

# SMT/THM TEST POINTS

Designers' Choice

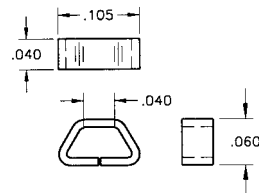


## (SMT) SURFACE MOUNT TEST POINTS ON TAPE & REEL

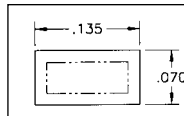


### MINIATURE

- Ultra low profile ideally suited for advanced surface mount printed circuit board applications
- Designed for long life and durability
- Manufactured using flat wire to provide a large mounting surface area
- Ideal for use with miniature probes, clips, and hooks
- Efficient, safe, board level testing



Pad Layout



#### SPECIFICATIONS

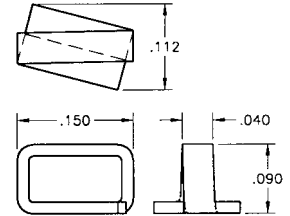
Contact Material: .010 Phosphor Bronze  
 Contact Finish: Tin Lead  
 Tape Material: 8mm wide; 4mm pitch; conductive polycarbonate carrier tape meets ANSI/EIA-481 standard  
 Reel Size: Cat. No. 5015: 7 inches – 1000 pieces per reel  
 Cat. No. 5017: 13 inches – 5000 pieces per reel

CAT. NO. 5015 (Tape & Reel)  
 CAT. NO. 5017 (Tape & Reel)

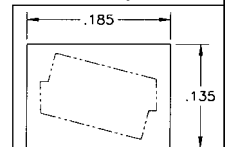


### COMPACT

- Unique design provides exceptional strength and durability
- Simplifies testing on dense SMT circuit boards
- Ideal for use with most standard probes, clips and hooks
- Efficient, safe, board level testing



Pad Layout



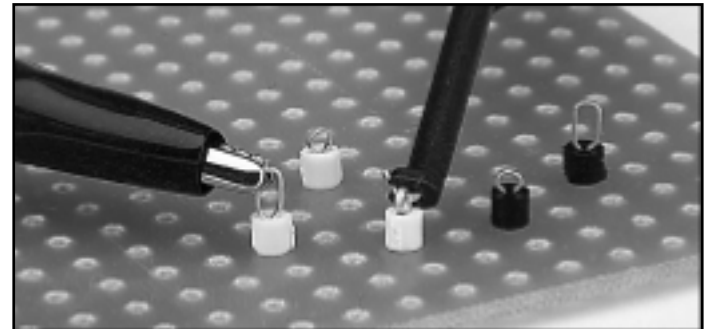
#### SPECIFICATIONS

Contact Material: .015 Phosphor Bronze  
 Contact Finish: Tin Lead  
 Tape Material: 12mm wide; 4mm pitch; conductive polycarbonate carrier tape meets ANSI/EIA-481 standard  
 Reel Size: Cat. No. 5016: 7 inches – 1000 pieces per reel  
 Cat. No. 5018: 13 inches – 5000 pieces per reel

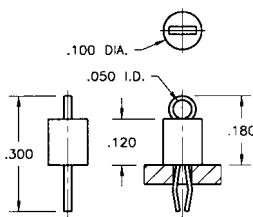
CAT. NO. 5016 (Tape & Reel)  
 CAT. NO. 5018 (Tape & Reel)

## (THM) THRU-HOLE MOUNT TEST POINTS – COLOR KEYED

- Color keyed for visibility and quick identification
- Economical choice for PC test point terminations
- Snap-fit mounting provides positive retention for wave soldering
- Wire form loop for safe, non-slip testing
- Space saving, ultra low and low profile designs
- High profile design for difficult to reach applications
- Suitable for high density packaging on .062 and .093 PC boards
- Practical replacement for wire-wrap posts and turrets
- Secure grip for J hooks, EZ hooks, grabbers, alligator clips, tips or probes
- Plastic base strengthens terminal for positive holding power
- Ideal for reliable production testing and field service troubleshooting



### MINIATURE

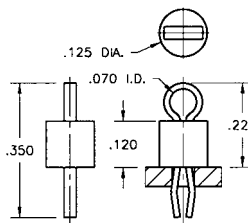


CAT. NO.	BASE COLOR
5000	RED
5001	BLACK
5002	WHITE
5003	ORANGE
5004	YELLOW

#### SPECIFICATIONS

Terminal: .010 x .020 Phosphor Bronze Wire, Tin Plate  
 Base: Valox, UL 94V-0  
**MOUNTING DETAIL**  
 Mtg. Hole: .040 Diameter  
 Mtg. Centers: .100 x .100

### COMPACT

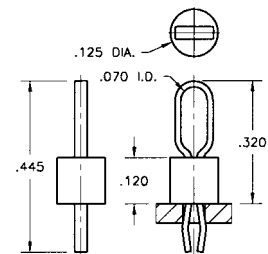


CAT. NO.	BASE COLOR
5005	RED
5006	BLACK
5007	WHITE
5008	ORANGE
5009	YELLOW

#### SPECIFICATIONS

Terminal: .015 x .032 Phosphor Bronze Wire, Tin Plate  
 Base: Valox, UL 94V-0  
**MOUNTING DETAIL**  
 Mtg. Hole: .063 Diameter  
 Mtg. Centers: .125 x .125

### MULTIPURPOSE



CAT. NO.	BASE COLOR
5010	RED
5011	BLACK
5012	WHITE
5013	ORANGE
5014	YELLOW

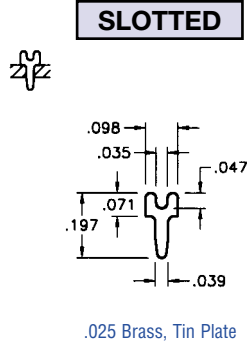
#### SPECIFICATIONS

Terminal: .015 x .032 Phosphor Bronze Wire, Tin Plate  
 Base: Valox, UL 94V-0  
**MOUNTING DETAIL**  
 Mtg. Hole: .063 Diameter  
 Mtg. Centers: .125 x .125

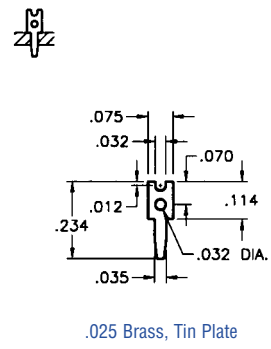
# PC TEST POINT TERMINALS

## PC TEST POINTS – SLOTTED & LOOP TYPES

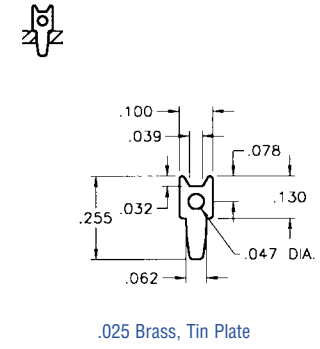
- Low profile, space saving designs for dense packaging
- Wide variety of configurations to suit most applications
- Safe, practical, economical replacement for wire-wrap posts
- Easy mount design, ideal for wave soldering
- Re-fit PC boards without need for re-design
- Provides easy access for production testing and field service troubleshooting
- Positive grip when using J hooks, EZ hooks, grabbers, clips, tips and probes
- Custom test point terminals can be manufactured to your specifications
- Other platings and materials available upon request



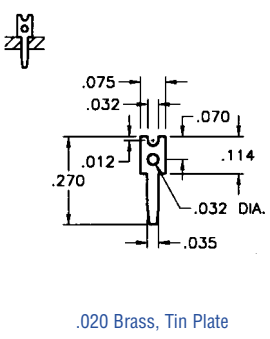
CAT. NO. 4950



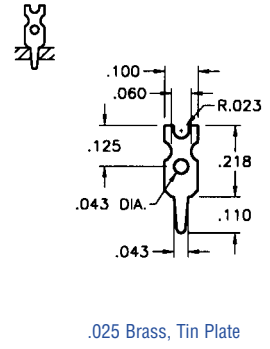
CAT. NO. 1030



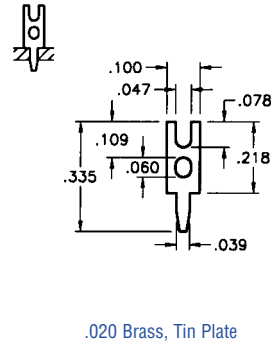
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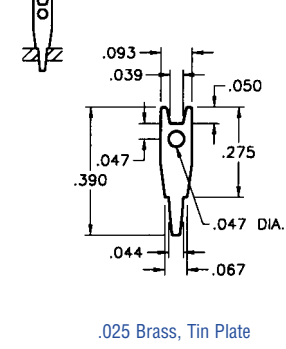
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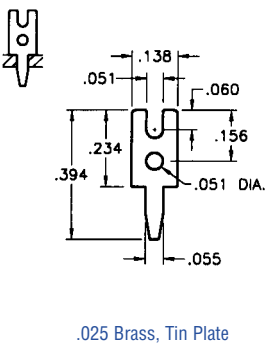
CAT. NO. 1034



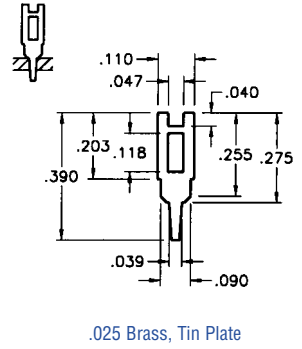
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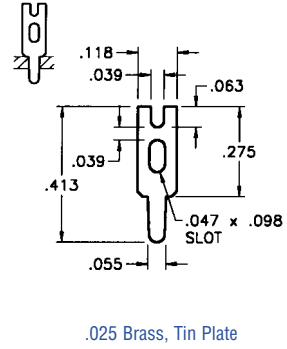
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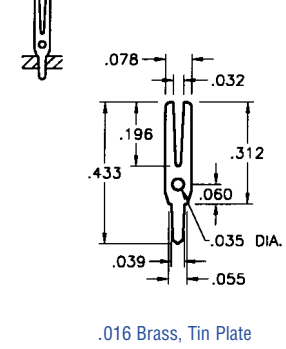
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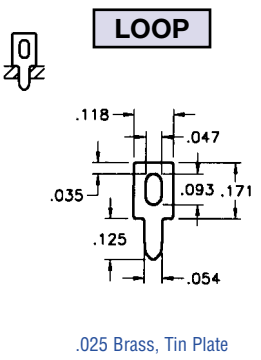
CAT. NO. 1040



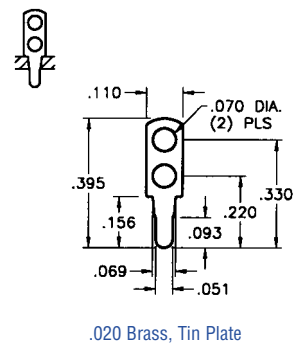
CAT. NO. 4951



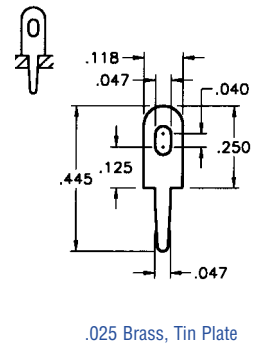
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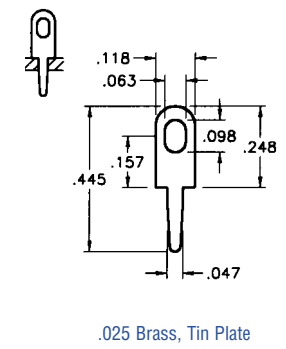
CAT. NO. 1033



CAT. NO. 1038



CAT. NO. 1249



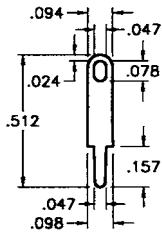
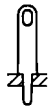
CAT. NO. 4952

# PC TEST POINT TERMINALS

Designers' Choice

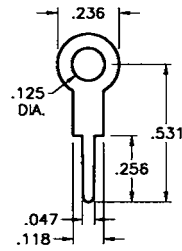


## PC TEST POINTS - LOOP TYPES



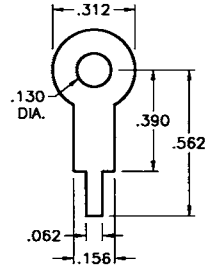
.020 Brass, Tin Plate

CAT. NO. 4953



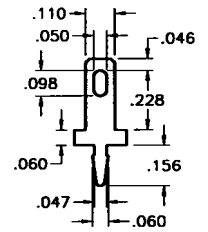
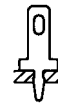
.020 Brass, Tin Plate

CAT. NO. 4954



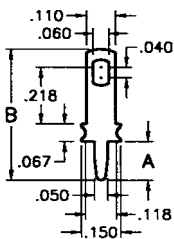
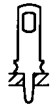
.015 Brass, Tin Plate

CAT. NO. 680



.020 Brass, Tin Plate

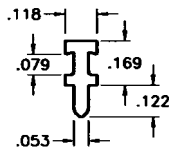
CAT. NO. 1250



.032 Brass, Tin Plate

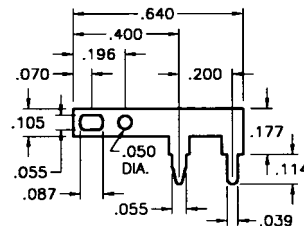
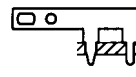
CAT. NO.	A	B
1041	.275	.630
1046	.150	.503

CAT. NO. 4955



.025 Brass, Tin Plate

CAT. NO. 4955



.025 Brass, Tin Plate

CAT. NO. 1045

### CUSTOM TEST POINT TERMINALS

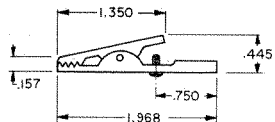
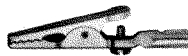
Keystone is fully integrated to meet your total design & production needs.

Manufacturing custom designs & modifications of standard items is our specialty.

Quotations on special stampings furnished promptly upon receipt of sample, sketch, print or CAD drawings.

## ALLIGATOR CLIPS

### LARGE CLIP • SCREW CONNECTION



JAW SPREAD  
.315 max.

CAT. NO. 5048

MATERIAL: Clip: Steel, Nickel Plate

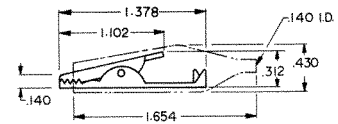
### MEDIUM CLIP • SOLDER CONNECTION WITH STRAIN RELIEF



INSULATED



CAT. NO. 5038 - NON-INSULATED



JAW SPREAD  
.236 max.

CAT. NO.	INSULATOR COLOR
5039	RED
5040	BLACK

MATERIAL: Clip: Steel, Nickel Plate Insulator: Vinyl

### SMALL CLIP • SOLDER CONNECTION WITH STRAIN RELIEF

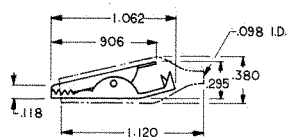


INSULATED



CAT. NO. 5033 - NON-INSULATED

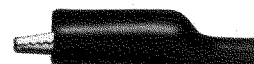
CAT. NO.	INSULATOR COLOR
5034	RED
5035	BLACK
5036	GREEN
5037	YELLOW



JAW SPREAD  
.236 max.

MATERIAL: Clip: Steel, Nickel Plate Insulator: Vinyl

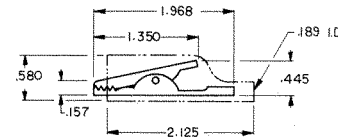
### LARGE CLIP • SOLDER CONNECTION (BARREL ACCEPTS WIRE OR STANDARD BANANA PLUGS)



INSULATED



CAT. NO. 5044 - NON-INSULATED



JAW SPREAD  
.315 max.

MATERIAL: Clip: Steel, Nickel Plate Insulator: Vinyl



Designers' Choice

# SPACERS & STANDOFFS

## ALUMINUM ECONOMY SPACERS

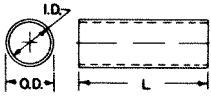
• PRECISION FORMED • NO BURRS

Made of flat strip aluminum and rolled on precision equipment. Assures maximum bearing surface, square ends.

Aluminum: Per 5052-H34 per QQ-A-250/8b



Tight Joint on Outside Diameter



Description and Tol.

SPACER FOR	I.D. ±.005	O.D. ±.007
#4	.125	.167
#6	.151	.193
#8	.178	.232

L Length	#4 Screw CAT. NO.	#6 Screw CAT. NO.	#8 Screw CAT. NO.
.187	397	—	—
.250	398	405	412
.312	399	406	413
.375	400	407	414
.437	401	408	415
.500	402	409	416
.625	403	410	417
.750	418	425	432
.875	419	426	433
1.000	420	427	434
1.250	421	428	435
1.500	422	429	436
1.750	—	430	437
2.000	—	—	438

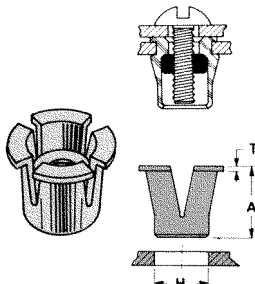
## BLIND CAPTIVE NUTS — PRESS FIT

MOUNT CHASSIS, PANELS, HEAT SINKS, SOCKETS

**MATERIAL:** Molded Nylon with Brass threaded insert.

- EASY ASSEMBLY
- DAMPENS VIBRATION
- ELIMINATES INSULATING WASHER
- HI-DIELECTRIC STRENGTH

A unique reusable fastener made of NYLON which contains a threaded brass nut. Finger pressure or light tap seals it in a pre-drilled hole. The nut is drawn up causing a Nylon bulge behind the workpiece. Screw may be removed or replaced.

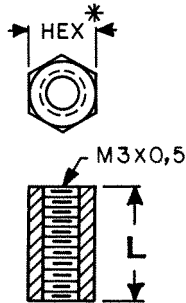


CAT. NO.	THREAD	"H" HOLE SIZE REQ/D.	IDEAL SHEET THICKNESS	A	T
4341	4-40	.250	.047	.312	.030
4342	6-32	.312	.078	.375	.030
4343	8-32	.406	.093	.500	.030

## METRIC HEX THREADED STANDOFFS

A comprehensive range of precision made metric hex spacers.

**MATERIAL:** Brass, ASTM-B16, Nickel plated (QQ-N-290)



5mm HEX*	
CAT. NO.	"L"
4390	5mm
4391	10mm
4392	15mm
4393	20mm
4394	25mm

5.5mm HEX*	
CAT. NO.	"L"
4395	5mm
4396	10mm
4397	15mm
4398	20mm
4399	25mm

## ROUND CLEAR SPACERS

BRASS OR ALUMINUM

**MATERIALS:**

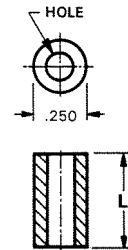
Brass: ASTM-B16, Nickel plate (QQ-N-290)

Aluminum: Iridite Finish (MIL-C-5541)

L LENGTH	HOLE	BRASS	ALUMINUM
		CAT. NO.	CAT. NO.
.125	.120	1909	2036
.250	.120	1454A	3457
.375	.120	1454B	3458
.500	.120	1454C	3459
.625	.120	1919	2314
.750	.120	1454D	3460
.875	.120	1920	3402
1.000	.120	1545E	3461
1.500	.120	1924	3462
2.000	.120	1925	3463
.125	.140	1934	3403
.250	.140	1457A	3464
.375	.140	1457B	3465
.500	.140	1457C	3466
.625	.140	1935	3429
.750	.140	1957D	3467
.875	.140	1936	3438
1.000	.140	1457E	3468
1.500	.140	1937	3469
2.000	.140	1938	3470
.125	.171	1942	4258
.250	.171	1480	3471
.375	.171	1481	3472
.500	.171	1482	3473
.625	.171	2032	4259
.750	.171	1483	3474
.875	.171	2033	4260
1.000	.171	1484	3475
1.500	.171	2034	3476
2.000	.171	2035	3477

CLEARANCE HOLE:

- .120 for #4 screw
- .140 for #6 screw
- .171 for #8 screw



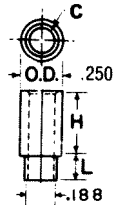
## ROUND SWAGE CLEAR SPACERS

**MATERIAL:** Brass, ASTM-B16, Nickel plate (QQ-N-290)

CLEARANCE HOLE:

- .120 for #4 screw
- .140 for #6 screw

CAT. NO.	H HEIGHT	FOR PANEL THICKNESS	C HOLE	L
5060-2	.250	1/16	.120	.109
5060-3	.250	3/32	.120	.141
5061-2	.375	1/16	.120	.109
5061-3	.375	3/32	.120	.141
5062-2	.500	1/16	.120	.109
5062-3	.500	3/32	.120	.141
5063-2	.250	1/16	.140	.109
5063-3	.250	3/32	.140	.141
5064-2	.375	1/16	.140	.109
5064-3	.375	3/32	.140	.141
5065-2	.500	1/16	.140	.109
5065-3	.500	3/32	.140	.141



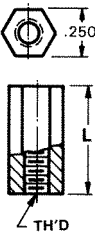
## HEX STAINLESS THREADED STANDOFFS

**MATERIAL:** Stainless Steel per ASTM-A581/A582, Class 303

• Corrosion Resistant

L Length Inches	4-40 Thread CAT. NO.	6-32 Thread CAT. NO.	8-32 Thread CAT. NO.
1/4 (.250)	1921	1922	1923
3/8 (.375)	1921A	1922A	1923A
1/2 (.500)	1921B	1922B	1923B
3/4 (.750)	1921C	1922C	1923C
1 (1.000)	1921D	1922D	1923D
1 1/2 (1.500)	1921E	1922E	1923E
2 (2.000)	1921F	1922F	1923F

- 4-40 thread on 1/2" and over tapped 1/4" each end
- 6-32 & 8-32 thread on 1" and over tapped 3/8" each end



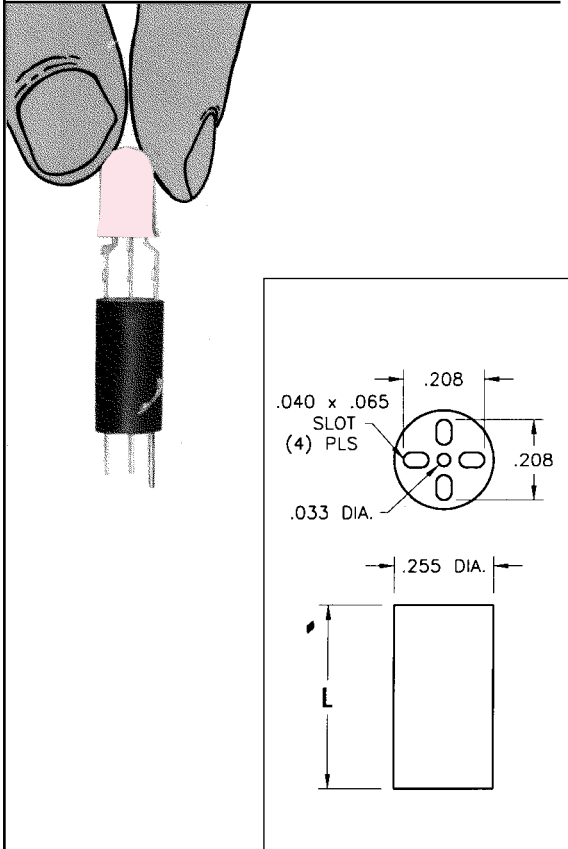
# LED SPACER MOUNTS

Designers' Choice



## "UNIVERSAL" FOR TRI-LEAD T-1 & T-1 3/4

- Unique design separates leads and retains Tri-Lead (and/or Bi-Lead) components
- Designed for PC board mounting of Tri-Lead (and/or Bi-Lead) T-1 and T-1<sup>3/4</sup> LEDs
- Provides height control, lead retention and stability
- Also suitable for mounting lamps, resistors, transistors, diodes, capacitors, etc.



**MATERIAL:** Black PVC, UL Rated 94V-0

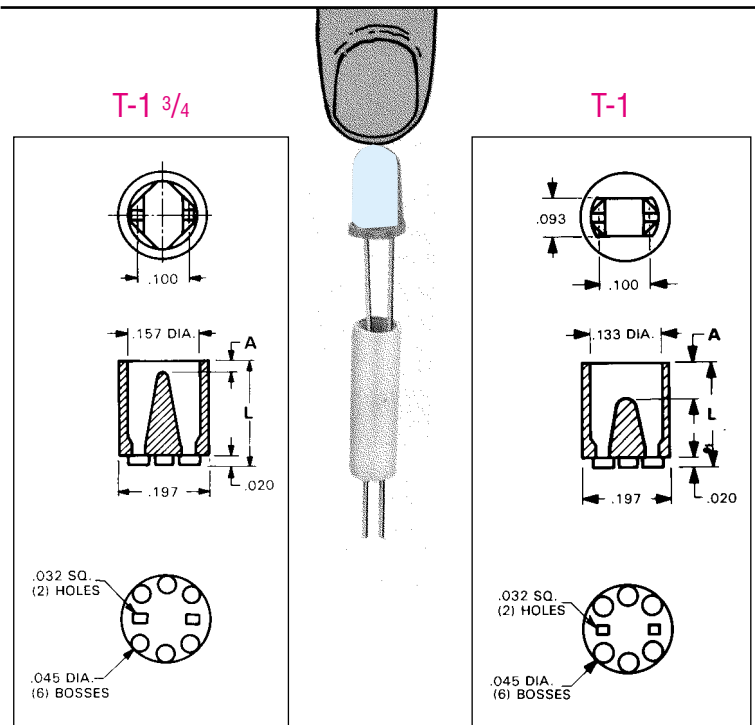
T-1 <sup>3/4</sup> and T-1			
CAT. NO.	LENGTH "L"	CAT. NO.	LENGTH "L"
8900	.120	8916	.400
8901	.140	8917	.420
8902	.160	8918	.440
8903	.180	8919	.450
8904	.200	8920	.460
8905	.220	8921	.480
8906	.240	8922	.500
8907	.250	8923	.550
8908	.260	8924	.600
8909	.280	8925	.650
8910	.300	8926	.700
8911	.320	8927	.750
8912	.340	8928	.800
8913	.350	8929	.850
8914	.360	8930	.900
8915	.380	8931	.925

## "SELF-ALIGNING" FOR BI-LEAD T-1 & T-1 3/4

- These unique, new self-aligning Bi-Lead LED mounting spacers, for T-1 and T-1<sup>3/4</sup> LEDs, reduce labor costs by simplifying preassembly to the printed circuit board
- The spacer features an internally tapered barrier which guides the leads and eliminates the possibility of crimping or shorting. The internal configuration also assures positive self-alignment on .100 centers
- The bosses serve the dual purpose of heat dissipation and easy post soldering cleanup
- Available in a range of lengths from .120 to .925 long. Molded from 6/6 nylon, UL Rated 94V-2

### Key Features...

- Internal design eliminates crimping or shorting of leads
- Positive self-alignment of leads on .100 centers
- Cost and labor saving
- No special tools required



**MATERIAL:** Natural Nylon, UL Rated 94V-2

T-1 <sup>3/4</sup>		T-1		T-1 <sup>3/4</sup>		T-1	
CAT. NO.	CAT. NO.	LENGTH "L"	"A" REF.	CAT. NO.	CAT. NO.	LENGTH "L"	"A" REF.
8311	7351	.120	.045	8327	7367	.400	.075
8312	7352	.140	.065	8328	7368	.420	.095
8313	7353	.160	.085	8329	7369	.440	.115
8314	7354	.180	.105	8330	7370	.450	.120
8315	7355	.200	.125	8331	7371	.460	.135
8316	7356	.220	.145	8332	7372	.480	.145
8317	7357	.240	.045	8333	7373	.500	.055
8318	7358	.250	.060	8334	7374	.550	.095
8319	7359	.260	.065	8335	7375	.600	.150
8320	7360	.280	.090	8336	7376	.650	.075
8321	7361	.300	.110	8337	7377	.700	.120
8322	7362	.320	.120	8338	7378	.750	.055
8323	7363	.340	.140	8339	7379	.800	.110
8324	7364	.350	.150	8340	7380	.850	.160
8325	7365	.360	.160	8341	7381	.900	.200
8326	7366	.380	.060	8342	7382	.925	.230