2)

T-101 Series

Color: Natural, Price Code: D

Part No.	H	T	F
T-101-200	.200 (5.1)	.150 (3.8)	.025 (.64)
T-101-210	.210 (5.3)	.150 (3.8)	.030 (.76)
T-101-220	.220 (5.6)	.150 (3.8)	.035 (.89)
T-101-230	.230 (5.8)	.150 (3.8)	.040 (1.0)
T-101-240	.240 (6.1)	.150 (3.8)	.045 (1.1)
T-101-250	.250 (6.4)	.150 (3.8)	.050 (1.3)
T-101-260	.260 (6.6)	.150 (3.8)	.055 (1.4)
T-101-270	.270 (6.9)	.150 (3.8)	.060 (1.5)
T-101-280	.280 (7.1)	.150 (3.8)	.065 (1.7)
T-101-290	.290 (7.4)	.150 (3.8)	.070 (1.8)
T-101-300	.300 (7.6)	.150 (3.8)	.075 (1.9)
T-101-310	.310 (7.9)	.150 (3.8)	.080 (2.0)
T-101-320	.320 (8.1)	.150 (3.8)	.085 (2.2)
T-101-330	.330 (8.4)	.150 (3.8)	.090 (2.3)
T-101-340	.340 (8.6)	.150 (3.8)	.095 (2.4)
T-101-350	.350 (8.9)	.150 (3.8)	.100 (2.5)



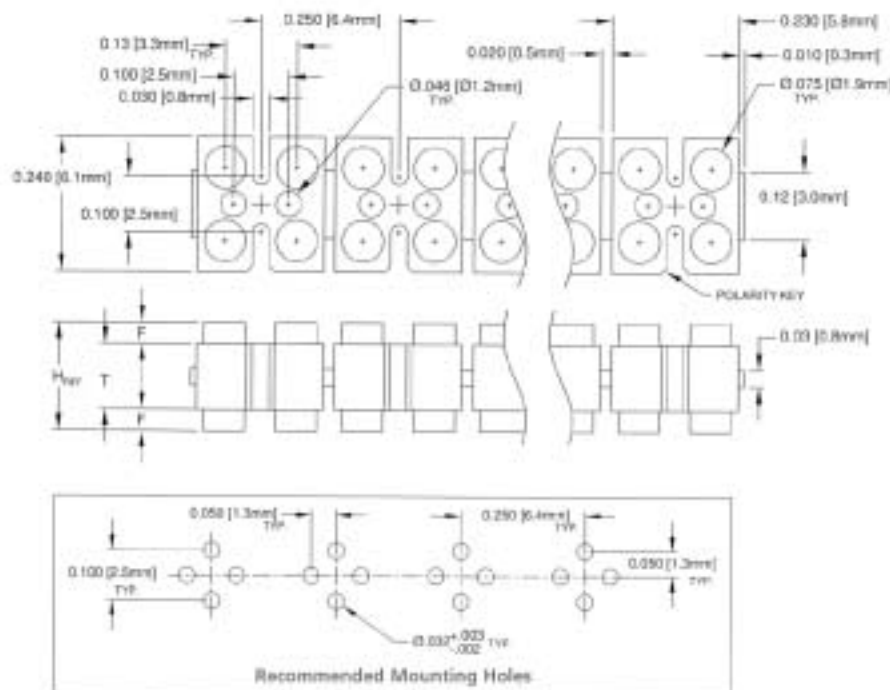
Recommended Mounting Holes

LED MOUNTS/SPACERS

T-13/4 (5mm) Nylon Strip Mounts

- Station Mounts Assure Even Spacing and Elevation
- Provides Entire Array Positioning
- May be Cut for Use from 2 to 15 Stations
- Molded from Natural Nylon per ASTM D-4066
- Made from 94V-2 Rated Nylon

12 Station Mount T-13/4 (5mm) LEDs



T-175 Series

Color: Natural. Price Code: D

Part No.	H	T	F
T-175-060	060 (1.5)	040 (1.0)	010 (.25)
T-175-070	070 (1.8)	040 (1.0)	015 (.38)
T-175-080	080 (2.0)	040 (1.0)	020 (.51)
T-175-090	090 (2.3)	040 (1.0)	025 (.64)
T-175-100	100 (2.5)	040 (1.0)	030 (.76)
T-175-110	110 (2.8)	040 (1.0)	035 (.89)
T-175-120	120 (3.0)	040 (1.0)	040 (1.0)
T-175-130	130 (3.3)	040 (1.0)	045 (1.1)
T-175-140	140 (3.6)	040 (1.0)	050 (1.3)
T-175-150	150 (3.8)	040 (1.0)	055 (1.4)
T-175-160	160 (4.1)	040 (1.0)	060 (1.5)
T-175-170	170 (4.3)	040 (1.0)	065 (1.7)
T-175-180	180 (4.6)	040 (1.0)	070 (1.8)
T-175-190	190 (4.8)	040 (1.0)	075 (1.9)
T-175-200	200 (5.1)	040 (1.0)	080 (2.0)
T-175-210	210 (5.3)	040 (1.0)	085 (2.2)

T-176 Series

Color: Natural. Price Code: D

Part No.	H	T	F
T-176-200	200 (5.1)	150 (3.8)	025 (.64)
T-176-210	210 (5.3)	150 (3.8)	030 (.76)
T-176-220	220 (5.6)	150 (3.8)	035 (.89)
T-176-230	230 (5.8)	150 (3.8)	040 (1.0)
T-176-240	240 (6.1)	150 (3.8)	045 (1.1)
T-176-250	250 (6.4)	150 (3.8)	050 (1.3)
T-176-260	260 (6.6)	150 (3.8)	055 (1.4)
T-176-270	270 (6.9)	150 (3.8)	060 (1.5)
T-176-280	280 (7.1)	150 (3.8)	065 (1.7)
T-176-290	290 (7.4)	150 (3.8)	070 (1.8)
T-176-300	300 (7.6)	150 (3.8)	075 (1.9)
T-176-310	310 (7.9)	150 (3.8)	080 (2.0)
T-176-320	320 (8.1)	150 (3.8)	085 (2.2)
T-176-330	330 (8.4)	150 (3.8)	090 (2.3)
T-176-340	340 (8.6)	150 (3.8)	095 (2.4)
T-176-350	350 (8.9)	150 (3.8)	100 (2.5)

ACFComponents
1-800-227-2901 & Fasteners, Inc.

NYLON TUBULAR SPACERS

Nylon Spacers for Standard Screw Sizes

- Screw Spacers give users an extremely wide selection of tubular spacers for PCB support in almost any elevation
- Six basic ID/OD combinations with heights ranging from 1/16" (1.6mm) through 1.0" (25.4mm), are available from factory stock or within two weeks
- Such a broad selection permits the user to choose the most suitable sizes for strength, elevation and ease of assembly

Material Specifications:

Natural Nylon, per ASTM D4066 PA225, UL Rated 94V-2

Oxygen Rating Index: Over 23%

Standard Drawing Tolerances:

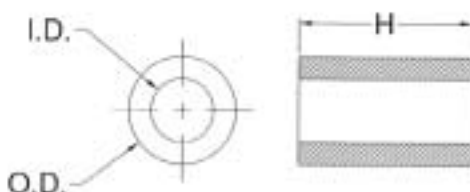
(unless otherwise indicated)

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

H Dim: 1/16-1/2 (1.6-12.7) is $\pm .005$ (.13)

H Dim: 9/16-1.0 (14.3-25.4) is $\pm .010$ (.25)



99XX Series

Color: Natural

Series	Screw Size	I.D.	O.D.	*H* DIM.	Dash No.	Price Code
9913	#2	.091 (2.3)	.187 (4.7)	1/16 (1.6)	-062	U
				1/8 (3.2)	-125	U
				3/16 (4.8)	-187	U
9910	#2	.091 (2.3)	.250 (6.4)	1/4 (6.4)	-250	U
				5/16 (7.9)	-312	U
				3/8 (9.5)	-375	V
9908	#4	.125 (3.2)	.187 (4.7)	7/16 (11.1)	-437	V
				1/2 (12.7)	-500	V
				9/16 (14.3)	-562	V
9911	#4	.125 (3.2)	.250 (6.4)	5/8 (15.9)	-625	W
				3/4 (19.1)	-750	W
				13/16 (20.6)	-812	X
9905	#6	.147 (3.7)	.250 (6.4)	7/8 (22.2)	-875	X
				15/16 (23.8)	-937	X
				1.0 (25.4)	-1000	X

Examples:

9913-250 is for a #2 Screw; O.D. is .187 (4.7)
Length is 1/4 (6.4), price code U.

9910-125 is for a #2 Screw; O.D. is .250 (6.4)
Length is 1/8 (3.2), price code U.

ACFComponents
1-800-227-2901 & Fasteners, Inc.

NYLON TUBULAR SPACERS

Nylon Spacers for Standard Screw Sizes

- Screw Spacers give users an extremely wide selection of tubular spacers for PCB support in almost any elevation
- Six basic ID/OD combinations with heights ranging from 1/16" (1.6mm) through 1.0" (25.4mm), are available from factory stock or within two weeks
- Such a broad selection permits the user to choose the most suitable sizes for strength, elevation and ease of assembly



Material Specifications:

Natural Nylon, per ASTM D4066 PA225,
UL Rated 94V-2

Oxygen Rating Index: Over 23%

Standard Drawing Tolerances:

(unless otherwise indicated)

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

"H" Dim: 1/16-1/2 (1.6-12.7) is $\pm .005$ (.13)

"H" Dim: 9/16-1.0 (14.3-25.4) is $\pm .010$ (.25)

mm Chart

Series	1mm .039	2mm .079	3mm .118	4mm .158	5mm .197	6mm .236	7mm .276	8mm .315	9mm .354	10mm .394	11mm .433	12mm .472
9905	9905-1mm	9905-2mm	9905-3mm	9905-4mm	9905-5mm	9905-6mm	9905-7mm	9905-8mm	9905-9mm	9905-10mm	9905-11mm	9905-12mm
9908	9908-1mm	9908-2mm	9908-3mm	9908-4mm	9908-5mm	9908-6mm	9908-7mm	9908-8mm	9908-9mm	9908-10mm	9908-11mm	9908-12mm
9910	9910-1mm	9910-2mm	9910-3mm	9910-4mm	9910-5mm	9910-6mm	9910-7mm	9910-8mm	9910-9mm	9910-10mm	9910-11mm	9910-12mm
9911	9911-1mm	9911-2mm	9911-3mm	9911-4mm	9911-5mm	9911-6mm	9911-7mm	9911-8mm	9911-9mm	9911-10mm	9911-11mm	9911-12mm
9912	9912-1mm	9912-2mm	9912-3mm	9912-4mm	9912-5mm	9912-6mm	9912-7mm	9912-8mm	9912-9mm	9912-10mm	9912-11mm	9912-12mm
9913	9913-1mm	9913-2mm	9913-3mm	9913-4mm	9913-5mm	9913-6mm	9913-7mm	9913-8mm	9913-9mm	9913-10mm	9913-11mm	9913-12mm
Price Code	U	U	U	U	U	U	U	V	V	V	V	V

Series	13mm .512	14mm .551	15mm .591	16mm .630	17mm .669	18mm .709
9905	9905-13mm	9905-14mm	9905-15mm	9905-16mm	9905-17mm	9905-18mm
9908	9908-13mm	9908-14mm	9908-15mm	9908-16mm	9908-17mm	9908-18mm
9910	9910-13mm	9910-14mm	9910-15mm	9910-16mm	9910-17mm	9910-18mm
9911	9911-13mm	9911-14mm	9911-15mm	9911-16mm	9911-17mm	9911-18mm
9912	9912-13mm	9912-14mm	9912-15mm	9912-16mm	9912-17mm	9912-18mm
9913	9913-13mm	9913-14mm	9913-15mm	9913-16mm	9913-17mm	9913-18mm
Price Code	V	V	W	W	W	W

Series	19mm .748	20mm .787	21mm .827	22mm .868	23mm .906	24mm .945
9905	9905-19mm	9905-20mm	9905-21mm	9905-22mm	9905-23mm	9905-24mm
9908	9908-19mm	9908-20mm	9908-21mm	9908-22mm	9908-23mm	9908-24mm
9910	9910-19mm	9910-20mm	9910-21mm	9910-22mm	9910-23mm	9910-24mm
9911	9911-19mm	9911-20mm	9911-21mm	9911-22mm	9911-23mm	9911-24mm
9912	9912-19mm	9912-20mm	9912-21mm	9912-22mm	9912-23mm	9912-24mm
9913	9913-19mm	9913-20mm	9913-21mm	9913-22mm	9913-23mm	9913-24mm
Price Code	W	X	X	X	X	X

SELF-RETAINING PVC SCREW SPACERS

- Simple Pre-Assembly Convenience Saves Handling
- Firm Retention Assured
- 5 Standard Sizes in Lengths from .050" - 1.250" (.76 - 31.8) in .005" (.127) Increments

Ribbed inner-wall design assures a snug fit onto #4, #6 and #8 screws, or M3 and M4 metric screws enabling the spacers to remain pre-assembled during handling and assembly. The SRS Series provides a dependable solution for otherwise awkward assembly steps and lost assembly time.

Material Specifications:

Gray Rigid PVC material, UL Rated 94V-0

Oxygen Rating Index: Over 45%

Standard Drawing Tolerances:

(unless otherwise indicated)

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

"H" Dim: 1/16-1/2 (1.6-12.7) is $\pm .005$ (.13)

"H" Dim: 9/16-1.0 (14.3-25.4) is $\pm .010$ (.25)

Ordering Information:

SRS X XXX

Length Expressed in Inches
(Must be even multiples of .005")
or whole millimeters (example: 2mm)
0.050 = 050 0.750 = 750
0.100 = 100 1.250 = 1.250

Series



SRS Series		Color: Gray		
Part No.	Screw Size	Minor I.D.	I.D.	"H" DIM.
SRS-1	#4	.107 (2.7)	.142 (3.6)	.050-1.250 (1.3-31.8)
SRS-2	#6 (M3.5)	.131 (3.3)	.174 (4.4)	.050-1.250 (1.3-31.8)
SRS-3	#8	.155 (3.9)	.177 (4.5)	.050-1.250 (1.3-31.8)
SRS-4	M3	.113 (2.9)	.144 (3.7)	.050-1.250 (1.3-31.8)
SRS-5	M4	.149 (3.8)	.185 (4.7)	.050-1.250 (1.3-31.8)

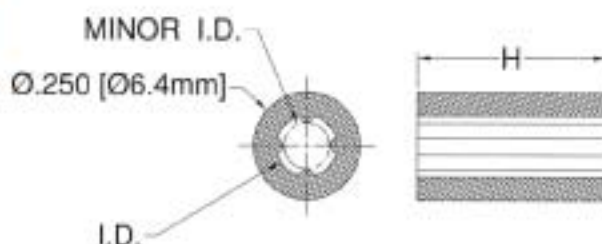
"H" Dimension	Price Code SRS-1 thru SRS-5
.050-.075 (1.3-1.9)	W
.080-.150 (2.0-3.8)	X
.155-.250 (4.0-6.3)	X
.275-.310 (6.9-7.9)	Y
.315-.380 (8.0-9.7)	Z
.385-.485 (9.8-12.3)	ZZ
.500-.750 (12.7-19.1)	ZZZ
.755-1.250 (19.2-31.8)	ZZZZ

Examples:

SRS-1-240 is price code Y

SRS-5-410 is price code ZZ

SRS-3-900 is price code ZZZZ



ACFComponents
1-800-227-2901 & Fasteners, Inc.

SELF-RETAINING PVC SCREW SPACERS

- Simple Pre-Assembly Convenience Saves Handling
- Firm Retention Assured
- 5 Standard Sizes in Lengths from .050" - 1.250" (.76 - 31.8) in .005" (.127) Increments



Material Specifications:

Gray Rigid PVC material, UL Rated S4V-0

Oxygen Rating Index: Over 45%

Standard Drawing Tolerances:

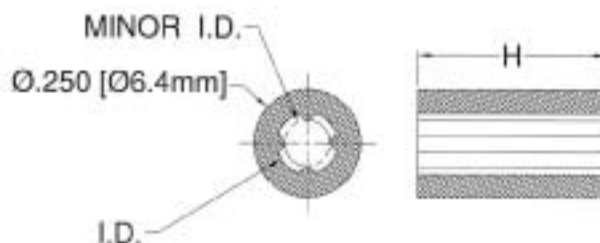
(unless otherwise indicated)

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

H Dim: 1/16-1/2 (1.6-12.7) is $\pm .005$ (.13)

H Dim: 9/16-1.0 (14.3-25.4) is $\pm .010$ (.25)



mm Chart

Series	Screw Size	2mm .079	3mm .118	4mm .158	5mm .197	6mm .236	7mm .276	8mm .315
SRS-1	4	SRS-1-2mm	SRS-1-3mm	SRS-1-4mm	SRS-1-5mm	SRS-1-6mm	SRS-1-7mm	SRS-1-8mm
SRS-2	6 (M3.5)	SRS-2-2mm	SRS-2-3mm	SRS-2-4mm	SRS-2-5mm	SRS-2-6mm	SRS-2-7mm	SRS-2-8mm
SRS-3	8	SRS-3-2mm	SRS-3-3mm	SRS-3-4mm	SRS-3-5mm	SRS-3-6mm	SRS-3-7mm	SRS-3-8mm
SRS-4	M3	SRS-4-2mm	SRS-4-3mm	SRS-4-4mm	SRS-4-5mm	SRS-4-6mm	SRS-4-7mm	SRS-4-8mm
SRS-5	M4	SRS-5-2mm	SRS-5-3mm	SRS-5-4mm	SRS-5-5mm	SRS-5-6mm	SRS-5-7mm	SRS-5-8mm
Price Code		W	W	X	X	Y	Y	Z

Series	Screw Size	9mm .354	10mm .394	11mm .433	12mm .472	13mm .512	14mm .551	15mm .591	16mm .630
SRS-1	4	SRS-1-9mm	SRS-1-10mm	SRS-1-11mm	SRS-1-12mm	SRS-1-13mm	SRS-1-14mm	SRS-1-15mm	SRS-1-16mm
SRS-2	6 (M3.5)	SRS-2-9mm	SRS-2-10mm	SRS-2-11mm	SRS-2-12mm	SRS-2-13mm	SRS-2-14mm	SRS-2-15mm	SRS-2-16mm
SRS-3	8	SRS-3-9mm	SRS-3-10mm	SRS-3-11mm	SRS-3-12mm	SRS-3-13mm	SRS-3-14mm	SRS-3-15mm	SRS-3-16mm
SRS-4	M3	SRS-4-9mm	SRS-4-10mm	SRS-4-11mm	SRS-4-12mm	SRS-4-13mm	SRS-4-14mm	SRS-4-15mm	SRS-4-16mm
SRS-5	M4	SRS-5-9mm	SRS-5-10mm	SRS-5-11mm	SRS-5-12mm	SRS-5-13mm	SRS-5-14mm	SRS-5-15mm	SRS-5-16mm
Price Code		L	L	L	L	L	L	L	L

Series	Screw Size	17mm .669	18mm .709	19mm .748	20mm .787	21mm .827	22mm .866	23mm .906	24mm .945
SRS-1	4	SRS-1-17mm	SRS-1-18mm	SRS-1-19mm	SRS-1-20mm	SRS-1-21mm	SRS-1-22mm	SRS-1-23mm	SRS-1-24mm
SRS-2	6 (M3.5)	SRS-2-17mm	SRS-2-18mm	SRS-2-19mm	SRS-2-20mm	SRS-2-21mm	SRS-2-22mm	SRS-2-23mm	SRS-2-24mm
SRS-3	8	SRS-3-17mm	SRS-3-18mm	SRS-3-19mm	SRS-3-20mm	SRS-3-21mm	SRS-3-22mm	SRS-3-23mm	SRS-3-24mm
SRS-4	M3	SRS-4-17mm	SRS-4-18mm	SRS-4-19mm	SRS-4-20mm	SRS-4-21mm	SRS-4-22mm	SRS-4-23mm	SRS-4-24mm
SRS-5	M4	SRS-5-17mm	SRS-5-18mm	SRS-5-19mm	SRS-5-20mm	SRS-5-21mm	SRS-5-22mm	SRS-5-23mm	SRS-5-24mm
Price Code		ZZ	ZZ	ZZ	ZZZ	ZZZ	ZZZ	ZZZ	ZZZ

CO-EXTRUDED SELF RETAINING SCREW SPACERS

- Unique Bi-Material Design, Patented
- Tight Fit with Low Insertion Force
- Works with #4 - #8 (M3-M4) Screw Sizes

CRS-1	#4 Screws	CRS-2	#M3 Screws
CRS-3	#6 Screws	CRS-4	#M4, #8 Screws

CRS Spacers provide precise spacing of electro-mechanical assemblies and eliminate shakes and rattles associated with movement in high-vibration PC-board applications, such as large rack-mounted fan cooling trays and multiple trays found in telecommunications, industrial networks, and avionics applications.

Designed with Bivar's patent-pending technology, these co-extruded self retaining screw spacers feature a soft pliable inner lining with a hard outer shell composed of UL rated 94V-0 PVC material. This unique design requires only a minimal amount of manual insertion force to cause the spacer's soft inside material to conform to the threads of the screw. The cushioning of the encapsulated screw and self-tapping design structure secures the screw in place, ensuring tight retention.

Material Specifications:

Natural, Rigid and Semi-Rigid PVC material,
UL Rated 94V-0

Oxygen Rating Index: Over 45%

Standard Drawing Tolerances:

(unless otherwise indicated)

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

"H" Dim: 1/16-1/2 (1.6-12.7) is $\pm .005$ (.13)

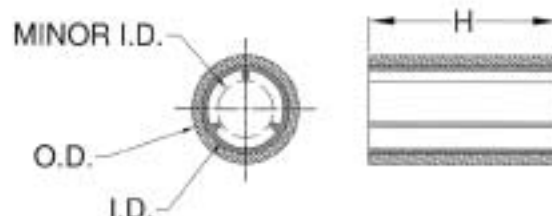
"H" Dim: 9/16-1.0 (14.3-25.4) is $\pm .010$ (.25)

Ordering Information:

CRS X XXX

Length Expressed in Inches
(Must be even multiples of .005")
or whole millimeters (example: 2mm)
0.050 = 050 0.750 = 750
0.100 = 100 1.250 = 1.250

Series



"H" Dimension	Price Code CRS-1 thru CRS-4
.050-.075 (1.27-1.91)	W
.080-.150 (2.0-3.81)	X
.155-.230 (4.0-5.81)	X
.235-.310 (6.0-7.91)	Y
.315-.380 (8.0-9.71)	Z
.385-.495 (9.8-12.6)	ZZ
.500-.750 (12.7-19.1)	ZZZ
.755-1.250 (19.2-31.8)	ZZZZ

ACFComponents
1-800-227-2901
& Fasteners, Inc.

NYLON TUBULAR SPACERS

Universal Spacers for Discrete Components

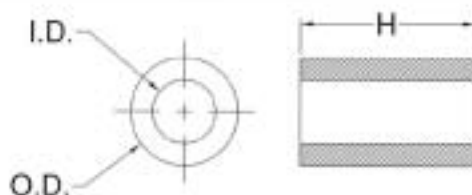
- 4,182 Standard Sizes for "Just Right" Fit
- Makes Solder Filletting and Board Cleaning More Effective



Universal Spacers give users an extremely wide selection of tubular spacers for mounting PCB discrete devices in any lead pattern and elevation.

Seventeen basic I.D./O.D. combinations with heights ranging from .030" (.76) through 1.250" (31.8), in .005" (.13) increments are available from factory stock or within two weeks.

Such a broad selection permits the user to choose the most suitable sizes for strength, elevation and ease of assembly, as well as providing for proper filletting and cleaning.



Ordering Information:

9XX XXX

Length Expressed in Inches
(Must be even multiples of .005")
or whole millimeters (example: 2mm)
0.030 = 030 0.750 = 750
0.100 = 100 1.250 = 1,250

Series

900 Series Color: Natural

Series	"H" DIM.	I.D.	O.D.	A15485/06 M30527/06
901	.030-1.250 (.76-31.8)	.028 (.71)	.085 (2.2)	-029N
902	.030-1.250 (.76-31.8)	.032 (.81)	.125 (3.2)	-031N
903	.030-1.250 (.76-31.8)	.047 (1.2)	.156 (4.0)	-034N
904	.030-1.250 (.76-31.8)	.063 (1.6)	.187 (4.7)	-036N
905	.030-1.250 (.76-31.8)	.147 (3.7)	.250 (6.4)	-041N
906	.030-1.250 (.76-31.8)	.085 (2.2)	.148 (3.8)	-033N
907	.030-1.250 (.76-31.8)	.105 (2.7)	.187 (4.7)	-035N
908	.030-1.250 (.76-31.8)	.125 (3.2)	.187 (4.7)	-038N
910	.030-1.250 (.76-31.8)	.091 (2.3)	.250 (6.4)	-039N
911	.030-1.250 (.76-31.8)	.125 (3.2)	.250 (6.4)	-
912	.030-1.250 (.76-31.8)	.171 (4.3)	.250 (6.4)	-042N
913	.030-1.250 (.76-31.8)	.091 (2.3)	.187 (4.7)	-037N
917	.030-1.250 (.76-31.8)	.090 (2.3)	.125 (3.2)	-
918	.030-1.250 (.76-31.8)	.032 (.81)	.085 (2.2)	-030N
919	.030-1.250 (.76-31.8)	.047 (1.2)	.125 (3.2)	-032N
940	.030-1.250 (.76-31.8)	.063 (1.6)	.156 (4.0)	-
941	.030-1.250 (.76-31.8)	.135 (3.4)	.230 (5.8)	-

"H" Dimension	Price Code for 901, 902, 917, 918, 919	Price Code for 903, 904, 905, 906, 907, 908 910, 911, 912, 913, 940, 941
.030-.075 (.76-1.9)	U	W
.080-.120 (2.0-3.0)	V	W
.125-.230 (3.2-5.8)	W	X
.235-.310 (6.0-7.9)	X	Y
.315-.380 (8.0-9.7)	Y	Z
.385-.495 (9.8-12.6)	Z	ZZ
.500-.750 (12.7-19.1)	ZZ	ZZZ
.755-1.250 (19.2-31.8)	ZZZ	ZZZ

Examples:

901-050 is price code U 902-100 is price code V
903-120 is price code W 901-250 is price code X

NYLON TUBULAR SPACERS

Universal Spacers for Discrete Components

- 4,182 Standard Sizes for "Just Right" Fit
- Makes Solder Filletting and Board Cleaning More Effective

Material Specifications:

Natural Nylon, per ASTM D4066 PA225 UL Rated 94V-2

Oxygen Rating Index: Over 23%

Standard Drawing Tolerances:

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

"H" Dim: .030 - 500 (.76 - 12.7) is $\pm .005$ (.13)

"H" Dim: .505 - 750 (12.8 - 19.1) is $\pm .008$ (.20)

"H" Dim: 755 - 1,250 (19.2 - 31.8) is $\pm .015$ (.38)



mm Chart

1mm thru 12mm

Series	1mm .039	2mm .079	3mm .118	4mm .158	5mm .197	6mm .236	7mm .276	8mm .315	9mm .354	10mm .394	11mm .433	12mm .472
901	901-1mm	901-2mm	901-3mm	901-4mm	901-5mm	901-6mm	901-7mm	901-8mm	901-9mm	901-10mm	901-11mm	901-12mm
902	902-1mm	902-2mm	902-3mm	902-4mm	902-5mm	902-6mm	902-7mm	902-8mm	902-9mm	902-10mm	902-11mm	902-12mm
937	937-1mm	937-2mm	937-3mm	937-4mm	937-5mm	937-6mm	937-7mm	937-8mm	937-9mm	937-10mm	937-11mm	937-12mm
938	938-1mm	938-2mm	938-3mm	938-4mm	938-5mm	938-6mm	938-7mm	938-8mm	938-9mm	938-10mm	938-11mm	938-12mm
939	939-1mm	939-2mm	939-3mm	939-4mm	939-5mm	939-6mm	939-7mm	939-8mm	939-9mm	939-10mm	939-11mm	939-12mm
Price Code	U	V	V	W	W	X	X	Y	Y	Z	Z	Z

Series	1mm .039	2mm .079	3mm .118	4mm .158	5mm .197	6mm .236	7mm .276	8mm .315	9mm .354	10mm .394	11mm .433	12mm .472
903	903-1mm	903-2mm	903-3mm	903-4mm	903-5mm	903-6mm	903-7mm	903-8mm	903-9mm	903-10mm	903-11mm	903-12mm
904	904-1mm	904-2mm	904-3mm	904-4mm	904-5mm	904-6mm	904-7mm	904-8mm	904-9mm	904-10mm	904-11mm	904-12mm
905	905-1mm	905-2mm	905-3mm	905-4mm	905-5mm	905-6mm	905-7mm	905-8mm	905-9mm	905-10mm	905-11mm	905-12mm
906	906-1mm	906-2mm	906-3mm	906-4mm	906-5mm	906-6mm	906-7mm	906-8mm	906-9mm	906-10mm	906-11mm	906-12mm
907	907-1mm	907-2mm	907-3mm	907-4mm	907-5mm	907-6mm	907-7mm	907-8mm	907-9mm	907-10mm	907-11mm	907-12mm
908	908-1mm	908-2mm	908-3mm	908-4mm	908-5mm	908-6mm	908-7mm	908-8mm	908-9mm	908-10mm	908-11mm	908-12mm
910	910-1mm	910-2mm	910-3mm	910-4mm	910-5mm	910-6mm	910-7mm	910-8mm	910-9mm	910-10mm	910-11mm	910-12mm
911	911-1mm	911-2mm	911-3mm	911-4mm	911-5mm	911-6mm	911-7mm	911-8mm	911-9mm	911-10mm	911-11mm	911-12mm
912	912-1mm	912-2mm	912-3mm	912-4mm	912-5mm	912-6mm	912-7mm	912-8mm	912-9mm	912-10mm	912-11mm	912-12mm
913	913-1mm	913-2mm	913-3mm	913-4mm	913-5mm	913-6mm	913-7mm	913-8mm	913-9mm	913-10mm	913-11mm	913-12mm
940	940-1mm	940-2mm	940-3mm	940-4mm	940-5mm	940-6mm	940-7mm	940-8mm	940-9mm	940-10mm	940-11mm	940-12mm
941	941-1mm	941-2mm	941-3mm	941-4mm	941-5mm	941-6mm	941-7mm	941-8mm	941-9mm	941-10mm	941-11mm	941-12mm
Price Code	W	W	W	X	X	Y	Y	Z	Z	ZZ	ZZ	ZZ

NYLON TUBULAR SPACERS

Universal Spacers for Discrete Components

- 4,182 Standard Sizes for "Just Right" Fit
- Makes Solder Filletting and Board Cleaning More Effective



Material Specifications:

Natural Nylon, per ASTM D4066 PA225 UL Rated 94V-2

Oxygen Rating Index: Over 23%

Standard Drawing Tolerances:

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

H Dim: .030 - .500 (1.27 - 12.7) is $\pm .005$ (.13)

H Dim: .505 - .750 (12.8 - 19.1) is $\pm .008$ (.20)

H Dim: .755 - 1.250 (19.2 - 31.8) is $\pm .015$ (.38)

mm Chart 13mm thru 24mm

Series	13mm .512	14mm .551	15mm .591	16mm .630	17mm .669	18mm .709	19mm .748	20mm .787	21mm .827	22mm .866	23mm .906	24mm .945
901	901-13mm	901-14mm	901-15mm	901-16mm	901-17mm	901-18mm	901-19mm	901-20mm	901-21mm	901-22mm	901-23mm	901-24mm
902	902-13mm	902-14mm	902-15mm	902-16mm	902-17mm	902-18mm	902-19mm	902-20mm	902-21mm	902-22mm	902-23mm	902-24mm
937	937-13mm	937-14mm	937-15mm	937-16mm	937-17mm	937-18mm	937-19mm	937-20mm	937-21mm	937-22mm	937-23mm	937-24mm
938	938-13mm	938-14mm	938-15mm	938-16mm	938-17mm	938-18mm	938-19mm	938-20mm	938-21mm	938-22mm	938-23mm	938-24mm
939	939-13mm	939-14mm	939-15mm	939-16mm	939-17mm	939-18mm	939-19mm	939-20mm	939-21mm	939-22mm	939-23mm	939-24mm
Price Code	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZZZ	ZZZZ	ZZZZ	ZZZZ	ZZZZ

Series	13mm .512	14mm .551	15mm .591	16mm .630	17mm .669	18mm .709	19mm .748	20mm .787	21mm .827	22mm .866	23mm .906	24mm .945
903	903-13mm	903-14mm	903-15mm	903-16mm	903-17mm	903-18mm	903-19mm	903-20mm	903-21mm	903-22mm	903-23mm	903-24mm
904	904-13mm	904-14mm	904-15mm	904-16mm	904-17mm	904-18mm	904-19mm	904-20mm	904-21mm	904-22mm	904-23mm	904-24mm
905	905-13mm	905-14mm	905-15mm	905-16mm	905-17mm	905-18mm	905-19mm	905-20mm	905-21mm	905-22mm	905-23mm	905-24mm
906	906-13mm	906-14mm	906-15mm	906-16mm	906-17mm	906-18mm	906-19mm	906-20mm	906-21mm	906-22mm	906-23mm	906-24mm
907	907-13mm	907-14mm	907-15mm	907-16mm	907-17mm	907-18mm	907-19mm	907-20mm	907-21mm	907-22mm	907-23mm	907-24mm
908	908-13mm	908-14mm	908-15mm	908-16mm	908-17mm	908-18mm	908-19mm	908-20mm	908-21mm	908-22mm	908-23mm	908-24mm
910	910-13mm	910-14mm	910-15mm	910-16mm	910-17mm	910-18mm	910-19mm	910-20mm	910-21mm	910-22mm	910-23mm	910-24mm
911	911-13mm	911-14mm	911-15mm	911-16mm	911-17mm	911-18mm	911-19mm	911-20mm	911-21mm	911-22mm	911-23mm	911-24mm
912	912-13mm	912-14mm	912-15mm	912-16mm	912-17mm	912-18mm	912-19mm	912-20mm	912-21mm	912-22mm	912-23mm	912-24mm
913	913-13mm	913-14mm	913-15mm	913-16mm	913-17mm	913-18mm	913-19mm	913-20mm	913-21mm	913-22mm	913-23mm	913-24mm
940	940-13mm	940-14mm	940-15mm	940-16mm	940-17mm	940-18mm	940-19mm	940-20mm	940-21mm	940-22mm	940-23mm	940-24mm
941	941-13mm	941-14mm	941-15mm	941-16mm	941-17mm	941-18mm	941-19mm	941-20mm	941-21mm	941-22mm	941-23mm	941-24mm
Price Code	ZZZ	ZZZ	ZZZ	ZZZ	ZZZ	ZZZ	ZZZ	ZZZZ	ZZZZ	ZZZZ	ZZZZ	ZZZZ

ACFComponents
1-800-227-2901
& Fasteners, Inc.

MOLDED POWER TRANSISTOR MOUNTS



Material Specifications:

Nylon, per ASTM D 4066 PA111
UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

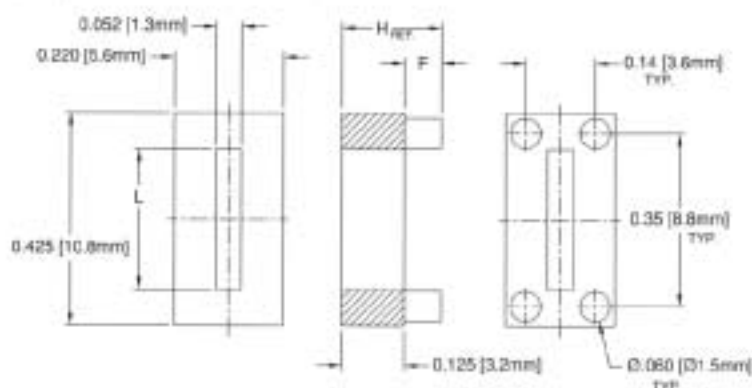
Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)

X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)



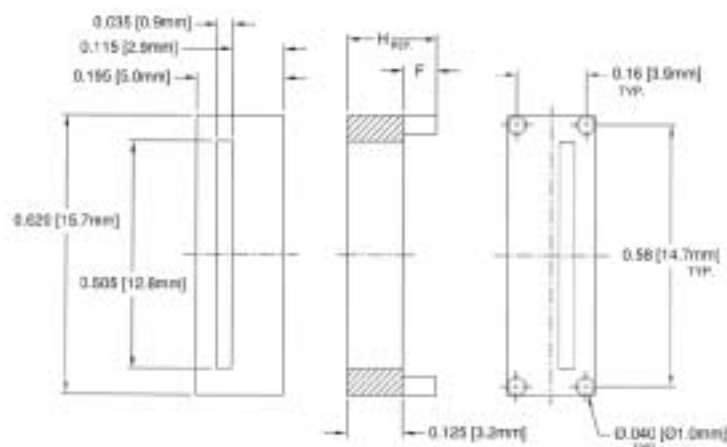
TO-202, TO-220 Price Code: I

Part No.	H	F	L	Color
423-125	.125 (3.2)	.000	.255 (6.5)	Black
423-150	.150 (3.8)	.025 (.64)	.255 (6.5)	Black
423-175	.175 (4.4)	.050 (1.3)	.255 (6.5)	Black
423-200	.200 (5.1)	.075 (1.9)	.255 (6.5)	Black
424-125	.125 (3.2)	.000	.280 (7.1)	White
424-150	.150 (3.8)	.025 (.64)	.280 (7.1)	White
424-175	.175 (4.4)	.050 (1.3)	.280 (7.1)	White
424-200	.200 (5.1)	.075 (1.9)	.280 (7.1)	White



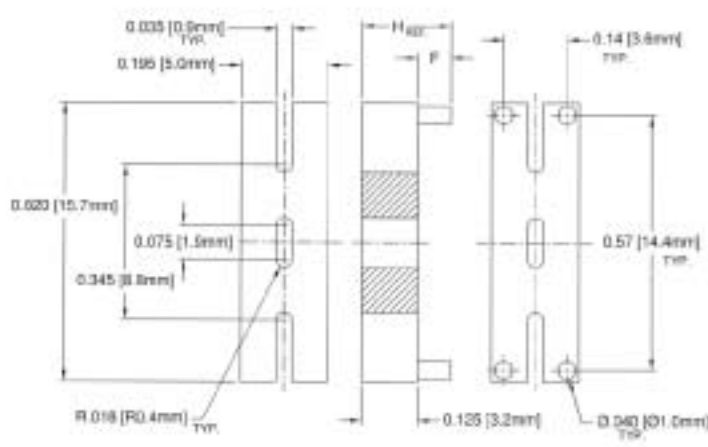
TO-219 Price Code: I

Part No.	H	F	Color
422-125	.125 (3.2)	.000	Black
422-150	.150 (3.8)	.025 (.64)	Black
422-175	.175 (4.4)	.050 (1.3)	Black
422-200	.200 (5.1)	.075 (1.9)	Black



TO-247 Price Code: I

Part No.	H	F	Color
426-125	.125 (3.2)	.000	Black
426-150	.150 (3.8)	.025 (.64)	Black
426-175	.175 (4.4)	.050 (1.3)	Black
426-200	.200 (5.1)	.075 (1.9)	Black



EXTRUDED POWER TRANSISTOR MOUNTS

- Standard lengths from .030" - .750" (.76mm - 19.1mm) in .005" (.13mm) increments
- Made from semi-rigid PVC UL Rated material

Standard Tolerances:

O.D. $\pm .005$ (.13)

I.D. $\pm .005$ (.13)

"H" Dim: .030 - .500 (.76 - 12.7) $\pm .005$ (.13)

"H" Dim: .500 - .750 (12.7 - 19.1) $\pm .008$ (.20)

Ordering Information:

EPM XXX

Length Expressed in Thousandths
(in .005" increments)

(Must be even multiples of .005")

0.030 = 030 0.750 = 750

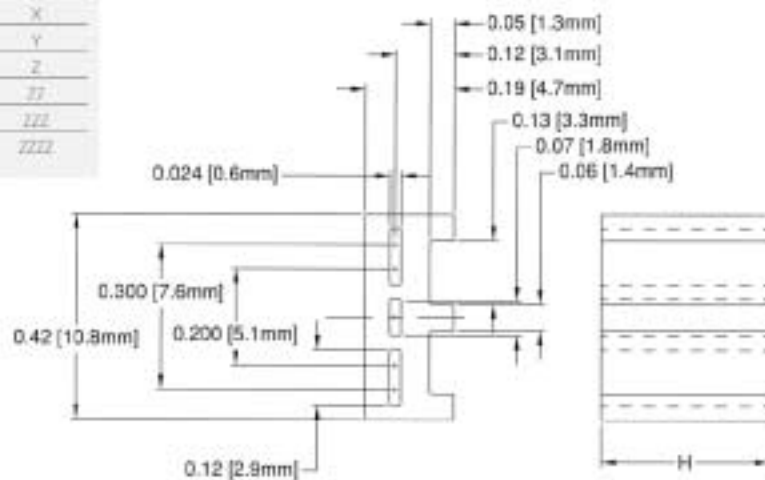
0.100 = 100

Series: EPM

EPM Series

Color: Natural

Part No.	"H" Dimensions	Price Code
EPM-030 thru EPMH-075	030-075 (.76-1.9)	W
EPM-080 thru EPMH-150	080-150 (2.0-3.8)	X
EPM-155 thru EPMH-230	155-230 (4.0-5.8)	Y
EPM-235 thru EPMH-310	235-310 (6.0-7.9)	Z
EPM-315 thru EPMH-380	315-380 (8.0-9.7)	ZZ
EPM-385 thru EPMH-495	385-495 (9.8-12.6)	ZZZ
EPM-500 thru EPMH-750	500-750 (12.7-19.1)	ZZZZ



ACFComponents
1-800-227-2901 & Fasteners, Inc.

SHOULDER WASHERS

Machine Screw Insulators

- Use with TO-3, TO-3P, TO-66, TO-218, TO-220 and TO-247 Devices
- 125°C maximum recommended service temperature
- Chemically inert
- Recommended torque of 5 to 6 inch-pounds

Material Specifications:

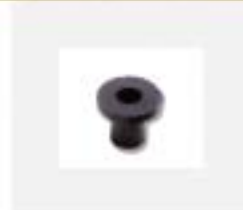
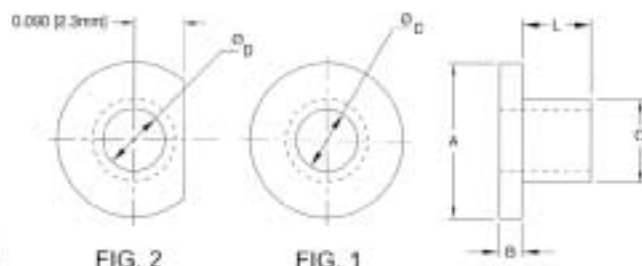
40% Glass filled Polyphenylene Sulfide (PPS)
UL Rated 94V-0

Oxygen Rating Index: Over 45%

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)
X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)



Part No.	L	A	B	C	D	Screw Size	FIG.
SW-031-120	.031 (0.8)						
SW-063-120	.063 (1.6)						
SW-093-120	.093 (2.4)						
SW-125-120	.125 (3.2)	.235 (6.0)	.047 (1.2)	.120 (3.0)	.090 (2.3)	2	1
SW-187-120	.187 (4.8)						
SW-250-120	.250 (6.4)						
SW-375-120	.375 (9.5)						
SW-031-135	.031 (0.8)	.215 (5.5)	.040 (1.0)	.135 (3.4)	.116 (3.0)		1
SW-040-140	.040 (1.0)	.245 (6.2)	.040 (1.0)	.140 (3.6)	.119 (3.0)		2
SW-125-140	.125 (3.2)	.280 (7.1)	.042 (1.1)	.140 (3.6)	.112 (2.8)		
SW-031-145	.031 (0.8)	.235 (6.0)	.047 (1.2)	.145 (3.7)	.115 (2.9)		
SW-093-145	.093 (2.4)						
SW-125-145	.125 (3.2)	.280 (7.1)	.047 (1.2)	.145 (3.7)	.118 (3.0)		
SW-063-145	.063 (1.6)						
SW-093-145	.093 (2.4)						
SW-125-145	.125 (3.2)	.235 (6.0)	.047 (1.2)	.145 (3.7)	.115 (2.9)	4	1
SW-187-145	.187 (4.8)						
SW-250-145	.250 (6.4)						
SW-375-145	.375 (9.5)						
SW-125-150	.125 (3.2)	.280 (7.1)	.042 (1.1)	.150 (3.8)	.112 (2.8)		
SW-185-150	.185 (4.7)	.280 (7.1)	.042 (1.1)	.150 (3.8)	.112 (2.8)		
SW-031-170	.031 (0.8)						
SW-063-170	.063 (1.6)						
SW-093-170	.093 (2.4)						
SW-125-170	.125 (3.2)	.290 (7.4)	.047 (1.2)	.170 (4.3)	.140 (3.6)	6	1
SW-187-170	.187 (4.8)						
SW-250-170	.250 (6.4)						
SW-375-170	.375 (9.5)						
SW-500-170	.500 (12.7)						
SW-031-177	.031 (0.8)	.312 (7.9)	.047 (1.2)	.177 (4.5)	.144 (3.7)		
SW-031-190	.031 (0.8)	.312 (7.9)	.047 (1.2)	.190 (4.8)	.146 (3.7)		

Part No.	L	A	B	C	D	Screw Size	FIG.
SW-031-205	.031 (0.8)						
SW-063-205	.063 (1.6)						
SW-093-205	.093 (2.4)						
SW-125-205	.125 (3.2)						
SW-187-205	.187 (4.8)	.344 (8.7)	.063 (1.6)	.205 (5.2)	.173 (4.4)	8	1
SW-250-205	.250 (6.4)						
SW-375-205	.375 (9.5)						
SW-500-205	.500 (12.7)						
SW-031-260	.031 (0.8)						
SW-063-260	.063 (1.6)						
SW-093-260	.093 (2.4)						
SW-125-260	.125 (3.2)						
SW-187-260	.187 (4.8)	.399 (10.1)	.063 (1.6)	.260 (6.6)	.200 (5.1)	10	1
SW-250-260	.250 (6.4)						
SW-375-260	.375 (9.5)						
SW-500-260	.500 (12.7)						
SW-031-312	.031 (0.8)						
SW-063-312	.063 (1.6)						
SW-093-312	.093 (2.4)						
SW-125-312	.125 (3.2)						
SW-187-312	.187 (4.8)	.513 (13.0)	.063 (1.6)	.312 (7.9)	.260 (6.6)	1/4	1
SW-250-312	.250 (6.4)						
SW-375-312	.375 (9.5)						
SW-500-312	.500 (12.7)						
SW-031-360	.031 (0.8)						
SW-063-360	.063 (1.6)						
SW-093-360	.093 (2.4)						
SW-125-360	.125 (3.2)						
SW-187-360	.187 (4.8)	.620 (15.7)	.063 (1.6)	.360 (9.1)	.320 (8.1)	5/16	1
SW-250-360	.250 (6.4)						
SW-375-360	.375 (9.5)						
SW-500-360	.500 (12.7)						

SHOULDER WASHERS

High Temperature Machine Screw Insulators

- Use with TO-3, TO-3P, TO-66, TO-218, TO-220 and TO-247 Devices
- 260°C maximum recommended service temperature
- Chemically inert (no known solvents under 200°C)



Material Specifications:

White or Natural Nylon, per ASTM D4066
 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

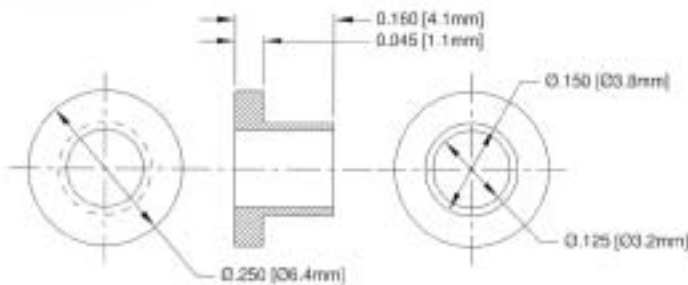
Standard Drawing Tolerances:

(unless otherwise indicated)

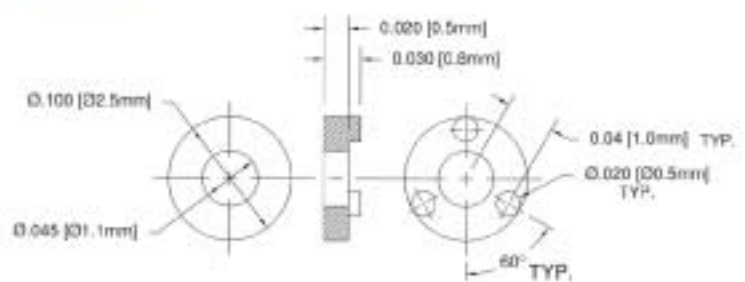
Fractions: $\pm 1/64$ (0.4) XX = $+0.01$ (0.25)

X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)

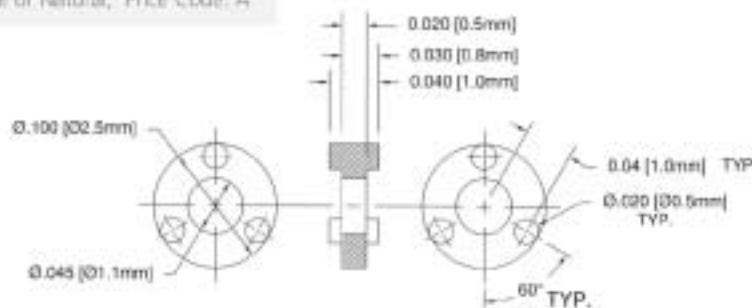
405-160 Color: White or Natural, Price Code: A



413-030 Color: White or Natural, Price Code: A



419-040 Color: White or Natural, Price Code: A



CAPACITOR MOUNTS

Material Specifications:

Natural or black Nylon, per ASTM D 4066
PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

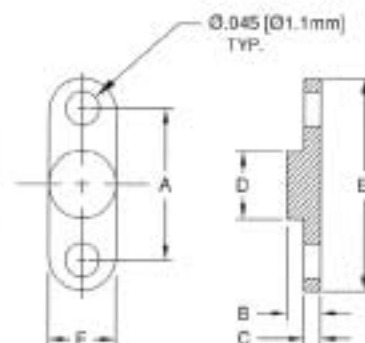
Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)

X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)



300 Series Color: Natural

Part No.	ASS485/ M3B527/06	A	B	C	D	E	F	Price Code
300-100-022	-	100 (2.5)	N.A.	.022 (.55)	N.A.	.180 (4.6)	.090 (2.3)	A
300-100-03	-	100 (2.5)	.030 (.76)	.011 (.28)	.050 (1.3)	.180 (4.6)	.090 (2.3)	A
300-100	-008N	100 (2.5)	.045 (1.1)	.022 (.55)	.050 (1.3)	.180 (4.6)	.090 (2.3)	A
300-100-075	-	100 (2.5)	.075 (1.9)	.022 (.55)	.055 (1.4)	.180 (4.6)	.090 (2.3)	A
301-150CS	-	150 (3.8)	N.A.	.022 (.55)	N.A.	.270 (6.9)	.125 (3.2)	A
301-150-030	-	150 (3.8)	.030 (.76)	.011 (.28)	.090 (2.3)	.270 (6.9)	.125 (3.2)	A
301-150-040	-	150 (3.8)	.040 (1.0)	.022 (.55)	.090 (2.3)	.270 (6.9)	.125 (3.2)	A
301-150	-009N	150 (3.8)	.045 (1.1)	.022 (.55)	.090 (2.3)	.270 (6.9)	.125 (3.2)	A
301-150 MOD	-	150 (3.8)	.045 (1.1)	.022 (.55)	.090 (2.3)	.240 (6.1)	.090 (2.3)	A
302-200-030	-	200 (5.1)	.030 (.76)	.011 (.28)	.090 (2.3)	.290 (7.4)	.090 (2.3)	A
302-200-040	-	200 (5.1)	.040 (1.0)	.022 (.55)	.090 (2.3)	.290 (7.4)	.090 (2.3)	A
302-200	-010N	200 (5.1)	.045 (1.1)	.022 (.55)	.090 (2.3)	.290 (7.4)	.090 (2.3)	A
303-250	-017N	250 (6.4)	.045 (1.1)	.026 (.66)	.090 (2.3)	.340 (8.6)	.090 (2.3)	A
304-300	-018N	300 (7.5)	.045 (1.1)	.026 (.66)	.140 (3.6)	.390 (9.9)	.090 (2.3)	B
305-350	-019N	350 (8.9)	.045 (1.1)	.030 (.76)	.140 (3.6)	.440 (11.2)	.090 (2.3)	B
306-400	-020N	400 (10.2)	.045 (1.1)	.030 (.76)	.190 (4.8)	.490 (12.4)	.090 (2.3)	B
307-500	-021N	500 (12.7)	.045 (1.1)	.030 (.76)	.190 (4.8)	.590 (12.4)	.090 (2.3)	B



ACFComponents
1-800-227-2901 & Fasteners, Inc.

CAPACITOR MOUNTS



Material Specifications:

Natural or black Nylon, per ASTM D 4066
PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

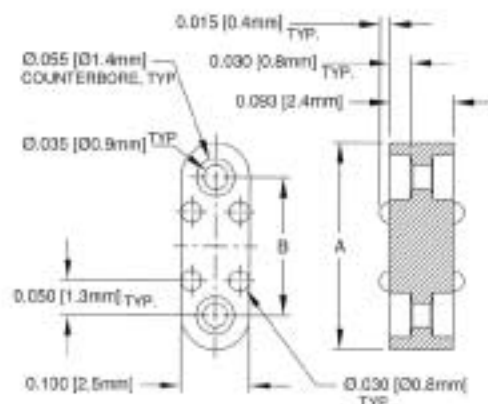
Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)
.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

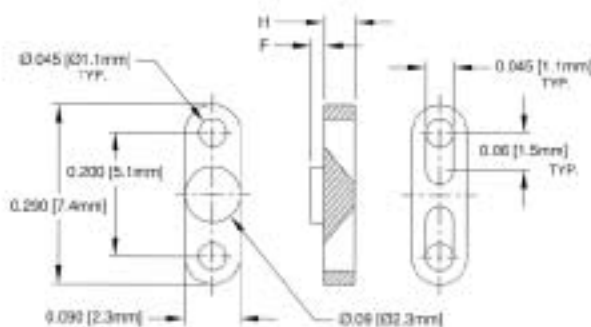
311 thru 316 Series Color: Natural

Part No.	AS5485/06 M38527/06	A	B	Price Code
311-200	-023N	300 (7.6)	200 (5.1)	A
312-250	-074N	350 (8.9)	250 (6.4)	A
313-300	-025N	400 (10.2)	300 (7.6)	A
314-350	-026N	450 (11.4)	350 (8.9)	B
315-400	-077N	500 (12.7)	400 (10.2)	B
316-500	-028N	600 (15.2)	500 (12.7)	B



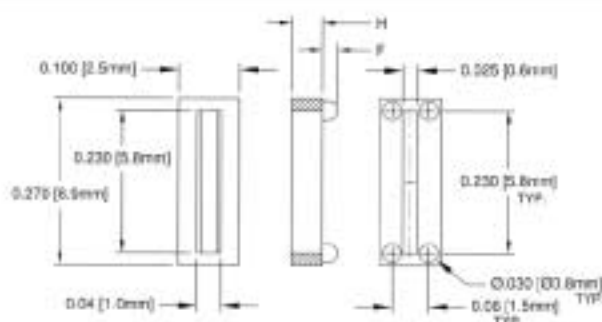
330 Series Discrete

Part No.	AS5485/06 M38527/06	H	F	Price Code
330-050	-047N	050 (1.3)	C00	A
330-072	-046N	072 (1.8)	C22 (1.50)	A
330-085	-048N	085 (2.2)	C35 (1.80)	A



388 Series Color: Black

Part No.	H	F	Price Code
388-025	025 (1.64)	000	A
388-050	050 (1.3)	025 (1.64)	A
388-075	075 (1.9)	050 (1.3)	A



CAPACITOR MOUNTS

Single In-Line Mounts

- Works with Capacitors, Resistor Networks and any other electrical component with in-line lead configurations

Material Specifications:

Natural Nylon, per ASTM D4065
 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

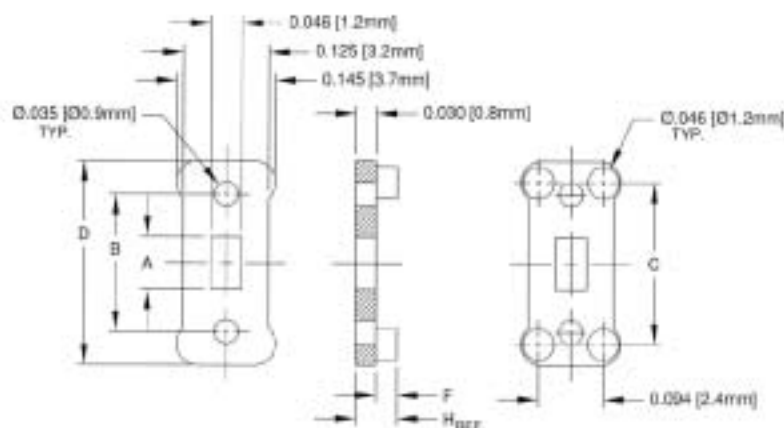
Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)



3XX Series

Part No.	A	B	C	D	F	H	Price Code
330-200					.000	.090 (.76)	A
331-200	.076 (1.9)	200 (5.1)	235 (6.0)	297 (7.5)	.090 (.76)	.060 (1.5)	
332-200					.060 (1.5)	.090 (2.3)	
335-300					.000	.090 (.76)	A
336-300	.176 (4.5)	300 (7.6)	335 (8.5)	397 (10.1)	.090 (.76)	.060 (1.5)	
337-300					.060 (1.5)	.090 (2.3)	
340-400					.000	.090 (.76)	B
341-400	.276 (7.0)	400 (10.2)	435 (11.0)	497 (12.6)	.090 (.76)	.060 (1.5)	
342-400					.060 (1.5)	.090 (2.3)	
345-500					.000	.090 (.76)	B
346-500	.376 (9.6)	500 (12.7)	535 (13.6)	597 (15.2)	.090 (.76)	.060 (1.5)	
347-500					.060 (1.5)	.090 (2.3)	
350-600					.000	.090 (.76)	G
351-600	.476 (12.1)	600 (15.2)	635 (16.1)	697 (17.7)	.090 (.76)	.060 (1.5)	
352-600					.060 (1.5)	.090 (2.3)	
355-700					.000	.090 (.76)	G
356-700	.576 (14.6)	700 (17.8)	735 (18.7)	797 (20.2)	.090 (.76)	.060 (1.5)	
357-700					.060 (1.5)	.090 (2.3)	



CAPACITOR MOUNTS

Single In-Line Mounts



Material Specifications:

Natural Nylon, per ASTM D4066
PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

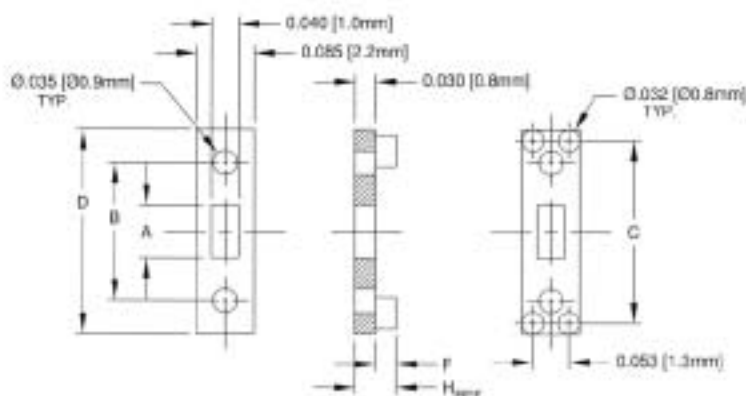
(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

36X, 37X, 38X Series

Part No.	A	B	C	D	F	H	Price Code
360-200					.000	.030 (.76)	A
361-200	.076 (1.9)	.200 (5.1)	.235 (6.0)	.297 (7.5)	.030 (.76)	.060 (1.5)	
362-200					.060 (1.5)	.090 (2.3)	
365-300					.000	.030 (.76)	A
366-300	.176 (4.5)	.300 (7.6)	.335 (8.5)	.397 (10.1)	.030 (.76)	.060 (1.5)	
367-300					.060 (1.5)	.090 (2.3)	
370-400					.000	.030 (.76)	B
371-400	.276 (7.0)	.400 (10.2)	.435 (11.0)	.497 (12.6)	.030 (.76)	.060 (1.5)	
372-400					.060 (1.5)	.090 (2.3)	
375-500					.000	.030 (.76)	B
376-500	.376 (9.6)	.500 (12.7)	.535 (13.6)	.597 (15.2)	.030 (.76)	.060 (1.5)	
377-500					.060 (1.5)	.090 (2.3)	
380-600					.000	.030 (.76)	G
381-600	.476 (12.1)	.600 (15.2)	.635 (16.1)	.697 (17.7)	.030 (.76)	.060 (1.5)	
382-600					.060 (1.5)	.090 (2.3)	
385-700					.000	.030 (.76)	G
386-700	.576 (14.6)	.700 (17.8)	.735 (18.7)	.797 (20.2)	.030 (.76)	.060 (1.5)	
387-700					.060 (1.5)	.090 (2.3)	



INTEGRATED CIRCUIT MOUNTS

Dual In-Line Mounts



Material Specifications:

Natural Nylon, per ASTM D4066

PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

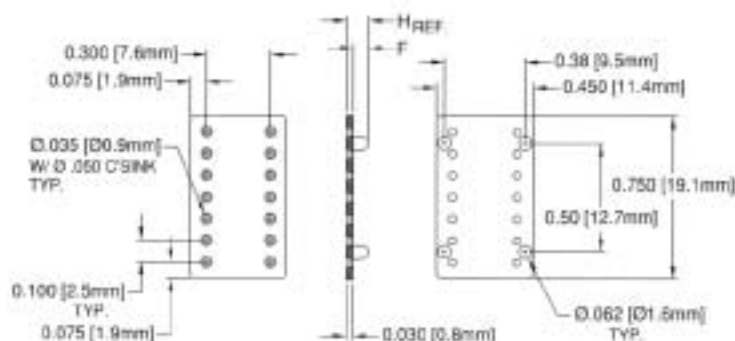
Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)



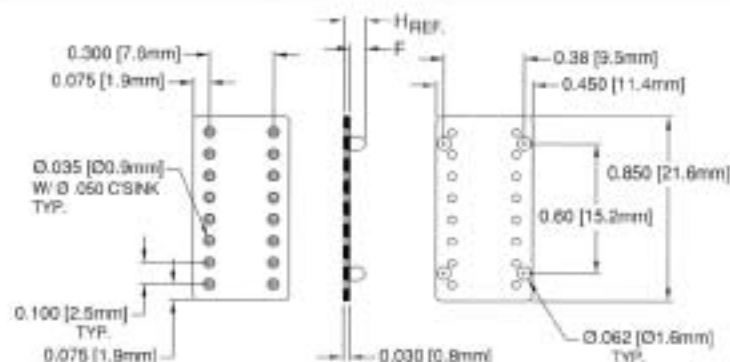
814 Series

Part No.	F	H	A55485/06 M38527/06	Price Code	Color
814-030	.030	.030 (.76)	-004N	C	Natural
814-045	.015 (.38)	.045 (1.1)	-	C	Black
814-060	.030 (.76)	.060 (1.5)	-005N	C	Natural
814-080	.050 (1.3)	.080 (2.0)	-006N	C	Natural
814-100	.070 (1.8)	.100 (2.5)	-	C	Black



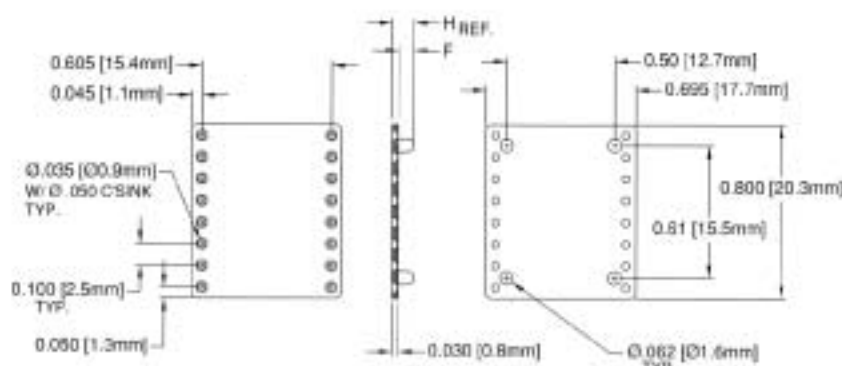
816 Series

Part No.	F	H	A55485/06 M38527/06	Price Code	Color
816-030	.030	.030 (.76)	-	C	Black
816-045	.015 (.38)	.045 (1.1)	-	C	Black
816-060	.030 (.76)	.060 (1.5)	-007N	C	Natural
816-080	.050 (1.3)	.080 (2.0)	-	C	Black
816-100	.070 (1.8)	.100 (2.5)	-	C	Black



818 Series

Part No.	F	H	A55485/06 M38527/06	Price Code	Color
818-030	.030	.030 (.76)	-	C	Black
818-045	.015 (.38)	.045 (1.1)	-	C	Black
818-060	.030 (.76)	.060 (1.5)	-	C	Black
818-080	.050 (1.3)	.080 (2.0)	-	C	Black
818-100	.070 (1.8)	.100 (2.5)	-	C	Black



CAPACITOR MOUNTS

ECM: Electrolytic Capacitor Mounts

ECI: Electrolytic Capacitor Insulators

ECM: Electrolytic Capacitor Mounts

Color: Natural

- Works with 5mm through 35mm industry standard electrolytic capacitors
- Insulates and protects leads
- Prevents shorting under shock and vibration

Material Specifications:

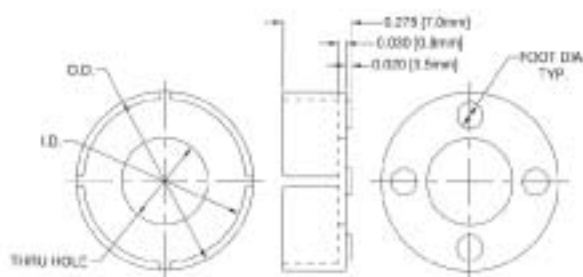
Nylon, per ASTM D4066 PA111,
UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)
X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)



Part No.	EC Type	I.D.	O.D.	Thru Hole	Foot Dia.	Price Code
ECM-1	5	.227 (5.8)	.287 (7.3)	.125 (3.2)	.060 (1.5)	A
ECM-2	6-6.3	.273 (6.9)	.333 (8.5)	.150 (3.8)	.070 (1.8)	B
ECM-3	8	.345 (8.8)	.405 (10.3)	.225 (5.7)	.070 (1.8)	F
ECM-4	10	.424 (10.8)	.484 (12.3)	.250 (6.4)	.100 (2.5)	F
ECM-5	12.5-13	.542 (13.8)	.602 (15.3)	.350 (8.9)	.105 (2.7)	G
ECM-6	16	.660 (16.8)	.720 (18.3)	.350 (8.9)	.106 (2.7)	G
ECM-7	18	.738 (18.7)	.798 (20.3)	.350 (8.9)	.106 (2.7)	H
ECM-8	20	.817 (20.8)	.877 (22.3)	.441 (11.2)	.118 (3.0)	H
ECM-9	22	.896 (22.8)	.956 (24.3)	.449 (11.4)	.118 (3.0)	I
ECM-10	25	1.008 (25.6)	1.074 (27.3)	.547 (13.9)	.138 (3.5)	I
ECM-11	25.5	1.030 (26.2)	1.090 (27.7)	.547 (13.9)	.138 (3.5)	J
ECM-12	30	1.210 (30.5)	1.270 (32.3)	.645 (16.4)	.138 (3.5)	K
ECM-13	35	1.410 (35.8)	1.470 (37.3)	.645 (16.4)	.138 (3.5)	C

ECI: Electrolytic Capacitor Insulators

Color: Clear

- Self-retaining
- Insulates and allows circuitry beneath capacitor
- Transparent, tough and temperature resistant

Material Specifications:

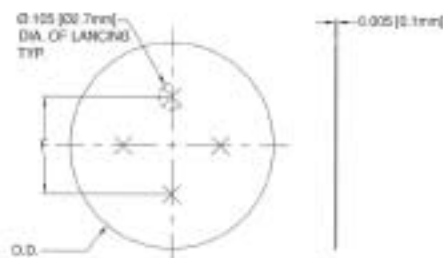
Dupont, Mylar EL-21 wth
UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)
X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)



Part No.	Case Style	O.D. ±.005	F	Use With
ECI-1	I	.710 (18.0)	.394 (10.0)	30
ECI-2	II	.830 (21.0)	.394 (10.0)	22, 25, 35

PERM-O-PADS®

TO-18 and T-1³/₄ (5mm) LED Mounts

Material Specifications:

White or Natural Nylon, per ASTM D4066 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

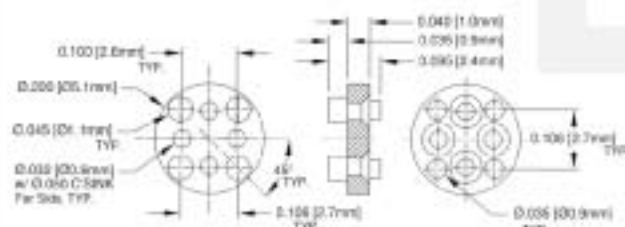
(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

100-095

Price Code: A

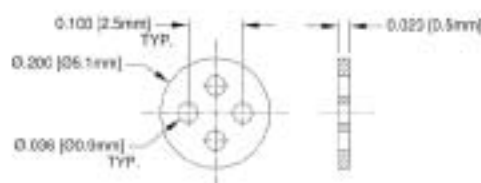


104-020

Price Code: A

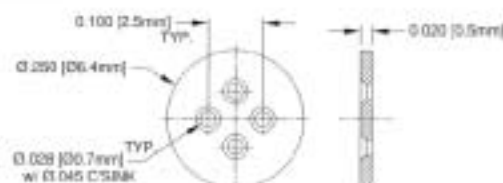
A55485 / 01-040N

M38527 / 01-040N



105-021

Price Code: A

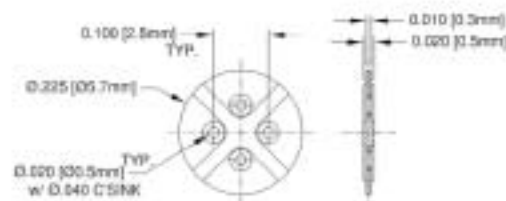


108-021

Price Code: A

A55485 / 01-039N

M38527 / 01-039N

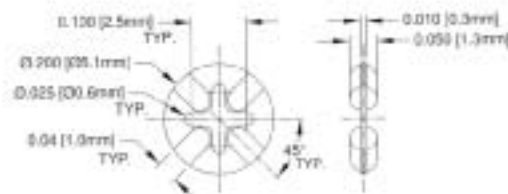


109-045

Price Code: A

A55485 / 01-031N

M38527 / 01-031N

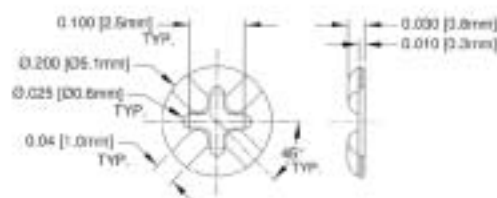


110-030

Price Code: A

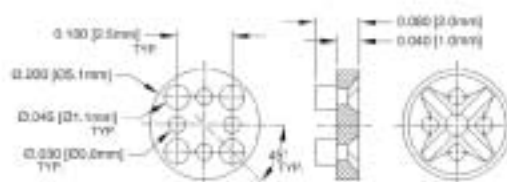
A55485 / 01-037N

M38527 / 01-037N



111-080

Price Code: A



PERM-O-PADS®

TO-18 and T-1³/₄ (5mm) LED Mounts

Material Specifications:

White or Natural Nylon, per ASTM D4066 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

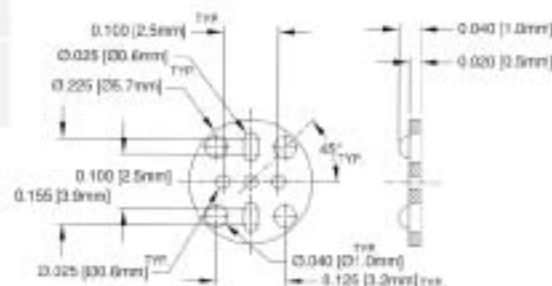
.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

112-040

Price Code: A

A55485 / 07-002N

M38527 / 07-002N

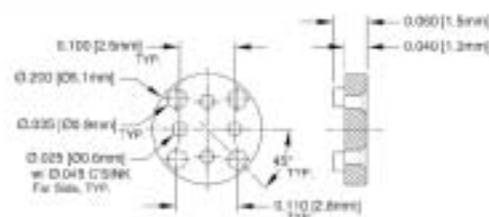


116-060

Price Code: A

A55485 / 01-035N

M38527 / 01-035N

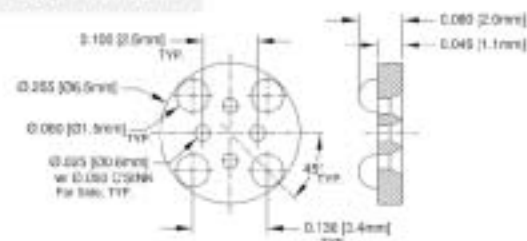


117-080

Price Code: A

A55485 / 01-034N

M38527 / 01-034N

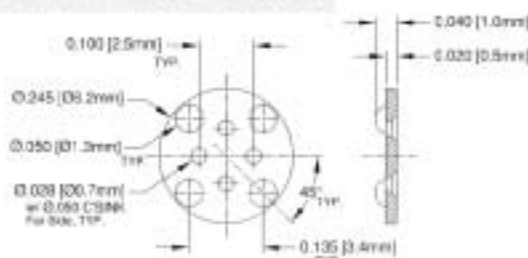


118-055

Price Code: A

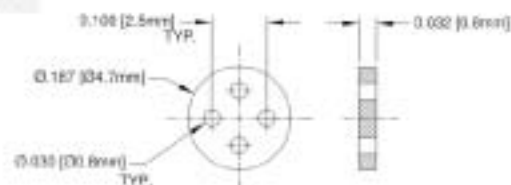
A55485 / 01-036N

M38527 / 01-036N



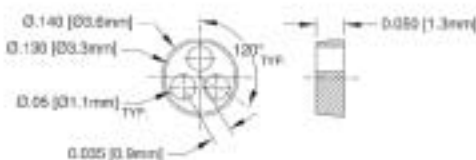
121-032

Price Code: A



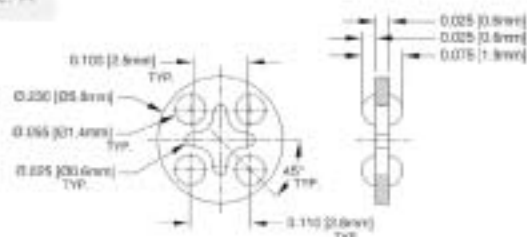
123-050

Price Code: A



125-080

Price Code: A



PERM-O-PADS®

TO-18 and T-1³/₃₂ (5mm) LED Mounts and TO-18 Spreaders



Material Specifications:

White or Natural Nylon, per ASTM D4066 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)

X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)

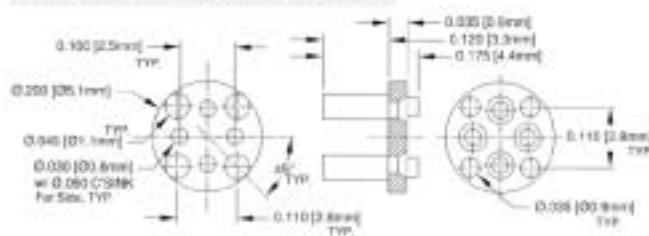


107-180

A55485 / 01-043N

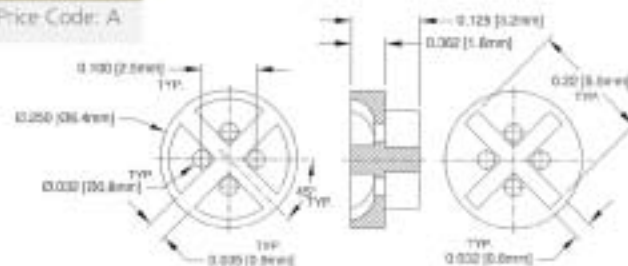
Price Code: A

M38527 / 01-043N



113-125

Price Code: A

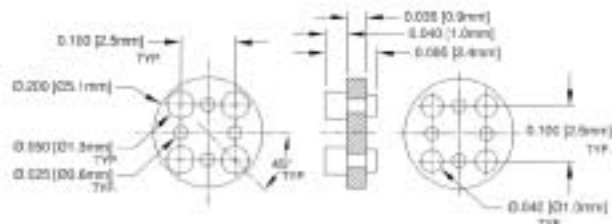


115-100

A55485 / 01-030N

Price Code: A

M38527 / 01-030N

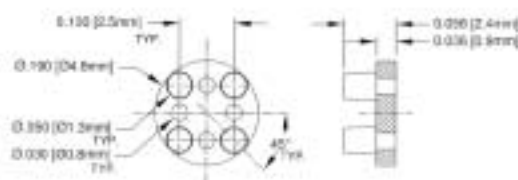


119-096

Price Code: A

A55485 / 01-033N

M38527 / 01-033N

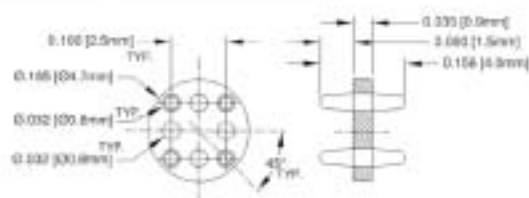


120-156

A55485 / 01-044N

Price Code: A

M38527 / 01-044N

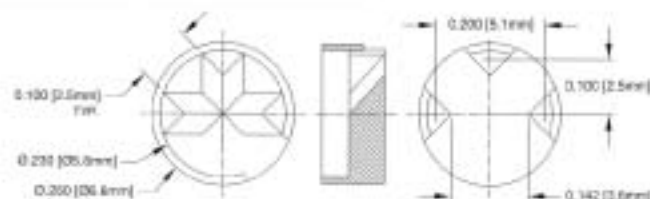


200-115

Price Code: A

A55485 / 03-013N

M38527 / 03-013N



PERM-O-PADS®

TO-18 and T-1³/₃₂ (5mm) LED Mounts and TO-18 Spreaders

Material Specifications:

White or Natural Nylon, per ASTM D4066 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

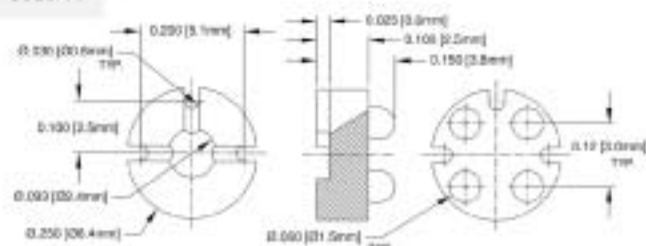
(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

202-150

Price Code: A

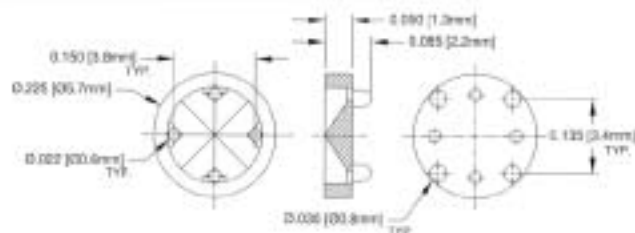


205-085

A55485 / 03-002N

Price Code: A

M38527 / 03-002N

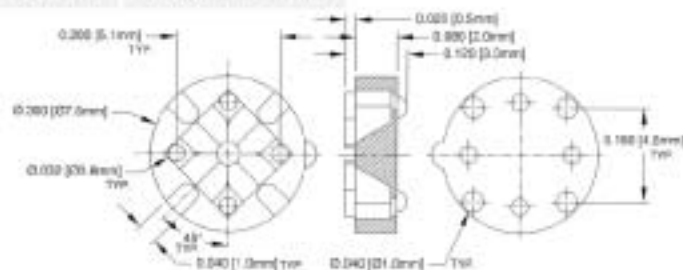


209-125

Price Code: A

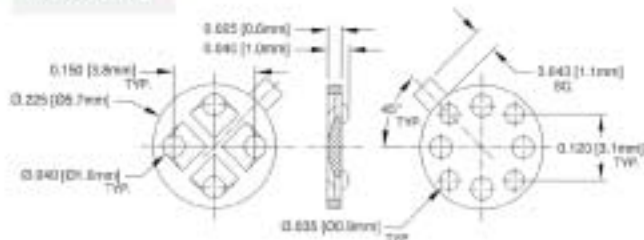
A55485 / 03-010N

M38527 / 03-010N



211-040

Price Code: A

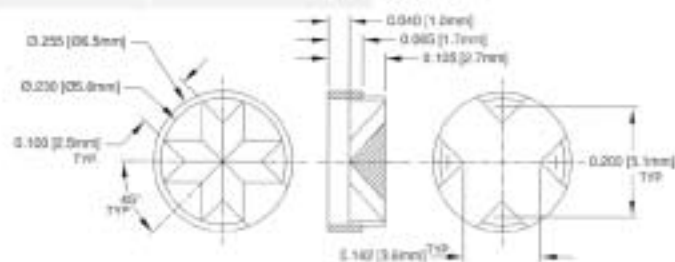


213-100

Price Code: A

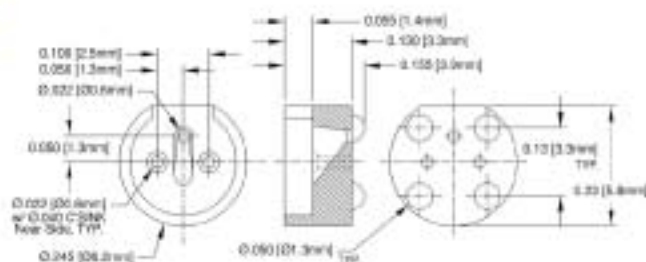
A55485 / 03-004N

M38527 / 03-004N



215-130

Price Code: A



PERM-O-PADS®
TO-5 Mounts

Material Specifications:

White or Natural Nylon, per ASTM
D4066 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

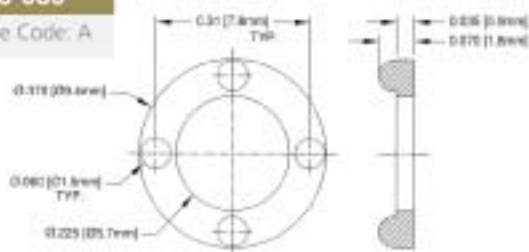
(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

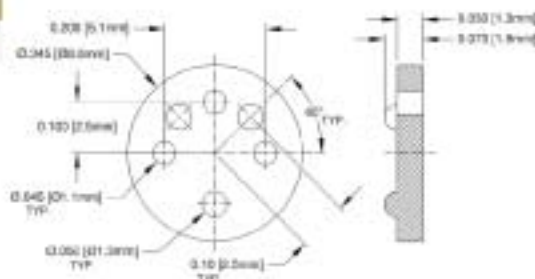
500-080

Price Code: A



501-075

Price Code: A

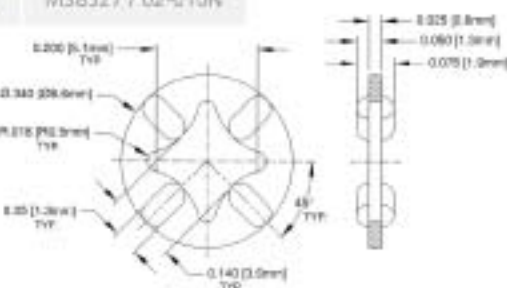


503-075

Price Code: A

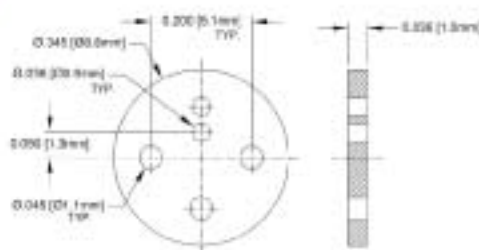
A55485 / 02-010N

M38527 / 02-010N



506-038

Price Code: A

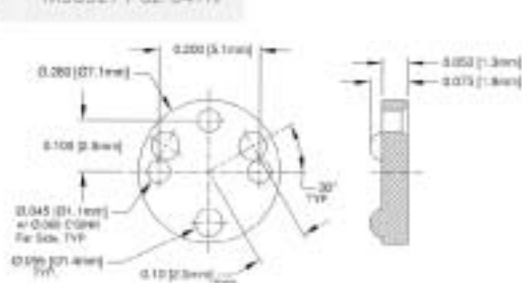


508-075

Price Code: A

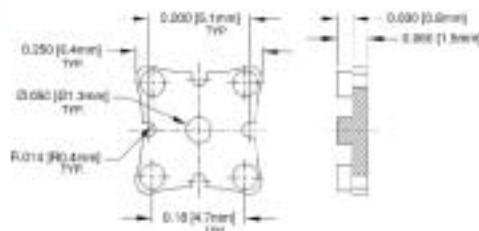
A55485 / 02-047N

M38527 / 02-047N



509-060

Price Code: A

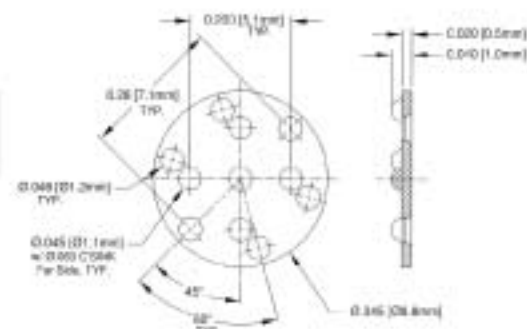


511-038

Price Code: A

A55485 / 02-020N

M38527 / 02-020N



PERM-O-PADS® TO-5 Mounts

Material Specifications:

White or Natural Nylon, per ASTM
D4066 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

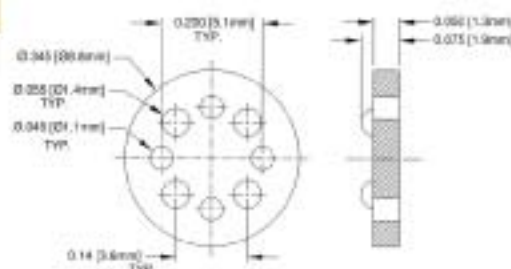
(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

513-075

Price Code: A

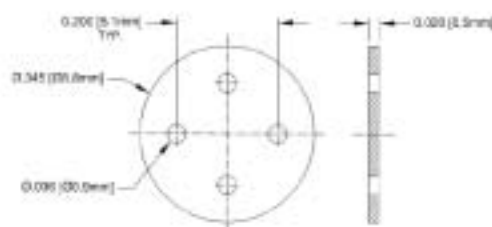


515-020

Price Code: A

A55485 / 02-018N

M38527 / 02-018N

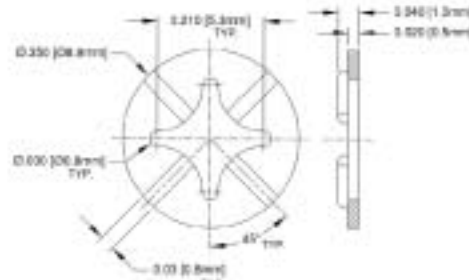


516-038

Price Code: A

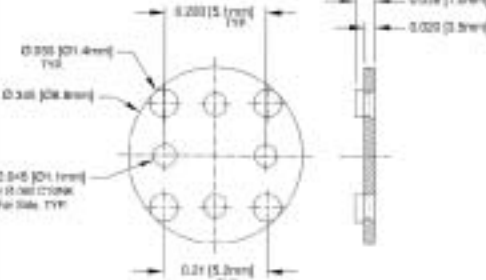
A55485 / 02-013N

M38527 / 02-013N



518-038

Price Code: A

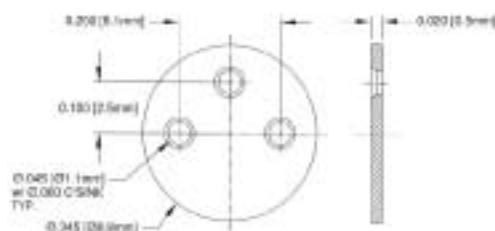


520-021

Price Code: A

A55485 / 02-019N

M38527 / 02-019N

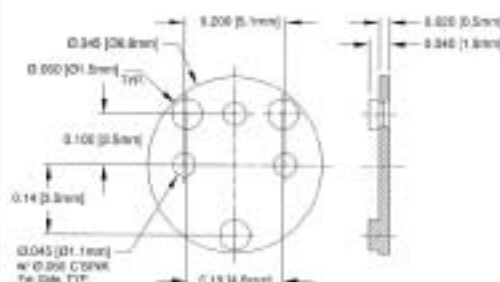


525-038

Price Code: A

A55485 / 02-014N

M38527 / 02-014N

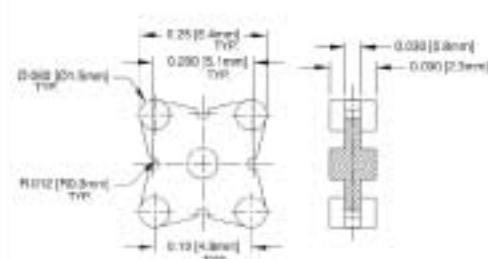


526-090

Price Code: A

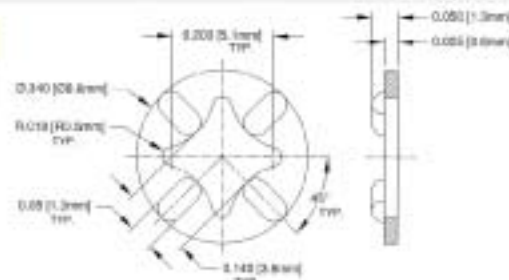
A55485 / 02-038N

M38527 / 02-038N



532-050

Price Code: A



PERM-O-PADS® TO-5 and Integrated Circuit Mounts

Material Specifications:

White or Natural Nylon, per ASTM D4066 PA111,
UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

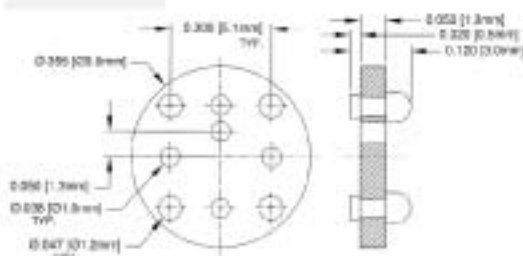
(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

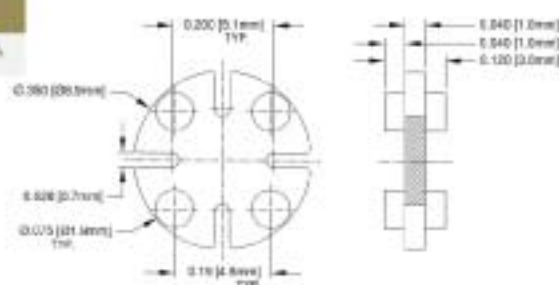
502-120

Price Code: A



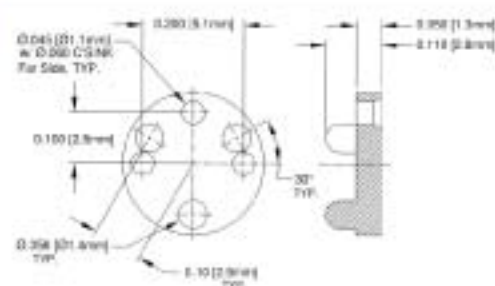
505-120

Price Code: A



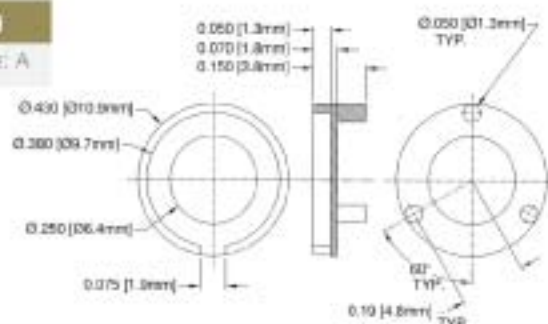
510-110

Price Code: A



512-150

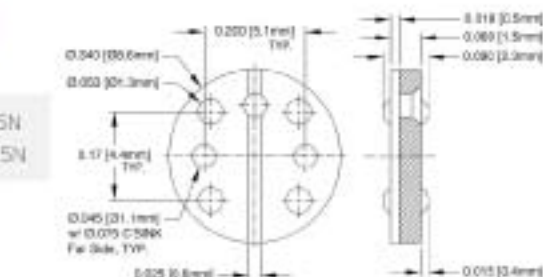
Price Code: A



517-095

Price Code: A

A55485 / 02-025N
M38527 / 02-025N



521-094

Price Code: A

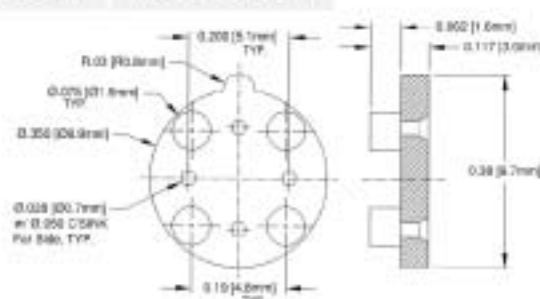
A55485 / 01-041N
M38527 / 01-041N



528-117

Price Code: A

A55485 / 02-022N
M38527 / 02-022N



90

PERM-O-PADS®

TO-18 and T-1³/₂ (5mm) LED Mounts

Universal TO-5, to TO-18 and T-1³/₄ (5mm) LED Mounts

Material Specifications:

Nylon, per ASTM D4066 PA111, UL Rated 94V-2

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

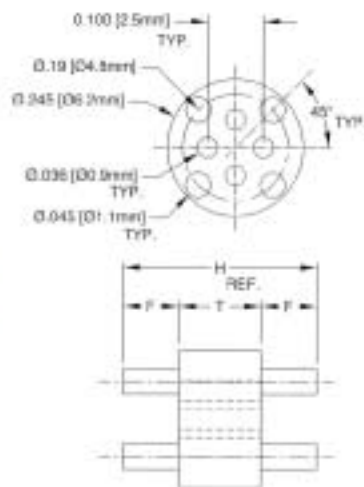
Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)



102 Series

Color: White, Price Code: A



TO-18 and T-1³/₄ (5mm) LED Mounts

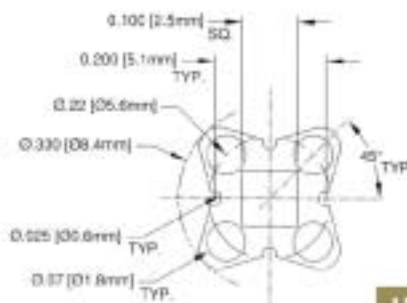
Part No.	H	T	F
102-050	.050 (1.3)	.030 (.76)	.010 (.25)
102-060	.060 (1.5)	.030 (.76)	.015 (.38)
102-070	.070 (1.8)	.030 (.76)	.020 (.51)
102-080	.080 (2.0)	.030 (.76)	.025 (.64)
102-090	.090 (2.3)	.030 (.76)	.030 (.76)
102-100	.100 (2.5)	.030 (.76)	.035 (.89)
102-110	.110 (2.8)	.030 (.76)	.040 (1.0)
102-120	.120 (3.0)	.030 (.76)	.045 (1.1)

Part No.	H	T	F
102-130	.130 (3.3)	.030 (.76)	.050 (1.3)
102-140	.140 (3.6)	.030 (.76)	.055 (1.4)
102-150	.150 (3.8)	.030 (.76)	.060 (1.5)
102-160	.160 (4.1)	.030 (.76)	.065 (1.7)
102-170	.170 (4.3)	.030 (.76)	.070 (1.8)
102-180	.180 (4.6)	.030 (.76)	.075 (1.9)
102-190	.190 (4.8)	.030 (.76)	.080 (2.0)
102-200	.200 (5.1)	.030 (.76)	.085 (2.2)



126 Series

Color: White, Price Code: A



Universal TO-5 to TO-18 and T-1³/₄ (5mm) LED Mounts

Part No.	H	T	F
126-030	.030 (.76)	.030 (.76)	.000
126-040	.040 (1.0)	.030 (.76)	.005 (.13)
126-050	.050 (1.3)	.030 (.76)	.010 (.25)
126-060	.060 (1.5)	.030 (.76)	.015 (.38)
126-070	.070 (1.8)	.030 (.76)	.020 (.51)
126-080	.080 (2.0)	.030 (.76)	.025 (.64)
126-090	.090 (2.3)	.030 (.76)	.030 (.76)
126-100	.100 (2.5)	.030 (.76)	.035 (.89)
126-110	.110 (2.8)	.030 (.76)	.040 (1.0)
126-120	.120 (3.0)	.030 (.76)	.045 (1.1)
126-130	.130 (3.3)	.030 (.76)	.050 (1.3)

Part No.	H	T	F
126-140	.140 (3.5)	.030 (.76)	.055 (1.4)
126-150	.150 (3.8)	.030 (.76)	.060 (1.5)
126-160	.160 (4.1)	.030 (.76)	.065 (1.7)
126-170	.170 (4.3)	.030 (.76)	.070 (1.8)
126-180	.180 (4.6)	.030 (.76)	.075 (1.9)
126-190	.190 (4.8)	.030 (.76)	.080 (2.0)
126-200	.200 (5.1)	.030 (.76)	.085 (2.2)
126-210	.210 (5.3)	.030 (.76)	.090 (2.3)
126-220	.220 (5.6)	.030 (.76)	.095 (2.4)
126-230	.230 (5.8)	.030 (.76)	.100 (2.5)
126-240	.240 (6.1)	.030 (.76)	.105 (2.7)

PERM-O-PADS® TO-5 Mounts



514 Series

Color: White, Price Code: A

Material Specifications:

Nylon, per ASTM D4066 PA111, UL Rated 94V-2

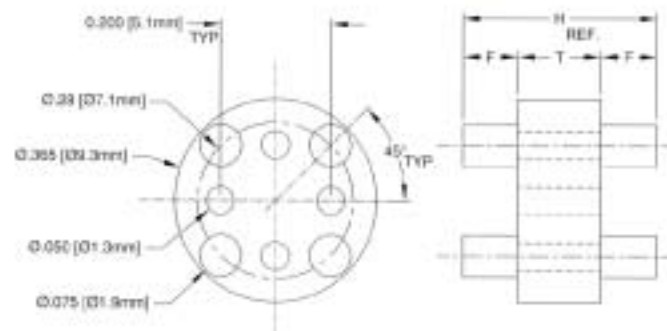
Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)



TO-5 Mounts

Part No.	H	T	F
514-050	.050 (1.3)	.030 (.76)	.010 (.25)
514-060	.060 (1.5)	.030 (.76)	.015 (.38)
514-070	.070 (1.8)	.030 (.76)	.020 (.51)
514-080	.080 (2.0)	.030 (.76)	.025 (.64)
514-090	.090 (2.3)	.030 (.76)	.030 (.76)
514-100	.100 (2.5)	.030 (.76)	.035 (.89)
514-110	.110 (2.8)	.030 (.76)	.040 (1.0)
514-120	.120 (3.0)	.030 (.76)	.045 (1.1)
514-130	.130 (3.3)	.030 (.76)	.050 (1.3)
514-140	.140 (3.6)	.030 (.76)	.055 (1.4)

Part No.	H	T	F
514-150	.150 (3.8)	.030 (.76)	.060 (1.5)
514-160	.160 (4.1)	.030 (.76)	.065 (1.7)
514-170	.170 (4.3)	.030 (.76)	.070 (1.8)
514-180	.180 (4.6)	.030 (.76)	.075 (1.9)
514-190	.190 (4.8)	.030 (.76)	.080 (2.0)
514-200	.200 (5.1)	.030 (.76)	.085 (2.2)
514-210	.210 (5.3)	.030 (.76)	.090 (2.3)
514-220	.220 (5.6)	.030 (.76)	.095 (2.4)
514-230	.230 (5.8)	.030 (.76)	.100 (2.5)
514-240	.240 (6.1)	.030 (.76)	.105 (2.7)

VERTICAL MOUNTS

Vertical Mounts for Diodes and Resistors

- Vertical Mounting Reduces Board Space Requirements Over 50%

Material Specifications:

Temperature resistant black thermoplastic (PBT) body per MIL-P-46161, Grade B, Class 30, UL Rated 94V-0

Oxygen Rating Index: Over 28%

Standard Drawing Tolerances:

(unless otherwise indicated)

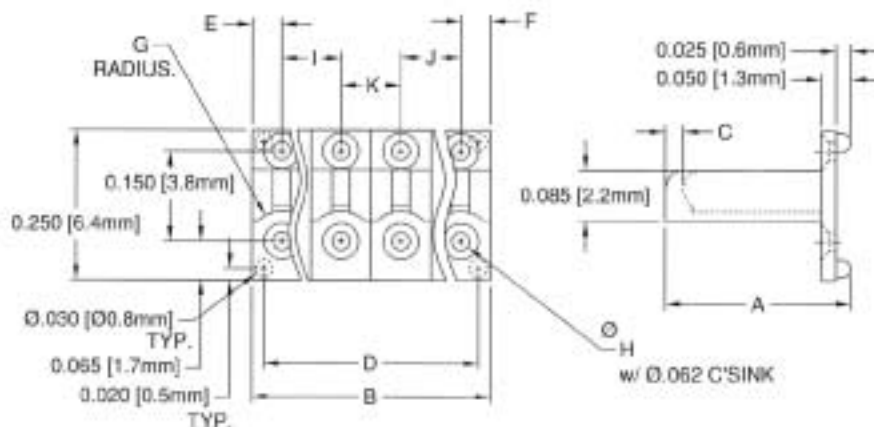
Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)

Height	.312"	.437"	.562"
Single	3121-004	4371-005	5621-006
Double	3122-010	4372-010	5622-012
Triple	3123-016	4373-017	5623-018
Quad	3124-022	4374-023	5624-024
	DO-34 & 35	DO-7	1/2 Watt
Use with	Diodes 1/8 watt Resistor	Diodes 1/4 watt Resistor	Resistor



Part No.	A	B	C	D	E	F	G	H	I	J	K	Price Code
3121-004	.312 (7.9)	.100 (2.5)	.030 (0.8)	.060 (1.5)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	N/A	N/A	N/A	B
3122-010	.312 (7.9)	.200 (5.1)	.030 (0.8)	.160 (4.1)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	.100 (2.5)	N/A	N/A	G
3123-016	.312 (7.9)	.300 (7.6)	.030 (0.8)	.260 (6.6)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	.100 (2.5)	.100 (2.5)	N/A	I
3124-022	.312 (7.9)	.400 (10.2)	.030 (0.8)	.360 (9.1)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	.100 (2.5)	.100 (2.5)	.100 (2.5)	J
4371-005	.437 (11.1)	.100 (2.5)	.030 (0.8)	.060 (1.5)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	N/A	N/A	N/A	F
4372-011	.437 (11.1)	.200 (5.1)	.030 (0.8)	.160 (4.1)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	.100 (2.5)	N/A	N/A	H
4373-017	.437 (11.1)	.300 (7.6)	.030 (0.8)	.260 (6.6)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	.100 (2.5)	.100 (2.5)	N/A	I
4374-023	.437 (11.1)	.400 (10.2)	.030 (0.8)	.360 (9.1)	.050 (1.3)	.050 (1.3)	.055 (1.4)	.030 (0.8)	.100 (2.5)	.100 (2.5)	.100 (2.5)	J
5621-006	.562 (14.3)	.150 (3.8)	.040 (1.0)	.110 (2.8)	.075 (1.9)	.075 (1.9)	.080 (2.0)	.040 (1.0)	N/A	N/A	N/A	G
5622-012	.562 (14.3)	.300 (7.6)	.040 (1.0)	.260 (6.6)	.075 (1.9)	.075 (1.9)	.080 (2.0)	.040 (1.0)	.150 (3.8)	N/A	N/A	I
5623-018	.562 (14.3)	.450 (11.4)	.040 (1.0)	.410 (10.4)	.075 (1.9)	.075 (1.9)	.080 (2.0)	.040 (1.0)	.150 (3.8)	.150 (3.8)	N/A	I
5624-024	.562 (14.3)	.600 (15.2)	.040 (1.0)	.560 (14.2)	.075 (1.9)	.075 (1.9)	.080 (2.0)	.040 (1.0)	.150 (3.8)	.150 (3.8)	.150 (3.8)	K



CRYSTAL MOUNTS

Molded Mounts

- Elevates Crystal Oscillators from PCB
- Improves Cooling Efficiency
- Allows for Proper Inspection of Solder Joints
- Allows for Traces to be Run Under Component



Material Specifications:

UL Rated 94V-2 White Nylon per ASTM D4066 PA111

Oxygen Rating Index: Over 28%

UL File #E135532

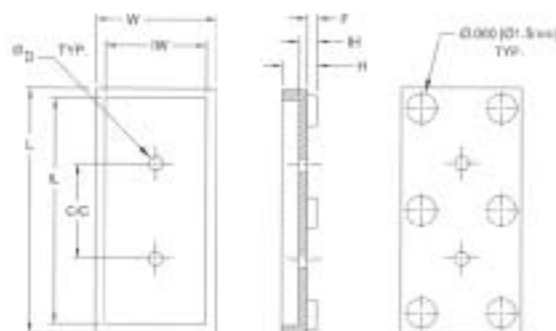
Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) .XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) .XXX = ± 0.005 (0.13)

Part No.	L	IL	W	IW	C/C	D	BH	F	H	Style	Price Code
470-015	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.028 (.71)	.015 (.38)	.000	.050 (1.3)	1	H
470-025	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.028 (.71)	.025 (.64)	.010 (.25)	.060 (1.5)	1	H
470-035	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.028 (.71)	.035 (.89)	.020 (.51)	.070 (1.8)	1	H
470-045	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.028 (.71)	.045 (1.1)	.030 (.76)	.080 (2.0)	1	H
471-015	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.050 (1.3)	.015 (.38)	.000	.050 (1.3)	2	H
471-025	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.050 (1.3)	.025 (.64)	.010 (.25)	.060 (1.5)	2	H
471-035	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.050 (1.3)	.035 (.89)	.020 (.51)	.070 (1.8)	2	H
471-045	.495 (12.6)	.455 (11.6)	.245 (6.2)	.205 (5.2)	.192 (4.9)	.050 (1.3)	.045 (1.1)	.030 (.76)	.080 (2.0)	2	H



ACF Components
1-800-227-2901 & Fasteners, Inc.

CRYSTAL INSULATORS

Mylar Mounts

- Only 0.005" Thick does not increase component height
- Insulates component from PCB
- Allows for trace to be run under components

Material Specifications:

UL Rated 94VTM-2 Mylar Film Dupont EL-21 Clear

Oxygen Rating Index: Over 28%

UL File #E93687

Standard Drawing Tolerances:

(unless otherwise indicated)

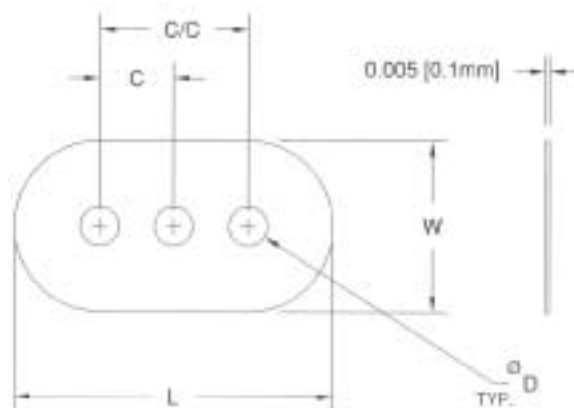
Fractions: $\pm 1/64$ (0.40) XX = ± 0.01 (0.25)

X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)

Note: SR Stands for Self Retaining



Part No.	C	C/C	L	D	W	Case Style	Price Code	Use with
C-148-028	-	.148 (3.8)	.325 (8.3)	.028 (.71)	.145 (3.7)	V	X	HC-80U
C-148-028 SR*	-	.148 (3.8)	.325 (8.3)	*	.145 (3.7)	V	X	HC-80U
C-148-028-3	.074 (1.9)	.148 (3.8)	.325 (8.3)	.028 (.71)	.145 (3.7)	V	X	HC-80U
C-148-028-3 SR*	.074 (1.9)	.148 (3.8)	.325 (8.3)	*	.145 (3.7)	V	X	HC-80U
C-192-028	-	.192 (4.9)	.465 (11.8)	.028 (.71)	.219 (5.6)	I	X	HC-18U, HC-43U & HC-49U
C-192-028 SR*	-	.192 (4.9)	.465 (11.8)	*	.219 (5.6)	I	X	HC-18U, HC-43U & HC-49U
C-192-028-3	.096 (2.4)	.192 (4.9)	.465 (11.8)	.028 (.71)	.219 (5.6)	I	X	HC-18U, HC-43U & HC-49U
C-192-028-3 SR*	.096 (2.4)	.192 (4.9)	.465 (11.8)	*	.219 (5.6)	I	X	HC-18U, HC-43U & HC-49U
C-192-050	-	.192 (4.9)	.465 (11.8)	.050 (1.3)	.219 (5.6)	I	X	HC-25U, HC-42U & HC-50U
C-192-050-3	.096 (2.4)	.192 (4.9)	.465 (11.8)	.050 (1.3)	.219 (5.6)	I	X	HC-25U, HC-42U & HC-50U



ACFComponents
1-800-227-2901 & Fasteners, Inc.

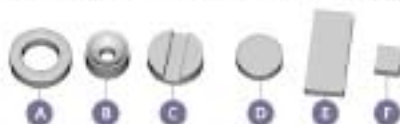
WASH-AWAY SPACERS

Wash-Away Component and General Purpose Spacers

- Ideal for all industry-standard DIP, axial and radial mounted devices
- Properly elevate and protect delicate leads during board handling and assembly
- Spacers wash away in hot or warm running water
- 96 different sizes and elevations



Most DISS-O-PADS® may be ordered in an effervescent version to reduce dissolving time. Add the letter "E" as a suffix, e.g. TO-117-070E. The extra cost is \$3.50/K regardless of quantity.



Standard Tolerances: $\pm .005$

To Order:

Simply specify PART NUMBER and follow by THICKNESS desired. EXAMPLE: TO-5-070 is the basic, TO-5 part, .070" thick

Note: For higher quantities or special shapes consult factory.



TO-5

Part No.	I.D.	O.D.	Thickness	FIG.	TO-5
TO-5	.225 (5.7)	.375 (9.5)	.030, .040, .050, .060, .070, .090, .100, .120, .130, .150	A	Spacer
TO-6	.250 (6.4)	.375 (9.5)	.030, .040, .050, .060, .070, .090, .100, .120, .130	A	I.C. Spacer
TO-8	.300 (7.6)	.437 (11.1)	.040, .050, .070, .090, .100, .120, .130, .150	A	.300 (7.6) I.S.
TO-13	.225 (5.7)	.310 (7.9)	.040, .050, .060, .070, .090, .100, .120, .130	A	Epoxy Case



TO-18

Part No.	I.D.	O.D.	Thickness	FIG.	TO-18
TO-12	.125 (3.2)	.310 (7.9)	.080, .090, .100, .120, .130	B	.250 (6.4) I.S.
TO-16	.125 (3.2)	.205 (5.2)	.030, .040, .050, .070, .090, .100, .120, .130	A	Epoxy Case
TO-17	.170 (4.3)	.250 (6.4)	.030, .040, .050, .070, .090, .100, .120, .130	A	Thin Walls
TO-18	.125 (3.2)	.250 (6.4)	.030, .040, .050, .060, .070, .090, .100, .120, .130, .150	A	Standard
TO-20	.125 (3.2)	.290 (7.4)	.090, .100, .120, .130, .150	B	.200 (5.1) I.S.
TO-27	.125 (3.2)	.290 (7.4)	.030, .040, .050, .070, .090, .100, .120, .130	A	Heavy Walls



AXIAL

Part No.	I.D.	O.D.	Thickness	Slot Depth	Width	FIG.
TO-21	.125 (3.2)	.250 (6.4)	.090, .100, .120, .130, .150	.045 (1.1)	.060 (1.5)	C
TO-25	-	.440 (11.2)	.120, .130, .140, .150	.065 (1.7)	.240 (5.8)	E
TO-26	-	.187 (4.7)	.060, .070, .080, .090, .100, .120, .130, .150	.040 (1.0)	.080 (2.0)	C
TO-27	-	.156 (4.0)	.050, .070, .090, .100, .120	.025 (.64)	.050 (1.3)	C

WASH-AWAY SPACERS

Wash-Away Component and General Purpose Spacers

- Ideal for all industry-standard DIP, axial and radial mounted devices
- Properly elevate and protect delicate leads during board handling and assembly
- Spacers wash away in hot or warm running water
- 96 different sizes and elevations



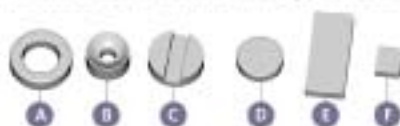
Most DISS-O-PADS® may be ordered in an effervescent version to reduce dissolving time. Add the letter "E" as a suffix, e.g. TO-67-070E. The extra cost is \$3.50/K regardless of quantity.

Standard Tolerances: $\pm .005$

To Order:

Simply specify PART NUMBER and follow by THICKNESS desired. EXAMPLE: TO-67-070 is the basic, TO-67 part, .070" thick

Note: For higher quantities or special shapes consult factory.



On-End/Cord Wood

Part No.	I.D.	O.D.	Thickness	FIG.
TO-7	.075 (1.9)	.175 (4.4)	.030, .050, .060, .070, .090, .100, .120, .130	A
TO-8	.082 (1.6)	.156 (4.0)	.030, .050, .060, .070, .090, .100, .120, .130	A
TO-10	.040 (1.0)	.085 (2.2)	.030, .040, .050, .060, .070	A
TO-11	.045 (1.1)	.100 (2.5)	.030, .040, .050, .060, .070	A
TO-26	.070 (1.8)	.187 (4.7)	.030, .040, .050, .060, .070, .090, .100, .120	A
TO-40	.045 (1.1)	.156 (4.0)	.030, .050, .060, .070, .090, .100, .120, .130	A
TO-64	.045 (1.1)	.140 (3.6)	.030, .050, .060, .070, .090, .100, .120, .130	A
TO-65	.075 (1.9)	.140 (3.6)	.030, .050, .060, .070, .090, .100, .120, .130	A
TO-67	.045 (1.1)	.140 (3.6)	.050, .060, .070, .090, .100, .120, .130	B
TO-68	.045 (1.1)	.110 (2.8)	.040, .050, .060, .070, .090, .100, .120, .130	B



General Purpose

Part No.	I.D.	O.D.	Thickness	FIG.
TO-46	.090 (2.3)	.250 (6.4)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-19	.250 (6.4)	.480 (12.2)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-22	.225 (5.7)	.437 (11.1)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-23	.090 (2.3)	.310 (7.9)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-24	.090 (2.3)	.340 (8.6)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-30	.275 (7.0)	.397 (10.0)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-25	.180 (4.6)	.480 (12.2)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-28	.172 (4.4)	.343 (8.7)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-41	.156 (4.0)	.360 (9.1)	.040, .050, .060, .070, .090, .100, .120, .130	A
TO-42	.250 (6.4)	.438 (11.1)	.040, .050, .060, .070, .090, .100, .120, .130	A



Solid

Part No.	I.D.	O.D.	Thickness	FIG.
TO-29	-	.156 (4.0)	.040, .050, .060, .070, .090, .100, .120, .130	D
TO-31	-	.125 (3.2)	.040, .050, .060, .070, .090, .100, .120, .130	D
TO-32	-	.187 (4.7)	.040, .050, .060, .070, .090, .100, .120, .130	D
TO-33	-	.250 (6.4)	.040, .050, .060, .070, .090, .100, .120, .130	D
TO-34	-	.375 (9.5)	.040, .050, .060, .070, .090, .100, .120, .130	D

WASH-AWAY SPACERS

Wash-Away Rectangular and Square Spacers for DIP, Radial and Axial Devices

- Ideal for all industry-standard DIP, axial and radial mounted devices
- Properly elevate and protect delicate leads during board handling and assembly
- Spacers wash away in hot or warm running water
- 96 different sizes and elevations



Most DISS-O-PADS® may be ordered in an effervescent version to reduce dissolving time. Add the letter "E" as a suffix, e.g. TO-117-070E. The extra cost is \$3.50/K regardless of quantity.

To Order:

Simply specify PART NUMBER and follow by THICKNESS desired. EXAMPLE: TO-117-070 is the basic TO-117 part, .070" (1.8) thick.

Note:

TO-XXX, 3 digit base part numbers are slightly higher in price than TO-XX, 2 digit base part numbers.

Tolerances: ±.005 (.13)

Thickness Conversion Chart

No.	inch	mm	No.	inch	mm
-030	.030	(.76)	-100	.100	(2.5)
-040	.040	(1.0)	-110	.110	(2.8)
-050	.050	(1.3)	-120	.120	(3.0)
-060	.060	(1.5)	-130	.130	(3.3)
-070	.070	(1.8)	-140	.140	(3.6)
-080	.080	(2.0)	-150	.150	(3.8)
-090	.090	(2.3)			



AXIAL LEAD MOUNT



DIP MOUNT

Unslotted Applications

Rectangular and Square Spacers

Part No.	L	W	Thickness	FIG.	
TO-100	.570 (14.5)	.100 (2.5)	.040, .050, .060, .070, .090, 100, 120, 130, 150	E	Rectangular
TO-101	.362 (9.3)	.185 (4.7)	.040, .050, .060, .070, .090, 100, 120, 130, 150	E	Rectangular
TO-102	.505 (12.8)	.160 (4.1)	.040, .050, .060, .070, .090, 100, 120, 130, 150	E	Rectangular
TO-116	.566 (14.4)	.300 (7.6)	.040, .050, .060, .070, .090, 100, 120, 130, 150	E	Rectangular
TO-117	.566 (14.4)	.281 (7.1)	.040, .050, .060, .070, .090, 100, 120, 130, 150	E	Rectangular
TO-118	.705 (17.9)	.260 (6.6)	.040, .050, .060, .070, .090, 100, 120, 130, 150	E	Rectangular
TO-120	.095 (2.4)	.095 (2.4)	.040, .050, .060, .070, .090, 100, 120	F	Square
TO-121	.095 (2.4)	.095 (2.4)	.040, .050, .060, .070, .090, 100, 120	F	Square



AXIAL LEAD MOUNT



RADIAL LEAD MOUNT

Slotted Applications

Radial and Axial Device Spacers

Part No.	C/C	S	W	L	Thickness
TO-200	.100 (2.5)	.075 (.89)	.095 (2.4)	.190 (4.8)	.040, .050, .060, .070, .090, 100, 120, 130, 150
TO-201	.150 (3.8)	.075 (.89)	.095 (2.4)	.240 (6.1)	.040, .050, .060, .070, .090, 100, 120, 130, 150
TO-203	.200 (5.1)	.075 (.89)	.095 (2.4)	.290 (7.4)	.040, .050, .060, .070, .090, 100, 120, 130, 150
TO-204	.250 (6.4)	.090 (1.0)	.145 (3.7)	.340 (8.6)	.040, .050, .060, .070, .090, 100, 120, 130, 150
TO-205	.300 (7.6)	.090 (1.0)	.145 (3.7)	.390 (9.9)	.040, .050, .060, .070, .090, 100, 120, 130, 150
TO-206	.400 (10.2)	.095 (1.1)	.195 (5.0)	.490 (12.4)	.040, .050, .060, .070, .090, 100, 120, 130, 150
TO-207	.500 (12.7)	.095 (1.1)	.195 (5.0)	.590 (15.0)	.040, .050, .060, .070, .090, 100, 120, 130, 150

PCB ASSEMBLY AIDS

Printed Circuit Board Hole Plugs

- Prevents solder from reaching top of PCBs
- Simple press-in use without tools, easy to remove by hand
- Withstands wave, dip or hand soldering temperatures; will not contaminate solder
- Low in cost, re-usable, available from stock
- 9 Standard sizes fit holes from .016" - .500" (.41-12.7) diameter

Designed to prevent solder from flowing through unused holes in PCBs, Bivar's PLUG-O-HOLE™ PCB hole plugs offer an economical solution to keep unwanted solder from reaching the top surfaces of PCBs. Low in cost, these convenient hole plugs are tapered for a snug fit, yet are simple to remove. Made of temperature resistant material, they will withstand flow, dip or hand soldering and are re-usable.

9 Standard sizes, ranging from .016" to .500" diameter, will fit most PCB holes. Protrusion above and below board surfaces will not interfere with solder process baths or conveyors.

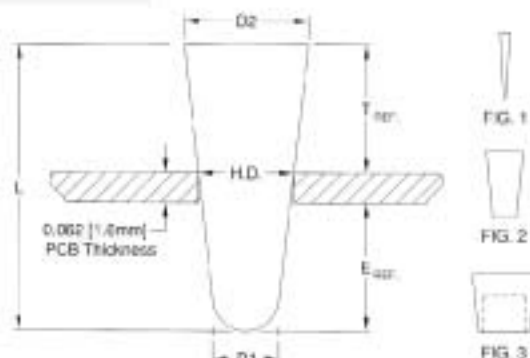
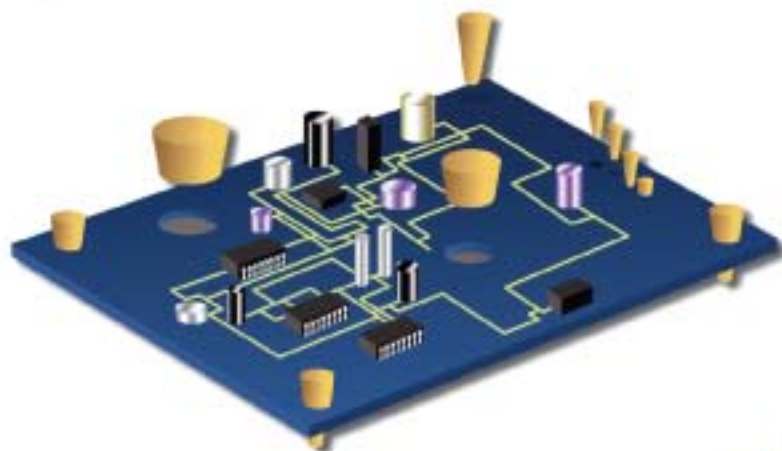
Standard Drawing Tolerances:

(unless otherwise indicated)

Fractions: $\pm 1/64$ (0.4) XX = ± 0.01 (0.25)

.X = ± 0.10 (2.5) XXX = ± 0.005 (0.13)

Part No.	FIG.	D1	H.D.	D2	T	E	L ±.015	Color	Price Code
POH-1	1	0.012 (.30)	0.025 (.63)	0.047 (1.2)	0.31 (7.9)	0.13 (3.2)	0.500 (12.7)	Black	Z
POH-2	1	0.015 (.38)	0.050 (1.3)	0.062 (2.1)	0.31 (7.9)	0.12 (4.4)	0.545 (13.8)	Black	Z
POH-3	2	0.040 (1.0)	0.100 (2.5)	0.160 (4.1)	0.31 (7.9)	0.22 (5.6)	0.585 (14.8)	Black	I
POH-4	2	0.060 (1.5)	0.150 (3.8)	0.200 (5.1)	0.31 (7.9)	0.22 (5.6)	0.585 (14.8)	Black	K
POH-5	2	0.140 (3.6)	0.200 (5.1)	0.261 (6.6)	0.31 (7.9)	0.22 (5.6)	0.585 (14.8)	Black	C
POH-6	2	0.200 (5.1)	0.250 (6.4)	0.309 (7.8)	0.31 (7.9)	0.17 (4.4)	0.540 (13.7)	Black	BB
POH-7	3	0.261 (6.6)	0.312 (7.9)	0.355 (9.0)	0.25 (6.4)	0.17 (4.4)	0.475 (12.1)	Black	CC
POH-8	3	0.320 (8.1)	0.375 (9.5)	0.420 (10.7)	0.25 (6.4)	0.17 (4.4)	0.475 (12.1)	Black	EE
POH-9	3	0.441 (11.2)	0.500 (12.7)	0.539 (13.7)	0.25 (6.4)	0.17 (4.4)	0.475 (12.1)	Black	KK



ACFComponents
1-800-227-2901 & Fasteners, Inc.

CONDUCTIVE INSERT CARD GUIDES

OFFER LOW-COST GROUNDING/EMI SOLUTION

Issues surrounding EMI (electro-magnetic interference), RFI (radio frequency interference) and EMC (electro-magnetic contamination) have driven enclosure design and manufacturing for several years. As these issues have become a focal point across virtually all applications, new restrictions governing emissions "outside the box" have forced many manufacturers to rethink how they design and package the inner workings of their products. To achieve compliance, retrofits and repackaging of existing products have resulted in the introduction of secondary shielding products like copper fingers and metalized elastomeric gaskets. While effective in keeping emissions contained within an enclosure, these secondary shielding products add to overall cost by increasing both component count and labor steps to the manufacturing process.

An excellent example of these application scenarios is the increasing emergence of network servers and RAID arrays. Within each enclosure there are as many as five high volume, high-speed, noisy hard drives spinning away at over 7,200 rpm. For proper operation and compliance with emissions standards, each drive must be grounded to the chassis, which in turn is connected to earth ground. A braided grounding strap with plated eyelets can be screwed to the side rail of each drive and then attached to the chassis providing a secure grounding pathway. Custom-made copper fingers can be applied to each drive independently, and slid into the chassis to achieve an adequate ground.



An easier, less expensive solution to grounding can be achieved by using a Nylon™ card guide equipped with Bivar's new stainless steel Conductive Insert™. Quered by several major manufacturers in their efforts to solve this costly grounding problem, Bivar focused on finding a solution. As a leading supplier of Nylon card guides to the PCB and enclosure industry offering numerous lengths and channel depths from immediate stock, Bivar's inherent criteria was to provide a solution that would not require modifications to existing designs and more common methods of packaging and retaining printed circuit boards. Bivar's new Conductive Insert™ card guides are provided fully assembled and ready for snap-in mounting in industry standard hole patterns. The patent pending Conductive Insert™ guides are assembled using a 0.006" [0.15mm] thick MIL-5-5059 stainless steel strip with a retaining tab to assure contact with board circuitry (Diagram 1). Resistance is limited to less than 10Ω per 8.0" [20cm] and is uniform over the entire contact length of the card guide. Purchasing a fully assembled unit actually reduces labor cost, and does not affect component count.

IMPROVING ON A PROVEN CONCEPT

Conductive card guides are not a new concept. For many years manufacturers have been making fully conductive metal card guides or plastic guides filled with conductive fiber. Unfortunately, metal card guides are heavy, bulky, comparatively expensive, and subject to corrosion and oxidation. Plastic guides, on the other hand, which use conductive fillers, do not exhibit a uniform surface resistivity, and are more appropriate as static dissipate devices than conductive grounding planes. By using stainless steel as the insert for grounding, users are afforded the many advantages gained from that material's qualities - stainless steel won't corrode or oxidize, has a long shelf life, and does not react with most chemicals and solvents used in the assembly process.

Bivar's extensive background in manufacturing card guides has allowed them the benefit of years of research into solving conductivity problems associated with grounding not only peripheral devices, but printed circuit boards as well. By adding the Conductive Insert™ to a familiar Nylon card guide, issues of ground contact integrity, weight and cost were all taken into account and established as design criteria. The result - a solution built on established industry leading technology.

ELIMINATING ESD

Currently, card guides fitted with the Conductive Insert™ are also being used to effectively eliminate potentially critical ESD (electro-static discharge). By plating the support edge of a standard PCB with conductive material, a full time earth ground can be established within an enclosure without the need for ancillary grounding straps or copper fingers. Self-adhesive conductive fabric tapes such as those manufactured by 3M® and Schlegel® are suitable retrofit edge platings. A section of conductive fabric tape (CFT) equal to the surface contact length of the Conductive Insert™ can be folded over the support edge of the PCB to assure uniform contact with the Conductive Insert™. The Conductive Insert™ solution has provided a cost effective, noise-reducing solution to ESD and EMC issues in applications ranging from network routers to medical devices.

Versatile in design, the conductive strips can be assembled onto virtually any of Bivar's snap-in card guide styles. As an example of that versatility, Bivar stocks over 100 card guide styles and sizes ranging in length from 2.0" [50.8mm] to 14.0" [355.6mm]. Custom configurations are also available to deal with specialty grounding issues. While system technology continues to surge forward, keeping inventory, assembly and labor costs to a minimum grows in importance. The conductive insert card guide is one of those simple, yet effective solutions many designers can use without rethinking their design and packaging concepts. The Conductive Insert™ is another product in Bivar's continuing commitment to solve unique customer problems associated with printed circuit board assembly and packaging. ■

AN IMMEDIATE, LOW COST SOLUTION IS AS CLOSE AS YOUR WORKSTATION

Designing a display or front panel indicator can be a costly, time-consuming endeavor that is often overlooked until the end of the design cycle. However, overlooking this important step can have a dramatic impact on the overall product success. Indicators perform the vital function of signaling information to an end-user. A poor indicator choice can result in a product's lack of market acceptance and possible demise. Using a custom indicator can be the determining factor in achieving that aesthetically pleasing front panel that sets your product ahead of the rest – ultimately increasing your product's chance of success.



Designing a custom indicator can take as long as the functional design cycle, and often must cross disciplines to include not only a mechanical engineer (ME), but a tooling engineer or mold maker as well. Tooling is an expensive and lengthy process with return on investment (ROI) being a direct function of volume. The number of applications that justify a custom indicator is therefore limited. Even with substantial volumes, tooling a custom indicator can slow time to market significantly, and frequently results in missed deadlines and unacceptable loss of opportunity.

A CUSTOM DISPLAY WITHOUT CUSTOM COST

The word "custom" often sends shudders down the spines of design engineers and purchasing professionals alike, dredging up images of valuable engineering hours, tooling problems, budget over runs and surplus inventories. But there is a way to achieve that "custom" indicator without the issues associated with "from-scratch" design and tooling. BivarOpto™ provides "custom tailored" LED assemblies as part of its BHA/Design Your Own™ program.

AN EASY PROCESS

The Bivar design program is akin to getting a custom-tailored suit with the ease and price of buying it "off the rack." Once you have selected the suit that best meets your needs from all the styles, sizes and colors, the tailoring begins. The result: a perfect fit and attractive, eye-catching look at an affordable price. That in essence is the BivarOpto™ Design Your Own™ program: custom tailored products to meet specific needs at an off the rack price without large volume commitments.

As an example, a major mid-west telecom manufacturer had finished functional design work on the board level product, while simultaneously the mechanical team, in conjunction with marketing, had completed a streamlined "state of the art" enclosure. No one had given adequate thought to front panel indication. This design team was faced with the prospect of custom tooling a LED assembly solution to work with the finished board and new enclosure. They turned to BivarOpto's BHA (Bivar holder assembly) program on the web and were able to custom tailor a LED assembly to meet specific design parameters while cutting time to market and saving tens of thousands of dollars in tooling.

The design program can be completed on-line at Bivar's website (www.bivar.com). An interactive form with pull down menus provides the designer with many of the options available for each display parameter, from centerlines and number of stations, to peak wavelength and forward current draw. At the heart of the Design Your Own™ program lies a vast selection of over 1200 different pieces of innovative modular hardware that can be mixed and matched to achieve specific results. Products ranging from single-level to quad-level 32 station arrays are available as standard products. BivarOpto™ has already made the substantial investment in tooling and inventory eliminating those costs from the custom indicator equation. An in-depth selection of standard to more unique LEDs is maintained allowing for the most demanding aesthetic requirements. With inventoried items ranging from 2ma low current devices to the latest 8,000mcd super yellow LEDs, virtually any requirement can be met with rapid turnaround and 48 hour sample response. You get exactly what is desired, without the custom price tag normally associated with this type of product.

STEP-BY-STEP CUSTOM DESIGN

The first step in successfully and quickly tailoring your own custom LED Assembly is to log on to the BivarOpto™ website (www.bivar.com). From the Bivar homepage select the Products tab. The Products section of the website offers access to both the Bivar and BivarOpto full line catalogs as well as new product information not currently in either edition. Select the "Design Your Own LED Displays" logo at the bottom of the page and you are ready to start the new abbreviated design cycle!

The first choice you must make is LED size, either T1 (3mm) or T1 (5mm). The T1 (3mm) offers you the choice of single, bi-, tri- and quad-level arrays, while the T1 (5mm) is available in single and bi-level designs only. Once you have selected the appropriate template, you are offered a series of drop-down menus that list the available choices for each parameter. "Pick and Click" the desired characteristic for each parameter, and you have finished your "Custom Tailored" LED assembly. After entering some brief information about yourself and your company, the form can be submitted to Bivar's engineering department by clicking on the "submit" button. Within 48 hours a full product specification will be submitted back via the provided routing information submitted with the initial design request. Samples are shipped globally within that same 48 hours assuring the actual product meets the design parameters outlined during the "Design Your Own™" phase.

An alternative to using the on-line system is to print out the pages on the website and fill out the form by hand (or use copied page from the printed catalog). In many circumstances there are additional design requirements that for brevity's sake have been excluded from the interactive forms necessitating a more detailed submittal. Additional LED characteristics may be needed, or in-depth applications notes may determine which LED assembly best suits a particular application. Of course, if required, a knowledgeable technical sales representative is always available. Either way, what would have typically taken weeks to design, submit, quote and sample has been reduced to 48 hours. Rapid response and ease of use are value-added engineering features that definitely take major strides in shortening the design cycle. The energy and resources expended are reduced by the smallest annual production runs.

As industry changes dictate innovative, yet cost-effective indicator panels in record time-to-market speeds, it is in every design engineer's best interest to add tools such as the Design Your Own™ program to his arsenal. BivarOpto™ will continue to take measured steps to increase the scope of these programs and to ensure that the most current, cutting edge applications can be serviced with rapid response and state of the art service. ■

MIL & CID CROSS REFERENCES



MIL-M-38527 & CID A55485

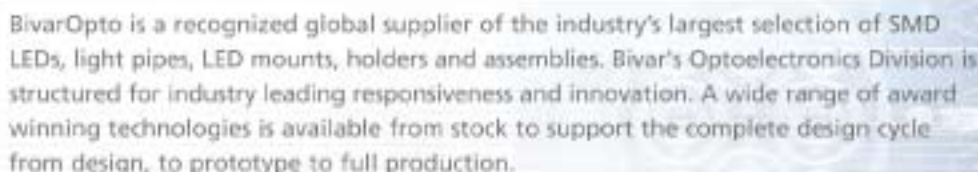
Dash No.	BIVAR	Dash No.	BIVAR	Dash No.	BIVAR	Dash No.	BIVAR	Dash No.	BIVAR
A01-030N	115-100	A02-018N	515-020	A03-015N	214-120	A06-024N	312-250	A06-039N	910-XXX
A01-031N	109-045	A02-019N	520-021	A04-013N	701-130	A06-025N	313-300	A06-041N	905-XXX
A01-033N	119-096	A02-020N	511-038	A06-004N	814-030	A06-026N	314-350	A06-042N	912-XXX
A01-034N	117-080	A02-022N	528-117	A06-005N	814-060	A06-027N	315-400	A06-046N	330-072
A01-035N	116-060	A02-025N	517-095	A06-006N	814-080	A06-028N	316-500	A06-047N	330-050
A01-036N	118-055	A02-027N	527-117	A06-007N	816-060	A06-029N	901-XXX	A06-048N	330-085
A01-037N	110-030	A02-030N	611-075	A06-008N	300-100	A06-030N	938-XXX	A07-002N	112-040
A01-039N	108-021	A02-031N	610-075	A06-009N	101-150	A06-031N	902-XXX	A07-007N	420-072
A01-040N	104-020	A02-033N	617-075	A06-010N	302-200	A06-032N	930-XXX	A10-006N	207-125
A01-041N	521-094	A02-038N	526-090	A06-017N	303-250	A06-033N	906-XXX		
A01-044N	120-156	A02-047N	508-075	A06-018N	304-300	A06-034N	903-XXX		
A02-004N	616-070	A03-002N	205-085	A06-019N	305-350	A06-035N	907-XXX		
A02-010N	503-075	A03-004N	213-100	A06-020N	306-400	A06-036N	904-XXX		
A02-013N	516-038	A03-010N	209-125	A06-021N	307-500	A06-037N	913-XXX		
A02-014N	525-038	A03-013N	200-115	A06-023N	311-200	A06-038N	908-XXX		

CROSS REFERENCE

Thermalloy	BIVAR	Thermalloy	BIVAR	Thermalloy	BIVAR	Scanbe	BIVAR
7717-2	207-125	7717-138	508-075*	7717-248	209-125	23071-1	SSD-250*
7717-3	503-075	7717-139	209-125*	7717-251	503-075	23071-2	SSD-300*
7717-4	513-075	7717-145	209-125	7717-253	603-115*	23071-3	SSD-400*
7717-5	502-120	7717-146	115-100*	5001N	CP-06	23071-4	SSD-4503X*
7717-7	113-125*	7717-147	606-075	5003N	CP-26	23071-5	SSD-600*
7717-8	610-075	7717-148	603-115*	5005-08N	CP-66	23071-7	SSD-650*
7717-10	611-075	7717-149	214-120	5005-09N	CP-2	5-200	CP-06
7717-12	612-075	7717-150	209-125*	5005-20N	CP-86	5-202	CP-26
7717-15	515-030	7717-151	508-075*	5009	CP-36	5-203	CP-36
7717-16	104-020	7717-152	109-045	7721-1PPS	5W-125-150	5-208	CP-86
7717-18	115-100	7717-153	118-055	7721-2PPS	5W-185-150	5-212	CP-66
7717-22	501-075	7717-154	503-080	7721-3PPS	5W-125-140	5-200-100	CP-09
7717-26	402-120	7717-155	420-078	7721-4PPS	5W-031-190	5-202-100	CP-29
7717-30	611-075*	7717-156	814-060*	7721-5PPS	5W-031-177	5-203-100	CP-39
7717-32	612-075*	7717-160	402-120*	7721-6PPS	5W-031-145	5-209	1209-062
7717-44	209-125	7717-161	519-075	7721-7PPS	5W-032-135	5-214	1107-062
7717-46	116-060	7717-162	711-085	7721-8PPS	5W-040-140		
7717-79	51-038*	7717-175	408-080	8820-2	DC-250		
7717-80	603-115*	7717-176	520-021	8820-4	DC-450		
7717-86	501-075*	7717-188	119-096	8820-6	DC-600		
7717-89	117-080	7717-189	604-115	8820-8	DC-800		
7717-93	211-040*	7717-190	521-094				
7717-94	516-038	7717-192	120-156				
7717-107	707-120	7717-193	121-032				
7717-108	116-060*	7717-194	122-152				
7717-109	517-095	7717-198	525-038				
7717-110	108-021*	7717-199	123-050				
7717-111	606-075	7717-200	526-090				
7717-112	110-030	7717-201	603-115				
7717-122	616-070	7717-205	200-115				
7717-124	108-021	7717-206	513-075				
7717-125	605-085*	7717-207	104-020*				
7717-127	506-038	7717-219	511-038*				
7717-128	527-117	7717-220	125-080				
7717-129	408-080*	7717-224	512-150				
7717-130	112-040	7717-227	509-060				
7717-131	518-038	7717-239	107-180*				
7717-135	214-120*	7717-240	802-038				
7717-136	528-117	7717-245	808-187*				
7717-137	213-100	7717-247	214-120*				

Note: Bivar Numbers with an asterisk (*) are Bivar's closest equivalents.

Bivar's cross reference is to be used as a guide only. Samples are available for evaluation from Bivar or your local stocking authorized distributor.



BivarOpto™ has introduced dozens of new products this year. Here are a few examples:

- New Integrated Surface Mount LEDs for Flexible Light Pipe Displays Eliminating Need for Thru-Hole Drilling Of PCBs
- Full Ultraviolet LED Product Group Featuring New Packaging Styles and Narrower Bandwidth for Variety Of Emerging Applications
- Solaris™ Mega Bright Surface Mount LED Featuring Integrated Heat Sink, High Current Drive Capabilities



SEARCH

ENTER KEYWORD OR PRODUCT NUMBER

SEARCH

PRODUCTS BY APPLICATION

- Chip Coolers
- PCB Spotlights
- Fluorid Coolers
- Component Mounts / Spacers
- Single Mounts / Indicators
- High-Power Spotlights
- LED Mounts / Spacers
- PCB Assembly Jigs
- PCB Indicators

PRODUCTS BY TECHNOLOGY

- GAU-LEDs
- UV-LEDs
- Light Pipes
- Plastic Light Pipes
- Iron-LED Assemblies
- Iron-LED Assemblies
- Iron-LED Assemblies
- Thermoplastic Assemblies
- Polycarbonate Assemblies
- Design Kits
- Design Your Own



MicroLED Technology

MicroLED technology is a new LED technology that allows for the production of high-performance, high-brightness LEDs. It is a technology that is still in the early stages of development, but it has the potential to revolutionize the LED industry.

MicroLED technology is a new LED technology that allows for the production of high-performance, high-brightness LEDs. It is a technology that is still in the early stages of development, but it has the potential to revolutionize the LED industry.

PRODUCTS BY APPLICATION

Chip Coolers

PCB Spotlights

Fluorid Coolers

Component Mounts / Spacers

Single Mounts / Indicators

High-Power Spotlights

LED Mounts / Spacers

PCB Assembly Jigs

PCB Indicators

PRODUCTS BY TECHNOLOGY

GAU-LEDs

UV-LEDs

Light Pipes

Plastic Light Pipes

Iron-LED Assemblies

Iron-LED Assemblies

Iron-LED Assemblies

Thermoplastic Assemblies

Polycarbonate Assemblies

Design Kits

Design Your Own

PRODUCTS BY APPLICATION

Chip Coolers

PCB Spotlights

Fluorid Coolers

Component Mounts / Spacers

Single Mounts / Indicators

High-Power Spotlights

LED Mounts / Spacers

PCB Assembly Jigs

PCB Indicators

PRODUCTS BY TECHNOLOGY

GAU-LEDs

UV-LEDs

Light Pipes

Plastic Light Pipes

Iron-LED Assemblies

Iron-LED Assemblies

Iron-LED Assemblies

Thermoplastic Assemblies

Polycarbonate Assemblies

Design Kits

Design Your Own

PRODUCTS BY APPLICATION

Chip Coolers

PCB Spotlights

Fluorid Coolers

Component Mounts / Spacers

Single Mounts / Indicators

High-Power Spotlights

LED Mounts / Spacers

PCB Assembly Jigs

PCB Indicators

PRODUCTS BY TECHNOLOGY

GAU-LEDs

UV-LEDs

Light Pipes

Plastic Light Pipes

Iron-LED Assemblies

Iron-LED Assemblies

Iron-LED Assemblies

Thermoplastic Assemblies

Polycarbonate Assemblies

Design Kits

Design Your Own

To see more exciting new products, please visit us on-line at: www.bivar.com



BIVAR, INC. 4 THOMAS, IRVINE, CALIFORNIA 92618 WWW.BIVAR.COM E-MAIL: BIVAR@BIVAR.COM

TEL: 949.951.8808

FAX: 949.951.3974

 **ACF**Components
1-800-227-2901 & Fasteners, Inc.