

# Electronic Components

Connectors, Switches,  
Terminal Blocks,  
Cooling Fans



**Contents:**

A comprehensive range of the following components are held in stock. All components are manufactured by manufacturers well proven for the quality of their product, service and reliable delivery over the twenty five years Hi-Q Electronics Ltd has been established.

**Switches Plus Components:**

SKB Shock Racks - Multi Standard Utility Cases  
APM Hexseal - Self-sealing Fasteners  
LORLIN'S - Metal Keypads  
TECHNO Connectors

FLOYD BELL Sound Solutions  
OTTO Switches and Control Grips  
C&K Switches  
LIN ENGINEERING

**Mains IEC Inlets & Outlets:**

Snap-in, Screw Mount,  
Straight & Right Angle Plugs.  
Combinations with Switch, Fuse etc.



1 - 5

**Mains Filters:**

Line, PCB & IEC modules with combinations  
of Filter, Mains Switch, Inlet, Outlet, Fuse &  
Voltage Selector.



6 - 7

**Fuse and Fuse Holders:**

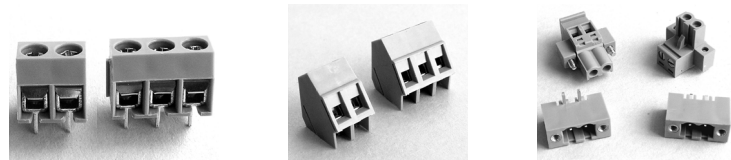
5x20mm, 6.3x32mm, Pico, Microfuse, SMT,  
Resettable.



8 - 11

**Terminal Blocks:**

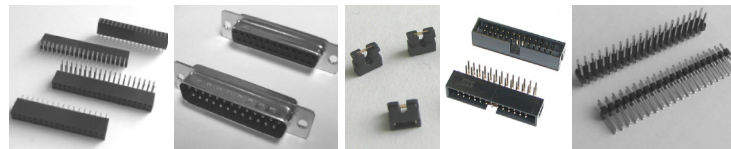
PCB Vertical & Right Angle, Plug & Header  
Types, Dual Vertical, Screwless, Barrier.



12 - 21

**Connectors:**

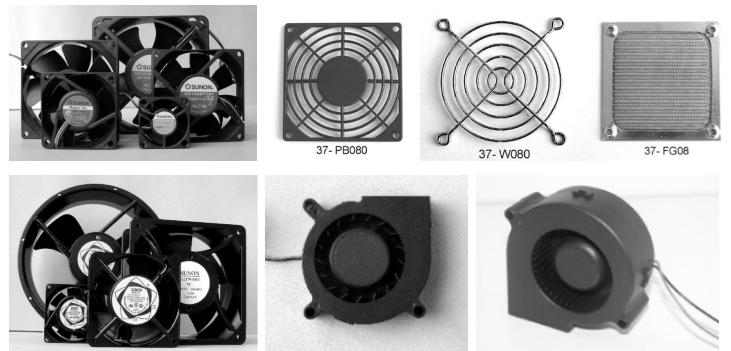
'D' Types, PCB & Solder, Covers & Blanks,  
Ribbon IDC Sockets & Headers, Pin Headers  
& Sockets, DIP Transition.



22 - 30

**Cooling Fans & Accessories:**

AC Axial, DC Brushless, Micro DC Blower,  
Plastic & Wire Fan Guards, Air Filter.



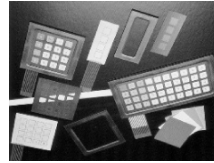
31 - 34



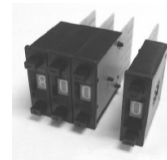
## Contents Continued:

**Keypads:**

Membrane Keypads & Accessories,  
Keypads.

**35 - 36****Switches:**

Keypad, Panel Mount, DIP / Rotary DIP,  
Reed, Miniature Toggle, Pushbutton.  
Pushwheel/Thumbwheel.

**37 - 49****Crystals/Oscillators :**

Microprocessor, Watch, Custom Quartz  
Crystals. Microprocessor & TCXO  
Oscillators.

**50 - 53****Buzzers:**

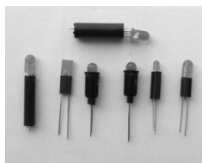
Piezo Buzzers ( Internal, External & Self  
Drive). Magnetic Buzzers and Transducers.

**54 - 58****Speakers:**

Miniature Piezoelectric & Magnetic.

**59 - 60****Indicators:**

Light Emitting Diodes, Bi/Tri Colour, Panel  
Mount SMD, Chip, Multi Assemblies,  
Mounts, Light Pipes.

**61 - 64****Female Disconnectors**

Vinyl-insulated Disconnectors  
Vinyl-Fully Insulated Disconnectors  
Nylon-Fully Insulated Disconenectors  
Vinyl-Insulated Double Crimp

**65**

Contents Continued:

<p><b>Plastic Parts - Summary of contents in Cat PG7-2005:</b> Screws &amp; Nuts, Washers, Spacers, Rivets &amp; Panel Clips, Grommet Nuts, Hooks, Bumpers, Hole Plugs, Insulating Bushes, Grommets, Strain Relief Bushes, Cable Glands, Cable Ties, Tie Mounts, Cable Clips &amp; Clamps, PCB Supports, PCB Track, Component Mounts, LED Mounts, Light Pipes, Assorted Kits, Plastic &amp; Diecast Boxes, End Caps &amp; Plugs.</p>	<p><b>66 - 70</b></p>
<p><b>Enclosures - Summary of contents in Cat HM1-2004:</b> General purpose utility, Project Boxes, Instrument, Desktop, Console, Polystyrene, ABS &amp; Diecast Aluminium, Watertight, Flanged lid, Flanged base.</p>	<p><b>71 - 73</b></p>
<p><b>End Caps and Plugs - Summary of contents in Cat SC2-2005:</b> Short Caps, Long Caps, End Caps, Vinyl Plus Caps, Threaded Caps, T Plugs/Caps, Tube Inserts, Silicone Caps/Plugs, EPDM Caps/Plugs, Tapes &amp; Discs.</p>	<p><b>74-75</b></p>
<p><b>Knobs, Handles, Hand Wheels, Adjustable Feet &amp; Tube Ends</b> Summary of contents in cat TG1-2007</p>	<p><b>76</b></p>
<p><b>Properties of Materials:</b> Mechanical, Thermal &amp; Electrical properties of plastic materials, resistance of material to different media, I.P. Protection Classification.</p>	<p><b>77-78</b></p>



## Schurter IEC Low Current Power Inlets

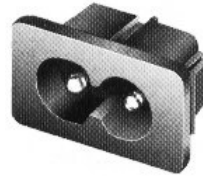
230 Volt 2.5 Amp • 65°C



### Panel Screw Mount

Solder Terminals  
P/N 33-4300.0096

PCB  
P/N 33-4300.0097



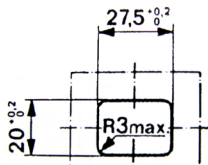
### Snap-in Mount

Solder Terminals  
P/N 33-4300.0098

PCB  
P/N 33-4300.0099

Standards: UL 498, CSA 22.2, EN 60320-1/C8, IEC 320-1/C8  
Approvals (2.5A/250V AC): SEV, VDE, SEMKO, UL, CSA, NEMKO

## Inlets



### Snap-in Mount

1/4" QC 1.5mm Panel

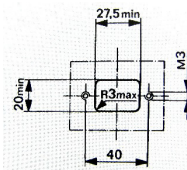
Part No. 33-6100.4315

or Solder Terminals

Part No. 33-6100.4115

10A SEV,VDE,SEMKO 15A UL,CSA

or Part No. 33-10R303B15



### Screw Mount

1/4" QC 1.5mm Panel

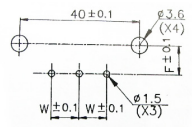
Part No. 33-6100.3300

or Solder Terminals

Part No. 33-6100.3100

10A SEV,VDE,SEMKO 15A UL,CSA

or Part No. 33-10R301B



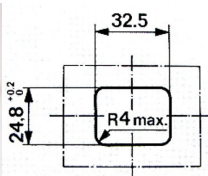
### PCB Mount

Part No. 33-10R307A,B,C

or D VDE,SEMKO,UL,CSA

PCB Layout	
F	W
A	7.3 7.0
B	7.3 9.1
C	9.7 7.0
D	9.7 9.1

## Outlets



### Snap-in Mount

1/4" QC 1.5mm Panel

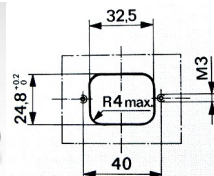
Part No. 33-6600.4315

or Solder terminals

Part No 33-6600.4115

10A SEV,VDE,SEMKO

or Part No. 33-10R308B15



### Screw Mount

1/4" QC

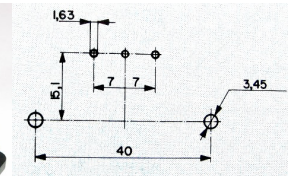
Part No. 33-6600.3300

or Solder terminals

Part No 33-600.3100

15A UL,CSA

or Part No. 33-10R306B



### PCB Mount

Part No. 33-4300.0251

10A SEV,VDE,SEMKO

15A UL,CSA

## Plugs

### Inlets



### Straight Plug

Part No. 33-4732.0000



### Right Angle Plug

Part No. 33-4733.0000

Pin Temp 65 deg. C – 10A 250V AC  
Approvals: SEV, VDE, UL, CSA, BSI  
Standards: EN 60320, IEC 320/E

### Outlets



### Straight Plug

Part No. 33-4782.0000



### Right Angle Plug

Part No. 33-4785.0000

Pin Temp 65 deg. C – 10A 250V AC  
Approvals: SEV, VDE, UL, CSA, BSI  
Standards: EN 60320, IEC 320/E

## Schurter 6200 Series - Inlet & Fuse

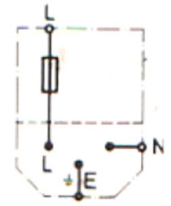
**Screw Mount or Snap-in**  
with shock-safe 1 pole 5x20mm fuse holder and spare fuse compartment  
Approvals:



Screw Mnt, 1/4" QC  
Part No. 33-6200.2300



Snap-in, 1.5mm Panel, 1/4" QC  
Part No. 33-6200.4315



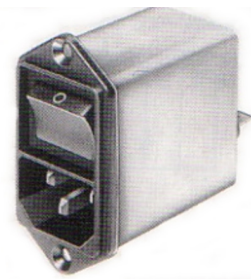
## Schurter KEB II and Schurter KFB II



### Schurter KEB II Inlet & Switch

Screw Mount or Snap-in  
with 2 pole SPST On/Off switch  
non-illuminated or illuminated  
rated at 10 A / 250 V.  
Approvals:

UL, CSA, VDE, SEV, SEMKO & CS



### Schurter KFB II Inlet, Switch & Filter

Screw Mount.  
with 2 pole SPST On/Off switch and  
an integral mains filter for  
1, 2, 4, 6 or 10A/250V standard and  
medical applications  
Approvals:

UL, CSA, VDE, SEV, SEMKO & CS

## Schurter KD Series and Schurter CD Series



### Schurter KD Series Inlet, Switch, Fuse & Volts Selector

Screw Mount or Snap-in with shock-safe 1 or 2 pole  
5x20mm fuse holder, 2 pole  
10A DPST switch and with or without 4 position step switch voltage selector.  
Approvals:

UL, CSA, VDE, SEV, SEMKO & CS



### Schurter CD Series Inlet, Switch, Fuse Filter & Volts Selector

Screw Mount or Snap-in with shock-safe 1 or 2 pole  
5x20mm fuse holder, 2 pole  
10A DPST switch and with or without 4 position step switch voltage selector and integral mains filter  
1, 2, 4, 6 or 10A/250V standard or medical.  
Approvals:

UL, CSA, VDE, SEV, SEMKO & CS

## Inlet, Filter, Switch & Fuse

### Screw mount

Quick connect terminals

Mains Filter:

Rated current: 4A @ 250V

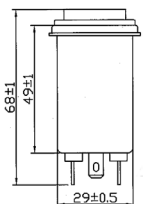
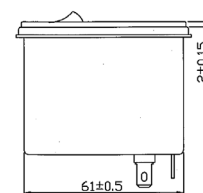
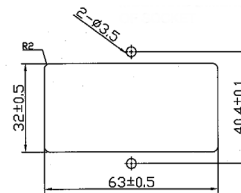
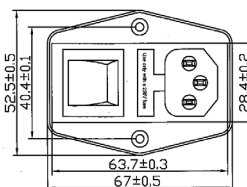
Leakage Current: <0.6mA max @ 250V @ 50Hz

5x20mm 2pole fuse holder.

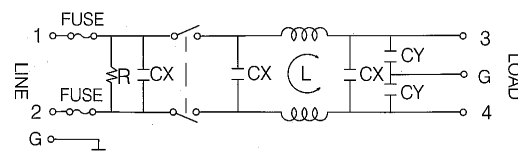
2 pole (DPST) On/Off switch.

Approvals: UL, VDE

Typical Insertion Loss (dB): Line to Ground:



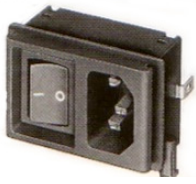
Part Number	0.15 MHz	0.5 MHz	1.0 MHz	5.0 MHz	10 MHz	30 MHz
33-0YQA41	13	21	26	41	42	26



CX : 0.22uF  
CY : 2200pF  
L : 2 x 2.5mH  
R : 1MΩ



## Schurter KP Series and KPF Series



### Schurter KP Series

#### Inlet & Switch

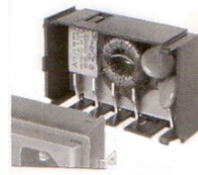
PCB Mount

Appliance Inlet, 1 or 2 pole On/Off Line Switch.

Panel mount from rear.

Approvals:

UL, CSA, 15A 250V AC VDE, SEV, SEMKO 10A 250V AC



### Schurter KPF Series

#### Filter Module

'Backpack' RFI Filter for std or medical app.

Snaps onto KP Module, connection by PCB track.

1, 2, 4, 6, 8 or 10 A.

Approvals:

UL, CSA, VDE

## Schurter PMM Series Multifunctional Module

Low mounting depth • One component • Compact size

Easy snap-in mounting from the inside of the equipment.

All single elements, excepting the voltage selector, are ready wired on PCB.

Conforms to IEC/EN 60950.

Voltage Selector (optional) as 1-pole On/Off switch for Switch Mode Power Supply.

Approvals:

10A 250V AC UL, CSA, VDE, SEV, SEMKO



1. IEC inlet according to IEC 60320-1/C14.
2. IEC outlet according to IEC 60320-2-2/F.
3. Voltage Selector.
4. On/Off Mains Switch.
5. Ground terminal lug.
6. Combined solder/quick connect terminals.
7. Rear side cover.

## Schurter GRM 4 Series Filtered Module

Multifunctional with optimal EMC-shielding

Time saving 'Lock and Shield' mounting from the inside of the equipment (no pull out risk, no screws).

EMC-shield and EMC ground contact.

One stage EMC filter.

Mains switch 2 pole.

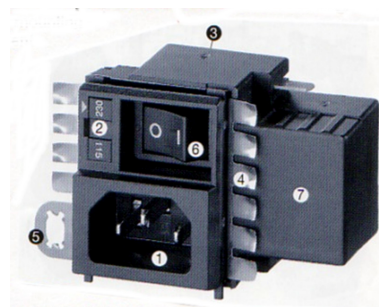
No wiring required.

Rated current up to 10A.

Fuse-holder internal (optional).

Voltage selector switch (optional) for Switch Mode

Power Supplies with 2 input voltage ranges.



1. IEC inlet according to IEC 60320-1/C14.
2. Voltage Selector (optional) 1 pole On/Off switch.
3. Fuse-holder (optional) internal 2-pole or 1-pole.
4. EMC Shield.
5. EMC ground contact.
6. 2 pole On/Off Mains Switch (1 pole optional).
7. Mains Filter, one stage 0.5, 1, 3, 6 or 10A standard or medical.

Approvals:

10A 250V AC UL, CSA, VDE, SEV, SEMKO

## Schurter Combination Modules

Inlet and Circuit Breaker • With or without Mains Filter

Unique compact design. - Pre-wired for easy installation.

Front panel cutout of 72 x 29 mm

Mains Filter: 1 to 10A VDE, Semko, 1 to 15A UL & CSA Standard or Medical

Circuit Breaker: 2 pole On/Off mains switch

Thermal overload protection

Undervoltage release – Remote trip release



**5145 Series**  
Inlet, Circuit Breaker  
and mains filter.



**6145 Series**  
Inlet and Circuit  
Breaker

**Ask for full details on these and many other quality Schurter products.**

## IEC Inlet/filters

With increasing RFI and induced interference it is important to protect the integrity of your equipment or system. Reduce your line to ground (common mode) interference.

It need not cost a lot with this range of filters. Quick Connect terminals available.

These filters meet low leakage requirements operating on mains voltages 115-250vAC 50/60 Hz.

They are compact and are easily mounted. Safety and construction are in compliance USA, Canadian & European standards.



33-1001,3,6,10AFS



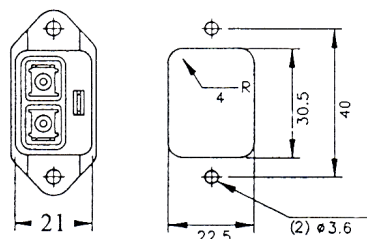
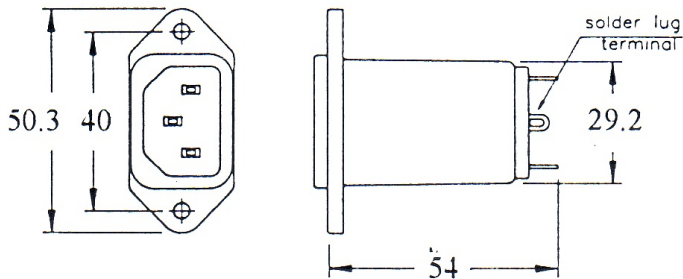
33-0YA01T3,03T3



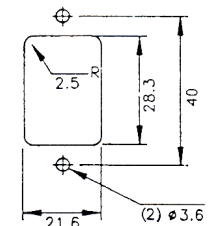
33-0YO06T1-AU



33-0YB01A1, 06A1



Back of panel



Front of panel

## Specifications

Typical Insertion Loss (dB): Line to Ground (50 ohm)

Part Number	Current Rating	0.15 MHz	0.5 MHz	1.0 MHz	5.0 MHz	10 MHz	30 MHz
33-1001AFS	1A	20	33	40	45	47	50
33-1003AFS	3A	15	25	30	45	50	53
33-1006AFS	6A	10	20	25	42	45	50
33-1010AFS	10A	8	15	20	38	40	45
33-0YB01A1	1A	28	38	41	39	39	41
33-0YB06A1	6A	14	22	27	38	42	47
33-0YO06T1-AU*	6A	6	16	21	38	42	43
33-0YA01T3	1A	36	55	40	40	40	30
33-0YA03T3	3A	24	36	40	48	48	34

\*Snap In Mount

T3 & AFS - Solder Terminals

A1 - 1/4" Quick Connect

Rated Voltage : 115/250 vAC 50/60 Hz

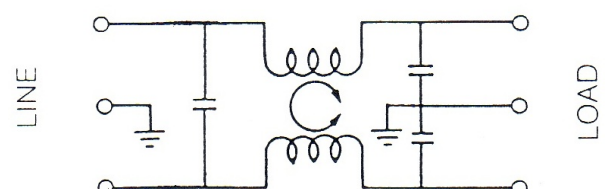
Maximum Leakage Current : Line to Ground @ 250v 50 Hz 0.8 mA

Test Voltage :

Line to Ground 2250vDC 1 minute

Line to Line 1450vDC 1 minute

## Electrical Schematic





## IEC Inlet/Fuse/Filters

Compact IEC Inlet / Filter module including one fuseholder plus clip for spare and an IEC Inlet.

Safety interlock prevents fuse removal with line plug inserted.  
Easy mounting 6.3mm Quick Connect Terminals

UL, CSA, VDE, SEMKO, FIMKO, NEMKO & DEMKO Recognition.



### Specifications

Typical Common Mode Attenuation (dB):

Part Number	Current Rating	0.15 MHz	0.5 MHz	1.0 MHz	5.0 MHz	10 MHz	30 MHz
33-OYL03T1	3A	32	42	48	50	51	44
33-OYL10T1	10A	15	24	27	42	52	44

**Rated Voltage:** 115/250 vAC 50/60 Hz

**Operating Temperature:** -25°C to 85°C

**Leakage Current:** 0.8mA max.

**Test Voltage:**

Line to Line 1450vDC 1 minute  
Line to Ground 2250vDC 1 minute

**Insulation Resistance:** 100 M\* Min 250V DC

**D.C Resistance:** 0.2 max \* (OYL03T1)

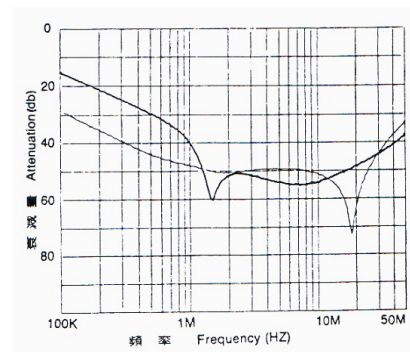
0.1 max \* (OYL10T1)

**Temperature Rise:** 30°C Max.

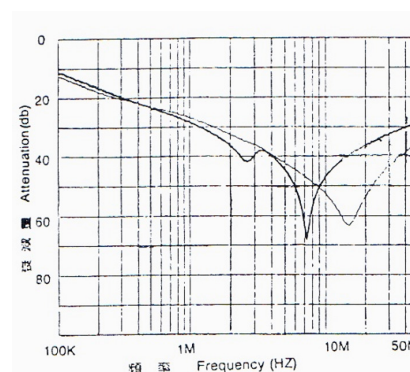
**Normal Mode:** \_\_\_\_\_

**Common Mode:** \_\_\_\_\_

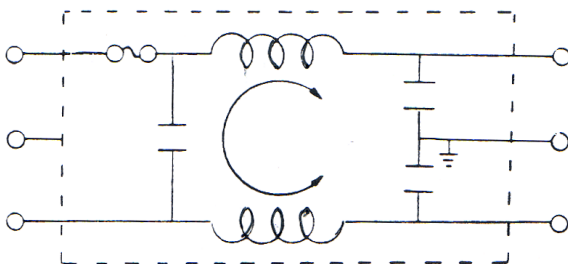
#### OYL03T1



#### OYL10T1



### Electrical Schematic



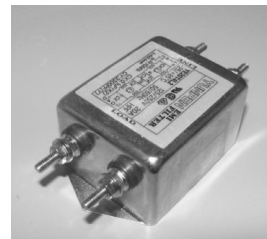
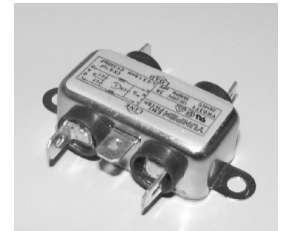
## Mains Line Filters

Designed to suppress line-to-ground and line-to-line interference. Enclosed in metal case.

The 0YK and AA Series are single stage filters for cost sensitive applications.

Where a higher level of filtering is required the 0YE Series offers a 2 stage filter for high insertion loss plus low leakage current.

Safety and construction are in compliance USA, Canadian & European standards.



Dimensions	A	B	C	D	E
33-0YK01T1-WIRE	32	44	18	53.5	63.5
33-1001AAS	53.4	45.9	16.7	54.1	64.2
33-0YK03T1-WIRE	32	44	18	53.5	63.5
33-0YK03T1	48	44	18	53.5	63.5
33-0YK10T1-WIRE	32	44	18	53.5	63.5
33-0YK10T1	48	44	18	53.5	63.5
33-0YET05T1L2	90	52	38	75	85
33-0YE10T1L2	90	52	38	75	85
33-0YE20T4L2	105	52	38	75	85

### Specifications

Typical insertion loss (dB): live to ground in 50ohm system

Part Number	Current Rating	0.15 MHz	0.5 MHz	1.0 MHz	5.0 MHz	10 MHz	30 MHz
33-1001AAS	1A	15	30	38	50	50	50
33-0YK01T1	1A	26	35	38	41	41	37
33-0YK03T1	3A	21	27	32	39	39	42
33-0YK10T1	10A	7	16	21	35	41	36
33-0YE05T1L2	5A	53	84	70	58	53	51
33-0YE10T1L2	10A	26	63	76	66	62	42
33-0YE20T4L2	20A	14	39	49	63	59	38

Suffix - WIRE - Leads; T1 & S - 1/4" QC Terminals

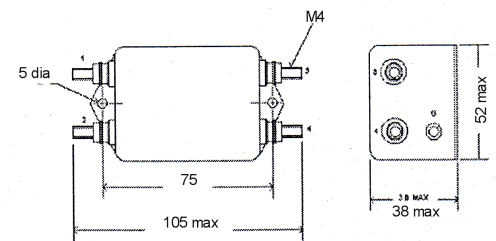
Note : 33-0YE20T4L2 is M4 screw terminals

**Rated Voltage:** 115/250 V AC 50/60 Hz

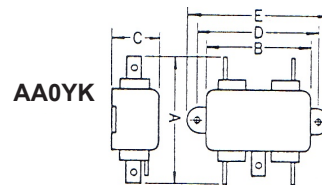
**Maximum Leakage Current :** **AA** **0Y/YE**  
Line to Ground @ 250v 50 Hz 0.5mA 0.8mA

### Test Voltage:

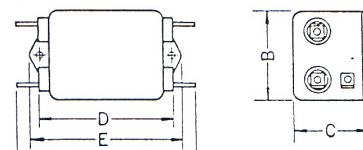
Line to Ground 2250vDC 1 minute  
Line to Line 1450vDC 1 minute



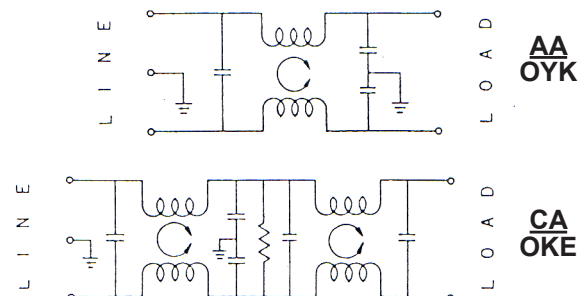
33-0YE20T4I2



0YE



### Electrical Schematic



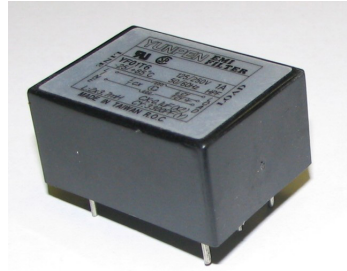
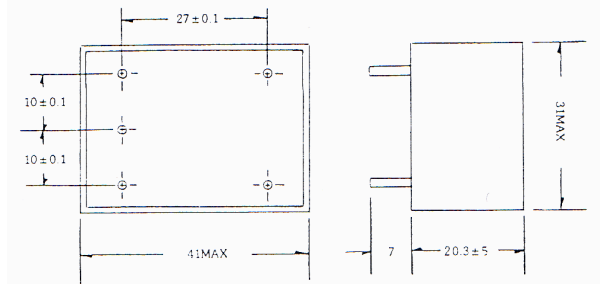


## PCB Line Filters

Low cost labour saving PCB Design.

UL, CSA Recognition

Leakage current of 0.8 mA Max.



### Specifications

Typical Common Mode Attenuation (dB):

Part Number	Current Rating	0.15 MHz	0.5 MHz	1.0 MHz	5.0 MHz	10 MHz	30 MHz
33-OYF01T6	1A	38	55	52	49	54	36
33-OYF03T6	3A	27	36	41	41	43	32

**Rated Voltage:** 115/250 vAC 50/60 Hz

**Operating Temperature:** -25°C to 85°C

**Leakage Current:** 0.8mA max.

**Test Voltage:**

Line to Line 1450vDC 1 minute

Line to Ground 2250vDC 1 minute

**Insulation Resistance:** 1000 MΩ Min 250V DC

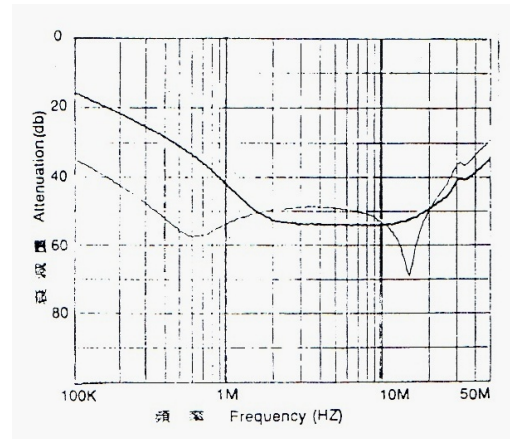
**Direct Current Resistance:** 0.5 Ω (OYF01T6)  
0.2 Ω (OYF03T6)

**Temperature Rise:** 35°C Max.

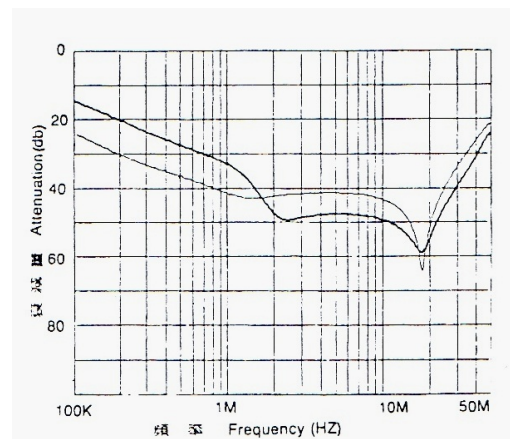
**Normal Mode:** \_\_\_\_\_

**Common Mode:** \_\_\_\_\_

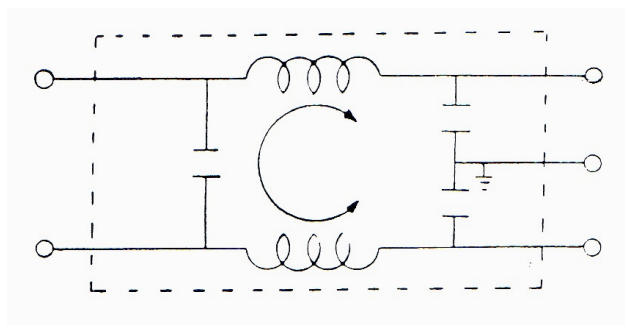
### OYF01T6



### OYF03T6



### Electrical Schematic

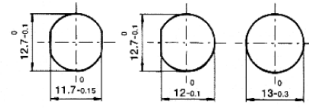


### Schurter FPG 1 Series

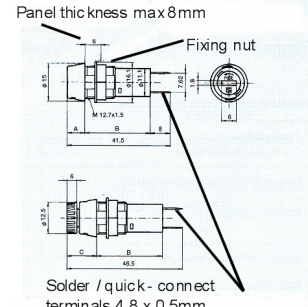
Front Panel Screw Mount - General Purpose Models.



- Part No. 31-010015 Fingergrasp/Bayonet Cap
- Part No. 31-010010 Screwdriver Slot/Bayonet Cap



Panel mounting holes /



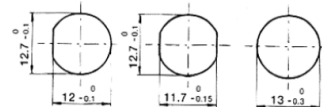
5x20mm

### Schurter FPG 2 Series

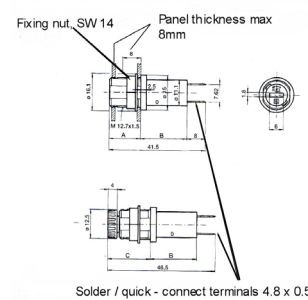
Rear Panel Screw Mount - Allows cost saving prewiring.



- Part No. 31-010025 Fingergrasp/Bayonet Cap
- Part No. 31-010020 Screwdriver Slot/Bayonet Cap



Panel mounting holes /



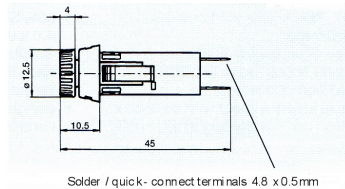
5x20mm

### Schurter FPG 3 Series

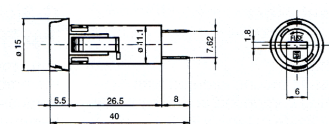
Snap-in Front Panel Mount - Easy fit for time saving operation.



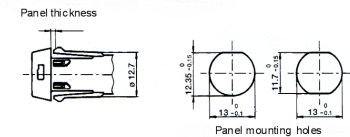
- Part No. 31-010035 Fingergrasp/Bayonet Cap for 1.0 - 1.8mm panel thicknesses
- Part No. 31-010036 Fingergrasp/Bayonet Cap for 2.0 - 3.0mm panel thicknesses
- Part No. 31-010030 Screwdriver Slot/Bayonet Cap for 1.0 - 1.8mm panel thicknesses
- Part No. 31-010031 Screwdriver Slot/Bayonet Cap for 2.0 - 3.0mm panel thicknesses



Solder / quick - connect terminals 4.8 x 0.5mm



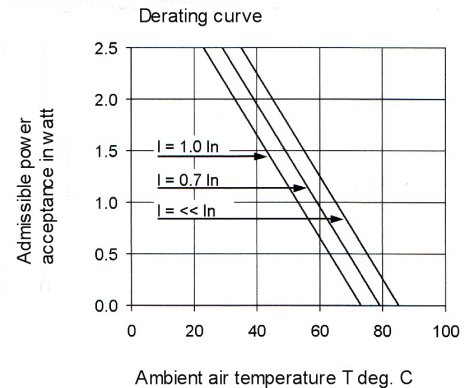
5x20mm



Panel mounting holes

### Technical Data

- Rated Voltage: 250 V
- Rated Current: 10 A to SEV, VDE, SEMKO  
16 A to UL, CSA
- Contact Resistance: < 5 mΩ at 20mV
- Ambient Temperature: -25°C to +85°C
- Degree of Protection: - IP40 (IP67 available FPG1 & 2)  
Holder complete from the front side
- Materials: Body - PBTP Thermoplastic  
Live Parts - Corrosion proof copper alloy



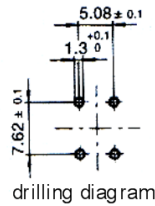
### Schurter FPG 4 Series

Vertical 5x20mm PCB Mount • Saves space on PCB

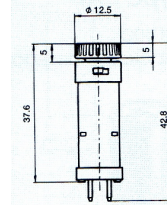


Fingerrip / Bayonet Cap  
Part No. 31-010045

Screwdriver Slot / Bayonet Cap  
Part No. 31-010040



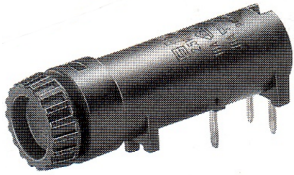
drilling diagram



Fuse-carrier with figure grip

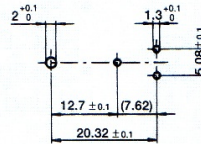
### Schurter FPG 5 Series

Horizontal 5x20mm PCB Mount • Secure fixing

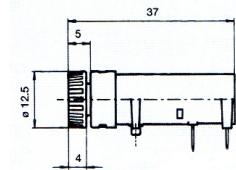


Fingerrip / Bayonet Cap  
Part No. 31-010055

Screwdriver Slot / Bayonet Cap  
Part No. 31-010050



Drilling diagram

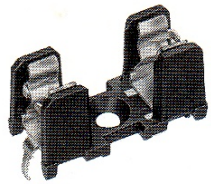


Fuse carrier with finger grip

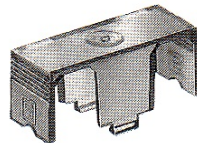
### Schurter OGN 5x20mm Open PCB Mnt

10A 250v

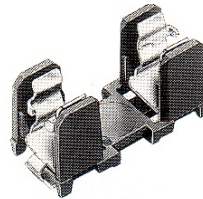
OG 5x20mm Clip



Low profile fuse block  
with insulation walls.  
Through hole mounting.



Cover



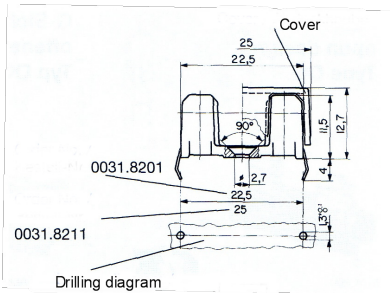
Surface mounting type  
suitable for reflow and  
vapour phase soldering



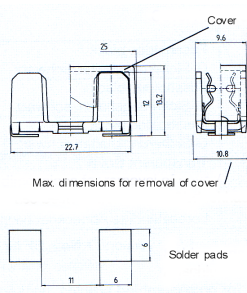
PCB Mount – 10A – 250V  
Kicked Terminals  
Material: Brass, Tin Plated



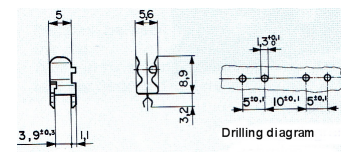
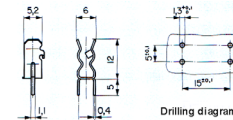
0751.0110  
0751.0062



Part No. 31-8201 22.5mm Pitch  
Part No. 31-8211 25.0mm Pitch



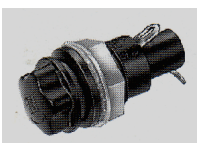
Part No. 31-8221 SMD Type  
Part No. 31-0853.0551 Cover



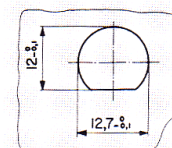
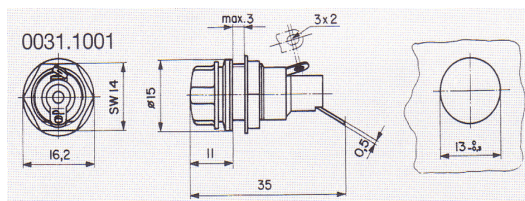
Part No. 31-0751.0110  
In Line Pins  
Part No. 31-0751.0062  
Side Mounted Pins

### Schurter FEP 5x20mm Panel mount

Compact applications – rear clearance of only 21mm



Part No. 31-1001





## FSF Quick Acting - Low Breaking Capacity (Std Fuse)

A quality fusible link for most applications. IEC127 Standard.

Breaking Capacity : 35A / 250v / 50Hz / p.f. 1

Sizes 5x20mm : 2 mA to 10 A / 250v

Part Nos. 34-1501 / 1526

6.3x32mm : 100mA to 10 A / 250v

Part Nos. 34-1736 / 1756



## SP Quick Acting F - High Breaking Capacity

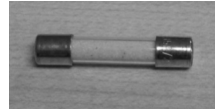
Breaking Capacity : 1500 A / 250v / 50Hz / p.f. 0.7 - 0.8 >6.3A 500A/250v

Sizes 5x20mm : 500mA to 16 A / 250v

Part Nos. 34-001.1001 / 1016

6.3x32mm : 500mA to 20 A / 250v

Part Nos. 34-001.1021 / 1037



## FST Slow Blow (Time Lag) T - Low Breaking Capacity

For high inrush or transient loads.

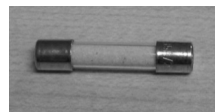
Breaking Capacity : 35A / 250v / 50Hz / p.f. 1

Sizes 5x20mm : 20 mA to 20 A / 250v

Part Nos. 34-3101 / 3130

6.3x32mm : 20mA to 20 A / 250v

Part Nos. 34-3401 / 3430



## SPT Slow Blow (Time Lag) T - High Breaking Capacity

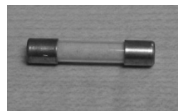
Breaking Capacity : 1500A / 250v / 50Hz / p.f. 0.7 - 0.8 >6.3A 500A/250v

Sizes 5x20mm : 500mA to 16 A / 250v

Part Nos. 34-001.2501 / 2516

6.3x32mm : 500mA to 32 A / 250v

Part Nos. 34-001.2521 / 2539



## SA Super Quick Acting FF - High Breaking Capacity

Breaking Capacity is defined as the maximum current the fuse is able to interrupt at its rated voltage. In the event of a fault an inadequate breaking capacity can result in a persistent arc causing serious damage.

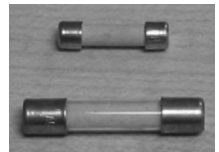
Breaking Capacity : 1500A / 250v / 50Hz / p.f. 0.7 - 0.8 (500A 4-to 10A)

Sizes : 5x20mm : 1.6 A to 10 A / 250v

Part Nos. 34-0903 / 0911

6.3x32 : 1.6 mA to 16 A / 250v

Part Nos. 34-1001 / 1012



## MSA Axial Lead (Pico) and Quick Acting F 125V

### MSA Axial Lead (Pico)

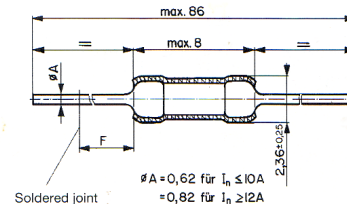
Part Number	Rating A
34-4807	.0625
34-4810	.125
34-4813	.250
34-4815	.375
34-4817	.500
34-4820	.750
34-4822	1
34-4824	1.5
34-4826	2

### Quick Acting F 125V

Part Number	Rating A
34-4827	2.5
34-4828	3
34-4831	4
34-4832	5
34-4833	7
34-4834	10
34-4835	12
34-4836	15

### UL/CSA

Breaking Capacity : 300A/125v  
>10A 300A/32v



## MSF Microfuse - Quick Acting

Pluggable into sub-miniature fuseholder or directly mountable on printed circuit boards.

### MSF 125v

100mA to 5 A

Part Nos. 34-4206/4228

UL, CSA



### MSF 250v

50 mA to 5 A

Part Nos. 34-6000/6021

UL, SEV, VDE-Mark, SEMKO-



## MST 250v Microfuse - Time Lag

Pluggable into sub-miniature fuseholder or directly mountable on printed circuit boards.

Available in sizes 63mA to 4 A / 250v.

Part Nos. 34-6602 / 6623

Breaking Capacity : 35 A or 10. In / 250v AC (p.f. 1) according to IEC 127-3/4



## Resettable PTC Fuses

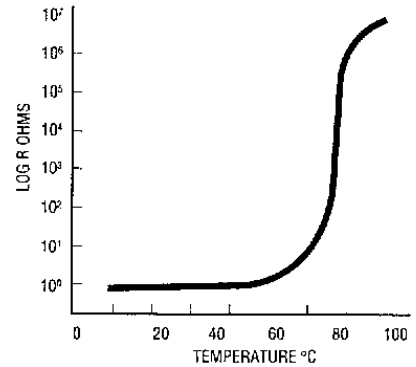
Schurter Polymeric Positive Temperature Coefficient (PPTC) fuses enable convenient protection of low voltage supplies, with the advantage of reset.

At normal temperature there are numerous carbon chains forming conductive paths through the device.

Under fault conditions, I<sup>2</sup>R heating causes the carbon chains to be pushed apart, with most of them no longer conducting current and the resistance of the device increases sharply (see Fig. 1).

The PPTC remains latched, providing continuous protection, until the fault is cleared and the power is removed.

Reversing the phase transformation allows the carbon chains to reform as the polymer re-crystallizes. The resistance quickly returns to its original value.



### Surface Mount

Part Nos. 34-PFMC.020.2 / 110.2  
34-PFSM.030.2 / 260.2



#### FEATURES:

- SMD
- Fully compatible with industry standards
- Packaged per EIA 481-2 standard
- UL, TUV & CSA (pending)
- Rated 6 - 30 volts
- I break to 40 amps

#### APPLICATIONS:

- Computer & Peripherals
- Computer Cards
- Automotive applications
- General Electronic

### Radial Leaded

Part Nos. 34-PFRA.010.x / 900.x  
34-PFRX.110.x / 375.x



#### FEATURES:

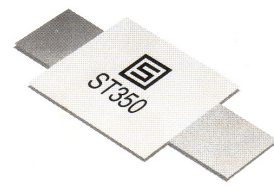
- Insulating Material UL94V0
- T+R and Ammo-Pak
- UL, TUV & CSA
- Rated 30 - 60 volts
- I break to 40 amps

#### APPLICATIONS:

- Security Systems
- Motors/fans
- Loud speakers
- Power Transformers
- Computer & peripherals
- Automotive
- General Electronic

### Strap

Part Nos. 34-PFST.120 / 420  
34-PFLT.100 / 340



#### FEATURES:

- Fully compatible with industry standards
- Weldable nickel terminals
- Very low internal resistance
- UL, TUV & CSA (pending)
- Rated 15 - 30volts
- I break to 100 amps

#### APPLICATIONS:

- Battery Packs
- Cell phones
- Lap-Tops

## Schurter SMT Fuses - Quick Acting - Surface Mount

### OMF 63v

100mA to 5 A  
Part No. 34-02.0003 / 0040.xx

Available in loose pieces or taped and reeled 750 pieces.  
UL, CSA



### OMF 250v

400 mA to 4 A  
Part No. 34-03.0010 / 0022.xx

Available in loose pieces or taped and reeled 2000 pieces.  
UL



## Low Profile Wire Protector Style - Miniature

A range of top quality terminal blocks at prices which can mean savings for you.

2 & 3 Pole Modular Interlocking Housing: Polyamide 66 Green (UL94V0)

Wire Guard: Phosphor Bronze Nickel Plated

Voltage Rating: 300V

Approvals: UL, VDE, CE

### Vertical



32-DED350V-2P



32-DT126VP-3P



32-DED508V-2P

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DED350V-2P	2	3.5	10A	1.5
32-DED350V-3P	3	3.5	10A	1.5

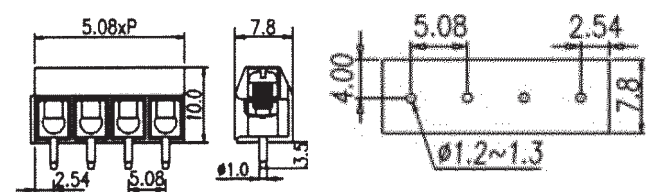
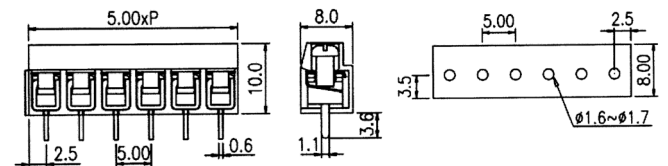
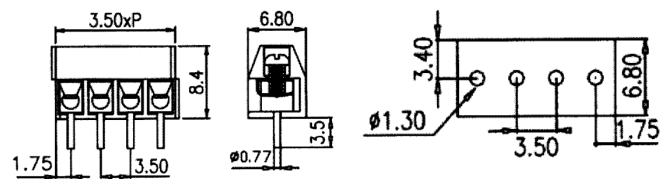
Screws M2 Combination  
Torque 2 lb-in

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT126VP-2P	2	5.0	8A	1.5
32-DT126VP-3P	3	5.0	8A	1.5

Screws M2.5 Combination  
Torque 4.4 lb-in

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DED508V-2P	2	5.08	8A	1.5
32-DED508V-3P	3	5.08	8A	1.5

Screws M2.5 Combination  
Torque 3.5 lb-in



### Right Angle



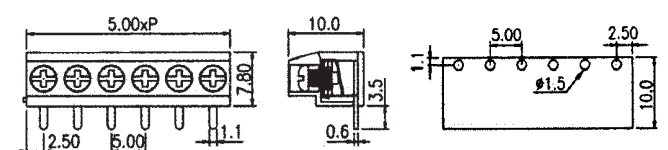
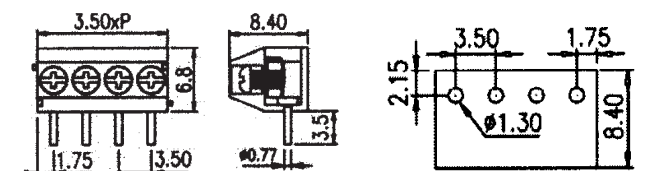
32-DT126RP-3P

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DED350R-2P	2	3.5	10A	1.5
32-DED350R-3P	3	3.5	10A	1.5

Screws M2 Combination  
Torque 2 lb-in

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT126RP-2P	2	5.0	8A	1.5
32-DT126RP-3P	3	5.0	8A	1.5

Screws M2.5 Combination  
Torque 4.4 lb-in





## Elevator Clamp Type

for secure repeatable connection

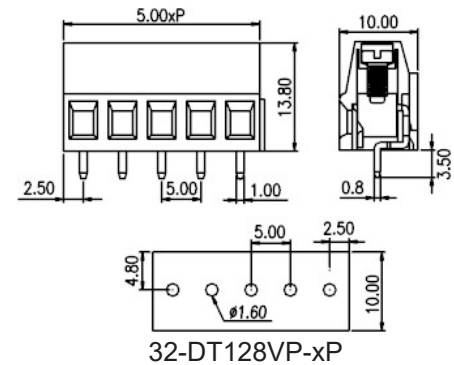
2 & 3 Pole Modular Interlocking Housing: Polyamide 66 Green (UL94V0)

Approvals: UL, VDE, CE

### DT128V & DEK508 Series

Vertical - Max Volts 300V

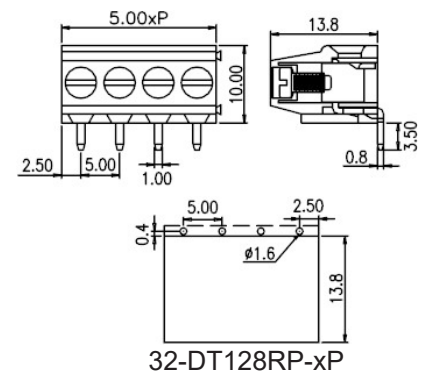
Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT128VP-2P	2	5.0	20A	2.5
32-DT128VP-3P	3	5.0	20A	2.5
32-DEK508V-2P	2	5.08	20A	2.5
32-DEK508V-3P	3	5.08	20A	2.5
32-DT128VP-2P3	2	7.5	20A	2.5
32-DT128VP-3P3	3	7.5	20A	2.5



### DT128R Series

Right Angle - Max Volts 300V

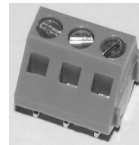
Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT128RP-2P	2	5.0	20A	2.5
32-DT128RP-3P	3	5.0	20A	2.5
32-DT128RP-2P3	2	7.5	20A	2.5
32-DT128RP-3P3	3	7.5	20A	2.5



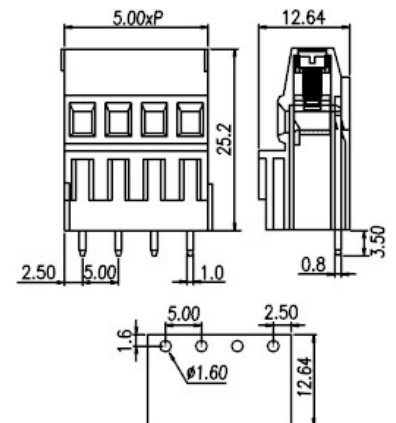
### DT103 Series

45° Entry - Max Volts 300V

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT103-2P	2	5.0	10A	2.5
32-DT103-3P	3	5.0	10A	2.5



32-DT103-XP



Screws M2.5 Combination

## Bi-Level Elevator Clamp Type

### Dual Vertical

Use with 32-DT128VP series

Approvals : UL , VDE, CE

2Px2 & 3Px2 Modular Interlocking

Pins: 0.8 x 1.0mm

Housing: Polyamide 66 Green (UL94V0)

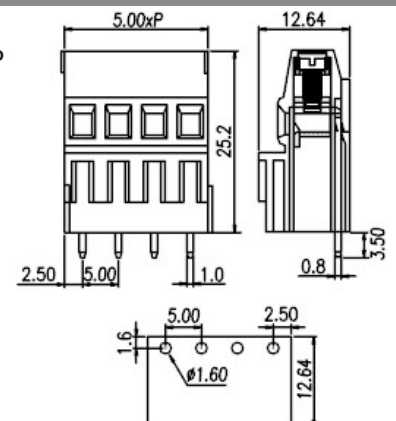
### DEEK500V Series - Max Volts 300V

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DEEK500V-2P	4	5.0	20A	2.5
32-DEEK500V-3P	6	5.0	20A	2.5

Screws M2.5 Combination



32-DEEK500V-3P

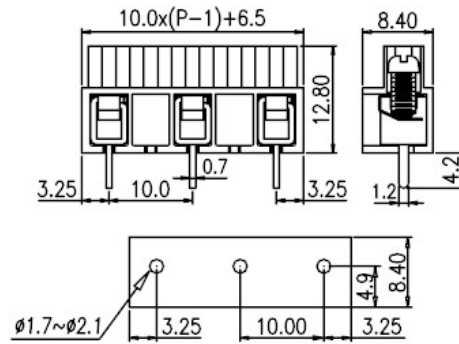


## High Voltage Wire Protector Type

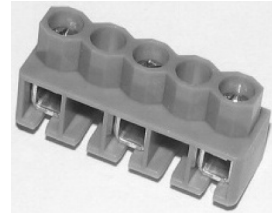
DT166 Series - Vertical

Approvals: UL, VDE  
12A/4.0mm<sup>2</sup>/380VAC  
Pins: 0.8 x 1.0mm  
Housing: Polyamide 6/6 Green (UL94V2)  
Screws M3 Combination

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT166-2P5	2	10.0	12A	4
32-DT166-3P5	3	10.0	12A	4



10mm Pitch

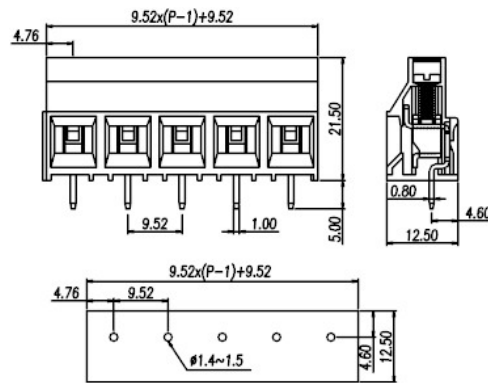


## 30A Elevator Clamp Type

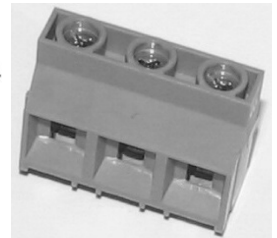
EK950V Series - Vertical

Approvals: UL, TUV  
2 & 3 Pole Modular Interlocking  
30A / 45.0mm<sup>2</sup> / 300VAC  
Pins: 0.8 x 1.0mm  
Housing: Polyamide 6/6 Green (UL94V2)  
Screws M3 Combination

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DEK950V-2P	2	9.52	30A	4
32-DEK950V-3P	3	9.52	30A	4



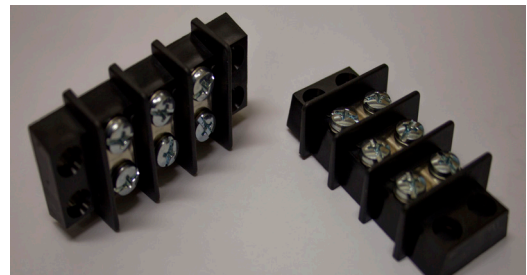
9.52mm Pitch



## Screw Mount Terminal Block

Barrier Terminal Block Double row 3 Way

Barrier terminal blocks, screw connection 600V  
Panel mounting  
Material:  
Insulation - PBT  
Conductor - Copper Alloy  
Plating - Tinned



Part Number	Rating	Wire	Screw Thread
32-D0113-1003	35A	14.3mm	M4

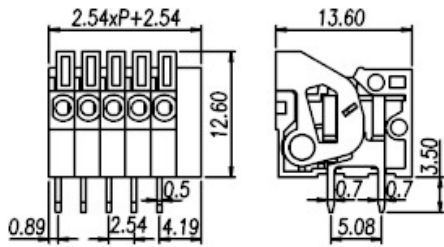
## Fast Connection - Screwless Spring Type

### DT141 and DT142 Series Pitch 2.54mm and 5.08mm Vertical and Horizontal entry

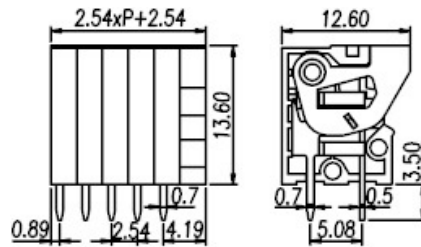
Insert and release wires using a screwdriver in the slot  
Terminals and solid wires can be inserted directly without the assistance of the lever.

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT141V-xxP	2 to 24	2.54	4A	0.5
32-DT141R-xxP	2 to 24	2.54	4A	0.5
32-DT142V-xxP	2 to 24	5.08	10A	2.5
32-DT142R-xxP	2 to 24	5.08	10A	2.5

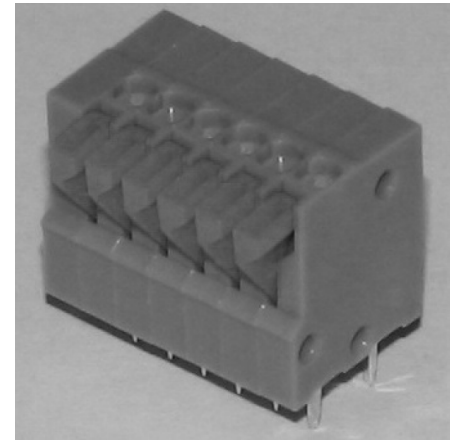
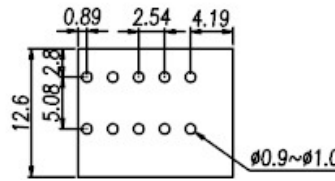
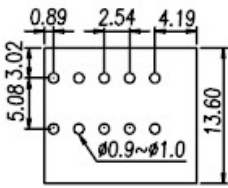
Where xx is the number of poles



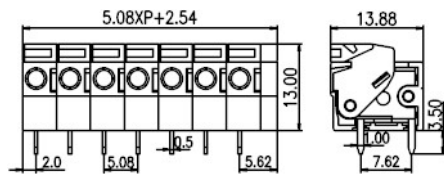
32-DT141R-07P



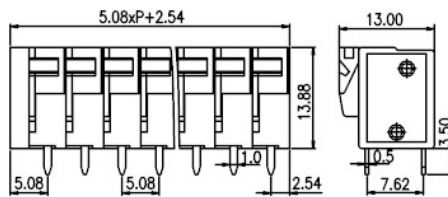
32-DT141V-05P



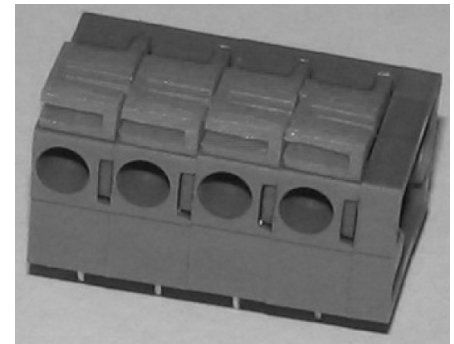
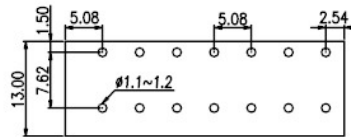
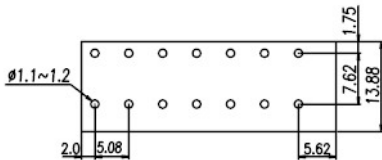
32-DT141V-06P



32-DT142R-07P



32-DT142V-07P



32-DT142R-04P



## Fast Connection - Screwless Spring Type

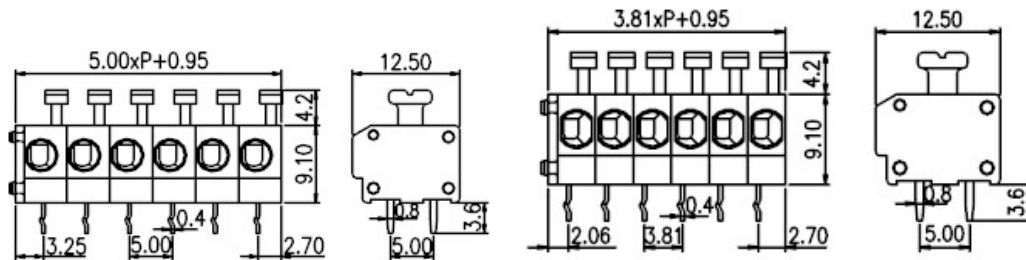
DT144RA Series - Pitch 3.81mm, 3.96mm, 5.0mm & 7.5mm

Insert and release wires with no tools

Terminals and solid wires can be inserted directly without the assistance of the lever.

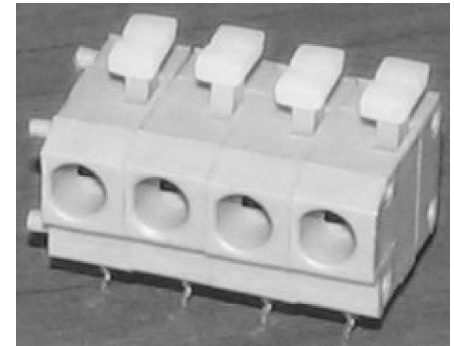
Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT144RA-xxP	2 to 24	5.0	10A	2.5
32-DT144RA-xxP1	2 to 24	3.81	10A	1.5
32-DT144RA-xxP2	2 to 24	3.96	10A	1.5
32-DT144RA-xxP3	2 to 24	7.5	10A	2.5

Where xx is the number of poles

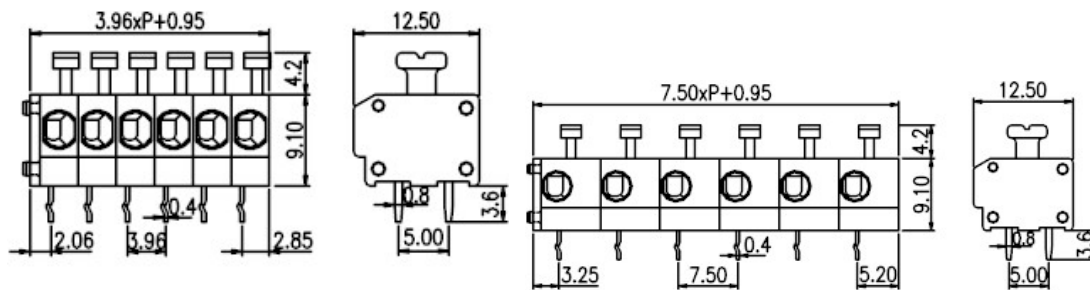


32-DT144RA-06P

32-DT144RA-06P1



32-DT144RA-04P



32-DT144RA-06P2

32-DT144RA-06P3

## Fast Connection - Screwless Spring Type

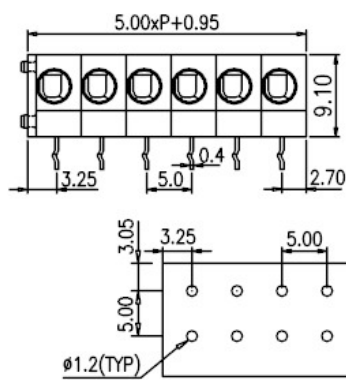
Low profile - DT144R Series - Pitch 3.81mm, 3.96mm, 5.0mm & 7.5mm

Insert and release wires with a screwdriver

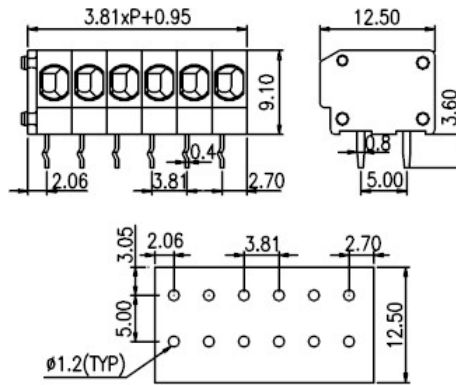
Terminals and solid wires can be inserted directly without the assistance of the lever.

Part Number	Poles	Pitch mm	Max Current	Max mm <sup>2</sup>
32-DT144R-xxP	2 to 24	5.0	10A	2.5
32-DT144R-xxP1	2 to 24	3.81	10A	1.5
32-DT144R-xxP2	2 to 24	3.96	10A	1.5
32-DT144R-xxP3	2 to 24	7.5	10A	2.5

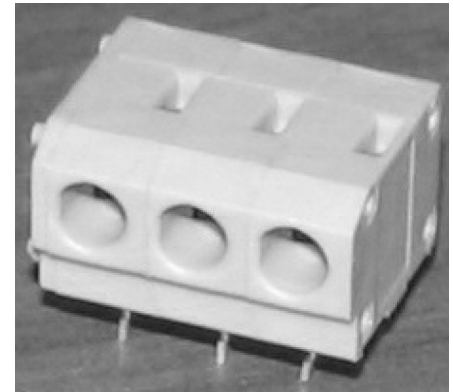
Where xx is the number of poles



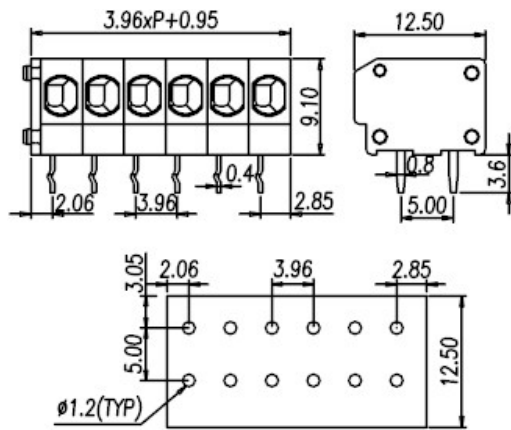
32-DT144R-06P



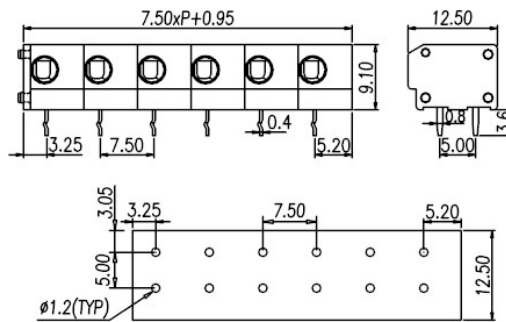
32-DT144R-06P1



32-DT144R-03P



32-DT144R-06P2



32-DT144R-06P3

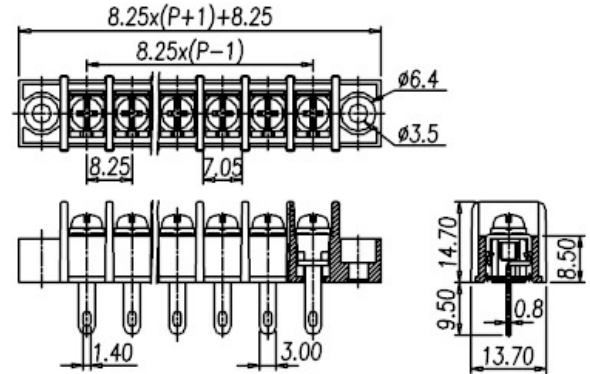
### Barrier Type - DT35 Series

Feed Through Solder Tag Type • 8.25mm Pitch - 20A

Rating: 300V / 20A Wire size 22 ~ 12 AWG Insulation Breakdown Volts : 2000VAC /  
Min Operating Temp. Range: -40°C ~ +105°C  
Materials: Polamide Housing, UL94VO, Black  
Terminals: Brass 0.8 x 3.0mm, tin plated  
Screw: M4 Steel Nickel Plated  
Screw Torque Value : 10 Kg-cm

Part No. 32-DT35A02W-xx  
xx = No of Poles  
( 2, 3, 4, 5, 6, 7, 8, 9, 10 & 12 pole)

Part Number	Pitch A	Current Rating
32-DT35A02W-xx	8.25	20A



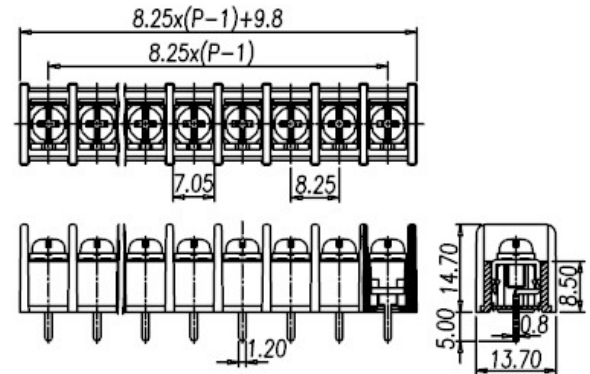
### Barrier Type - DT35 Series

PCB Mount - Centre Pin • 8.25mm Pitch - 20A

Offset Pin also available with B07 Series  
Rating: 300V / 20A Wire size 22 ~ 12 AWG  
Insulation Breakdown Volts: 2000VAC/Min Operating Temp. Range : -40°C ~ +105°C  
Materials: Polamide Housing, UL94VO, Black  
Terminals: Brass 0.8 x 3.0mm, tin plated  
Screw: M4 Steel Nickel Plated  
Screw Torque Value : 10 Kg-cm

Part No. 32-DT35B01W-xx  
xx = No of Poles  
( 2, 3, 4, 5, 6, 7, 8, 9, 10 & 12 pole)

Part Number	Pitch A	Current Rating
32-DT35B01W-xx	8.25	20A



### Barrier Type - DT35 Series

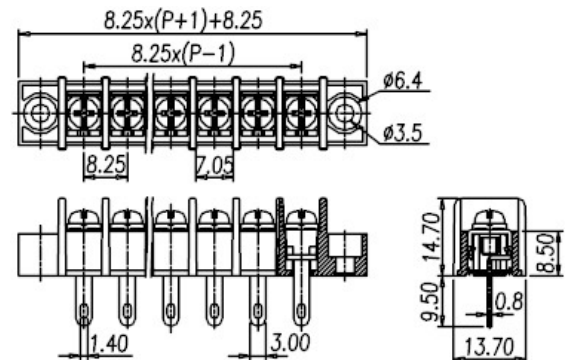
Feed Through Solder Tag Type • 8.25mm Pitch - 20A

#### For Marine Applications - Reduce corrosion with Brass Screws

Rating: 300V / 20A Wire size 22 ~ 12 AWG Insulation Breakdown Volts : 2000VAC /  
Min Operating Temp. Range: -40°C ~ +105°C  
Materials: Polamide Housing, UL94VO, Black  
Terminals: Brass 0.8 x 3.0mm, tin plated  
Screw: M4 Brass Nickel Plated  
Screw Torque Value: 10 Kg-cm

Part No. 32-DT35A02B-xx  
xx = No of Poles  
( 2, 3, 4, 5, 6, 7, 8, 9, 10 & 12 pole)

Part Number	Pitch A	Current Rating
32-DT35A02B-xx	8.25	20A





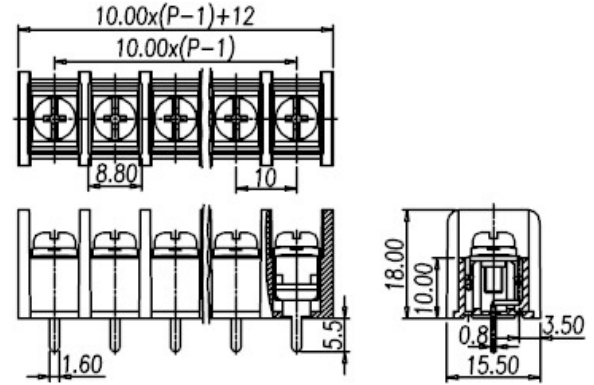
### Barrier Type - DT55 Series

PCB Mount - Centre Pin • 10mm Pitch - 25A

#### Offset Pin also available with B06 Series

Rating : 300V / 25A . Wire size 22 ~ 12 AWG  
 Insulation Breakdown Volts : 2000VAC / Min Operating Temp. Range : -40°C ~ +105°C  
 Materials : Polyamid Housing, UL94VO, Black  
 Pins : Brass 0.8x1.6mm tin plated  
 Screw : M3.5 Steel, Nickel Plated  
 Screw Torque Value : 10 Kg-cm

Part No. 32-DT55B01W-xx  
 xx = No of Poles  
 ( 2, 3, 4, 5, 6, 7, 8, 9, 10 & 12 pole)



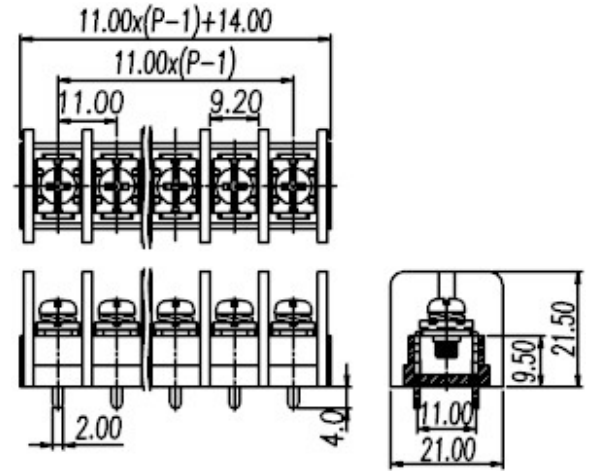
Part Number	Pitch A	Current Rating
32-DT55B01W-xx	10.0	25A

### Barrier Type - DT66 Series

PCB Mount - Dual Pin • 11mm Pitch - 40A

Rating : 600V / 40A . Wire size 18 ~ 10 AWG  
 Insulation Breakdown Volts : 2000VAC / Min Operating Temp. Range : -40°C ~ +130°C  
 Materials : Polyester Housing, UL94VO, Black  
 Pins : Brass 1x2mm x 2, tin plated  
 Screw : M4 Steel, Nickel Plated  
 Screw Torque Value : 18 Kg-cm

Part No. 32-DT66B01W-xx  
 xx = No of Poles  
 ( 2, 3, 4, 5, 6, 7, 8, 9, 10 & 12 pole)

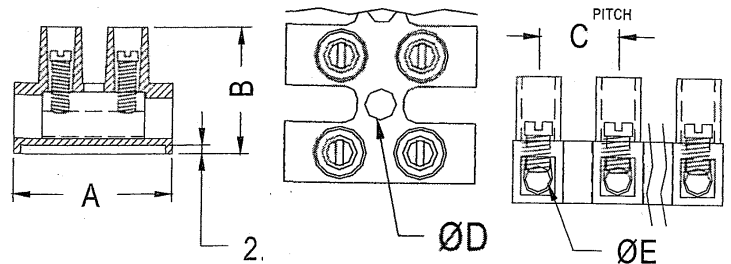
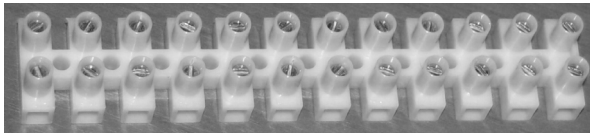


Part Number	Pitch A	Current Rating
32-DT66B01W-xx	11.0	40A

### Screw Terminal Block

Wire Protector Type • 12 Way. 6 & 10Amp

Material: Nylon 66 UL94V-2  
 Wire Protector and Standard types  
 Wire Protector specs are:  
 Voltage Rating: 380 volts  
 Temperature Rating: 105° C  
 Approvals: UL, VDE, CSA, F, D, N, S.



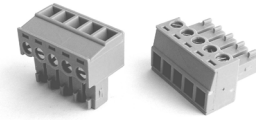
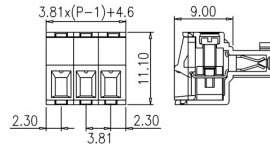
Part Number	Rating	Wire	A	B	C	D	E
<b>Standard type</b>							
32-PA09F/12	24A	2.5mm <sup>2</sup>	20.2	16.0	10.0	3.6	5.0
<b>Wire Protector</b>							
32-PA07FDS/12	17.5A	1.5mm <sup>2</sup>	17.0	13.4	8.2	2.9	2.8
32-PA09DS/12	24A	2.5mm <sup>2</sup>	20.2	16.7	10.0	3.6	5.0
32-PA12HDS/12	41A	6.0mm <sup>2</sup>	23.8	19.0	12.0	3.6	3.8

## Plug & Header System - 3.50mm & 3.81mm Pitch

Versatile system assists design, testing & servicing - Elevator Style Cage for positive clamping.  
Polarised Design - Wire Size: 1.3mm<sup>2</sup> - Approvals: UL 300V @ 8A IEC 125V @ 8A

### Straight Terminal Female Plug

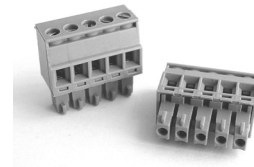
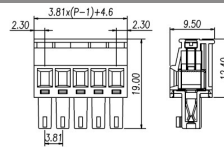
Clamp: Phosphor Bronze 0.3t Solder Plated, Wire Cage Brass Ni. Plated  
Housing: Polyamide 6.6 Green (UL94V0)  
**Part No. 32-EC350Vxx** 3.50mm Pitch  
**Part No. 32-EC381Vxx** 3.81mm Pitch  
xx = No of Poles  
(2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14 & 16 poles)



32-EC381V03

### Right Angle Terminal Female Plug

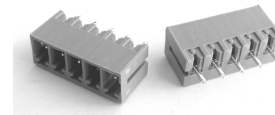
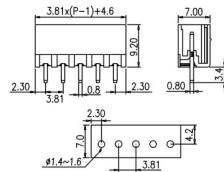
Clamp: Phosphor Bronze 0.3t Solder Plated, Wire Cage Brass Ni. Plated  
Housing: Polyamide 6.6 Green (UL94V0)  
**Part No. 32-EC350Rxx** 3.50mm Pitch  
**Part No. 32-EC381Rxx** 3.81mm Pitch  
xx = No of Poles  
(2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14 & 16 poles)



32-EC381R05

### Vertical PCB Mount Header

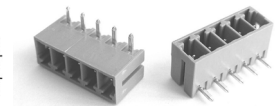
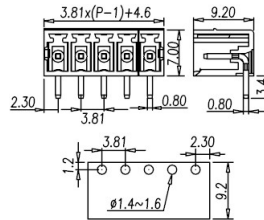
Closed ends to prevent cross connection.  
Solder Pin: Brass Solder Plated  
Housing: Polyamide 6.6 Green (UL94V0)  
**Part No. 32-ECH350Vxx** 3.50mm Pitch  
**Part No. 32-ECH381Vxx** 3.81mm Pitch  
xx = No of Poles  
(2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14 & 16 poles)



32-ECH381V05

### Horizontal PCB Mount Header

Closed ends to prevent cross connection.  
Solder Pin: Brass Solder Plated  
Housing: Polyamide 6.6 Green (UL94V0)  
**Part No. 32-ECH350Rxx** 3.50mm Pitch  
**Part No. 32-ECH381Rxx** 3.81mm Pitch  
xx = No of Poles  
(2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14 & 16 poles)



32-ECH381R05

## Plug & Header Retaining Screw Series

### Straight Terminal Female Plug

Part No 32- EC350VMxx  
Part No 32- EC381VMxx  
xx = No of Poles

### Right Angle Terminal Female Plug

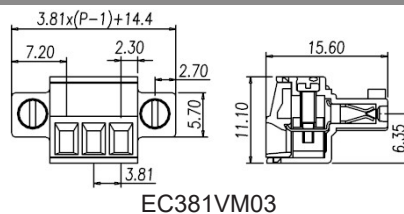
Part No 32- EC350RMxx  
Part No 32- EC381RMxx  
xx = No of Poles

### Vertical PCB Mount Header

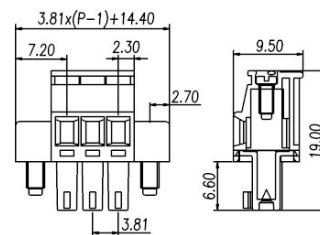
Part No 32- ECH350VMxx  
Part No 32- ECH381VMxx  
xx = No of Poles

### Horizontal PCB Mount Header

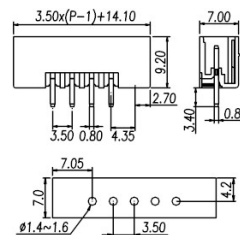
Part No 32- ECH350RMxx  
Part No 32- ECH381RMxx  
xx = No of Poles



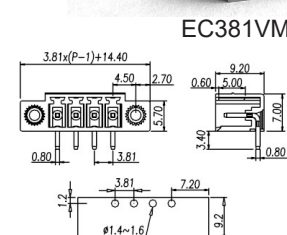
EC381VM03



EC381RM04

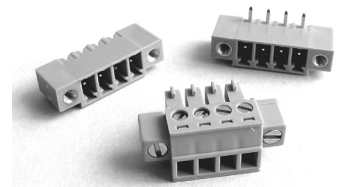


ECH381VM04



ECH381RM04

ECH381VM04 ECH381RM04



EC381VM04

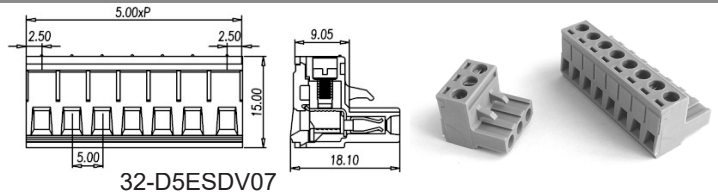
## Plug & Header System - 5.0mm & 5.08mm ( 0.2") Pitch

Versatile system assists design, testing & servicing. Elevator Style Cage for positive clamping. Polarised Design.  
 Rating: 10A @ 300V. Wire Size : 3.3mm<sup>2</sup> Max. - Approvals : UL , VDE, CSA, FI, Δ

### Straight Terminal Female Plug

Clamp: Phosphor Bronze 0.4t Solder Plated, Zinc Plated Steel Cage  
 Housing: Polyamide 6.6 Green (UL94V0)

**Part No. 32-D5ESDVxx** 5.0mm Pitch  
**Part No. 32-D2ESDVxx** 5.08mm Pitch  
 xx = No of Poles  
 (2, 3, 4, 5, 6, 7, 8, 9, 10, 12,14 & 16 poles)

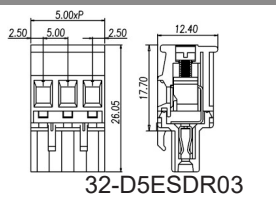


32-D5ESDV07

### Right Angle Terminal Female Plug

Clamp : Phosphor Bronze 0.4t Solder Plated, Zinc Plated Steel Cage  
 Housing : Polyamide 6.6 Green (UL94V0)

**Part No. 32-D5ESDRxx** 5.0mm Pitch  
**Part No. 32-D2ESDRxx** 5.08mm Pitch  
 xx = No of Poles  
 (2, 3, 4, 5, 6, 7, 8, 9, 10, 12,14 & 16 poles)

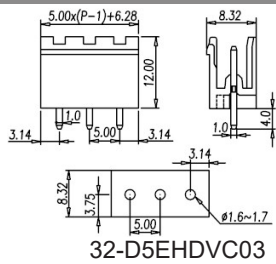


32-D5ESDR03

### Vertical PCB Mount Header

Mates with ESDV & ESDR Plug  
 Solder Pin: Brass Tin Plated 1.0 x1.0mm  
 Housing: Polyamide 6.6 Green (UL94V0)  
 Closed ends to prevent cross connection.

**Part No. 32-D5EHDVCxx** 5.0mm Pitch  
**Part No. 32-D2EHDVCxx** 5.08mm Pitch  
 xx = No of Poles  
 (2, 3, 4, 5, 6, 7, 8, 9, 10, 12,14 & 16 poles)

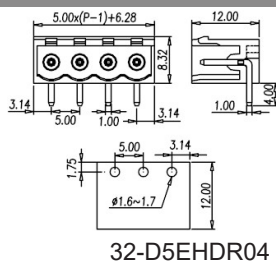


32-D5EHDVC03

### Horizontal PCB Mount Header

Mates with ESDV & ESDR Plug  
 Solder Pin: Brass Tin Plated 1.0 x1.0mm  
 Housing : Polyamide 6.6 Green (UL94V0)  
 Closed ends to prevent cross connection.

**Part No. 32-D5EHDRcx** 5.0mm Pitch  
**Part No. 32-D2EHDRcx** 5.08mm Pitch  
 xx = No of Poles  
 (2, 3, 4, 5, 6, 7, 8, 9, 10, 12,14 & 16 poles)



32-D5EHDR04

## Plug & Header Retaining Screw Series

### Straight Terminal Female Plug

Part No 32- D5ESDVMxx 5.0mm Pitch  
 Part No 32- D2ESDVMxx 5.08mm Pitch

### Right Angle Terminal Female Plug

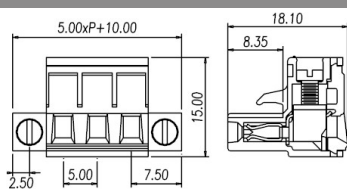
Part No 32- D5ESDRMxx 5.0mm Pitch  
 Part No 32- D2ESDRMxx 5.08mm Pitch

### Vertical PCB Mount Header

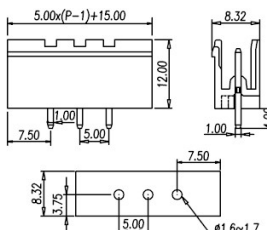
Part No 32- D5EHDVCMxx 5.0mm Pitch  
 Part No 32- D2EHDVCMxx 5.08mm Pitch

### Horizontal PCB Mount Header

Part No 32- D5EHDRCMxx 5.0mm Pitch  
 Part No 32- D2EHDRCMxx 5.08mm Pitch



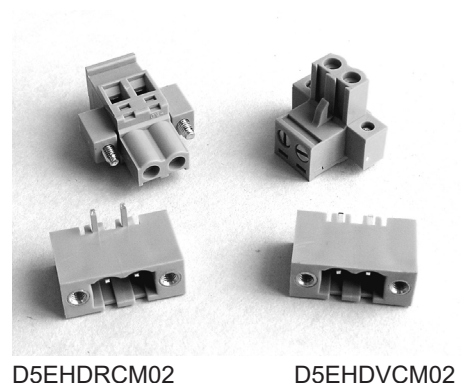
D5ESDVM03



D5EHDVCM03

D5ESDRM02

D5ESDVM02



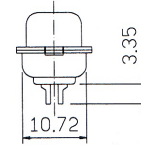
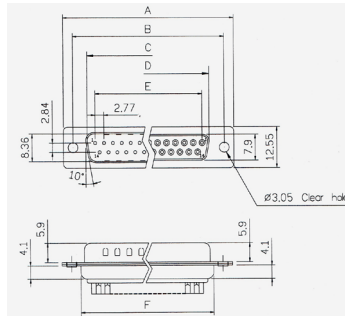
D5EHDRCM02

D5EHDVCM02



## D-SUB Straight Solder Type

- Quality Brass (Male) or Phosphor Bronze (Female) Gold Plated Contacts.
- Housing PBT 30% Glass ( UL94VO.)
- Current Rating: 5A
- Contact Resistance: 30mΩ max at 100mA DC
- Dielectric Strength: 1000VAC for 1 min.
- Operating Temp. -55°C to +105°C.

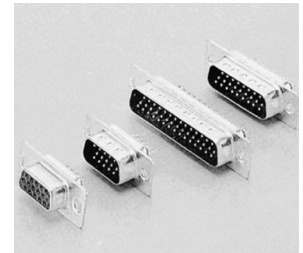
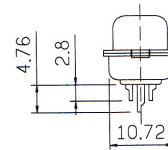
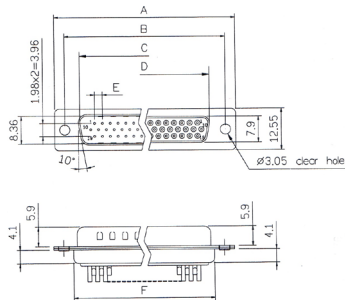


Part No 32-100 xx  
P(Male) or S(Female)  
xx = No of Contacts (09,15,25,37 or 50)

Positions	A	B	C	D	E	F
9	30.81	24.99	16.92	16.33	11.08	19.20
15	39.14	33.32	25.50	24.66	19.39	27.70
25	53.04	47.04	38.96	38.38	33.24	41.10
37	69.32	63.50	55.42	54.84	49.86	57.30

## D-SUB Straight Solder Type High Density

- Quality Brass (Male) or Phosphor Bronze (Female) Gold Plated Contacts.
- Housing PBT 30% Glass ( UL94VO.)
- Current Rating: 3A
- Contact Resistance: 20mΩ max at 1A DC
- Dielectric Strength: 1000VAC for 1 min.
- Operating Temp. -55°C to +105°C.

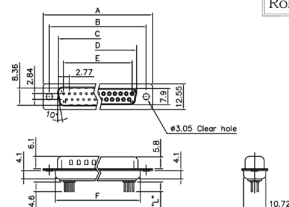


Part No 32-104 xx  
P(Male) or S(Female)  
xx = No of Contacts (15,26,44,62 or 78)

Positions	A	B	C	D	E	F
15	30.81	24.99	16.92	16.33	2.29	19.20
26	39.14	33.32	25.50	24.66	2.29	27.70
44	53.04	47.04	38.96	38.38	2.29	41.10
62	69.32	63.50	55.42	54.84	2.41	57.30

## D-SUB Dip Straight Type

- Quality Brass (Male) or Phosphor Bronze (Female) Brass Plated Contacts.
- Housing PBT 30% Glass ( UL94VO.)
- Current Rating: 3A
- Contact Resistance: 20mΩ max at 1A DC
- Dielectric Strength: 1000VAC for 1 min.
- Operating Temp. -55°C to +85°C.



KOH



Positions	A	B	C	D	E	F
9	30.81	24.99	16.92	16.33	11.08	19.20
15	39.20	33.30	25.25	24.70	19.39	27.70
25	53.05	47.04	38.96	38.40	33.24	41.10
37	69.40	63.50	55.42	54.80	49.86	57.30

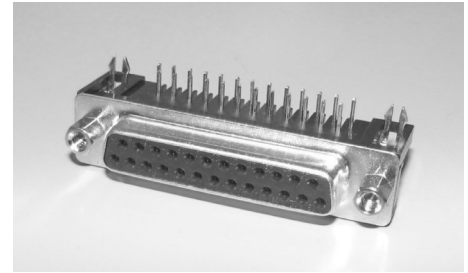
Part No 32-101 xx  
XX X X X X X X X X  
a b c d e f g h i

a = No of pins, b = (1 male / 2 female), c = contact plating, d = shell plating, e - insulator colour, f = position of clinch nut, g = flange mounting option, h = pin type, i = with / without ferrite

## D-SUB Connectors

### Right Angle PCB Mounting

- Quality Brass (Male) or Phosphor Bronze (Female) Gold Plated Contacts.
- Housing PBT 30% Glass ( UL94VO.)
- Current Rating: 5A
- Contact Resistance: 30mΩ max at 100mA DC
- Dielectric Strength: 1000VAC for 1 min.
- Operating Temp. -55°C to +105°C.



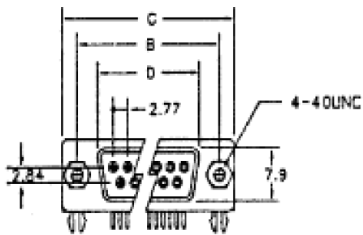
Male

Female

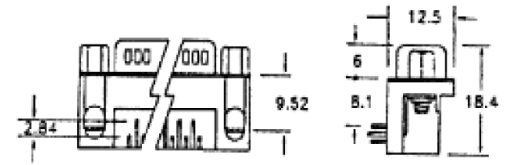
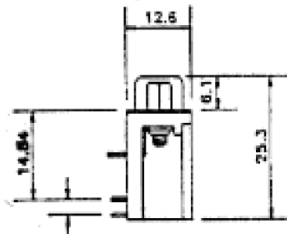
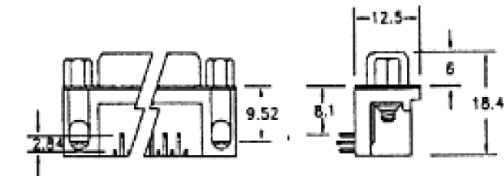
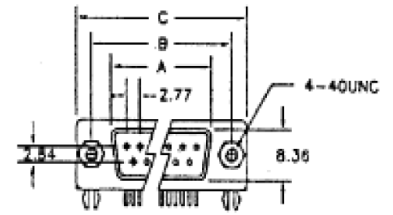
#### Standard Type

Part Number 32-107B xx P (Male) or S (Female)

xx = Number of Contacts (09, 15, 25 or 37)



Positions	A	B	C	D	E
9	16.92	24.99	30.81	19.28	16.33
15	25.25	33.62	39.14	27.51	24.66
25	38.96	47.04	53.04	41.30	38.38
37	55.42	61.50	69.32	57.71	54.84



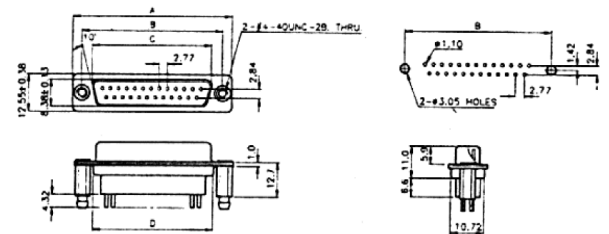
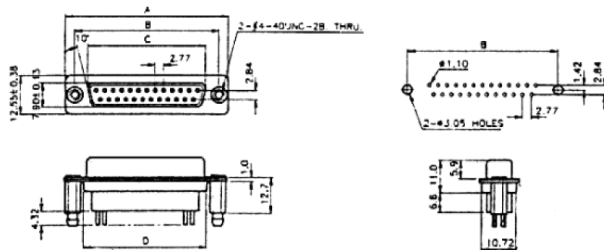
## Straight PCB Mounting

- Quality Brass (Male) or Phosphor Bronze (Female) Gold Plated Contacts.
- Housing: Glass Filled Nylon ( UL94VO.)
- Current Rating: 5A
- Contact Resistance: 15mΩ max
- Dielectric Strength: 1000VAC for 1 min.
- Operating Temp. -55°C to +105°C.



Female

Male



Positions	A	B	C	D
	±0.38	±0.13	±0.13	±0.13
9	30.81	24.99	16.33	19.28
15	39.14	33.32	24.66	27.51
25	53.04	47.04	38.38	41.30
37	69.32	63.50	54.85	57.71

Positions	A	B	C	D
	±0.38	±0.13	±0.13	±0.13
9	30.81	24.99	16.92	19.28
15	39.14	33.32	25.25	27.51
25	53.04	47.04	38.96	41.30
37	69.32	63.50	55.42	57.71

#### Standard Types

Part No. 32-155 xx P (Male) or S (Female) xx = No of Contacts (09,15,25 or 37)

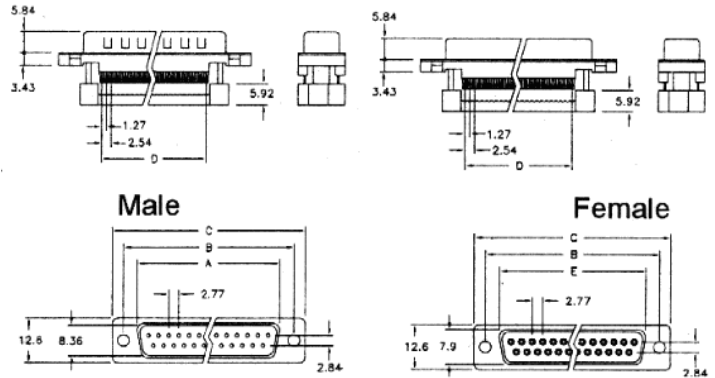
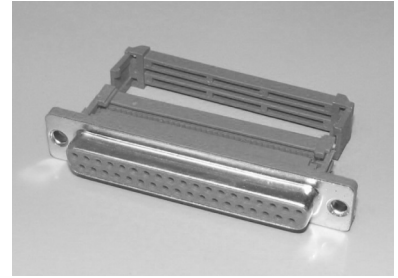
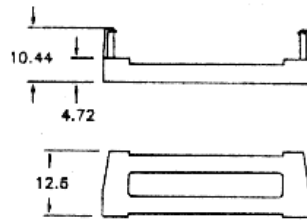
Variations available: Holes, Threads, Screw Locks, Board Locks, Setbacks, Heights.

## D-SUB IDC Connectors

- Quality Brass (Male) or Phosphor Bronze (Female) Gold Plated Contacts.
- Housing PBT 30% Glass (UL94VO.)
- Current Rating: 1A
- Contact Resistance: 30mΩ max at 100mA DC.
- Dielectric Strength: 500VAC for 1 min.
- Operating Temp. -55°C to +105°C.

Part No. 32-103 xx P(Male) or S(Female)  
xx = No of Contacts (09,15, 25 or 37)

Positions	A	B	C	D	E
9	16.92	25.00	30.80	10.16	16.30
15	25.25	33.32	39.10	17.78	24.50
25	38.96	47.04	53.10	30.48	38.30
37	55.45	63.50	69.50	45.72	54.80

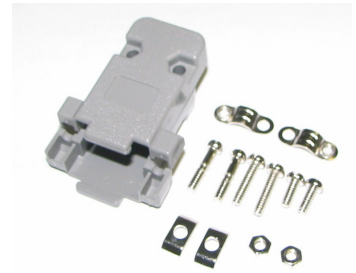


## D-SUB Type Covers

- Plastic Cover with strain relief casing screws and mounting screws.
- Housing : ABS Thermoplastic (UL94V-0)

Part No. 32-158 xx PG Standard Screws  
32-158 xx PG-TS Long Thumb Screws

xx = No of Contacts (09,15,25,37 or 50)

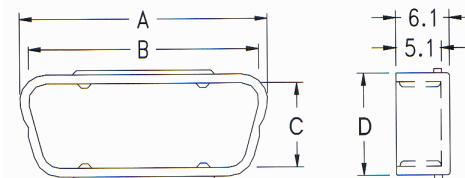


## D-SUB Connector Dust Covers

- Protect your 'D' connectors from dust and contamination.
- Material: Polyethylene

### Dimensions (mm)

Part Number	A	B	C	D
32-DTC09F	18.5	16.5	7.8	10.2
32-DTC25F	40.6	38.6	7.8	10.2
32-DTC09M	20.0	18.0	9.5	11.8
32-DTC25M	42.0	40.0	9.5	11.8

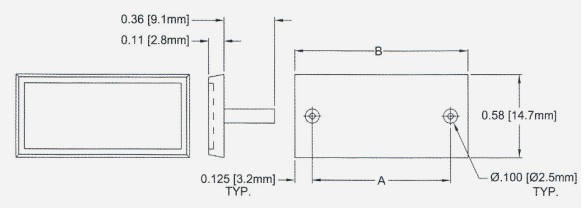
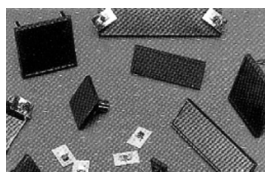


## D-SUB Connector Dust Covers

- Fast easy assembly with push-on nut supplied with each blank.

Part No. 32-B10 xx

xx = No of Contacts (09,15,25,37 or 50)



## PCB Headers with Latches

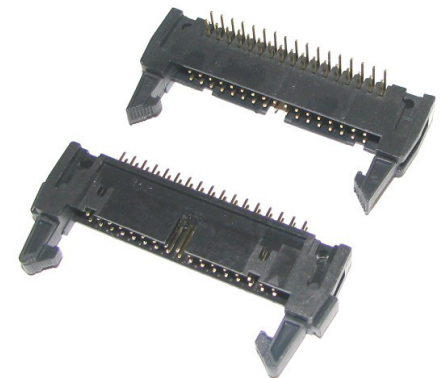
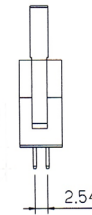
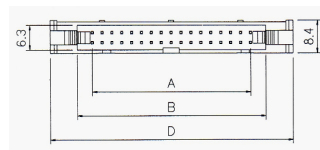
2.54mm pitch

- Quality Brass Gold Plated Contacts.
- Housing PBT 30% Glass (UL94VO.)
- Current Rating: 1A
- Dielectric Strength: 500VAC for 1 min.
- Operating Temp. -55°C to +105°C.

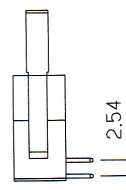
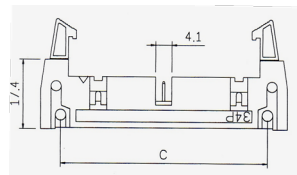
Part No. 32-119 xx S or R      S = Straight  
 xx = No of Contacts            R = Right Angle

Position	A	B	C	D
10	10.16	17.96	21.84	32.00
12	12.70	20.50	24.38	34.54
14	15.24	23.04	26.92	37.08
16	17.78	25.58	29.46	39.62
20	22.86	30.66	34.54	44.70
24	27.94	35.74	39.62	49.78
26	30.48	38.28	42.16	52.32
30	35.56	43.36	47.24	57.40
34	40.64	48.44	52.32	62.48
40	48.26	56.00	60.48	70.10
50	60.96	68.76	72.64	82.80
60	73.66	81.46	85.34	95.50
64	78.74	86.54	90.42	100.58

### Straight



### Right Angle



## IDC Socket with Strain Relief

2.54mm pitch

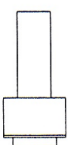
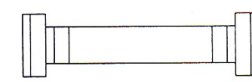
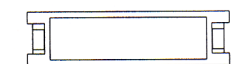
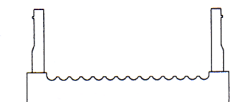
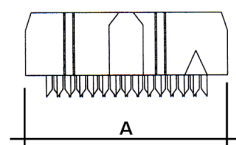
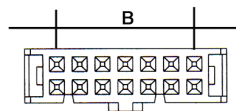
- Contacts: Gold Plated Phosphor Bronze.
- Housing PBT 30% Glass (UL94VO.)
- Contact Resistance: 30mΩ max at 100mA DC.
- Current Rating: 1A
- Operating Temp: -55°C to +105°C.

Part No. 32-110 xx            xx = No of Contacts



### Dimensions

Position	A	B
10	17.27	10.16
14	22.40	15.24
16	24.94	17.78
20	30.00	22.86
24	35.10	27.94
26	37.59	30.48
30	42.66	35.56
34	47.80	40.64
40	55.37	48.26
50	68.18	60.96
60	80.80	73.66
64	85.90	78.74



### Strain Relief



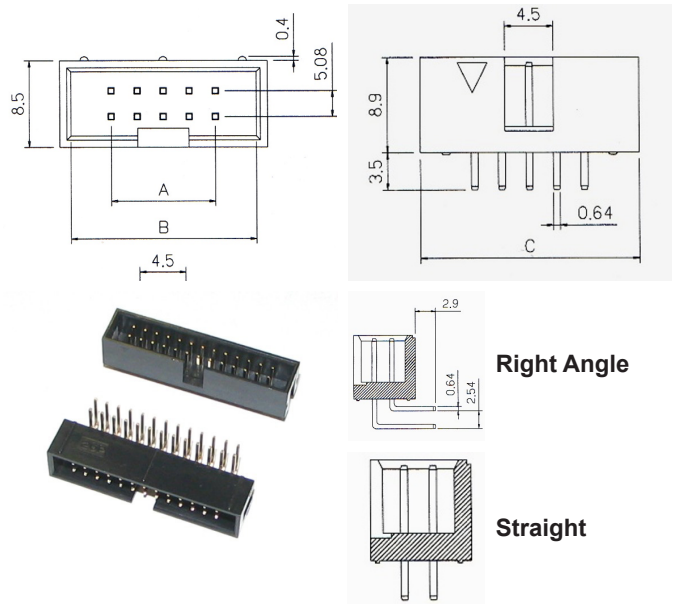
## Box Header 2.54mm pitch

- Brass Gold Plated Contacts.
- Current Rating: 1A
- Housing PBT 30% Glass UL94VO.
- Dielectric Strength: 500VAC for 1 min.
- Operating Temp. -55°C to +105°C.

Part No. 32-118 xx S or R  
xx = No of Contacts  
S = Straight  
R = Right Angle

### Dimensions

Positions	A	B	C
8	7.62	15.56	17.76
10	10.16	18.10	20.30
12	12.70	20.64	22.84
14	15.24	23.18	25.38
16	17.78	25.72	27.92
20	22.86	30.80	33.00
24	27.94	35.88	38.08
26	30.48	38.42	40.62
30	35.56	43.50	45.70
34	40.64	48.58	50.78
40	48.26	56.20	58.40
44	53.34	61.28	63.48
50	60.96	68.90	71.10
60	73.66	81.60	83.80
64	78.74	86.68	88.88



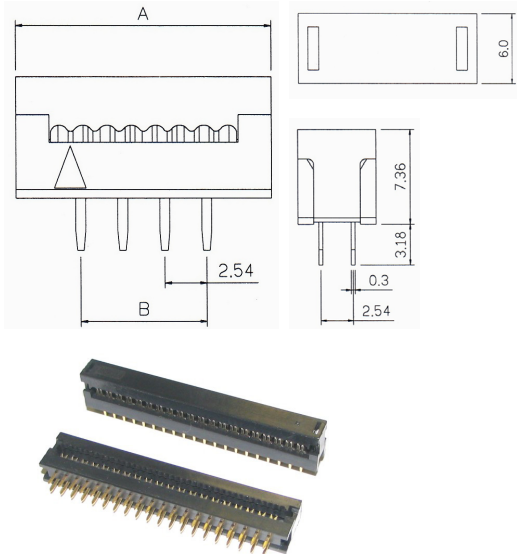
## DIP Transition - PCB to Ribbon. 2.54mm pitch

- Current Rating: 1A
- Contacts: Gold Plated Brass
- Housing: PBT 30% Glass UL94VO

Part No. 32-123 xx  
xx = No of Contacts

### Dimensions

Positions	A	B
8	15.48	7.62
10	18.02	10.16
12	20.56	12.70
14	23.10	15.24
16	25.64	17.78
18	28.18	20.32
20	30.72	22.86
24	35.84	27.98
28	40.88	33.02
30	43.42	35.56
34	48.50	40.64
40	56.12	48.26
50	68.82	60.96
60	81.52	73.66
64	86.60	78.74



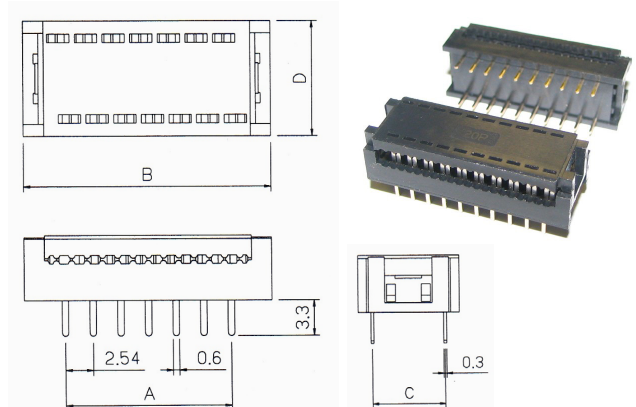
## DIP Plug 2.54mm pitch

- Housing: PBT 40% Glass Fibre UL94VO.)
- Contacts: Phosphor Bronze
- Current Rating: 1A
- Contact Resistance: 30mΩ max at 100mA DC.
- Insulation Resistance: 1000mΩ min. at DC 500V
- Operating Temp. -55°C to +105°C.

Part No. 32-124 xx  
xx = No of Contacts

### Dimensions

Positions	A	B	C	D
8	7.62	14.60	7.62	10.60
10	10.16	16.96	7.62	10.60
14	15.24	22.74	7.62	10.60
16	17.78	25.12	7.62	10.60
18	20.32	26.74	7.62	10.60
20	22.86	29.74	7.62	10.60
24	27.94	35.00	7.62	10.60
28	33.02	40.10	7.62	10.60
40	48.28	55.20	7.62	10.60

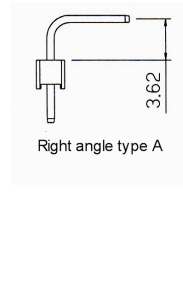
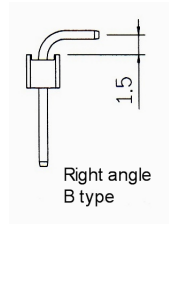
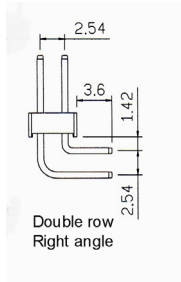
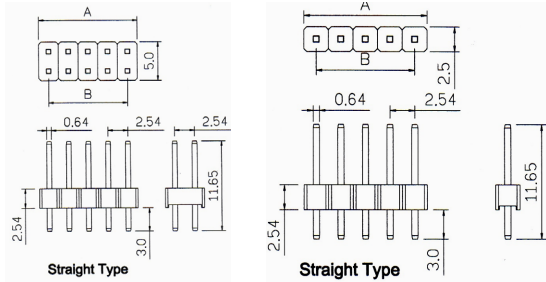
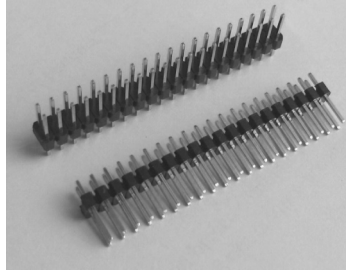


## Pin Headers

2.54mm pitch

- Current Rating: 1A
- Contacts : Gold Plated Brass
- Housing: PBT 30% Glass UL94VO

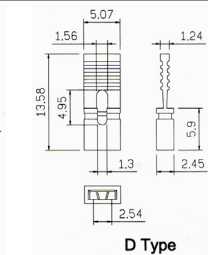
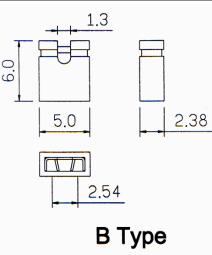
Part No 32-112 xx S/D V/R 2.54 mm Pitch  
 xx = No of Contacts  
 V = Straight  
 R = Right Angle  
 S = Single Row 2 to 40 way  
 D = Double Row 4 to 80 way



## Mini Jumpers

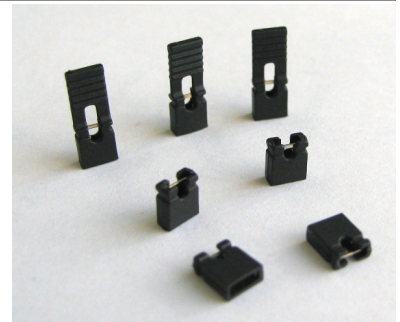
2.54mm pitch

- Current Rating: 1A
- Gold Plated Phosphor Bronze Contacts
- Housing: PBT 30% Glass UL94VO
- Insulation Resistance : 1000Mohm min. at 500V



Part No 32-116BG1

Part No 32-116DG1

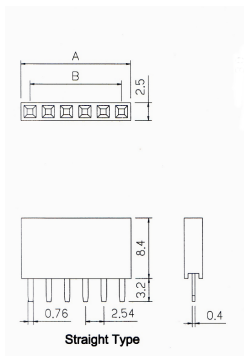
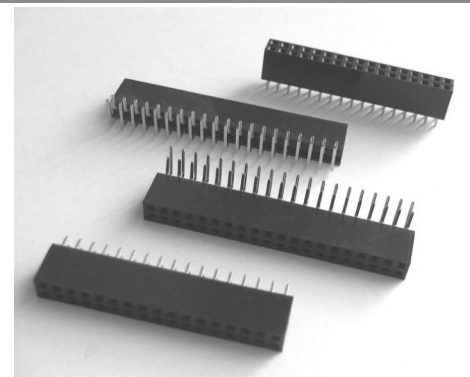


## PCB Socket

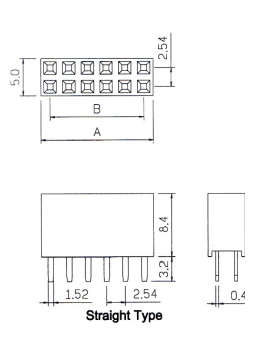
2.54mm pitch

- Gold Plated Phosphor Bronze Contacts.
- Current Rating: 1A
- Housing PBT 30% Glass UL94VO.
- Dielectric Strength: 500VAC for 1 min.
- Operating Temp. -55°C to +105°C.

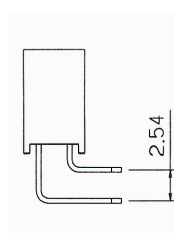
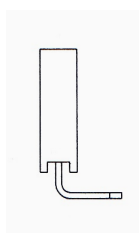
Part No 32-114 xx S/D V/R 2.54 mm Pitch  
 xx = No of Contacts  
 V = Straight  
 R = Right Angle  
 S = Single Row 2 to 40 way  
 D = Double Row 4 to 80 way



Single Row



Double Row



## Pin Headers

2.0 mm Pitch

- Current Rating: 1A
- Contacts : Phosphor Bronze
- Housing: PBT 30% Glass UL94VO

Part No 32-113 xx S/D V/R 2.0 mm Pitch

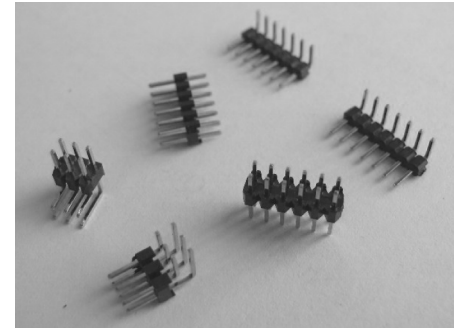
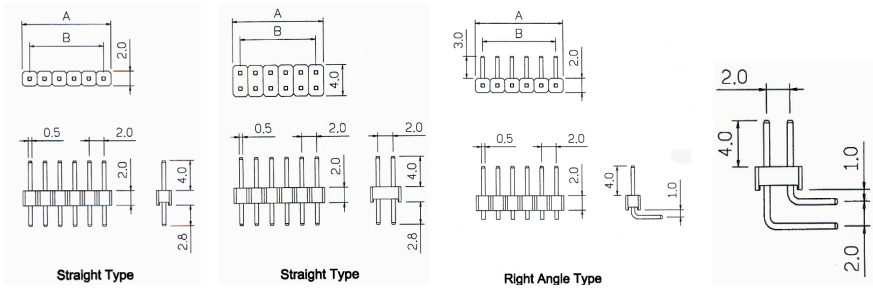
xx = No of Contacts

V = Straight

R = Right Angle

S = Single Row 2 to 40 way

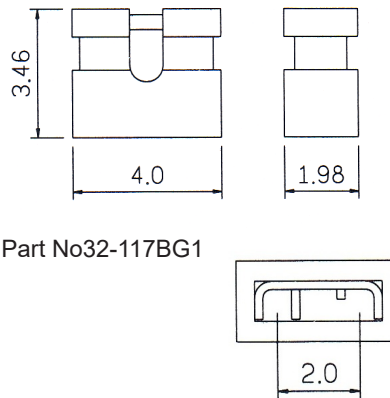
D = Double Row 4 to 80 way



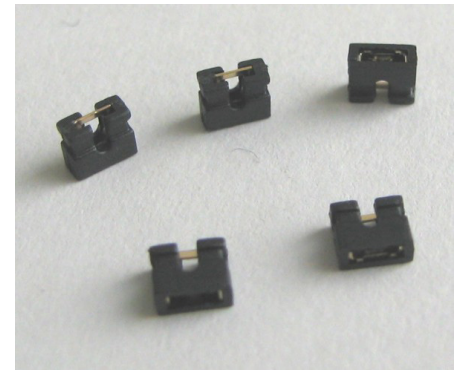
## Mini Jumpers

2.0 mm Pitch

- Current Rating: 1A
- Contacts : Gold Plated Phosphor Bronze
- Housing: PBT 30% Glass UL94VO
- Insulation Resistance : 1000Mohm min. at 500V



Part No 32-117BG1



## PCB Socket

2.0 mm Pitch

- Gold Plated Phosphor Bronze Contacts.
- Current Rating: 1A
- Housing PBT 30% Glass UL94VO.
- Dielectric Strength: 500VAC for 1 min.
- Operating Temp. -55°C to +105°C.

Part No 32-115 xx S/D V/R 2.0 mm Pitch

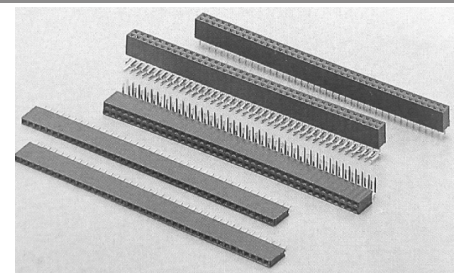
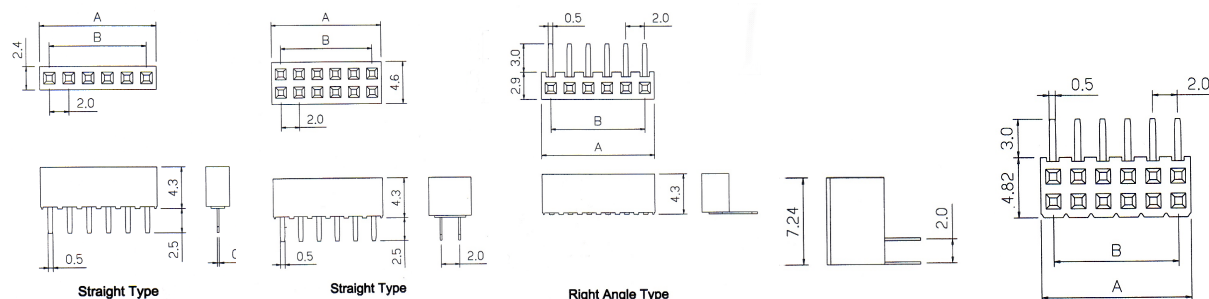
xx = No of Contacts

V = Straight

R = Right Angle

S = Single Row 2 to 40 way

D = Double Row 4 to 80 way

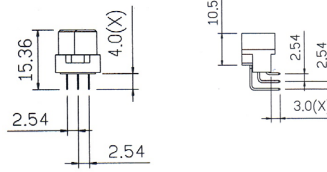




### Din 41612 C Type (3 Row)

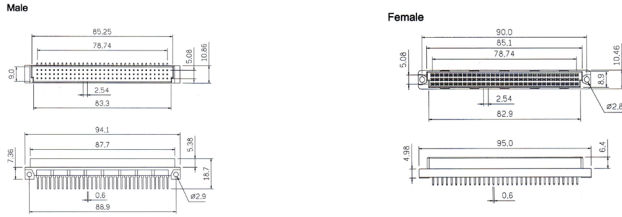
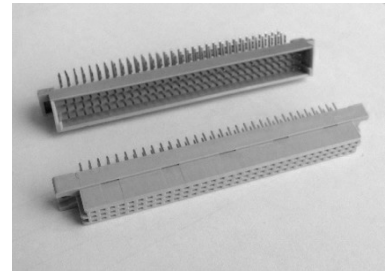
2.54 & 5.08 mm Pitch

- Current Rating: 2A
- Voltage Rating: 250 VACrms 60Hz
- Current Rating: 2A
- Contact Resistance: 30 milliohm max. at 1 amp DC
- Insulation Resistance: 1000 megohms at 500 VDC.
- Dielectric: 1000 VAC rms 60Hz for 1 min.
- Contacts: Female: Phosphor bronze full gold.  
Male: Brass
- Housing: Glass filled thermoplastic UL94VO rated



Female Male

Part No 32-146 xx  
xx = No of Contacts, 64 or 96 @ 2.54mm pitch

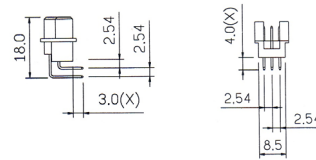


Other sizes available on request

### Din 41612 R Type (3 Row)

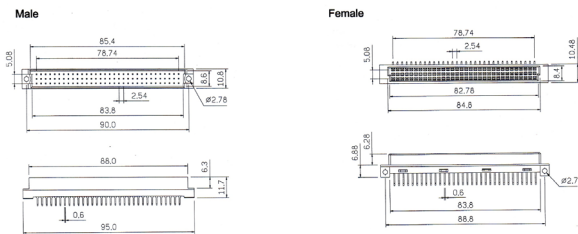
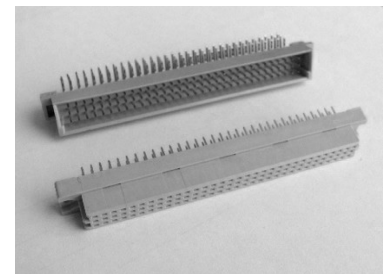
2.54 & 5.08 mm Pitch

- Current Rating: 2A
- Voltage Rating: 250 VACrms 60Hz
- Current Rating: 2A
- Contact Resistance: 30 milliohm max. at 1 amp DC
- Insulation Resistance: 1000 megohms at 500 VDC.
- Dielectric: 1000 VAC rms 60Hz for 1 min.
- Contacts: Female: Phosphor bronze full gold.  
Male: Brass
- Housing: Glass filled thermoplastic UL94VO rated



Female Male

Part No 32-147 xx  
xx = No of Contacts, 64 or 96 @ 2.54mm pitch

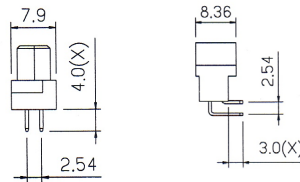


Other sizes available on request

### Din 41612 B/2 Type (2 Row)

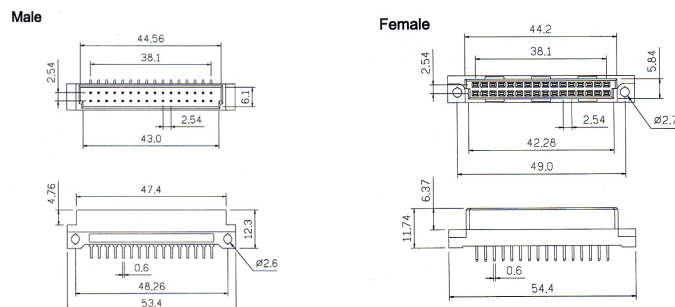
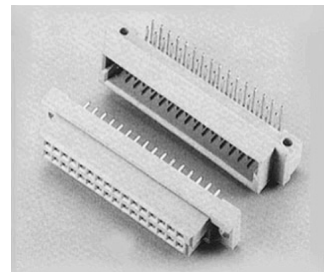
2.54 & 5.08 mm Pitch

- Current Rating: 2A
- Voltage Rating: 250 VACrms 60Hz
- Current Rating: 2A
- Contact Resistance: 30 milliohm max. at 1 amp DC
- Insulation Resistance: 1000 megohms at 500 VDC.
- Dielectric: 1000 VAC rms 60Hz for 1 min.
- Contacts: Female: Phosphor bronze full gold.  
Male: Brass
- Housing: Glass filled thermoplastic UL94VO rated



Female Male

Part No 32-148 xx  
xx = No of Contacts, 16 or 32 @ 2.54mm pitch



Other sizes available on request

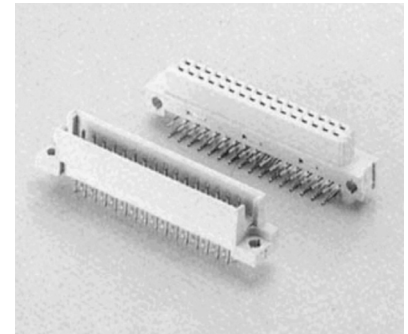


## Din 41612 Q/2 Type (2 Row) 2.54 & 5.08 mm Pitch

- Current Rating: 2A
- Voltage Rating: 250 VACrms 60Hz
- Current Rating: 2A
- Contact Resistance: 30 milliohm max. at 1 amp DC
- Insulation Resistance: 1000 megohms at 500 VDC.
- Dielectric: 1000 VAC rms 60Hz for 1 min.
- Contacts: Female: Phosphor bronze full gold  
Male: Brass
- Housing: Glass filled thermoplastic UL94VO rated

Part No 32-149 xx

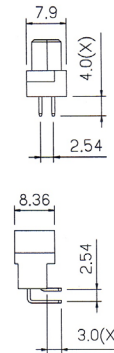
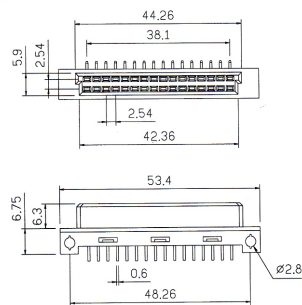
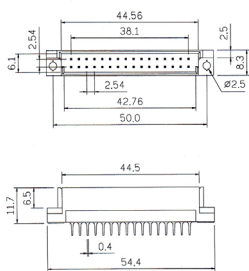
xx = No of Contacts, 16 or 32 @ 2.54mm pitch



Other sizes available on request

Male

Female

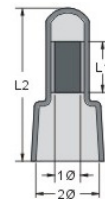


Female

Male

## Close-End Wire Connector

- Material: UL approved Nylon 66
- Nylon insulated close-end wire connector
- To apply, insert pre-stripped wires into connector tube and crimp it with crimping tool to hold wires firmly even in vibration.

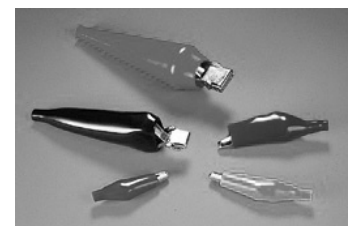
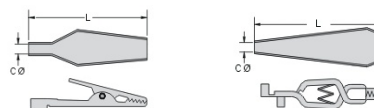


Part Number	L1	L2	Ø1	Ø2	sq	Suitable Wire	
						AWG	DIN mm <sup>2</sup> d
28-CE1	7.0	20.0	2.4	7.8	1.25	22-16	0.50 ~ 1.75
28-CE2	7.5	20.0	3.0	8.0	2.0	16-14	1.00 ~ 3.00
28-CE5	8.0	25.3	3.8	10.5	5.5	12-10	2.50 ~ 6.00
28-CE8	8.5	27.8	4.7	12.0	8.0	8	4.00 ~ 9.00

## Alligator Clips

Used for creating a temporary electrical connection

Part Number	L1	CØ	Ampere
32-CA32	35.0	3.0	2A
32-CA36	40.0	3.0	3A
32-CA50	50.0	4.0	5A



- Available in black and red. Add R or B after part number for red or black clip eg 32-CA32R

## Cooling Fans

### Introduction to Sunon Fans and Blowers

Five major design principles:

- Lower Power Consumption
- High Torque
- High Airflow
- Low Noise
- High Air Pressure

### AC Fans

New automatic motor wire wrapping technology ensures stable performance for high air flows and low acoustic noise. The larger models 37-A2179HBT and A2259MBT have thermal cut-outs and starting capacitors.



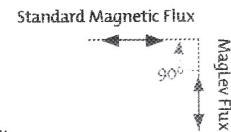
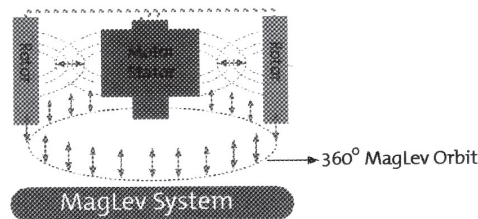
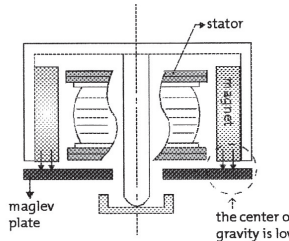
### DC Fans & Blowers

The Sunon designed '**Green Motor**' pioneered fan motor design by using advanced **single phase full wave windings**.

The single phase full wave winding uses only one winding instead of two. Consequently the wire thickness can be increased to prevent breakage during mass production. The winding fill is reduced by one third which dramatically increases the air flow for ultra miniature fans. The benefits of this patented design are low power consumption, high efficiency, low starting voltages and increased torque. The bobbin which protects the coil is made of high temperature, non inflammable thermoplastic which enables the fan to operate at higher ambient temperatures.

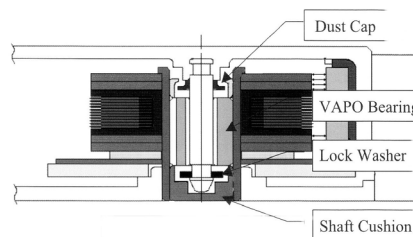
To summarize the advantages of the single phase full wave winding:

- Residual internal temperature lower, hence life span of motor increased.
- With thicker diameter wires, torque of the motor is increased 80%.
- Thinner smaller cooling fans are possible with this design.
- With motor coil area reduced and impeller size increased more air flow results.
- The power consumption is reduced to meet environmental requirements.



Another Sunon development introduced in 1999 is the '**Magnetic Levitation System Design**'

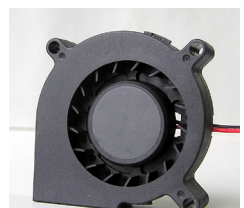
The MagLev motor fan's rotation is fully controlled by Sunon's patented 360° MagLev orbit. The resulting interaction between the MagLev plate pulls the rotor downward along the entire 360° surface. Due to the lower centre of gravity the motor runs in a more stable and consistent orbit. The shaft and bearing have no direct contact during operation, and so will experience no friction no matter how the fan is oriented, resulting in an extremely long lifespan for the fan.



The **Vapo Bearing** is a further development used in conjunction with the MagLev system to lessen friction and noise. With the addition of a dust cap, lubrication circulation inside the Vapo bearing is increased and friction reduced further. The fan can run at high temperatures in any orientation.

### Brushless DC Blowers

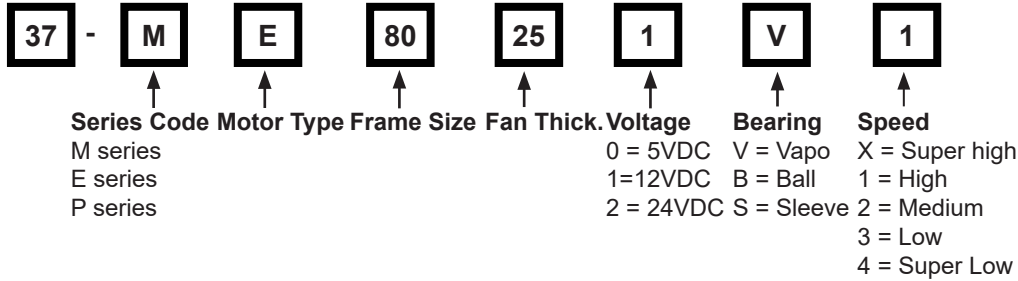
Where spot cooling is required Sunon manufacture an extensive range of sizes in blower's from 30x30x10mm to 120x120x32mm. These incorporate the 'Green Motor' and 'MagLev' design with Vapo or Ball bearings. They can be supplied with aluminium frames for heatsink cooling assistance. The main differences between fans and blowers are in air flow and air pressure. A blower is relatively lower in air flow and higher in air pressure than a fan. Spot cooling on PC Boards is an application for blowers. The thinnest blower measures 35x35x4.8mm.



## DC Fans & Blowers

We stock the Sunon DC fans below for High Performance and Reliability.  
The best choice for both service replacements and new manufacture.

### Model Numbering System - Example



Part Number (Stock types)	Frame Size mm	Hole Centres	Operating Volts	AirFlow CFM	Current Amp	Speed RPM	Noise dBA
<b>DC Fans</b>							
37-MB40101V2F	40x40x10	32	12VDC	6.6	0.08	5800	26.4
37-MB40201V1	40X40X20	32	12VDC	8.9	0.087	7200	25.5
37-MB50151V1	50X50X15	40	12VDC	17	0.125	5800	33
37-MB60251V1	60x60x25	50	12VDC	23.5	0.048	4500	33.5
37-MB60252V2	60x60x25	50	24VDC	19.3		3800	29
37-PMB1204PQB1F	40x40x28	32	12VDC	18.9	0.33	11000	45.0
37-PMD1204PQBUF	40x40x28	32	12VDC				
37-ME50101V1	50x50x10	40	12VDC	13.8	0.11	5500	31.0
37-ME60151V1F	60x60x15	50	12VDC	25.2	0.16	5400	36.2
37-MF80251V1A99	80 x 80 x 25	71.5	12VDC	41	0.120	3200	33
37-MF80251V3A99	80X80X25	71.5	12VDC	33	0.065	2600	28
37-ME92251V1	92x92x25	82.5	12VDC	51.5	0.165	3000	34.0
37-ME92251V3	92x92x25	82.5	12VDC	39.5	0.09	2400	28.0
37-EEC0251B1	120x120x25	104.8	12VDC	108.2	0.451	3100	44.5
37-EEC0251B2	120X120X25	104.8	12VDC	93	0.300	2700	40.5
37-EEC0381B1	120x120x38	104.8	12VDC	138	0.833	3100	48.0
37-MB60252V2	60x60x25	50	24VDC	19.3	0.048	3800	29.0
37-ME80252V1	80x80x25	71.5	24VDC	41.0	0.07	3200	33.0
37-ME92252V1	92x92x25	82.5	24VDC	51.5	0.087	3000	34.0
37-ME92252V2A	92x92x25	82.5	24VDC	45	0.068	2700	32.0
37-PMD2406PMB1	60x60x38		24VDC	56.5	0.430	8000	56.0
37-EEC0252B1	120x120x25	104.8	24VDC	108.2	0.207	3100	44.5
37-EEC0382B1F	120x120x38	104.8	24VDC	138	0.38	3100	48.0

### DC Blowers

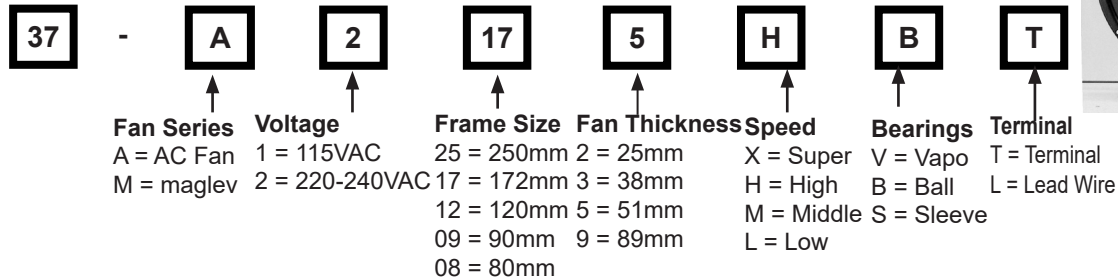
Available to order please contact us for a quote

Other sizes available  
A = with connector and heat shrink

## Cooling Fans - AC

We stock the Sunon AC fans below for High Performance and Reliability.  
The best choice for both service replacements and new manufacture.

### Model Numbering System - Example



Part Number (Stock types)	Frame Size mm	Hole Centres	Operating Volts AC	AirFlow CFM	Current Amp	Speed RPM	Noise dBA
<b>AC Fans</b>							
37-MA2062HVL	60x60x25	50.0	220-240	17	0.10	3600	25
37-MA2082HVL	80x80x25	71.5	220-240	40	0.10	3200	32
37-2082HSL	80x80x25	71.5	220-240	17	0.07	2300	29
37-2083HBL	80x80x38	71.4	220-240	24	0.09	2400	32
37-1092HST	92x92x25	82.5	115	36	0.11	2750	39
37-MA2092HVL	92x92x25	82.5	220-240	52	0.10	2900	31
37-2092HBL	92x92x25	82.5	220-240	30	0.07	2350	37
37-2092HST	92x92x25	82.5	220-240	36	0.06	2750	39
37-1122HBL	120x120x25	104.8	110-120	78	0.18	2300	46
37-2122HBT	120x120x25	104.8	220-240	66	0.09	2150	44
37-1123HBT	120x120x38	104.8	110-120	87	0.21	2750	45
37-2123HST	120x120x38	104.8	220-240	85	0.125	2550	43
37-2123HBT +Lead	120x120x38	104.8	220-240	87	0.125	2750	45
37-2123LBT	120x120x38	104.8	220-240	72	0.06	2150	37
37-2123LBT.5	120x120x38	104.8	220-240	50/49	0.04	1650/1600	26/25
37-A2175HBT-TC	171x151x51	162x134	220-240	203	0.11	2800	51
37-A2179HBT	176x176x89	152.74	220-240	315	0.11	2800	62
37-A2259MBT	254 Ø x 89	245.5	220-240	600	0.12	1400	50
37-A2259HBT	254 Ø x 89	245.5	220-240	770	0.24	1900	55
37-A300	Power Lead with moulded connector, 300mm long						
37-A1000	Power Lead with moulded connector, 1000mm long						

Other sizes available: Specifications all at 50Hz at the voltage shown. 37-A2175HBT-TC; 37-2179 & 37-2259 types are Alveolate motors



## Sunon AC & DC Fan Specifications

Refer to full data for each model

### AC Fans

Motor: Brushless

- Reliable Shaded - Pole Construction
- Alveolate with low start voltage & high efficiency

Frame: Die Cast Aluminium

Impeller: Black Themoplastic Rated UL94V-0

Bearing:

- Life Lubricated Ball Bearing
- Oil Impregnated Sintered Sleeve

Operating Temperature: -10 to +70°C

Protection:

- Impedance Protected
- Temp cutout on TC models

Approvals: UL, CE, RoHS compliant

### DC Fans

Motor:

- Patented Brushless DC Motor Design
- Maglev® magnetic Levitation Motor

Frame: Black Themoplastic Rated UL94V-0

Impeller: Black Themoplastic Rated UL94V-0

Bearing:

- "vapo" bearing
- Life Lubricated Ball Bearing
- Oil Impregnated Sintered Sleeve

Operating Temperature: -10 to +70°C

Protection:

- Electronic locked rotor protected
- Auto restart

Approvals: UL, CE, RoHS compliant

## Accessories for Fans

Connector plugs onto terminals on AC fans.

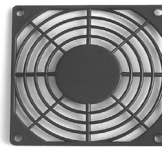
Part No. 37-A300 Length 300mm

Part No. 37-A1000 Length 1000mm



37- A300

## Fan Guards & Filters



37- PB080



37- W080



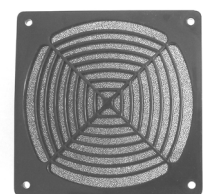
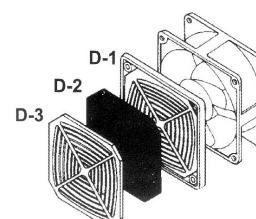
37- FG08

### Standard Types

Fan Size mm	Hole Centres mm	Thermoplastic Guard PBT UL 94V0 Part No.	Nickel Chrome Plated Wire Guard Part No.	Metal Mesh Guard/Filter Part No.
40x40	32	-	37-W040	-
50x50	40	-	37-W050	-
60x60	50	37-PB060	37-W060	-
80x80	71	37-PB080	37-W080	37-FGM08
92x92	83	37-PB092	37-W092	37-FGM09
120x120	105	37-PB120	37-W120	37-FGM12
171x151	162	-	37-W172	-
176x176	153	-	37-W176	-
254 Ø	174	-	37-W254	-

### 3 piece Plastic Guard including Air Filter

Part No	Fan Size	Hole Centres
37-P080F	80 x 80mm	71mm
37-P120F	120 x 120mm	105mm
37-P172F	180 x 151mm	162mm



37- P120F

## Membrane Keypads

### Semi-Custom Membrane Keypads

- For prototypes and short production runs.
- Stock keypads ready for your choice of overlay.
- The advantages of a custom keypad without the high tooling costs.
- Stock overlays and edge panels for some sizes.

#### Specifications:

Contact Rating: 15V DC 5mA

Insulation Resistance: 100 M $\Omega$  min.

Circuit Resistance: 150  $\Omega$  max.

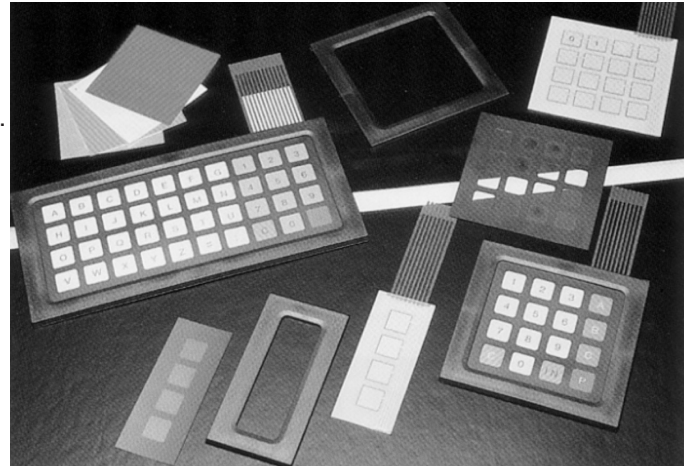
Contact Travel/Operating Force: DS series 0.15-0.2 mm/100-300g

DT series 0.15-0.5 mm / 450g

Operating Temperature: 0°C ~ +50 °C

Lifetime: DS series - 3,000,000 operations Min.

DT series - 1,000,000 operations Min.



### DS Series - Standard Type Switch

These keypads are the most commonly used.

Part Number	Keypad Layout	Size (mm)	Circuit	Stock Overlay
50-DS02C	* 1 x 2	* 34 x 51	Common Buss	Not Available
50-DS10C	* 1 x 10	* 34 x 187	Common Buss	Not Available
50-DS12	3 x 4	68 x 85	X-Y Matrix	Available
50-DS12C	3 x 4	47 x 64	Common Buss	Available
50-DS16	4 x 4	85 x 85	X-Y Matrix	Available
50-DS24	4 x 6	85 x 119	X-Y Matrix	Available
50-DS32	* 4 x 8	* 75 x 135	X-Y Matrix	Not Available
50-DS40	4 x 10	85 x 187	X-Y Matrix	Available

\* Can be cut into different configurations.

### DT Series - Tactile Type Switch

With integral stainless steel domes to give operator feedback.

Part Number	Keypad Layout	Size (mm)	Circuit	Stock Overlay
50-DT02C	* 1 x 2	* 34 x 85	Common Buss	Not Available
50-DT04	1 x 4	34 x 85	X-Y Matrix	Available
50-DT10C	* 1 x 10	* 34 x 187	Common Buss	Not Available
50-DT12	3 x 4	68 x 85	X-Y Matrix	Available
50-DT12C	3 x 4	47 x 64	Common Buss	Available
50-DT16	4 x 4	85 x 85	X-Y Matrix	Available
50-DT24	4 x 6	85 x 119	X-Y Matrix	Available
50-DT40	4 x 10	85 x 187	X-Y Matrix	Available

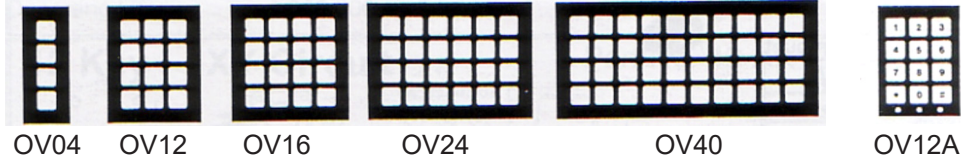
\* Can be cut into different configurations.

## Keypad Accessories

Items to give a professional look for your prototype or short run.

### Overlays

Consist of two layers - a black polyester mask with a clear non-reflecting window.



Part Number	Size (mm)	For use with Switch Part No.
50-OV04	34 x 85	DS04 or DT04
50-OV12	68 x 85	DS12 or DT12
50-OV12A	47 x 64	DS12C
50-OV16	85 x 85	DS16 or DT16
50-OV24	119 x 85	DS24 or DT24
50-OV40	187 x 85	DS40 or DT40

### Colour Pads - Part No 50-K100P

Pe-cut adhesive polyester labels are available to stick onto the key positions. They will accept a felt tip pen or transfer lettering. One package contains a sheet (16 squares) of each of the 6 colours available - White, Silver, Grey, Red, Orange & Blue.

### Edge Panels

Edge panels are made of moulded ABS plastic mounted with adhesive. Adds finishing touch and protects switch.

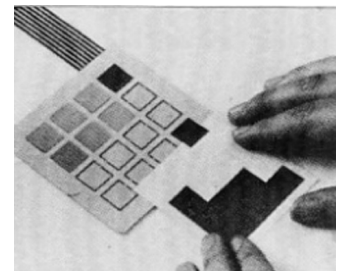
Part Number	Size (mm)	For use with Switch Part No.
50-EP04	49 x 100	DS04 or DT04
50-EP12	83 x 100	DS12 or DT12
50-EP16	100 x 100	DS16 or DT16
50-EP24	134 x 100	DS24 or DT24
50-EP40	202 x 100	DS40 or DT40

### Connectors

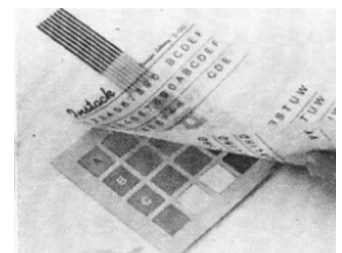
Double side contacts for reliability and versatility.

Part Number	Size (mm) A B	For use with Switch Part No.
50-KCD05	20.9 x 17.9	DS2C, 32
50-KCD07	23.4 20.4	DS70
50-KCD08	26.0 23.0	DS04, 12, 16, 32, 80, 128(3)
50-KCD10	31.0 28.0	DS24, 70, 80
50-KCD11	33.6 30.6	DS10C
50-KCD13	38.7 35.7	DS12C, 40

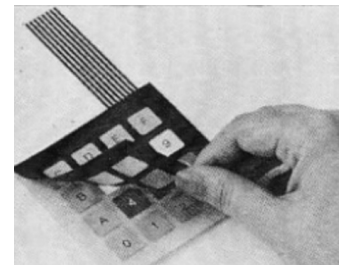
### Suggested Assembly



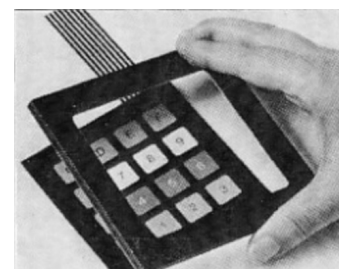
1. Place the desired colour pad over each key position.



2. Apply transfer lettering to the colour pad. The colour pad will also accept felt tip marker pen.



3. Remove the separator paper from the top of the switch then carefully place the overlay onto the adhesive on the switch.



4. When ready to mount the switch using the self adhesive on the edge panel place it over the completed switch to finish the keypad.

## Keypad Switches

Excellent tactile feel when used with overlay membrane.

### Specifications KRS Series

Contact Rating: 50 mA 12VDC

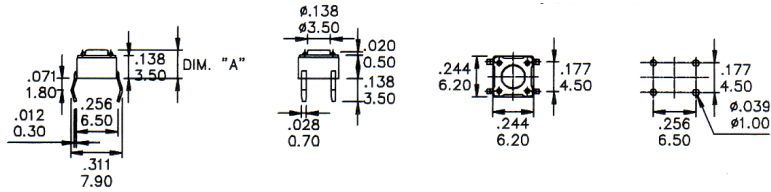
Travel: 0.25mm

Operating Force: 160g (260g available)

Endurance: 10,000 cycles at 10 cpm

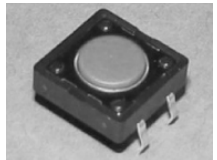
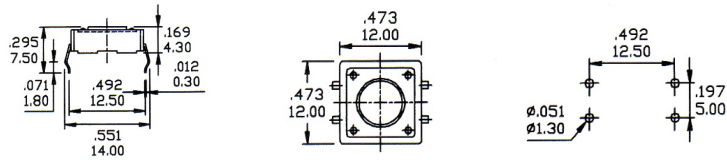
### KRS 0612 Series - Miniature and versatile thru hole mount.

Part Number	Dim. 'A'
41-KRS0612 / 4.3	4.3
41-KRS0612 / 5.0	5.0
41-KRS0612 / 7.3	7.3
41-KRS0612 / 9.5	9.5
41-KRS0612/13.0	13.0

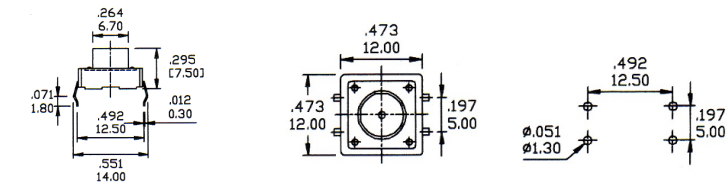


### KRS 12 Series - General Purpose Types with range of actuators. Positive Tactile Feel. Through Hole Mount. For SMD Versions add Suffix SMD.

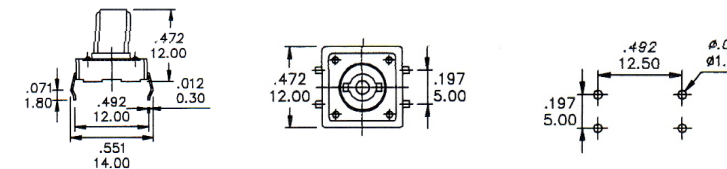
Part Number	Height 'L' above PCB
41-KRS1243	4.3
41-KRS1275	7.5
41-KRS12120	12.0



KRS1243



KRS1275

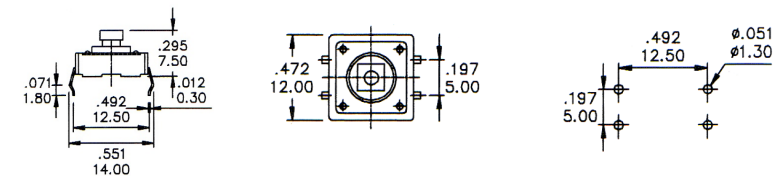


KRS12120

Drilling Patterns

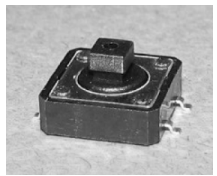
### KRS 1273 - Switch can be used with spacers for a wide range of overlay heights.

Spacer Part No.	Spacer Nominal Length	'L' PCB to Overlay
Without Spacer	0	7.5
41-KS04.8	4.8	9.1
41-KS06.4	6.4	10.7
41-KS08.0	8.0	12.3
41-KS09.5	9.5	13.8
41-KS11.1	11.1	15.4



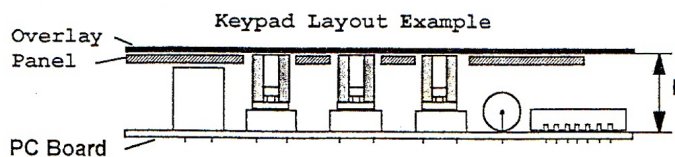
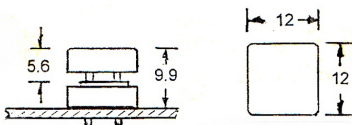
Drilling Pattern

Select spacer for reqd. dimension 'L'  
Spacers must be ordered separately



Part No. 41-KRS1273  
SMD Version Part No. 41-KRS1273SMD

Non stock sizes up to 'L' = 42.4mm



### Cap for KRS1273

To use as stand alone switch or keypad.

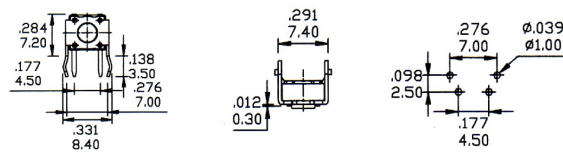


## Keypad Switches

### KRS 0614 - Right Angle Momentary Tactile.

Through Hole Mount  
Stock Actuator Length 3.2mm  
Other lengths up to 15.9mm

**Part No. 41-KRS0614**

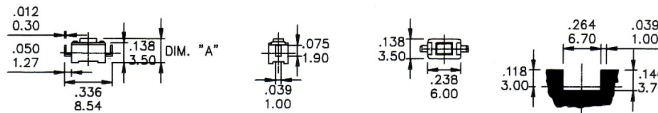


Drilling Pattern

### KRS0316 - Edge Mount Tactile.

Surface Mount

**Part No. 41-KRS0316**

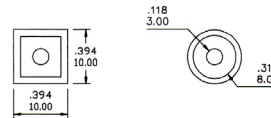
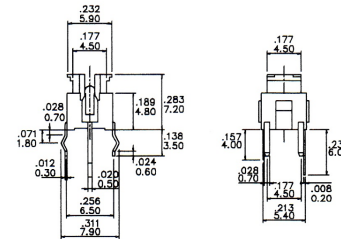


Land Pattern

### LP Series - Illuminated Tactile Switch.

Specifications:

Switch: SPST rated 12VDC 50mA  
Operating Temp.: -20°C to +70°C  
Contact Resistance: 100 milli ohm  
Operating Life: 100,000 cycles min.  
LED Rating: 20mA 4v.



CAPS  
Colour: Grey

**Part No 41-LP13A**

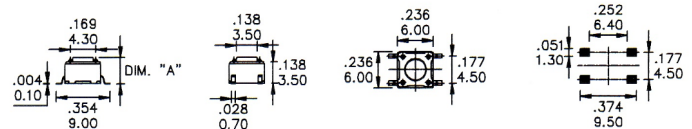
**Part No 41-LP13B**

Switch Part Number	LED Colour
41-LP13	No LED
41-LP13R	Red
41-LP13G	Green
41-LP13Y	Yellow

### KRSM6 Series - Miniature

Positive Tactile Feel  
Surface Mount Device

Part Number	Height mm above PCB
41-KRSM6-1	4.3
41-KRSM6-2	5.0
41-KRSM6-4	7.3
41-KRSM6-5	9.5

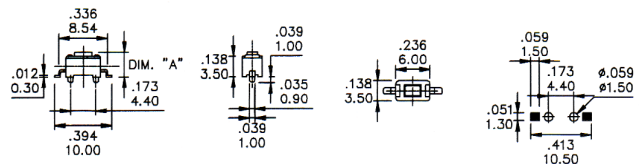


Land Pattern

### KRSM3 Series - Sub Miniature

Surface Mount Device

Part Number	Height mm above PCB
41-KRSM3C-1	4.3
41-KRSM3C-2	5.0



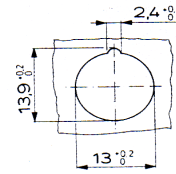
Land Pattern

## Panel Mount Membrane Switches - Schurter MCS 18 Series

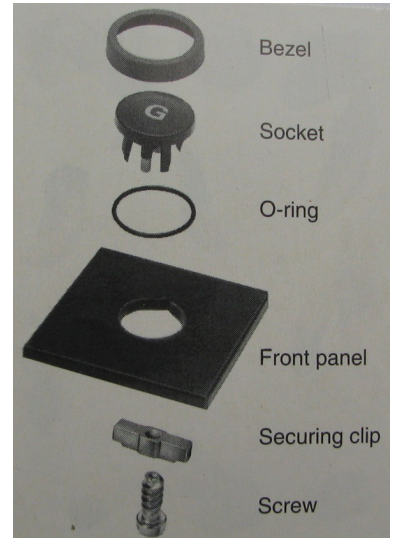
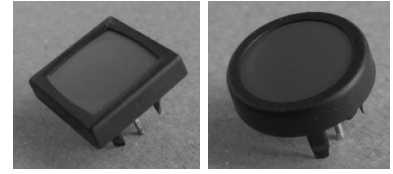
- Front panel sealed to IP 65 with 'O' ring kit and screw / bracket assembly.
- Positive tactile feel with snap dome.
- Available in 9 colours.
- Bezel removable to insert key ident film.

### Specifications:

Contact Resistance: New < 50 mΩ After 10<sup>6</sup>cycles < 150 mΩ  
 Switching Voltage: Silver Contact - Min. 5V DC Max. 48V DC  
 Switching Current Max.: Silver 125 mA  
 Insulation Resistance (pin to pin, off position): >100 MΩ  
 Contact Travel: 0.5 ± 0.1mm  
 Lifetime (IEC512-5 Test 9a): >1,000,000 operations  
 Ambient Temperature: -25 °C to +60 °C.



Front panel drilling



IP65 Seal Kit (O-ring,clip & screw)  
 Part No. 41-0098.9201

Part Number Square Black Bezel/Colour Face	Part Number Round Black Bezel/Colour Face
41-1100.791 - Yellow	41-1104.791 - Yellow
41-1100.793 - Red	41-1104.793 - Red
41-1100.795 - Green	41-1104.795 - Green
41-1100.796 - Grey	41-1104.796 - Grey
41-1100.797 - Black	41-1104.797 - Black
41-1100.798 - White	41-1104.798 - White

## Panel Mount Metallic Switches - Schurter MCS 19 Series

- Excellent tactile feedback.
- Low profile of 1mm on front panel.
- Protection IP65. – Panel Sealing to IP40.
- Robust metal housing and vandal resistant.
- Easy mounting with M19 nut and sealing ring.

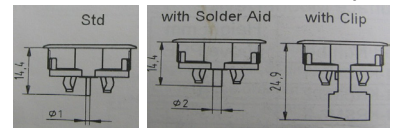
The MCS 19 Metallic is designed for use in front panels or complete enclosures. The switch has mechanical end stop strength, so that the actuator cannot damage the contact element even when hit with hard strokes. The fastening is by a screwed joint and a nut (M19x0.75). The actuator can be zinc diecasting nickel plated or stainless steel. The stainless steel version can be laser-lettered.

### Specifications:

Contact Resistance: New < 50 mΩ After 10<sup>6</sup> cycles < 150 mΩ  
 Switching Voltage: Gold: Min. 50mV DC Max. 24VDC  
 Silver: Min. 4VDC Max. 48VDC  
 Switching Current Max.: Gold: 80 mA Silver: 125mA  
 Rated breaking capacity: Gold: 12V/30mA Silver: 24V/50mA  
 Actuating Force: 3.7 N Contact Travel: 0.4 mm  
 Lifetime (at rated breaking capacity): <1,000,000 operations  
 Ambient Temperature: -25 °C to +60 °C.



Std with Solder Aid with Clip



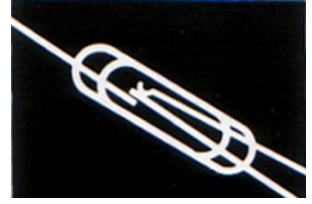
### Applications

- Entry control systems
- Door bell equipment
- Vending machines
- POS Info terminals
- Car wash facilities
- Elevator systems
- Test equipment

Variant	Part Number Without Legend		Part Number With Legend	
Contacts	Silver	Gold	Silver	Gold
Standard terminals	41-1241.2800	41-1241.2810	41-1241.2805.XXX	41-1241.2815.XXX
With solder aid	41-1241.2801	-	41-1241.2806.XXX	-
With Clip	41-1241.2802	41-1241.2812	41-1241.2807.XXX	41-1241.2817.XXX

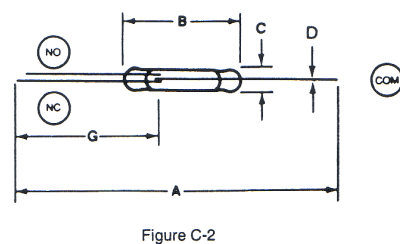
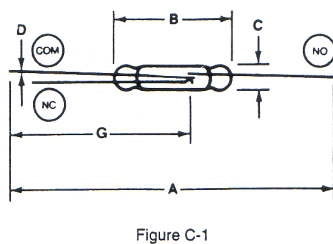
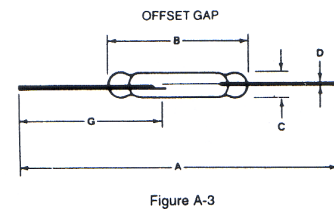
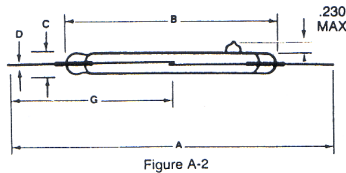
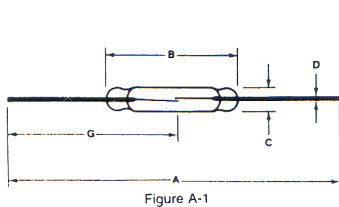
## Reed Switches

Reed switches are ideal for situations where the environment must be protected from contact arcing, for example, preventing explosions or where the contacts need to be protected from the dirt and corrosion of the outside world. Contact materials can be of Durel for low current or Rhodium for higher current applications. Tungsten is used for high power switching. Specifications of some of the types available in the table below.



Contact us regarding your application.

Part Number	Micro Miniature				Miniature		High Volts	High Power
	HSR -003	HSR -004	HSR -067	HSR -370	HSR -077	HSR -1015	HSR -V7K	HSR -834
Configuration	SPST	SPST	SPST	SPDT	SPST	SPST	SPST	SPDT
Nominal Overall Length A mm	26.7	25.4	31.5	37.9	48.1	55.6	82.0	86.1
Max. Glass Length B mm	5.33	6.6	11.7	12.3	14.0	20.3	53.3	34.3
Max. Glass Diameter C mm	1.4	1.4	1.8	1.8	2.3	2.6	5.3	5.3
Max Switching Voltage Volts DC/AC	30	30	30	30	100	200	5,000	500
Max. Switching Current Amps DC/AC	0.01	0.01	0.2	0.1	0.25	0.5	3.0	3.0
Max. Switching Power Watts DC/VA	0.25	0.25	4	3	7	10	50	100
Min. Voltage Breakdown Volts DC	150	150	250	200	250	350	7,500	1,000
Initial Contact Resistance Ohms	0.5	0.5	0.2	0.2	0.1	0.1	0.1	0.5
Min Insulation Resistance Megohms	1000	1000	10,000	10,000	10,000	10,000	10,000	100
Standard Pull-In Range Ampere Turns	5-20	5-20	10-35	15-35	15-40	15-40	60-125	60-100
Figure	A3	A1	A1	C1	A3	A-1	A-2	C-2
Contact Material	Durel	Durel	Durel/ Rhod.	Durel/ Rhod.	Durel/ Rhod.	Durel/ Rhod.	Tungst.	Tungst.
Operate Time (Incl. Bounce) Millisecond	0.2	0.2	0.3	0.6	0.6	0.75	3.0	3.0



## Min. Toggle Switches - Panel Mount

### Series 100

Contact Rating (UL/CSA): Silver  
 2A @ 250VAC or 5A @ 28VDC  
 Contact Res.: 10mΩ max. initial @ 2-4VDC  
 Insulation Resistance: 1,000 MΩ  
 Dielectric Strength: 1,000V RMS @ sea level  
 Operating Temp.: -30 °C to 85 °C  
 Electrical Life: 50,000 make & break cycles at full load.

Model	Switch Position		
SP1 & DP1	On	None	On
SP2 & DP2	On	None	(On)
SP3 & DP3	On	Off	On
SP4 & DP4	(On)	Off	(On)
SP5 & DP5	On	Off	(On)
Terminals	2-3,5-6	Open	2-1,5-4

(On) Momentary on

#### Panel Mount SPDT On/On

Refer table for other models

Solder Terminals Part No.  
41-T100SP1T1M1

PCB Terminals Part No.  
41-T100SP1T1M2

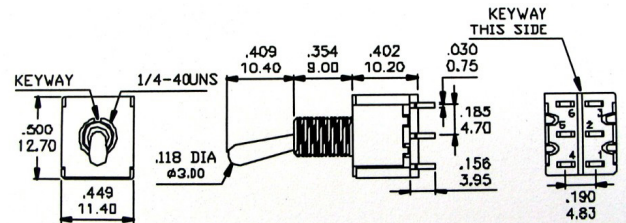
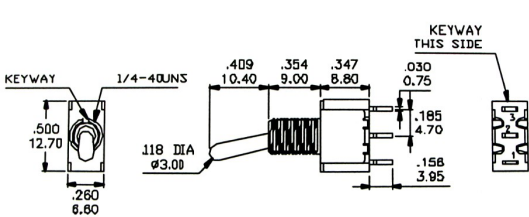


#### Panel Mount DPDT On/On

Refer table for other models

Solder Terminals Part No.  
41-T100DP1T1M1

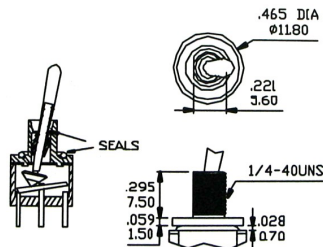
PCB Terminals Part No.  
41-T100DP1T1M2



## Min. Toggle Switches - Splashproof Models

### DPDT On-Off-Mom.

Solder Terminals Part No.  
41-T100DP5B9E



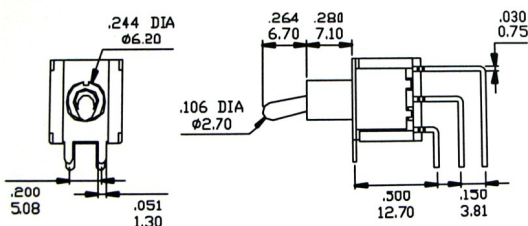
Rubber Boot, Nut & 'O' Ring  
for T100 Series Panel Mount  
Toggle Switches Part No.  
41-T100E1A



## Min. Toggle Switches - PCB Mounting Right Angle

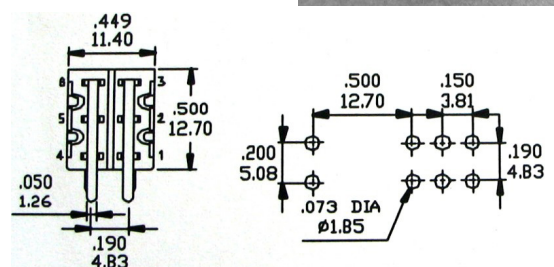
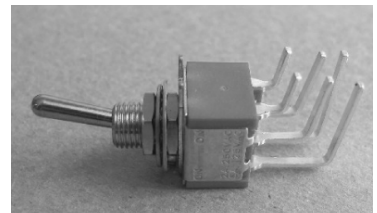
### SPDT On/On

Part No.  
41-T100SP1T1M7



### DPDT On/On

Part No.  
41-T100DP1T1M7





## Pushbutton Switches

### Series 700 - Snap Acting

Contact Rating (UL/CSA): Silver 1A @ 125VAC or 28VDC.

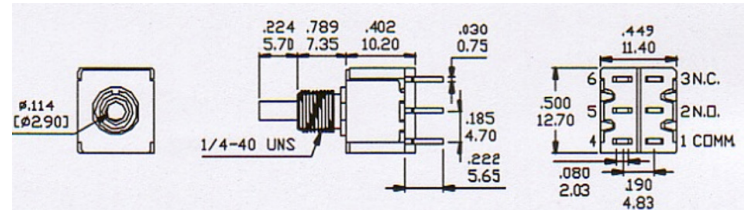
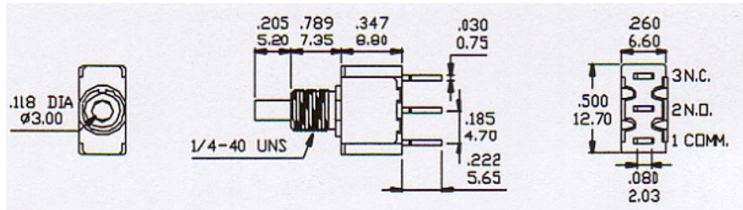
Contact Resistance: 10 mΩ

Operating Temp.: -30 °C to 85 °C

Electrical Life: 50,000 make & break cycles at full load.



### Panel Mount.



### Solder Tag

Part No. 41-T700SPB10M1 SPDT

Part No. 41-T700DPB10M1 DPDT

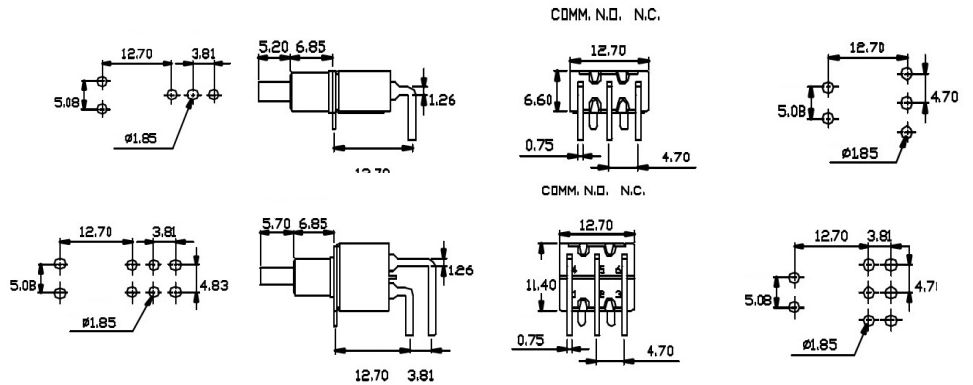
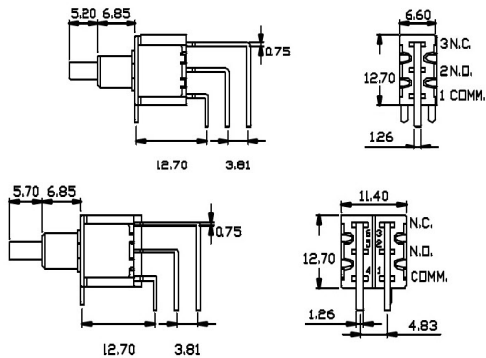
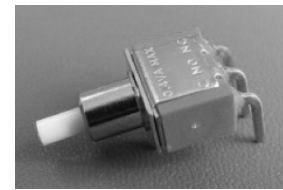
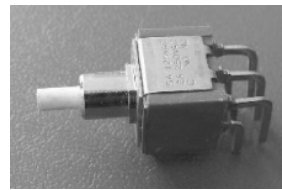
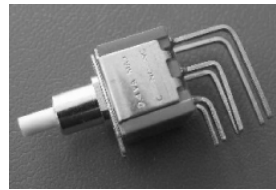
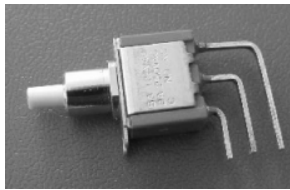
### PCB Terminal

Part No. 41-T700SPB10M2 SPDT

Part No. 41-T700DPB10M2 DPDT

### PCB Mount

#### Right Angle



### Vertical

Part No. 41-T700SPB20M7 SPDT

Part No. 41-T700DPB20M7 DPDT

### Horizontal

Part No. 41-T700SPB20M6 SPDT

Part No. 41-T700DPB20M6 DPDT

### Knobs for 700 Series

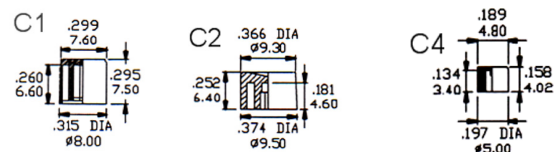
Part No. 41-T700C1B or R 8.0 x 7.6mm

Part No. 41-T700C2B or R 9.4 x 6.2mm

Part No. 41-T700C4B or R 5.0 x 4.0mm

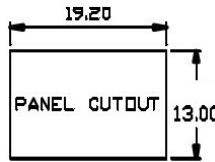
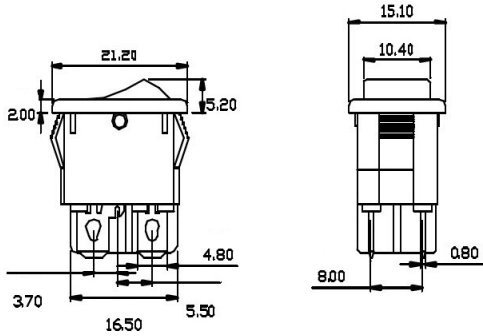
### Dress Nut

Part No. 41-T700WNU020X Brass N.P. 1/4 x 20 UNS



## Pushbutton Switches - Series R19 - Power Rocker Switch - Illuminated

Contact Rating 5A 250VAC, 10A 125VAC  
 Snap Mounting  
 Contact resistance <20mΩ  
 Electrical Life: 10,000 operations  
 Mechanical Life: 50,000 operations



SPST  
 Switch body black, rocker red  
 4.8mm QC terminals  
 Part Number 41-R19-001E6B

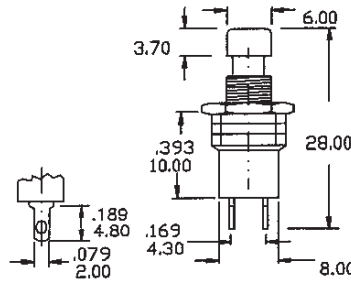
## Pushbutton Switches - Series R18 - Pushbutton Switches SPST

Contact Rating: 1 A @ 250V AC Resistive Load.

### Screw mounting – Round Miniature

Solder contacts  
 Panel Mount Hole Size 7.1mmØ

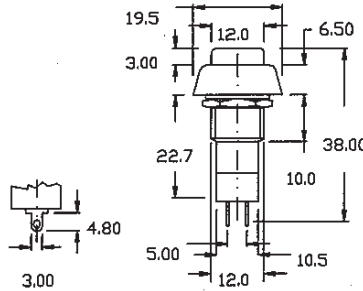
Part No	Type
41-R18-29ABLK	Off - (On)
41-R18-29ARED	Off - (On)
41-R18-30BBLK	On - (Off)
41-R18-30BRED	On - (Off)



### Screw mounting – Round

Solder contacts  
 Black body, red button  
 Panel Mount Hole Size 12.0mmØ

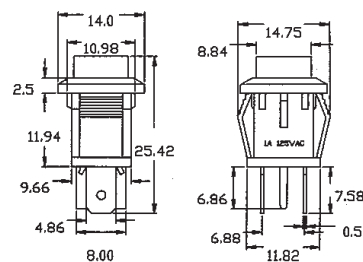
Part No	Type
41-R18-25ARED	Off - (On)
41-R18-25BRED	Off - (On)



### Snap-in mounting - Square

4.8mm QC connections

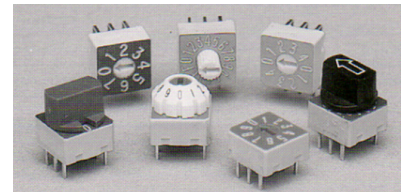
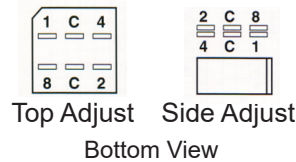
Part No	Type
41-R18-28ABLK	Off - (On)
41-R18-28ABLUE	Off - (On)
41-R18-28AGREEN	Off - (On)



## Rotary DIP Switches 3500 Series

Fully sealed miniature switch with a variety of options for data entry. Precise switch detent. Measures only 9.7 x 9.7 x 4.8mm.

10 pos. BCD Part Number	16 pos. BCH Part Number	Model Description 3 x 3 Pin-out
42-350002	42-350035	Top Adjust
42-350102	42-350135	Top Adjust/Shaft
42-351002	42-351035	Side Adjust
42-351102	42-351135	Side Adjust/Shaft



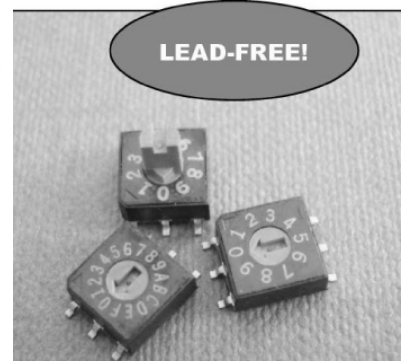
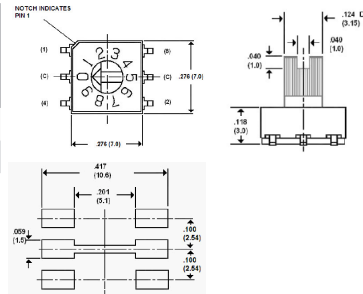
Complement codes also available

## Micro-DIP Switches 4800 Series - Surface Mount

Designed to withstand surface mount process temperatures. Low profile, fully sealed miniature package permits close spacing with free air flow.

Measures only 7.0 x 7.0 x 3.1mm.

10 pos. BCD Part Number	16 pos. BCH Part Number	Model Description 3 x 3 Pin-out
42-470002	42-470035	Top Adjust
42-470102	42-470135	Top Adjust/Shaft

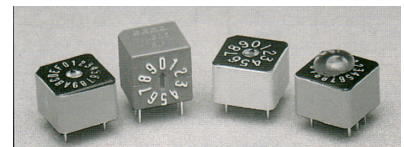
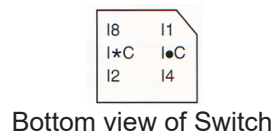


Complement codes also available

## Micro-DIP Switches 2300 Series - Double Pole +

Ideal for CMOS applications. The 2300 series switch offers a unique output arrangement in which all four output bits are always connected to one of two commons. This allows the use of a single pull up resistor instead of four.

10 pos. BCD Part Number	16 pos. BCH Part Number	Model Description 3 x 3 Pin-out
42-230056	42-230057	Top Adjust

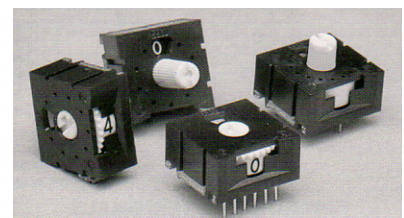


+ 2 pole with separate common not true bits.

## PCB Mounting Thumbwheel 2100 Series

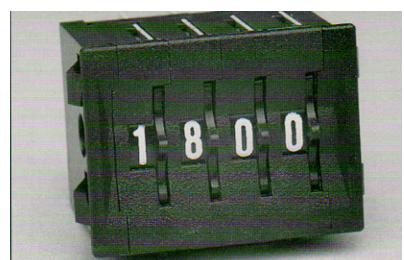
Unique switch which has a finished bezel for front panel access to allow end user adjustment. 1 pole Decimal / 1 & 2 pole BCD & Binary codes available plus a wide range of orientations and options

Dimensions: Width 20.3 x Depth 19.7 x Height 10.9 mm



## Thumbwheels 2100 Series

The EECO range of Thumbwheel Switches is very extensive, ranging from industrial to defence specifications, e.g. MIL-S-22710/15. Codes available include single and double pole binary, single and double pole decimal and special purpose codes such as voltage divider and resistance decades. Contact us for full details if you have an application.





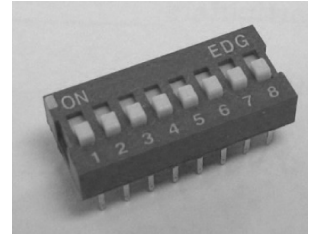
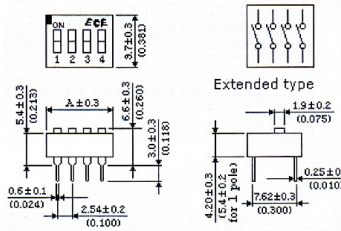
## Standard Slide Type

EDG Series

- Gold Plated Contacts.
- Bottom Epoxy Seal
- Contacts Rating: 50 vDC 100mA
- Operate Life: 3,000 operations min. per pole
- Operating Temp. - 40°C to +85°C.

### Part No. 43-EDG xxS

xx = No of poles



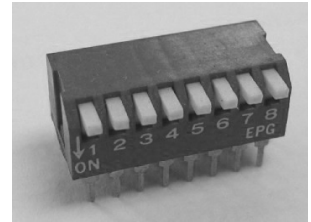
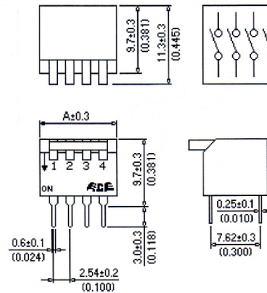
## Piano Type

EPG Series

- Gold Plated Contacts
- Bottom Epoxy Seal
- Contacts Rating: 50 vDC 100mA
- Operate Life: 3,000 operations min. per pole
- Operating Temp. - 40°C to +85°C.

### Part No. 43-EPG xxA

xx = No of poles



## Tri - State Type

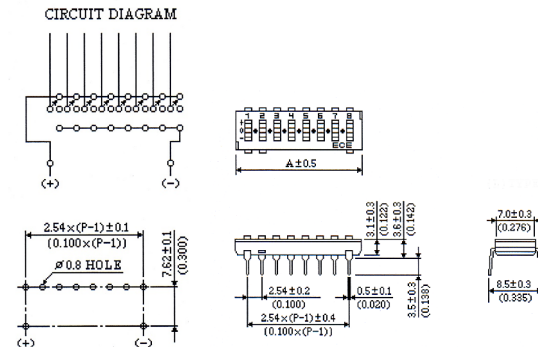
ETA Series

Three states (1,Open,0) setting function. When used with tri-state encoder/decoder IC a 9 pole tristate switch will provide 19,683 codes compared with 512 codes for a 2 state switch

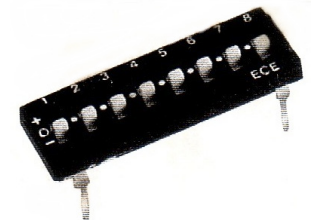
- Gold Plated Contacts
- Bottom Epoxy Seal
- Contacts Rating: 50 vDC 100mA
- Operate Life: 2,000 operations min. per pole
- Operating Temp. - 25°C to +70°C.

### Part No. 43-ETA xxE

xx = No of poles



PCB Drilling Layout



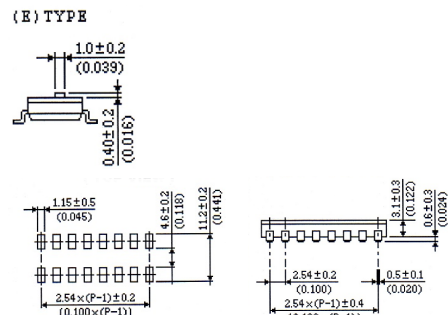
## Surface Mount Type

ESD Series

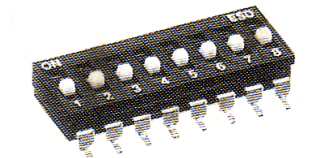
- End stackable type.
- Moulded 0.3" IC package outline.
- Twin gold plated contacts for stable contact

### Part No. 43-ESD xxE

xx = No of poles



PCB SMD Layout

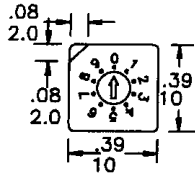
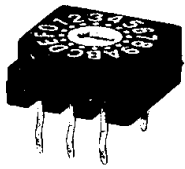




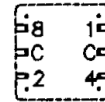
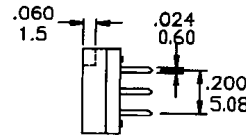
## Rotary DIP switches 3x3

Operating voltage: 24VDC max  
Switching current: 100mA max  
Contact resistance: 100 mΩ  
Life: 10,000 step operations min.

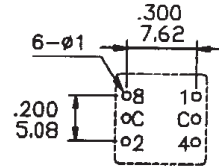
### Standard Top Adjust



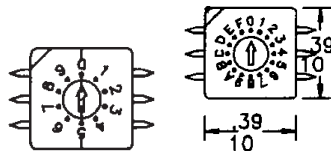
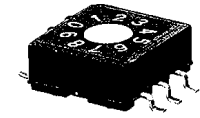
10 pos BCD 42- HV0002    16 pos Binary 42- HV0035



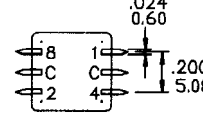
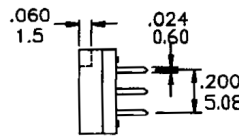
### 3x3 Pin out PCB Drilling Layout



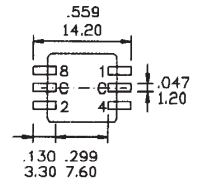
### SMD Top Adjust



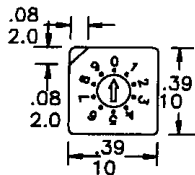
10 pos BCD 42- HSV0002    16 pos Binary 42- HSV0035



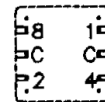
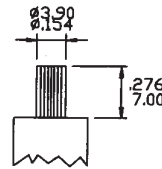
### 3x3 Pin out PCB SMD Layout



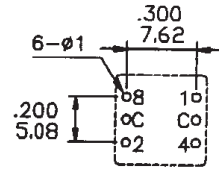
### Standard Side Adjust



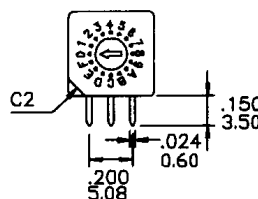
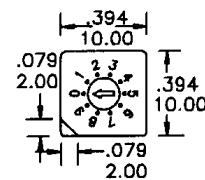
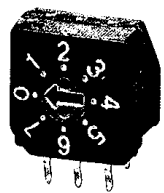
10 pos BCD 42- HV0102    16 pos Binary 42- HV0135



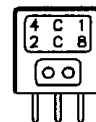
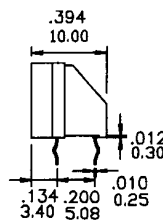
### 3x3 Pin out PCB Drilling Layout



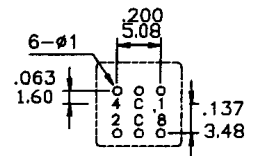
### Standard Top Adjust / Shaft



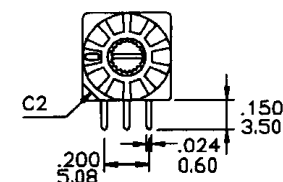
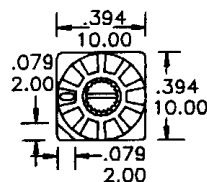
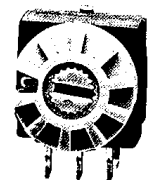
10 pos BCD 42- HR1002    16 pos Binary 42- HR1035



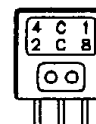
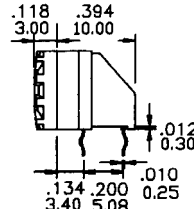
### 3x3 Pin out PCB Drilling Layout



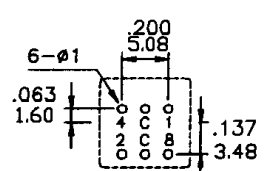
### Standard Top Adjust / Knob



10 pos BCD 42- HR1102W    16 pos Binary 42- HR1135W - with knob  
42- HR1102    42- HR1135 - shaft only



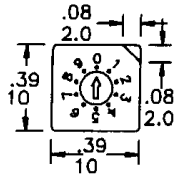
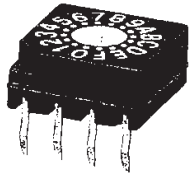
### 3x3 Pin out PCB Drilling Layout



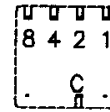
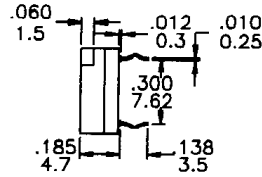
## Rotary DIP switches 4x1

Operating voltage: 24VDC max  
 Switching current: 100mA max  
 Contact resistance: 100 mΩ  
 Life: 10,000 step operations min.

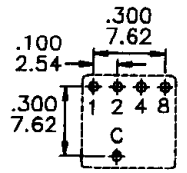
### Standard Top Adjust



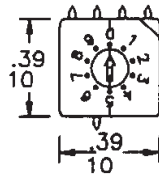
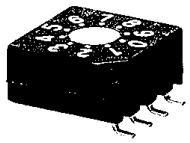
10 pos BCD 42-FV0002    16 pos Binary 42-FV0035



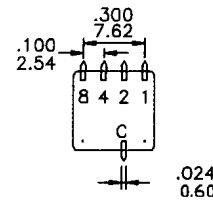
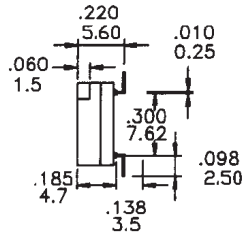
4x1 Pin out  
 PCB Drilling Layout



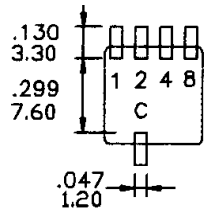
### SMD Top Adjust



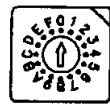
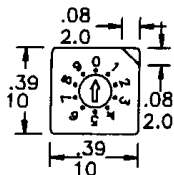
10 pos BCD 42-FSV0002    16 pos Binary 42-FSV0035



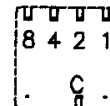
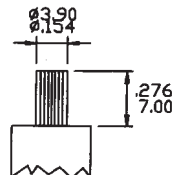
4x1 Pin out  
 PCB SMD Layout



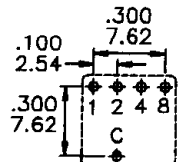
### Standard Top Adjust / Shaft



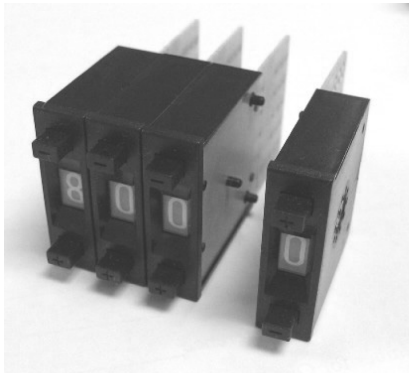
10 pos BCD 42-FV0102    16 pos Binary 42-FV0135



4x1 Pin out  
 PCB Drilling Layout



## Pushwheel Switches



### Features

- 10 position BCD & Decimal Codes.
- Extended PCB for Diodes.
- Miniature applications.
- Economical, reliable and easy to operate as 'user selector switch'.
- Quick snap fit panel mounting.
- Large easy to read numerals.

### Specifications

Operating Voltage: 50 vAC / 28 vDC  
 Switching Current: 100mA Max.  
 Carrying Current: 1A Max (½A 15mm Models).  
 Contact Resistance: 200 milliohm  
 Operating Temperature: -20°C to +65°C  
 Life - Mechanical: 200,000 detent operations  
           Electrical: 100,000 detent operations  
 Insulation Resistance: (Method 302 of Mil-STD 202)

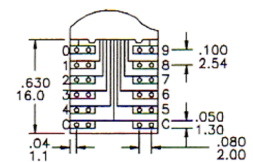
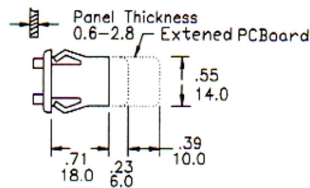
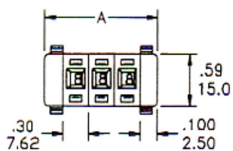
- a. Between common terminal and any output: 10 M\* min.  
 b. Between each output and non current carrying part: 1000 M\* min.  
 Dielectric Strength: (Method 301 of Mil-STD 202)  
 a: Between common terminal and any output: 800vAC 1 minute.  
 b: Between each output and non current carrying part: 1000 vAC 1 minute.

### Materials :

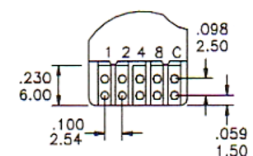
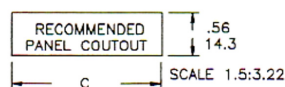
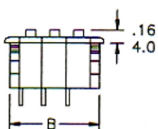
Housing - Black Thermoplastic  
 Contacts - Precious metal on phosphor bronze  
 PCB - Hard Gold plated over nickel plate on 0.79mm epoxy laminate.

## 15mm Models

### Dimensions



DECIMAL



BCB



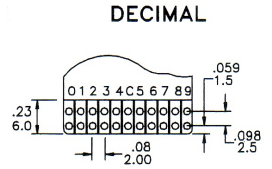
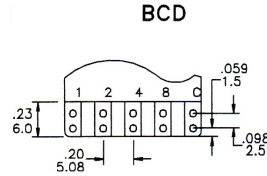
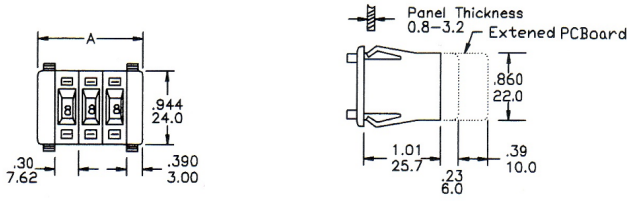
A = 7.62(.300) \* N + 5.00(.197)  
 B = 7.62(.300) \* N + 3.00(.118)  
 C = 7.62(.300) \* N + 3.30(.130)  
 N = Number of Sections

Part Number	Code	Lettering	End Plates Part No.	Spacer Part No.	Connector Part No
40-PF5252B	BCD	White on Black	40-E52HB	40-S52HB	40-TC5252
40-PF5201B	Decimal	White on Black	40-E52HB	40-S52HB	40-TC5201

# Pushwheel Switches

## 24mm Models

### Dimensions

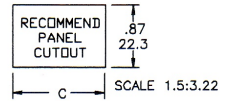


$$A = 7.62(.300) * N + 6.00(.236)$$

$$B = 7.62(.300) * N + 3.00(.118)$$

$$C = 7.62(.300) * N + 3.30(.130)$$

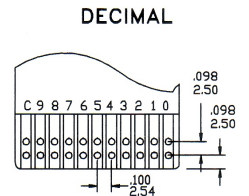
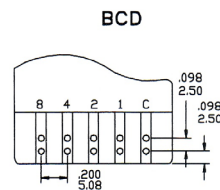
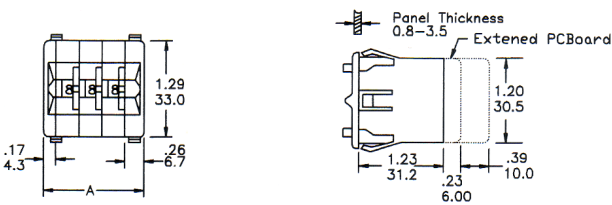
N = Number of Sections



Part Number	Code	Lettering	End Plates Part No.	Spacer Part No.	Connector Part No.
40-PF4452B	BCD	White on Black	40-E44HB	40-S44HB	40-TC4452
40-PF4401B	Decimal	White on Black	40-E44HB	40-S44HB	40-TC4401

## 33mm Models

### Dimensions

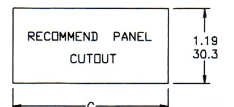


$$A = 8.00(.315) * N + 11.00(.433)$$

$$B = 8.00(.315) * N + 8.00(.315)$$

$$C = 8.00(.315) * N + 8.30(.327)$$

N = Number of Sections



Part Number	Code	Lettering	End Plates Part No.	Spacer Part No.	Connector Part No.
40-PF2152B	BCD	White on Black	40-E21HB	40-S21HB	40-TC2152
40-PF2101B	Decimal	White on Black	40-E21HB	40-S21HB	40-TC2101



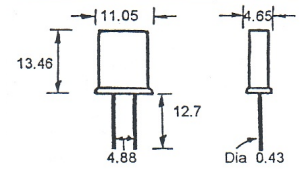
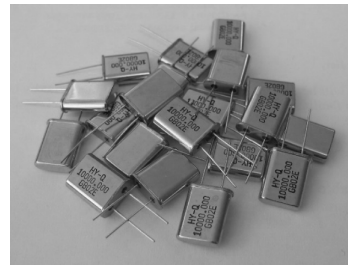
## Microprocessor Crystals

### Specifications:

Nominal Frequency:	1.0 - 50 MHz
Mode of Vibration:	Fundamental/Third
Holder Type:	QC49A, QC49/S, QC49/SMD
Frequency Tolerance:	+/- 30 or +/- 50 ppm
Load Capacitance:	20 pF/ 30 pF *
Frequency Stability:	+/- 50 ppm
Operating Temperature Range:	-20 to 70 °C
Drive Level (Recommended):	500 µW

\* Other load capacitance values available to suit customer.

### QC49/A (HC-49/U)



### Standard Frequencies (MHz) :

1.000 *	4.194304	8.867238	15.360
1.8432 *	4.433619	9.216	16.000
2.000 *	4.608	9.600	16.128
2.048 *	4.9152	9.8304	16.384
2.4576 *	5.000	10.000	18.000
2.500 *	5.0688	10.1376	18.432
3.000 *	5.120	10.240	19.6608
3.072 *	6.000	10.245	20.000
3.088 *	6.144	11.000	22.000
3.2768 *	6.176	11.0592	24.000
3.579545	6.400	11.98135	24.00014
3.584	6.5536	12.000	24.576
3.6864	7.000	12.250	25.000
3.800	7.3728	12.288	26.690
3.9936	7.9872	12.960	27.145
4.000	8.000	14.31818	30.000
4.032	8.064	14.7456	32.000
4.096	8.192	15.000	38.00053

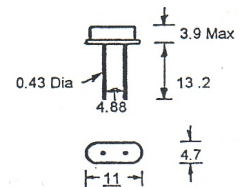
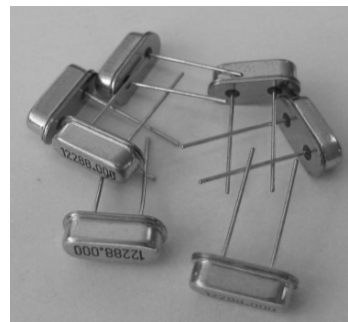
\* Not available in QC49/S or QC49/SMD

### Part Number for Ordering:

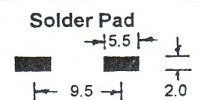
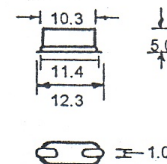
58 - XMAxx.xxxxxx QC49/A Holder xx.xxxxxx Freq. in MHz  
 58 - XMSxx.xxxxxx QC49/S Holder xx.xxxxxx Freq. in MHz  
 58 - XMDxx.xxxxxx QC49/SMD Holder xx.xxxxxx Freq. in MHz  
 e.g. 58-XMA08.867238, 58-XMS10.00000, 58-XMD38.00530

Special Frequencies are available

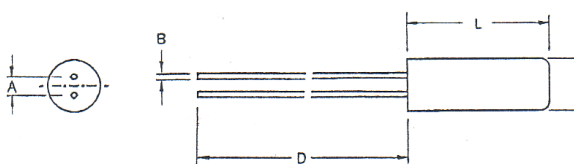
### QC49/S



### QC49/SMD



## Watch Crystals



Dimensions	A mm	B mm	C mm	L Max. mm	D Max. mm
TC38	1.1	0.3	3.0	8.3	9.0
TC26	0.8	0.2	2.0	6.0	5.0

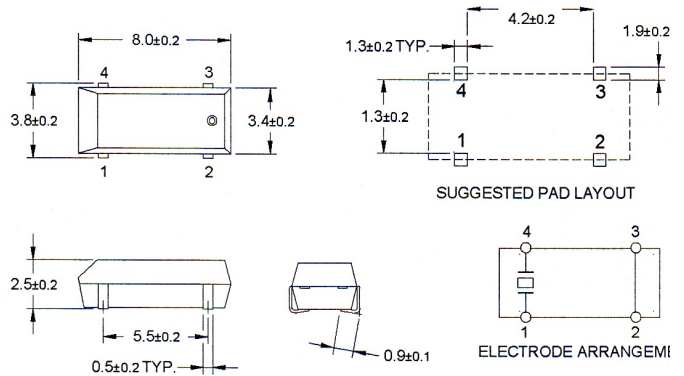
### Specifications:

Nominal Frequency: 32.768KHz  
 Tolerance: ±20ppm  
 Turnover Temperature: 25°C ± 5°C  
 Freq.Temp.Coefficient: -0.034±0.006/°C<sup>2</sup>  
 Load Capacitance: 12.5pF(TC38) 6.0pF(TC26)  
 Series Resistance: 30K Ohms Typical  
 Maximum Drive Level: 1uW  
 Operating Temperature: -10 to +60°C  
 Part Nos. 58 - XMW - TC38, 58 - XMW0.032768

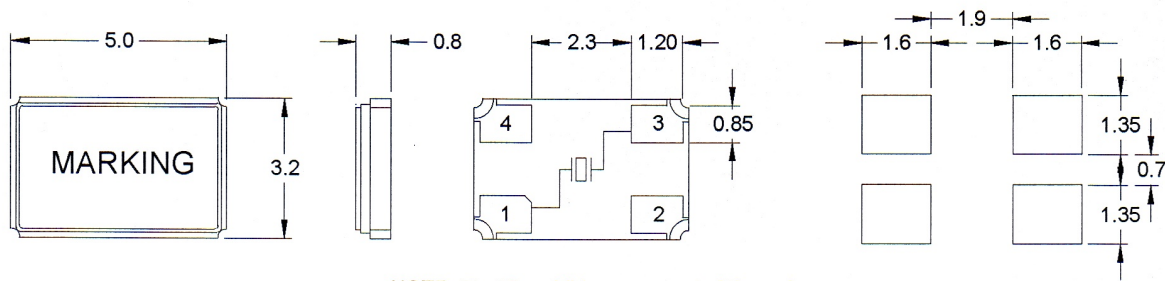
## Surface Mount Watch Crystal - Part Number 58-XMW-CM2005

### Specifications:

Nominal Frequency: 32.768 KHz  
 Frequency Tolerance at 25° C: ±20ppm  
 Operating temperature range: -10°C to 60 °C  
 Storage Temperature range: -55°C to 125° C  
 Freq vs temp characteristics:  $-0.034 \pm 0.006\text{ppm} / ^\circ\text{C}^2$  Typical  
 Temp Coeff turnover temperature: 25°C Typical  
 Equivalent series resistance: 50kΩ  
 Load capacitance: 12.5pF Typical  
 Drive level: 1μW Maximum  
 Shunt capacitance: 1.35pF Typical  
 Aging at 25°C: ±3ppm Maximum / first year



## Surface Mount Watch Crystal - Part Number 58-QSMC-3120



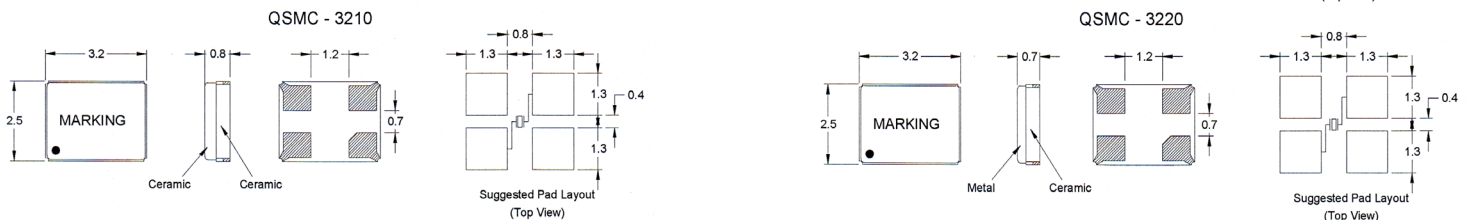
NOTE: Pin #2 and #4 are connected through cover, if case is connected to Ground frequency may drift.

Suggested Pad Layout (Top View)

### Specifications:

Frequency Fundamental	Freq. Tol.	Freq. Stab	Operating Temp	ESR	Drive Level Typical	CL
12.0MHz~40.0MHz	±50ppm 25°C	±50ppm (25°C )	-10°C~ + 60°C	60Ω	0.1mW	16pF
40.0MHz~67.0MHz	-	±100ppm (25°C )	-10°C~ + 60°C	40Ω	0.1mW	16pF

## Surface Mount Crystals - Part No. 58-QSMC3210/3220



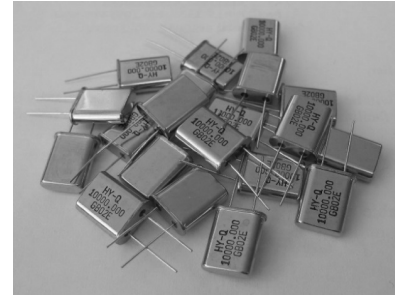
Frequency Ranges	Osc Mode	CL	ESR
13.00 ~ 15.99MHz	Fundamental	16pF	150Ω
16.00 ~ 50.00MHz	Fundamental	16pF	90Ω

### Specifications:

	Frequency Fundamental Range	Frequency Tolerance	Frequency Stability	Operating Temperature
58-QSMC-3220	13MHz~ 50MHz	± 10ppm 25° C	± 10ppm ( Ref. to 25°C )	-10°C~+60°C
58-QSMC-3210/3220	13MHz~ 50MHz	± 50ppm 25° C	± 50ppm ( Ref. to 25°C )	Drive Level(Typical): 0.1mW

## For RF Communications Applications

- AT Cut Crystals
- Frequency Range 3 - 200 MHz
- Low Aging
- High Stability
- Resistance Weld
- Delivery of 4 weeks reduced to 24 hours ex factory with scaled priority charges.
- To order simply quote the Make & Model of the Transceiver with the frequencies required.
- Tait-TE-1 specification a speciality.
- Contact our sales office for your special requirement



### Standard Parameters:

Load Capacitance: Series, 20pF, 30pF

Shunt Capacitance: 7pF

Drive Level: 0.5mW

Adjustment Tolerance @ 25 °C: ± 5ppm to ± 50ppm ( ± 10ppm Std )

Mode	Frequency Range MHz	Equivalent Series Res. Ohms	Motional Capacitance fF *	Temperature Range °C	Stability (PPM)
Fundamental	3 to 45	20 to 180	5 to 30	-10 to +60	±3 to ±100
3rd	18 to 90	40	1 to 2.5	-10 to +60	±3 to ±100
5th	60 to 150	60	0.7	-10 to +60	±3 to ±100
7th	125 to 175	120	0.35	-10 to +60	±3 to ±100

\* Value dependent on frequency

Crystals can be ordered using international specifications (such as MIL, BS or IEC) or by the 3 column code below.

The first column consists of two letters specifying the operating temperature range (°C) and frequency stability (ppm) over that range. The stability is quoted as a frequency tolerance (ppm) relative to the actual frequency at the reference temperature.

The second column is a 2 digit code giving the preferred value of the calibration tolerance (ppm). This is the tolerance to which the crystal frequency will be set at the reference temperature.

The third column is a single letter giving the preferred value of load capacity.

### Example

**GJ05E**  
represents:

Operating Temp:  
**-10 to +60 °C**

Frequency Stability:  
**±5 ppm**

Calib. Tolerance:  
**± 10ppm**

Load Capacitance:  
**30 pf**

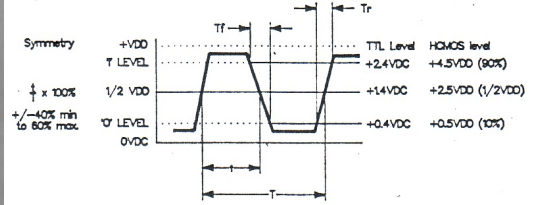
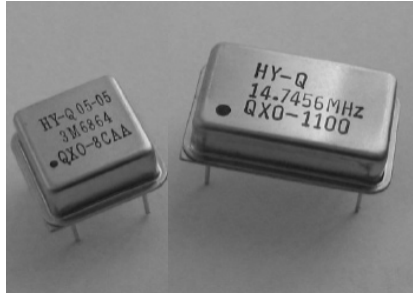
First Column			
First Letter Operating Temp. (°C)		Second Letter Freq. Stability (ppm)	
A	-55 to +105	A	±100
B	-40 to +90	B	±50
C	-30 to +80	C	±30
D	-25 to +75	D	±25
E	-20 to +70	E	±20
F	-15 to +65	F	±15
G	-10 to +60	G	±10
H	-5 to +55	H	±7.5
J	-0 to +50	J	±5
K	+5 to +45	K	±4
L	+10 to +40	L	±3
		M	±2

Second Column Calibration Tolerance (ppm)		Second Column Calibration Tolerance (ppm)	
01	±50	A	10
02	±30	B	15
03	±20	C	20*
04	±15	D	25
05	±10	E	30*
06	±7.5	F	32
07	±5.0	G	40
08	+45 to +65	H	45
09	+35 to +55	J	50
10	+25 to +45	K	60
11	+20 to +40	L	70
12	+15 to +35	M	80
13	+10 to +30	N	90
14	+5 to +25	P	100
15	+0 to +20	Q	18
16	-5 to +15	R	150
17	-15 to +5	S	Series - resonant*
18	-20 to 0	T	35
19	-25 to -5	U	55
20	-30 to -10	V	65
21	-35 to -15	W	75
22	-40 to -20	X	85
23	-45 to -25	Y	95
24	-50 to -30	Z	12
25	-55 to -35		
26	-60 to -40		
27	-65 to -45		
28	-70 to -50		
29	-75 to -55		

\* Preferred Value

## Oscillators - DIL Types

Nominal Frequency:	200 KHz - 80 MHz
Temperature Range:	-20 to 70 °C
Frequency Stability:	+/- 25, 50 or 100 ppm
Symmetry:	40 / 60% ( 50% VDD )
Output "0" level:	+0.5V ( 10%VDD )
Output "1" level:	+4.5V ( 90% VDD )
Supply Voltage:	+5V +/- 0.5V DC
Load:	CMOS Compatible 1-10 TTL Gates

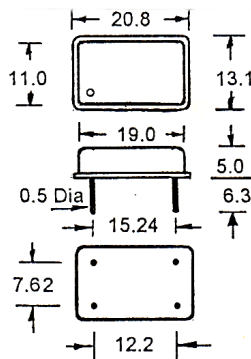


## Standard Frequencies (MHz)

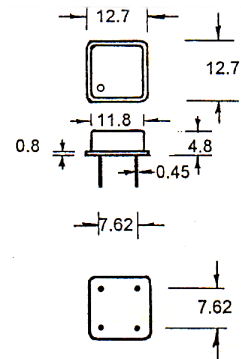
1.00000	16.00000
1.6500	16.25700
1.8432	18.00000
2.04800	18.43200
2.4576	19.66080
3.68640	20.00000
4.00000	20.27520
4.03200	24.00000
4.09600	24.57600
4.433619	25.00000
4.91520	25.17500
5.00000	28.32200
5.06880	30.00000
6.00000	32.00000
6.14400	33.00000
7.37280	35.00000
8.00000	36.00000
8.19200	40.00000
10.00000	48.00000
11.05920	50.00000
12.00000	60.00000
12.28800	66.00000
14.31818	66.66600
14.74560	80.00000
15.00000	

### 14 Pin DIL

Part No. 58-QX1100xx.xxxx 100ppm  
 Part No. 58-QX1050xx.xxxx 50ppm  
 Part No. 58-QX1025xx.xxxx 25ppm  
 Std Stock 100ppm



**Pin Connections:**  
 1. Not connected  
 4. Ground  
 5. Output  
 7. Ground  
 8. Output  
 14. +ve supply



**Pin Connections:**  
 1. Not Connected  
 4. Ground  
 5. Output  
 8. +ve supply

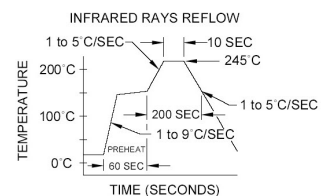
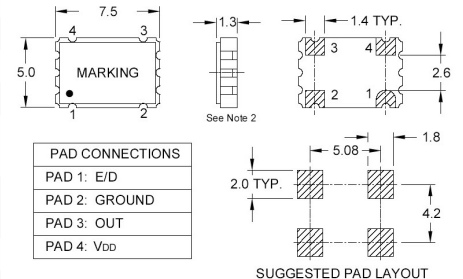
### 8 Pin DIL

Part No. 58-QX2100xx.xxxx 100ppm  
 Part No. 58-QX2050xx.xxxx 50ppm  
 Part No. 58-QX2025xx.xxxx 25ppm

## QSMO-4230 SMD Types

Part Number: 58-QSMO4230(stab)-freq

Frequency	1.8 to 170MHz
Overall freq stab. 0 to 70°C	A=±25ppm, B=±50ppm, C=±100ppm, D=±10ppm
Storage temp	-50°C to +125°C
Supply voltage	+5V ±10%
Supply current (max)	1.8~32MHz 18mA >32~67MHz 50mA >67~125MHz 80mA >125~170MHz 90mA
Output voltage - "0" level	0.5V
Output voltage - "1" level	4.5V
Output load(Max) TTL/CMOS	10LS TTL / 15pF
Output current (max) "0" level	2mA
Output current (max) "1" level	2mA
Rise/Fall times (max) (At 0.1 VDD ~ 0.9 VDD)	5nS (<80MHz) ~ 4nS (80MHz+)
Symmetry (max) (at 0.5VDD)	45 / 55% default
Start-up time (max)	10mSec
Tri-state control VIH (o/p enabled)	2.0V max
VOH (o/p high impedance)	0.8V min

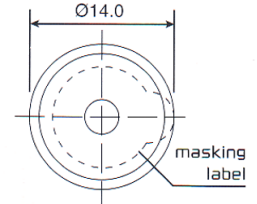
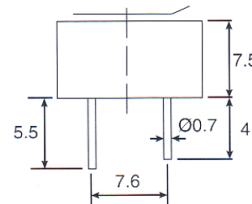




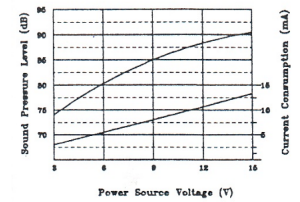
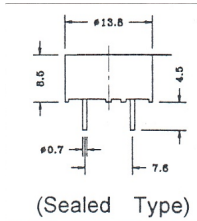
**Piezo Buzzers - Internal Drive**



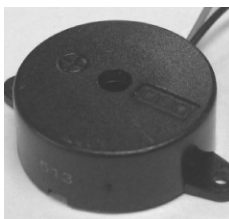
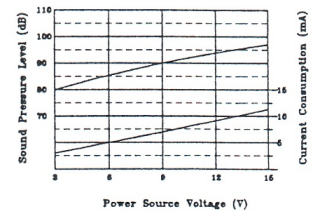
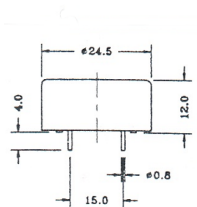
**54-32S4120 - PCB Mount - Dia. 14.0mm**  
**Waterproof**  
 Sound Pressure: 80db/6vDC/10cm  
 Oscillating Frequency: 4.0 ± 0.5 KHz  
 Max Rated Current: 7 mA/12v DC  
 Operating Voltage: 3v to 16v DC  
 Pin Spacing: 7.6 mm



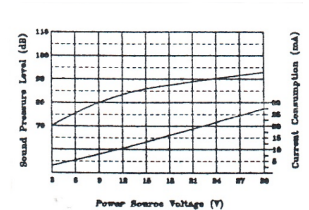
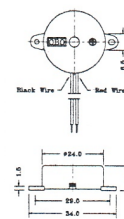
**54-15210 - PCB Mount - Dia. 13.8mm**  
**Waterproof**  
 Sound Pressure: 85db/9vDC/10cm  
 Oscillating Freq.: 4.4 ± 0.5 KHz  
 Current Consumption: 8 mA /9v DC  
 Operating Voltage: 3v to 15v DC  
 Pin Spacing: 7.6 mm



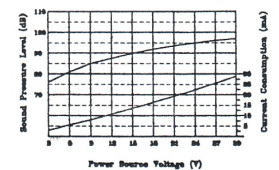
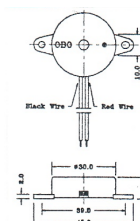
**54-20C115 - PCB Mount - Dia. 24mm**  
**Waterproof**  
 Sound Pressure: 90db/9vDC/30cm  
 Oscillating Freq.: 3.4 ± 0.5 KHz  
 Current Consumption: 7mA/ max/9v DC  
 Operating Voltage: 3v to 15v DC  
 Pin Spacing: 15mm



**54-20C6 - Lead Wire - Dia. 24mm**  
 Sound Pressure: 80db/9vDC /30cm  
 Oscillating Freq.: 3.4 ± 0.5 KHz  
 Current Consumption: 8mA max/9v DC  
 Operating Voltage: 3v to 30v DC  
 Lead Length: 135 ± 5 mm

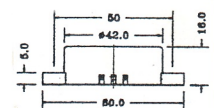
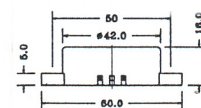
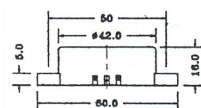
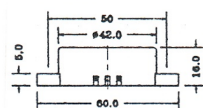


**54-27C4 - Lead Wire - Dia. 30mm**  
 Sound Pressure: 85db/9vDC/30cm  
 Oscillating Freq.: 3.5 ± 0.5 KHz  
 Current Consumption: 8mA max/9v DC  
 Operating Voltage: 3v to 30v DC  
 Lead Length: 75 ± 5 mm



**54-35 Series - Lead Wire - Dia. 42mm**

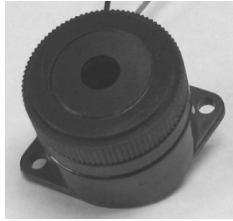
<b>Part No:</b>	<b>54-35C1</b>	<b>54-35C2</b>	<b>54-35D1</b>	<b>54-35P2</b>
	Continuous Tone	Continuous Tone	Dual Tone	Pulsating Tone



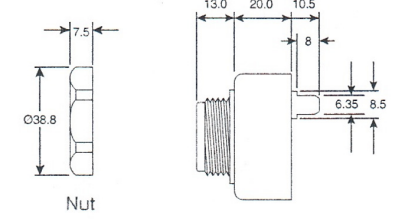
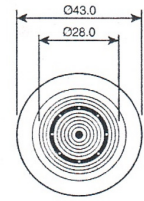
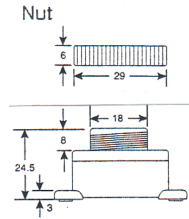
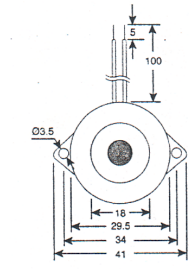
Lead high res: 120 ± 5 mm

Sound Pressure:	88db / 9vDC / 30cm	97db / 9vDC / 30cm	97db / 9vDC / 30cm	93db / 6vDC / 30cm
Oscillating Frequency:	2.8 ± 0.5 KHz	2.8 ± 0.5 KHz	About 2.9/3.05 KHz	2.6 ± 0.5 KHz
Current Consumption:	8 mA max/9v DC	12mA max/9v DC	20mA max/9v DC	12mA max/9v DC
Operating Voltage:	3v to 30v DC	3v to 20v DC	5v to 20v DC	5v to 20v DC
Operating Temp. Range:	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C

Piezo Buzzers - Internal Drive - Panel Mount



54-7S4120



**Part No:**  
12A Series

**54-7S4120**  
Single Tone

**54-12AS3120**  
Single Tone

**54-12ADN3120**  
Single/Slow Pulse

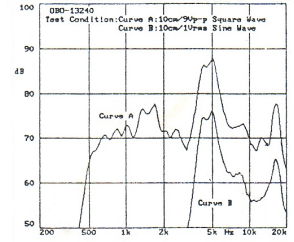
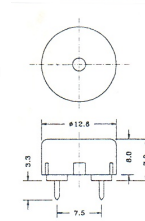
Minimum Sound Output:	95dBA / 12vDC / 30cm	80dBA / 12vDC / 30cm	80dBA / 12vDC / 30cm
Oscillating Frequency:	3.5KHz ± 0.5KHz	2.9KHz ± 0.5KHz	2.9KHz ± 0.5KHz
Operating Voltage:	1.5v to 16v DC	6v to 28v DC	6v to 28v DC
Rated Voltage:	12v DC	12v DC	12v DC
Rated Current:	15 mA max / 12v DC	20 mA max / 12v DC	20 mA max / 12v DC
Pulse Rate at 12VDC	Continuous	Continuous	1.2 ± 20% Hz
Operating Temp. Range:	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C

## Piezo Buzzers - External Drive



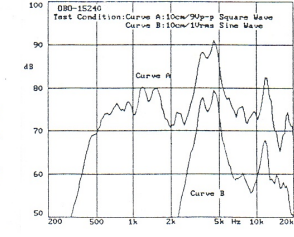
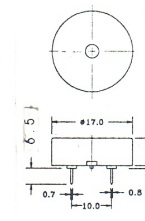
### 54-13240 - PCB Mount - Dia. 12.5mm

Sound Pressure: 80db min. @ 4KHz / 9.0v p-p Square Wave / 10 cm  
 Allowable Input Voltage: 15v p-p max.  
 Current Consumption: 3 mA / 4.0 Khz / 9v p-p Square Wave  
 Capacitance: 10,000 pF ± 30% / 25 °C  
 Temp. Range: -20 °C to +70 °C  
 Pin Spacing: 7.6mm



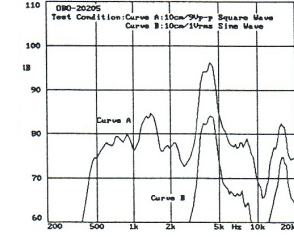
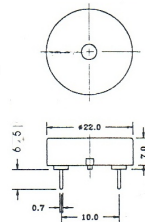
### 54-15240 - PCB Mount - Dia. 17mm

Sound Pressure: 80db min. @ 4KHz / 9.0v p-p Square Wave / 10 cm  
 Allowable Input Voltage: 30 v p-p max.  
 Current Consumption: 3 mA / 4.0 Khz / 9v p-p Square Wave  
 Capacitance: 14,000 pF ± 30% / 25 °C  
 Operating Temp. Range: -20 °C to +70 °C  
 Pin Spacing: 10mm



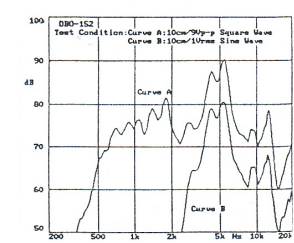
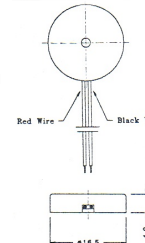
### 54-20205 - PCB Mount - Dia. 22mm

Sound Pressure: 85db min. @ 4KHz / 9.0v p-p Square Wave / 10 cm  
 Allowable Input Voltage: 30 v p-p max.  
 Current Consumption: 3 mA / 4.0 Khz / 9v p-p Square Wave  
 Capacitance: 15,000 pF ± 30% / 25 °C  
 Operating Temp. Range: -20 °C to +70 °C  
 Pin Spacing: 10mm



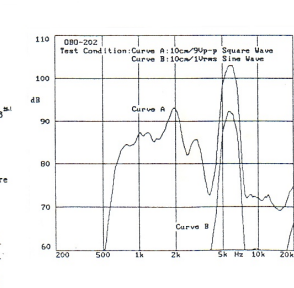
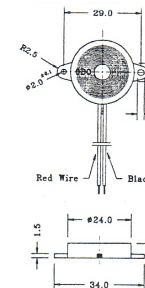
### 54-152 - Lead Wire - Dia. 16.8mm

Sound Pressure: 80db min. @ 4KHz / 9.0v p-p Square Wave / 10 cm  
 Allowable Input Voltage: 30 v p-p max.  
 Current Consumption: 3 mA / 4.0 Khz / 9v p-p Square Wave  
 Capacitance: 10,000 pF ± 30% / 25 °C  
 Operating Temp. Range: -20 °C to +70 °C  
 Lead Length: 85 ± 5 mm

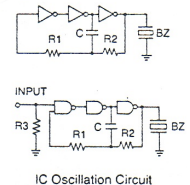
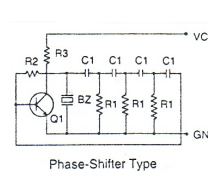
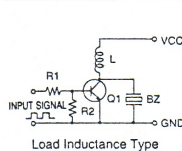
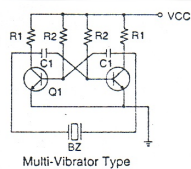
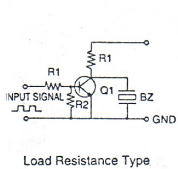


### 54-202 - Lead Wire - Dia. 24mm

Sound Pressure: 90db min. @ 5KHz / 9.0v p-p Square Wave / 10 cm  
 Allowable Input Voltage: 30 v p-p max.  
 Current Consumption: 3 mA / 4.0 Khz / 9v p-p Square Wave  
 Capacitance: 10,000 pF ± 30% / 25 °C  
 Operating Temp. Range: -20 °C to +60 °C  
 Lead Length: 85 ± 5 mm

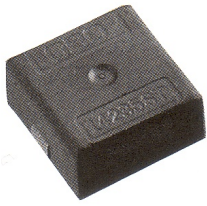


## Recommended circuits for external drive types





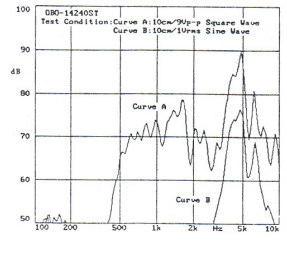
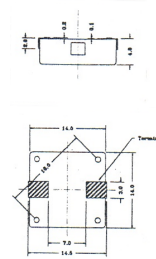
## Piezo Buzzers - External Drive



### 54-14240ST - Ext. Drive SMD Mount - 14 x14 mm

Sound Pressure: 80db min. @ 4KHz / 9.0v p-p Square Wave / 10cm  
 Allowable Input Voltage: 15 v p-p max.  
 Current Consumption: 3 mA / 4.0 Khz / 9v p-p Square Wave  
 Capacitance: 12,000 pF ± 30% / 25 °C  
 Operating Temp. Range: 20 °C to +70 °C  
 Case Material: PPS UL94VO

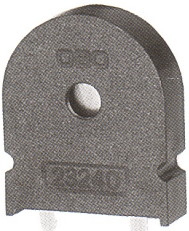
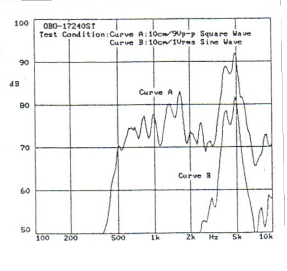
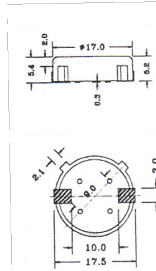
Optional version for IR reflow solder.



### 54-17240ST - Ext. Drive SMD Mount - Dia. 17mm

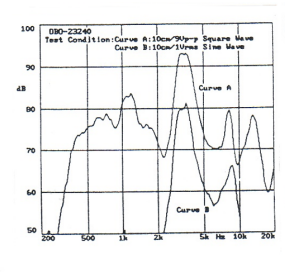
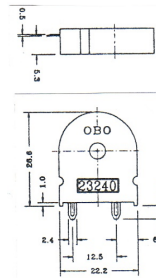
Sound Pressure: 80db min. @ 4KHz / 9.0v p-p Square Wave / 10cm  
 Allowable Input Voltage: 15 v p-p max.  
 Current Consumption: 3 mA / 4.0 Khz / 9v p-p Square Wave  
 Capacitance: 9,000 pF ± 30% / 25 °C  
 Operating Temp. Range: 20 °C to +70 °C  
 Case Material: PPS UL94VO

Optional version for IR reflow solder.

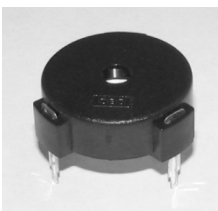


### 54-23240 - Ext. Drive Vertical Mount - Dia. 22mm

Sound Pressure: 85db min. @ 3.5KHz / 9.0v p-p Square Wave / 10cm  
 Allowable Input Voltage: 30 v p-p max.  
 Current Consumption: 4 mA / 3.5 Khz / 9v p-p Square Wave  
 Capacitance: 15,000 pF ± 30% / 25 °C  
 Operating Temp. Range: 20 °C to + 70 °C  
 Case Material: PBT UL94VO

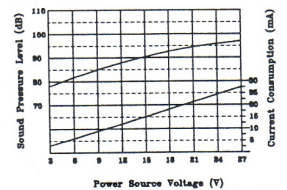
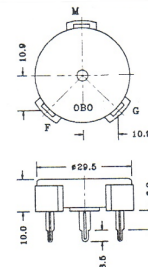


## Piezo Buzzers - Self Drive

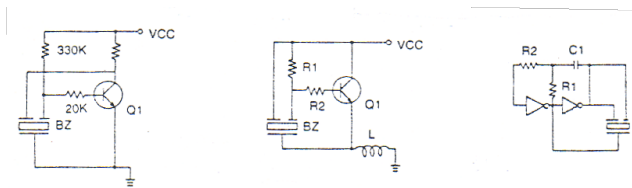


### 54-27336 - PCB Mount - Dia. 30 mm

Sound Pressure: 85dB min. / 9V DC / 30cm  
 Oscillating Freq.: 3.5 ± 0.5 KHz  
 Current Consumption: 9 mA max. / 9V DC  
 Operating Voltage: 3 to 27 V DC  
 Operating Temp. Range: -20 °C to +70 °C



## Recommended Circuits for self drive types

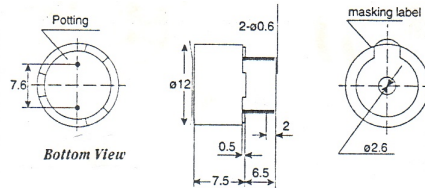
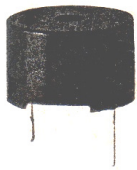




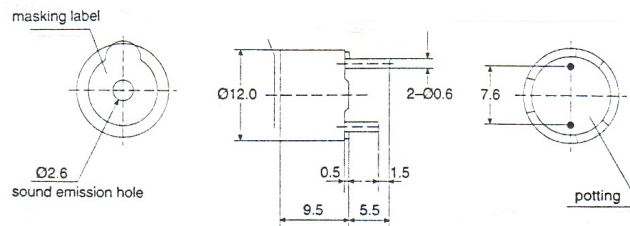
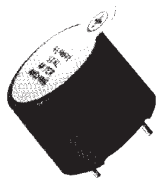
## Magnetic Buzzers

Drive circuit built-in • Low Resonant Frequency • Sealed for wave soldering and washing

Specifications	55-A1201SC	55-A1206SC	55-A1212SC
Rated Voltage	1.5 VDC	5 VDC	12 VDC
Operating Voltage	1.4 ~ 2 V	3 ~ 7 V	9 ~ 15 V
Max. Rated Current	25 mA	30 mA	30 mA
Sound Output at 10cm	> 75 dB	> 83 dB	> 83 dB
Frequency of Output Signal	2.3 ± 0.5 kHz	2.3 ± 0.4 kHz	2.3 ± 0.4 kHz
Operating Temperature	-20 ~ +60 °C	-20 ~ +70 °C	-20 ~ +70 °C



Specifications	55-TDB01	55-TDB05	55-TDB12
Rated Voltage	1.5 VDC	5 VDC	12 VDC
Operating Voltage	1.25 ~ 2 V	4 ~ 6.5 V	8 ~ 15 V
Max. Rated Current	30 mA	30 mA	30 mA
Sound Output at 10cm	> 75 dBA	> 85 dBA	> 85 dBA
Frequency of Output Signal	2300 ± 0.3 kHz	2300 ± 0.3 kHz	2300 ± 0.3 kHz
Operating Temperature	-40 ~ +60 °C	-40 ~ +85 °C	-40 ~ +85 °C



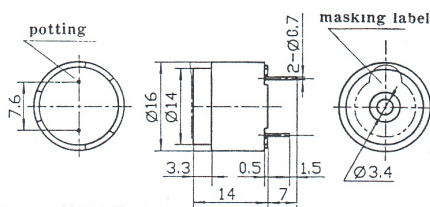
## Magnetic Transducers

Small size – high sound output. • Sealed for wave soldering and washing

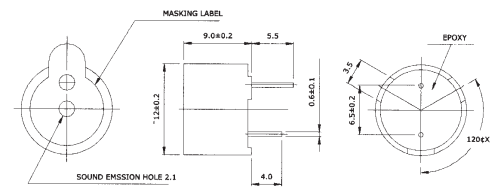
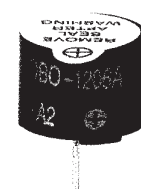
Magnetic transducers are designed to be driven by an external square wave. For best results use the recommended voltage and frequency.

Specifications	55-B1601	55-B1606	55-B1612	55-1206A-A2
Rated Voltage	1.5 VDC	6 VDC	12 VDC	6 VDC
Operating Voltage	1 - 2V	4 - 8 V	9 -15 V	4 ~ 8 V
Max. Rated Current	12mA	40mA	40mA	45mA
Sound Output at 10cm	80dB Min.	85dB Min.	85dB Min.	85dB Min.
Coil Resistance	27 ± 3 ohms	50 ± 5 ohms	115 ± 12 ohms	45 ± 5 ohms
Coil Impedance (2048 Hz)	ψ 80 ohms	ψ 110 ohms	ψ 200 ohms	abt 80 ohms
Resonant Frequency	2,048 Hz	2,048 Hz	2,048 Hz	2400 Hz
Operating Temperature	-30 ~ +80 °C	-30 ~ +80 °C	-30 ~ +80 °C	-30 ~ +80 °C
Pin spacing	7.5 mm	7.5 mm	7.5 mm	6.5 mm

55-B16xx



55-1206A-A2



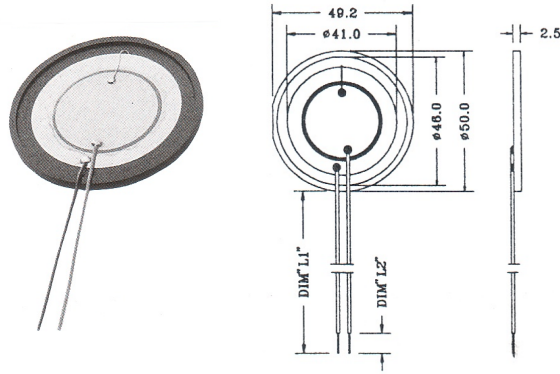
### Piezoelectric Speaker - External Drive

Emits Clear Sound • Low Power Consumption • Very thin and lightweight • No EMI/RFI

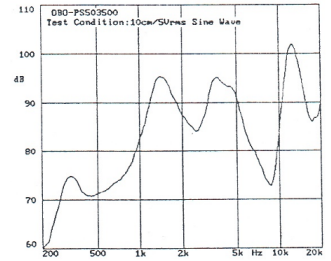
Can be driven directly by IC's.

**Part Number: 54-PS503500**  
**Specifications**

Dimensions: Diameter 50.0mmØ  
 Baffle Opening 41mmØ  
 Allowable Input Voltage: 30 volts p-p max.  
 Resonant Impedance: 1000 ohms max.  
 Resonant Frequency: 350Hz ± 100Hz  
 Capacitance: 500nF ± 30% at 120Hz  
 Operating Temperature Range: -20°C to +60°C  
 Storage Temperature Range: -30°C to +70°C  
 Case Material: ABS (UL94HB)  
 Lead Wire: 100mm ± 5.0mm AWG32  
 Weight: 2.5gms



Dimensions ±0.5mm



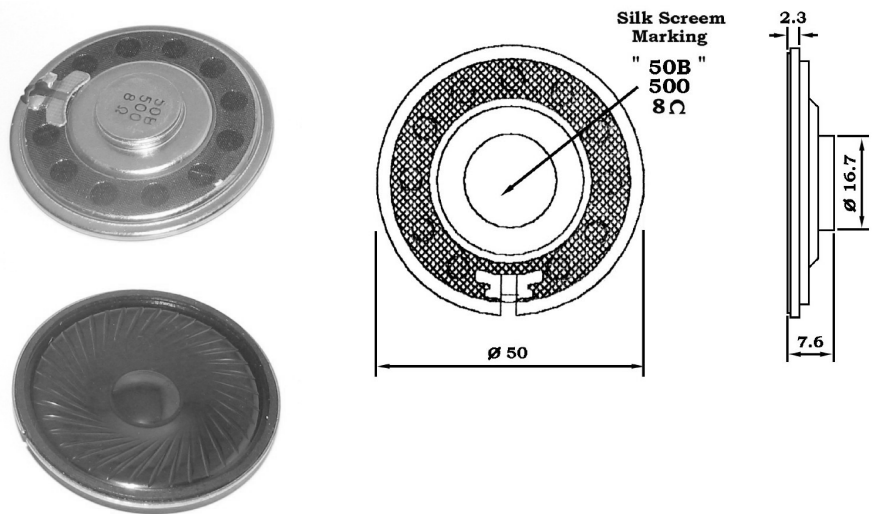
Sound Pressure Level vs Frequency

### Magnetic Speaker - Miniature Types

Compact Size • Natural Sound • High Sound Output • Good Frequency Response

**Part Number: 55-M501B050008C**  
**Specifications**

Dimensions: Diameter 50 mm, 7.6mm deep  
 Rated Power: 1W  
 Max Power: 2W  
 Resonant Frequency: 500 Hz  
 Frequency response to: 10kHz  
 Nominal Impedance: 8 ohms ± 15%  
 Magnet (Nd – Fe – B35): Size 12.5mmØ x 1.5mm  
 Weight: 11gms



## Magnetic Speaker

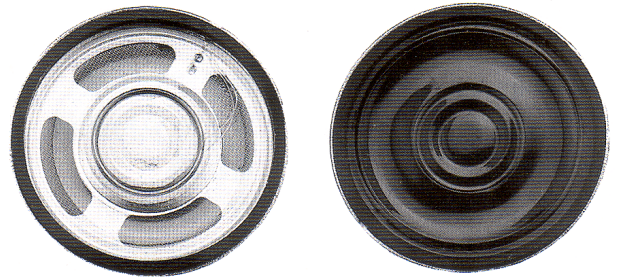
Compact Size • Natural Sound • High Sound Output • Good Frequency Response

**Part Number: 55-3608CSF-50BD**

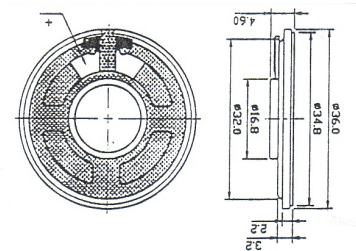
### Specifications

Dimensions: Diameter 36mm  
 Baffle Opening: 32.5mm  
 Power Rating: 500mW / Max 1000mW  
 Nominal Impedance: 8 ohms  $\pm$  15% @ 1200Hz  
 Frequency Range: 350 ~ 10000Hz (Av SPL -10dB)  
 Lowest Resonant Frequency: 530  $\pm$  150Hz  
 Distortion: 5% Max. @ 1000Hz 100mW  
 Output Sound Pressure Level (SPL): 85  $\pm$  3dB /0.1watt /0.5 meter  
 Av. @ 800,1000,1200,1500Hz

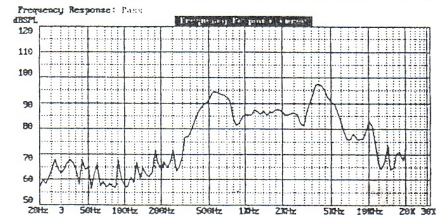
Magnet: Size 12.5mm $\varnothing$  x 1.5mm  
 Load Test: White Noise with Weighted Filter 2.0volts RMS 24Hrs  
 Abnormal Sound Test: 2.0 volts sine wave  
 Polarity: Forward diaphragm movement when positive DC current applied to + or marked terminal  
 Weight: 7.5gms



Dimensions: mm  $\pm$ 0.2



Frequency Response Curve at distance 0.5 metre

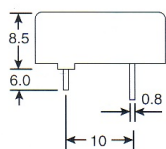
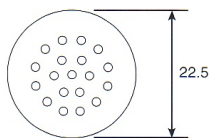


## Magnetic Speaker

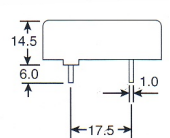
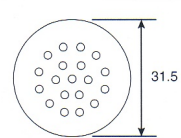
Specifications	55-23008G-01	55-MS30008
Power (Nominal)	0.1 W	0.15 W
Power (Max.)	0.2 W	0.2 W
Freq. Range	1100 – 12000 Hz	700 - 4000
Resonant Freq.	1900Hz $\pm$ 20%	1100 * 150 Hz
Sound O/P (0.1W,1Khz,0.5m)	71 dB	83 dB
Nominal Impedance	8 $\Omega$	8 $\Omega$



55-23008G-01



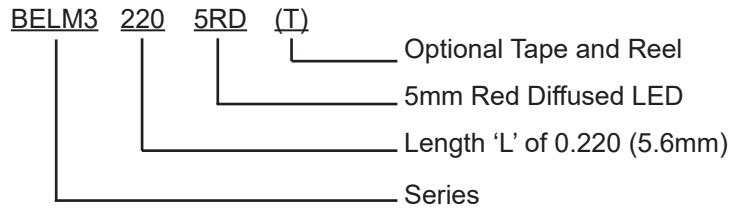
55-MS30008



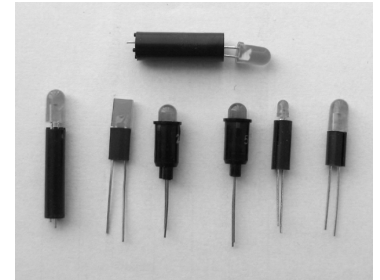
**Vertical LED Assemblies** Simplify assembly & inventory. High reliability. Consistent positioning & performance. Wide range of colours, Bi Colour and Tri-Colour , Low current and 5 Volt LED's available

- 3mm, 5mm & Rectangular LED's
- Lengths from 1.0 to 21.0mm
- Tape & Reel optional 2.0 to 13mm
- Light shield types available
- High temperature versions optional

Part Number Example



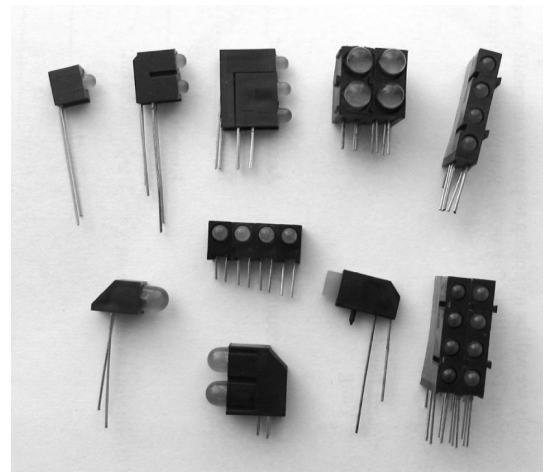
Series	Description
BELM1	5mm Narrow Profile
BELM2	3mm Standard Profile
BELM3	5mm Standard Profile
BELM5	3mm Narrow Profile
BSLM	5mm With Light Shield
BRL1-4	2x4 Rectangular
BRL1-5	2x5 Rectangular



**90° LED Assemblies** Simplify assembly & inventory. High reliability. Consistent positioning & performance. Wide range of colours, Bi Colour and Tri-Colour , Low current and 5 Volt LED's available

- Space saving designs
- Accurate & consistent LED positioning
- Subminiature options
- Rectangular vertical & horizontal assemblies
- Industry standard footprints

Series	Description
2mm	Single, Tri, Quad Level Arrays
3mm	Single, Quad & Interlocking Arrays, Single, Bi, Tri & Quad Levels, Variable Centrelines on Single & Bi-Level, Compact 16.5mm High Quad Option, Single SMD Type suitable for IR Reflow
5mm	Single, Quad & Interlocking Arrays, Single & Bi-Level, Bi & Tri-Colour Single & Bi-Level Arrays, Single SMD Type suitable for IR Reflow



**Typical LED Specifications for the above assemblies**

Standard Types ‡

Colour	Peak (nm)	Typ. VF	Typ. IFmA	3mm* Typ.mcd	5mm Typ.mcd
Red	660	1.7	20	8.0	15.0
Green	565	2.2	20	15.0	15.0
Yellow	585	2.1	20	18.0	18.0
Super Red	660	2.2	20	60.0	50.0
HE Red	635	2.0	20	40.0	30.0
Blue	430	5.0	20	15.0	15.0

Bi-Colour & Tri-Colour

Colour	Peak (nm)	Typ. VF	Typ. IFmA	3mm* Typ.mcd	5mm Typ.mcd
Red	635	2.0	20	25.0	35.0
Green	565	2.2	20	30.0	45.0
Yellow	585	2.1	20	20.0	30.0
Green	565	2.2	20	30.0	45.0

\* Ultra bright options up to 1000 mcd

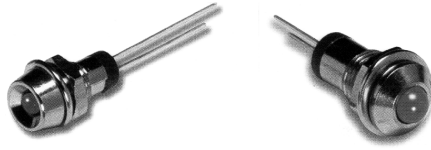
‡ Low Current and 5 volt types available.

Call us for a full BivarOpto Catalogue or visit their internet site; www.bivar.com for more detail. All components are from stock or on short delivery with quantities of 100 up.

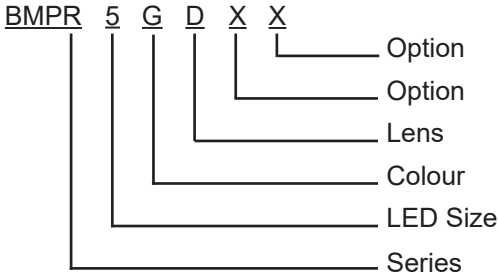


## Chrome Panel Mounts

- Ideal for rugged environments.
- Enhanced ease of viewing.
- Rust resistance.
- Nickel Plated Brass Housings.

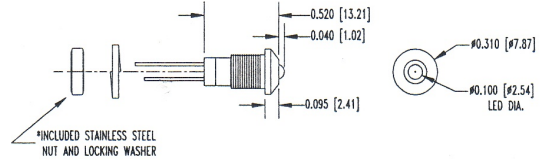


### Part Number Example

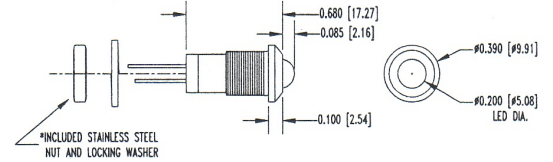


Chip		IF = 20mA		
Emitted Colour	Peak (nm)	Typ VF	Typ iV (mcd)	View Angle
Green	565	2.2	40.0	40°
HE Red	635	2.0	40.0	40°
Yellow	585	2.1	30.0	40°
Super Red	660	1.7	120.0	50°
Blue	430	5.0	15.0	45°

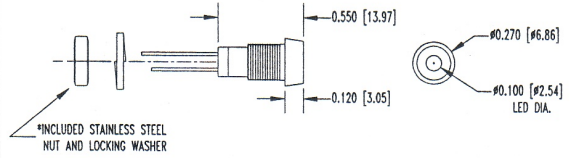
### MPC3 Series



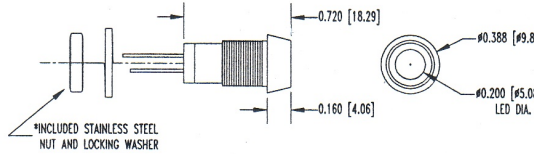
### MPC5 Series



### MPR3 Series



### MPR5 Series



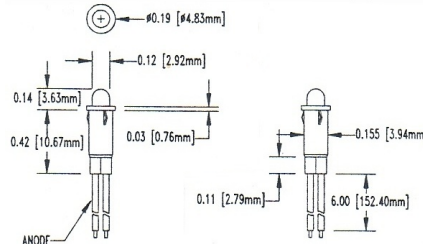
## Panel Mount LED Assemblies

- Press fit lowers labour costs
- Terminals or 150mm wire leads
- Header option on 5mm LED's
- Housing of Nylon UL94V0
- Std, Low Current, 5v or 12v LED's
- Colours HE Red, Green & Yellow

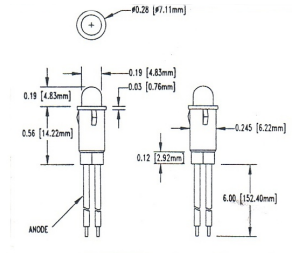
Hole Size for 3mm LED 3.8mm  
for 5mm LED 6.4mm



### PM3 Series (3mm)



### PM5 Series (5mm)



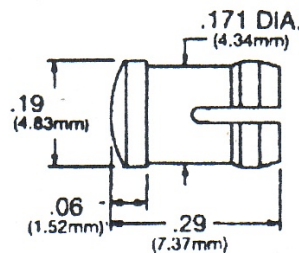
## Panel Mount Lenses for LED's

- Round low profile panel mounting lenses
- For 3mm and 5mm LED's

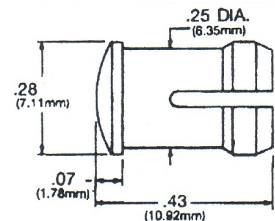
Clear or Transparent Colours Available:

Suffix xxx  
CTP Clear  
RTP Red  
YTP Yellow  
BTP Blue  
GTP Green

### Part Number (3mm) 35-SMB200 xxx



### Part Number (5mm) 35-CLB300 xxx

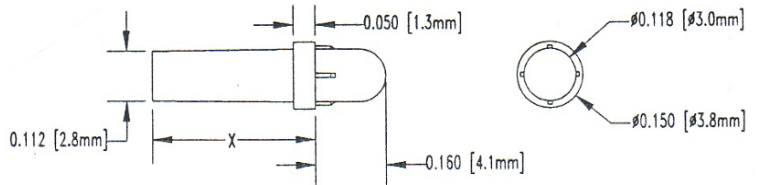
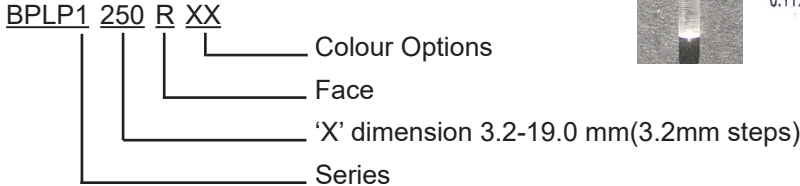


### Panel Light Pipes PLP1 Series

Light pipes are ideal for applications where an automatically placed surface mount LED requires its output to a front panel. Light pipes will also protect circuits from accidental damage from ESD by isolating the PCB from potential contact.

- Serviceability and design flexibility options
- PLP Series press into a 3.0-3.12mm panel hole
- Lengths range from 3.2 to 19.0 mm

#### Part Number Example



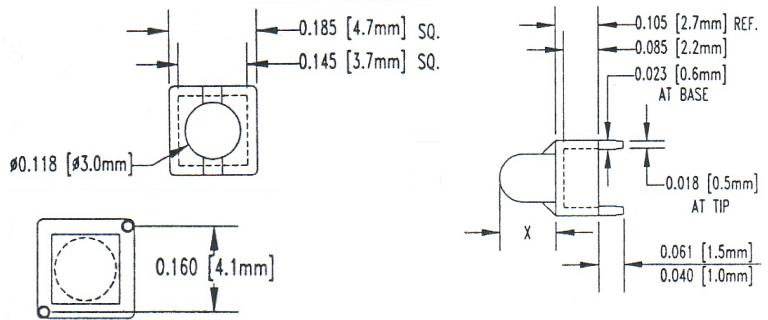
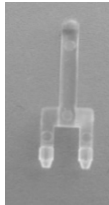
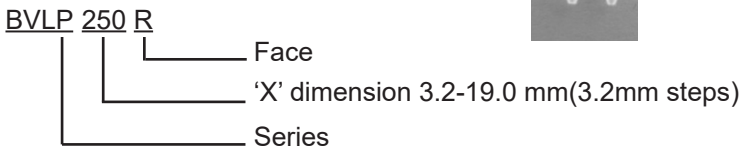
**\* These are not stock items, for prices and lead times please call us on 0800 800 293**

### Vertical Light Pipes VLP Series

Light pipes are ideal for applications where an automatically placed surface mount LED requires its output to a front panel. Light pipes will also protect circuits from accidental damage from ESD by isolating the PCB from potential contact.

- Protect circuits from ESD
- Round or flat face options
- For use with SMD series LED's

#### Part Number Example

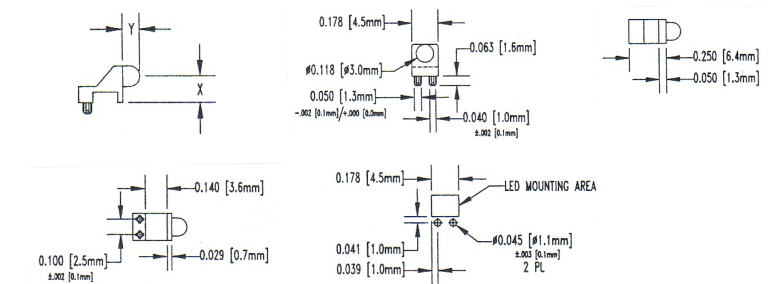
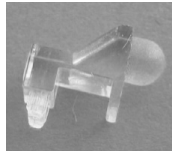
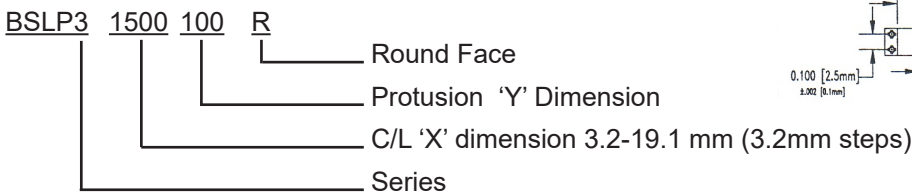


### 90° Light Pipes for Surface Mounts - SLP3 Series

Light pipes are ideal for applications where an automatically placed surface mount LED requires its output to a front panel. Light pipes will also protect circuits from accidental damage from ESD by isolating the PCB from potential contact.

- Centrelines 'X' from 3.8 to 19.0mm
- For use with SMD series LED's
- Wide viewing angles
- ESD protection

#### Part Number Example



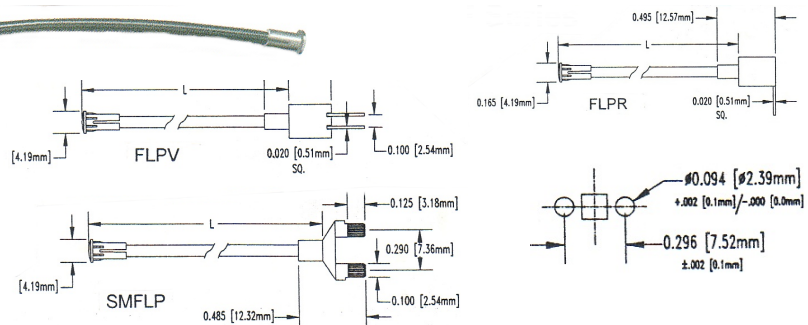
### Flexible Light Pipes FLP & SMF Series

Light pipes are ideal for applications where an automatically placed surface mount LED requires its output to a front panel. Light pipes will also protect circuits from accidental damage from ESD by isolating the PCB from potential contact.

- Ultimate in design flexibility
- Highly transmissive materials
- Lens cap pre-assembled with monofibre
- Monofibre press fits into an adaptor on the PCB assuring tight retention and shock resistance.
- Std lengths up to 48" in 3" steps.

#### PCB Adaptor Styles

- FLPR Right Angle Through hole LED Adaptor
- FLPV Vertical Through hole LED Adaptor
- SMFLP Adaptor compatible with all SMD LED's



**For more details call us and request a full BivarOpto Catalogue or visit internet**

## Rectangular Panel Mount

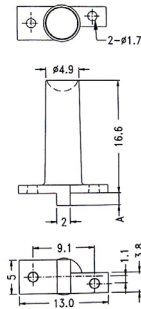
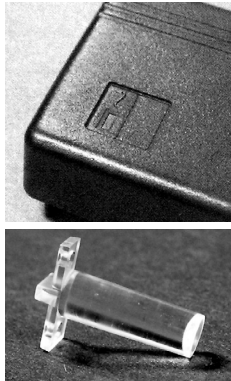
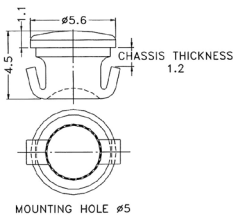
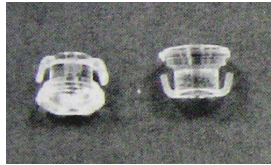
Neat indicator light solution.

**Rectangular Panel Mount**  
Neat indicator light solution.  
**35-LEM3**

Part Number	Dimension A
35-LEM31.8	1.8
35-LEM32.2	2.2

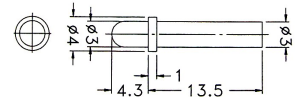
**5mm Panel Mount**  
Snaps into 5mm hole.

**35-LEM7**

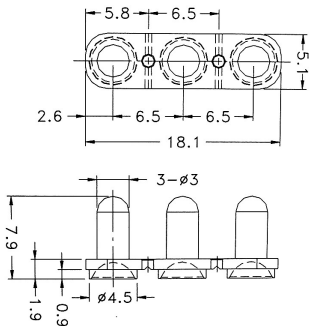
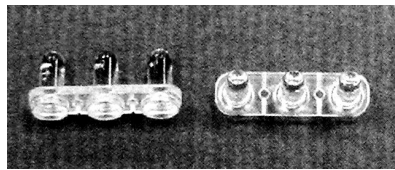


**3mm Extension**

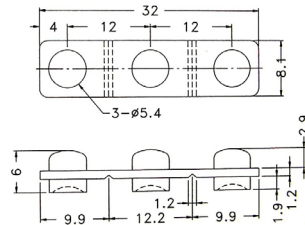
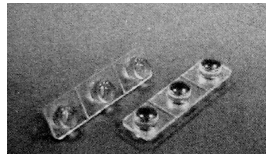
**35-LEM5**



**3mm Panel Mount - 3 way**  
Snap to make 1 way & 2 way.  
**35-LEM11**

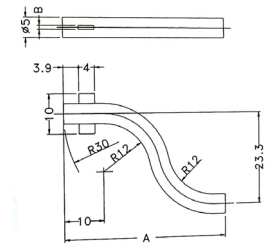
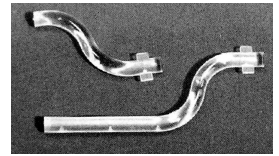


**5mm Panel Mount - 3 way**  
Snap off to make 1 way & 2 way.  
**35-LEM4**



**Light Pipes**

**35-LPG Series**



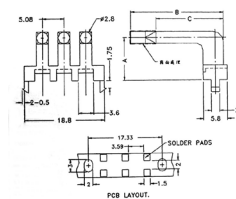
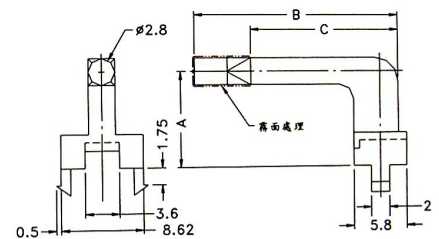
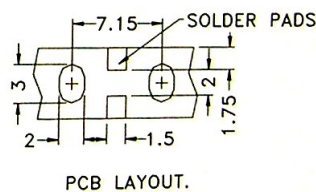
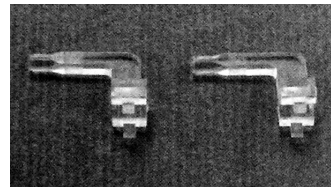
35-LPG42 A=41.5 B=1.3 mm  
35-LPG77 A=76.5 B=1.2 mm

## Right Angle SMT Light Pipe - 35-LPE1 Series

Multiple centreline heights & multi-levels • Available also as 2, 3 and 4 way

Part No	A	B	C
35-LPE10516	5.0	16.0	10.0
35-LPE10519	5.0	19.0	13.0
35-LPE10522	5.0	22.0	16.0
35-LPE11016	10.0	16.0	10.0
35-LPE11019	10.0	19.0	13.0
35-LPE11022	10.0	22.0	16.0
35-LPE11516	15.0	16.0	10.0
35-LPE11519	15.0	19.0	13.0
35-LPE11522	15.0	22.0	16.0

Material: Polycarbonate

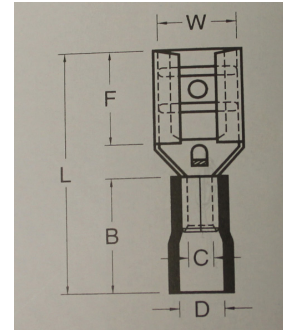


3 way



## Female Disconnectors Vinyl-Insulated

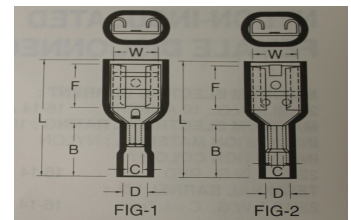
Part No	W	F	L	B	D	C
32-FDV1-110(5)	3.2mm	16.5mm	18.6mm	10.00mm	4.0mm	1.7mm
32-FDV1-187(5)	5.0mm	6.4mm	19.0mm	10.0mm	4.0mm	1.7mm
32-FDV1-110(8)	3.2mm	6.5mm	19.0mm	10.0mm	4mm	1.7mm
32-FDV1-250	6.6mm	7.3mm	20.5mm	10.0mm	4.0mm	1.7mm
32-FDV2-110(5)	3.2mm	18.6mm	10.0mm	10.0mm	4.5mm	2.3mm
32-FDV2-250	6.6mm	7.3mm	20.5mm	10.0mm	4.5mm	2.3mm
32-FDV5-250	6.6mm	7.3mm	23.5mm	13.0mm	5.5mm	3.4mm



Material: Polycarbonate

## Female Disconnectors Vinyl- Fully Insulated

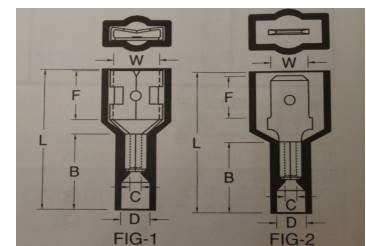
Part No	W	F	L	B	D	C
32-FDFV1-250	6.6mm	7.3mm	22.0mm	10.5mm	3.9mm	1.7mm
32-FDFV2-250	6.6mm	7.3mm	22.0mm	10.5mm	4.5mm	2.3mm
32-FDFV5-250	6.6mm	7.3mm	24.3mm	12.5mm	5.5mm	3.4mm



Material: Polycarbonate

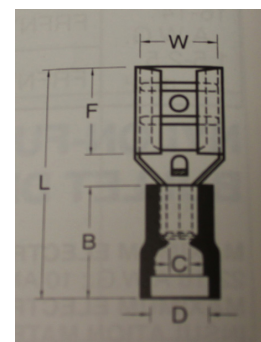
## Female Disconnectors Nylon-Fully Insulated

Part No	W	F	L	B	D	C
32-FDFNY5-250	6.6mm	7.3mm	23.00mm	12.0mm	5.0mm	1.7mm



## Female Disconnectors Vinyl-Insulated Double Crimp

Part No	W	F	L	B	D	C
32-FDD1-110(8)	3.2mm	6.5mm	19.0mm	10.5mm	3.8mm	1.7mm
32-FDD1-187(8)	5.0mm	6.4mm	19.4mm	10.5mm	3.8mm	1.7mm

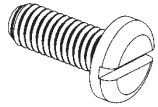




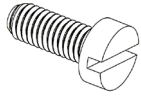
## Screws & Nuts

Metric & UNC • Refer to our Plastic Components Catalogue for details on these parts.

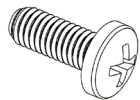
Pan Slot, Cheese Slot, Pan Phillips, Hexagon, Countersink Slot, Hex Socket, Head, Grub Screws & Press-Loc Screw Knobs. Hexagon, Cap, Wing, Lock, Thumb & Deco Wing Nuts.



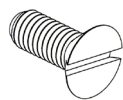
Pan Slot



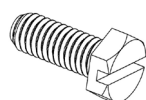
Cheese Slot



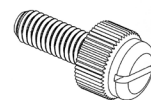
Pan Phillips



Countersink Slot



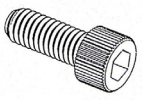
Hexagon Slot



Thumb Slot



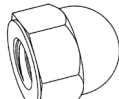
Grub Screw



Hex Socket



Hexagon



Cap



Wing



Lock



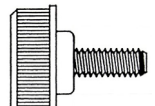
Thumb



Deco Wing



Threaded Rod



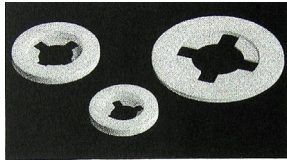
Press-Loc

## Washers

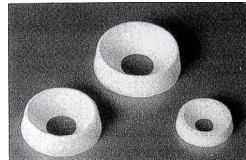
Flat, Self Retaining, Cup, Finishing, Screw Cap & Insulating Washers



Flat



Self Retaining



Finishing



Cup



Screw Cap



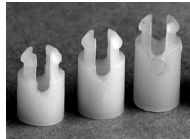
Insulating

## Spacers

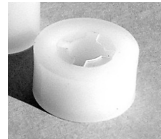
Round Clearance, Self Retaining, Threaded Male/Female & Female/Female



Round Clearance



Self Retaining



Self Retaining



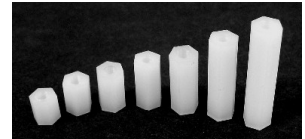
Self Retaining



Self Retaining



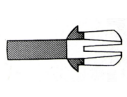
Male/  
Female



Female/  
Female

## Rivets & Panel Clips

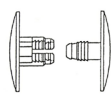
Post, Screw Rivet, Snap or Button, Ratchet, Mini, Panel Latch, Anchor, Arrow, Keyhole, Push-in Clips, Barbed Clips & Acetal Snap Clips.



Post



Snap



Ratchet



Anchor



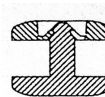
Arrow



Push-in



Screw Rivet



Mini



Panel Latch



Keyhole



Barbed



Acetal Snap

## Grommet Nuts

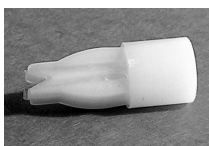
Miniature Spacer, Square Head Spacer, Closed Screw Spacer & Screw Anchors



Miniature Spacer



Square Head Spacer



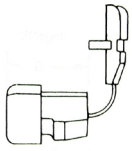
Closed Screw Spacer



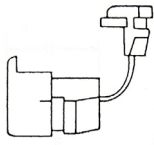
Screw Anchors

## Strain Relief Bushes & Cable Glands

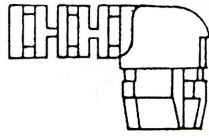
Straight & Right Angle, Flat & Round Cables, Strain Relief Assembly Tool. Standard & Metric Glands, Strain Relief & Right Angle Glands, Metric Reduction Fittings & Screw plugs.



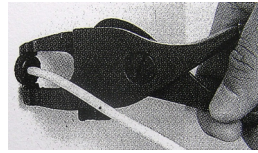
Straight



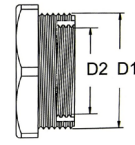
Right Angle



Right Angle Flexible Support



Assembly Tool



Metric Reduction



Standard Gland



Standard Strain Relief



Right Angle



Metric Integral Claw



Metric Strain Relief



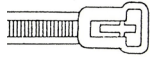
Metric Screw Plugs

## Cable Ties & Tie Mounts

Standard, Round Head, Screw Mount, Push Mount, Hank, Marker, Beaded, Twist, Releasable, Spiral Wrap & Assembly Tools. Screw Tie Mounts, Adhesive & Clip Mount. Fibre Optic Cable Mounts.



Standard Strap



Releasable



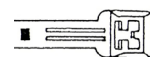
Screw Hole Mount



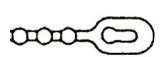
Marker Tie



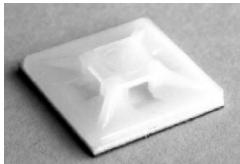
Push Mount



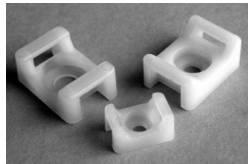
Hanking



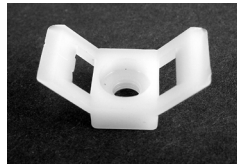
Beaded



Adhesive Tie Mounts



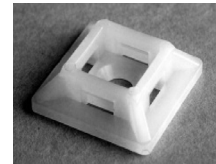
Screw Mount



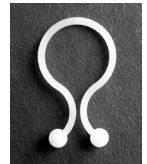
Screw Mount



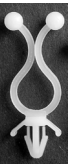
Screw Mount



Screw Mount



Twist Tie



Clip Mount Twist Tie



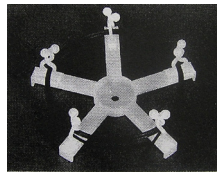
Tie Guns



Spacer Twist



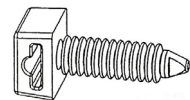
Spiral Wrap



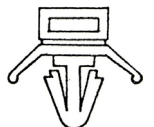
Fibre Optic Cable Mount



Adhesive Mount Twist Tie



Clip Mount



Clip Mount

## Hooks

Suspended Ceiling Hooks, Snap Hooks & Quikey Hooks



## Bumpers & Feet

Screw or Rivet Mount, Fast Fix, Self Fix, Anti Vibration Mount, Adhesive Mount Dome, Raised Dome, Round Taper, Recessed, Square Dimpled & Square Taper.



## Hole Plugs, Insulating Bushes & Grommets

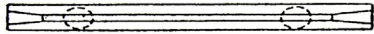
Non Locking Imperial & Metric Sizes, Miniature Bung Type, Locking, Vent & Window Plugs, Round, Square & Rect. Tube Inserts. Polyethylene Grommets & Blanks, Cont. Strip, Rubber Grommets, Strain Relief, Lamp Snap Bushes & Insulating Bushes, Miniature, Std and Adjust.





## PCB Track

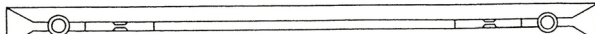
Standard & Miniature, Horizontal & Vertical, Side Mount, Anti-Static.



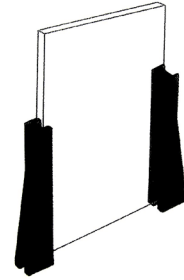
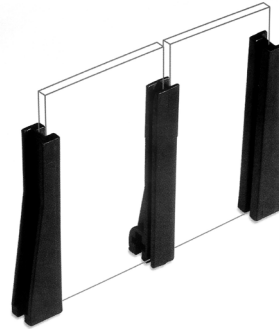
Miniature Horizontal Mount



Side Track Horizontal Mount



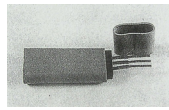
Standard Horizontal Mount



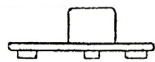
Vertical Mount

## Transistor Mounts & Insulators

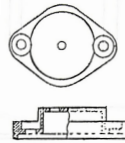
TO-3, TO-3P & TO-220 Insulator Pads & Tubing, Power Transistor, Insulator Mounts/Covers, Spring Clamps



Silicon Tubing



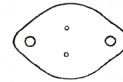
TO-66 & TO-3  
Insulator Mounts



TO-66 & TO-3  
Covers.



TO-220  
Spring Clamp



TO-3



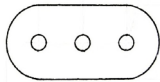
TO-3P



TO-220

## Component Mounts

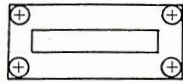
Crystal, Electrolytic, Transistor & Ceramic Resistor Mounts.



Crystal  
Insulator



Electrolytic  
Insulator



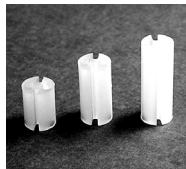
TO-220  
Mount



Ceramic  
Resistor Mount

## LED Mounts & Light Pipes

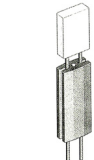
3 & 5mm Mounts, Self Retaining, R/A, Rectangular & High Temp. Panel Clip, Multiple Tier, Light Pipes, 3 & 5mm Round & Rectangular, Multiple & SMT



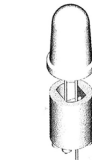
LDN Series  
Nylon Mounts



Self Retaining  
PVC Mounts



Rectangular  
PVC Mounts



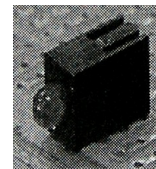
High Temp.  
PPA Mounts



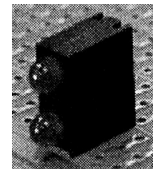
High Temp.  
PPA Mounts



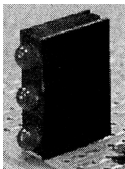
Photo  
TR Holder



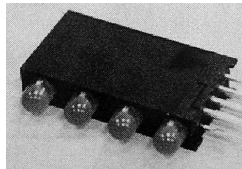
3mm 90°



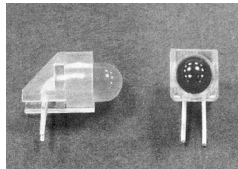
3mm 90°



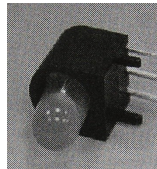
3mm 90°



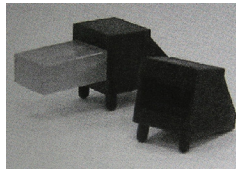
3mm 90°



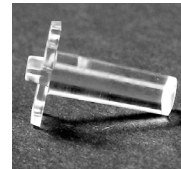
5mm 90°



5mm 90° 3 lead



5mm 90° 3 lead



Rectangular  
Panel Mount



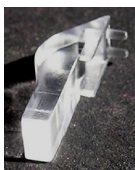
3mm Extension



Vertical  
VLP Series



Horizontal  
Round Face



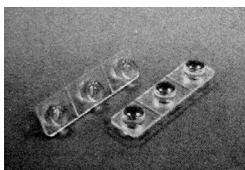
Horizontal  
Rect. Face



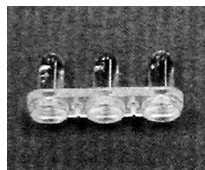
Horizontal  
Variable C/L



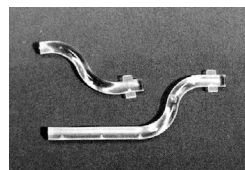
5mm Panel  
Mount



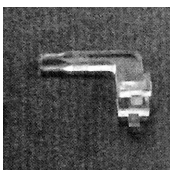
5mm Panel Mount  
3 way



3mm Panel Mount  
3 way



Light Pipes  
LPG Series

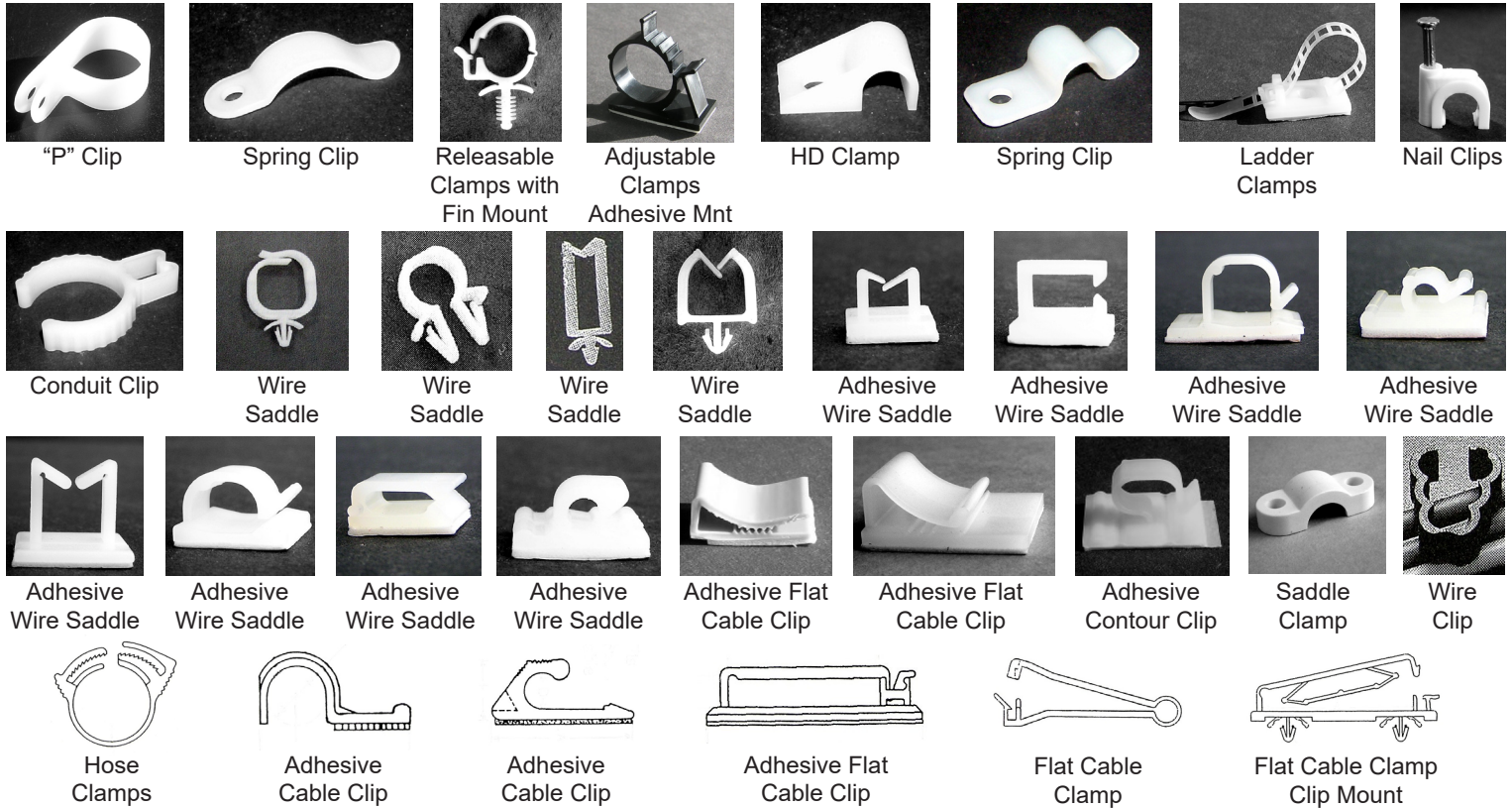


Right Angle  
Light Pipes  
LPE Series



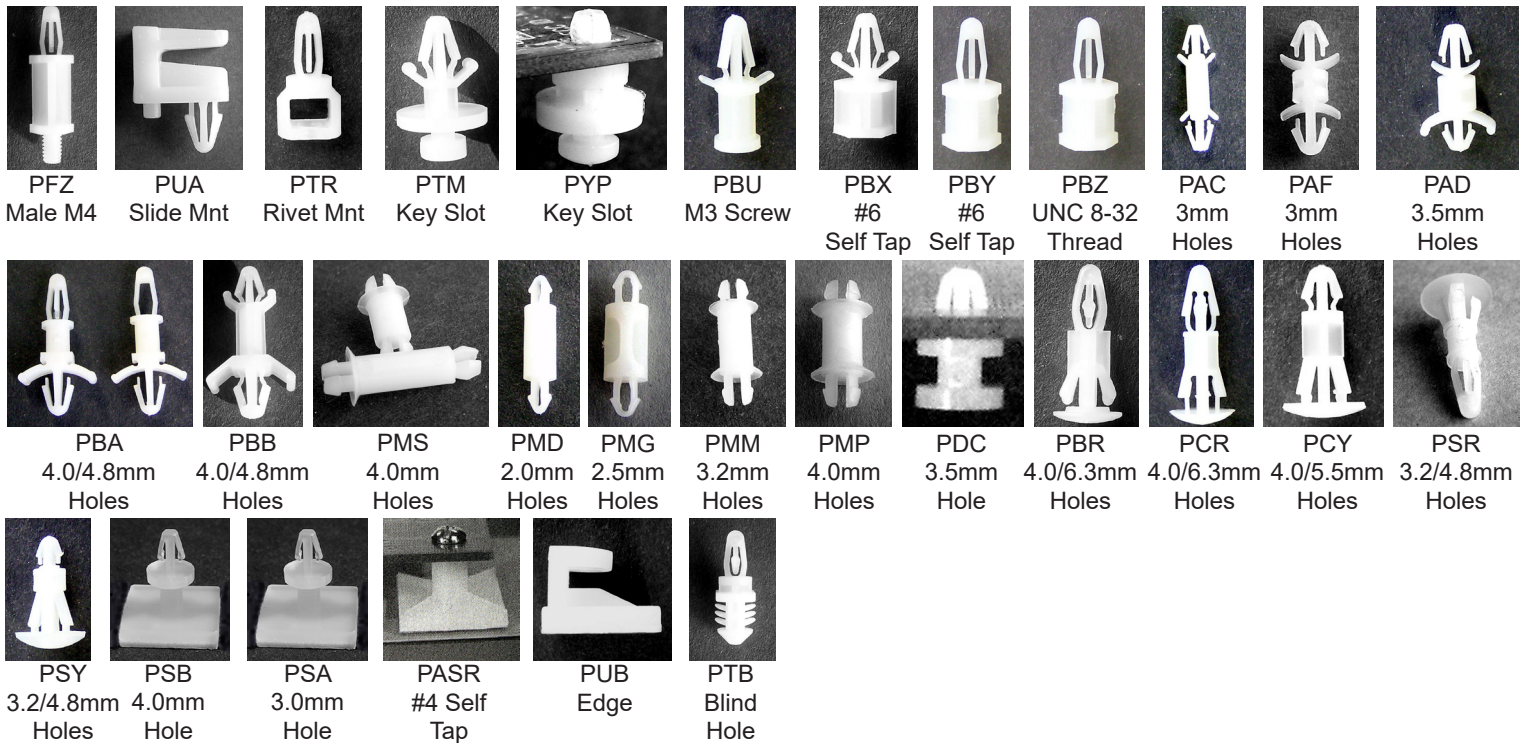
## Cable Clips and Clamps

'P' Miniature, Std & Heavy Duty , Spring, Fin Mount, Ladder , Adjustable, Nail-in, Conduit & Hose Clamps, Adhesive, Screw Mount & Clip Wire Saddles, Flat Cable Clips & Clamps. Contour Clips.



## PCB Supports

Screw, Rivet & Key Slot Mount, Double End Barb & Post, Lock & Tension, Dome End, Adhesive Mount, Edge Mount, & Blind Hole Mount.



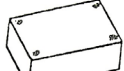
## PB Series

Low cost general purpose

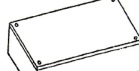
Part Number	Length *L	Width *W	Height *H	Material
26-PB004	50	35	21	Styrene
26-PB005	50	35	27	Styrene
26-PB013	84	54	30	Styrene
26-PB122	122	72	48	Styrene



PB004  
PB005

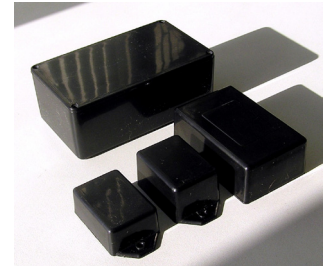


PB013



PB122

Colour: Black  
\*External Dimensions



## SR Type

- General purpose splash proof box with provision for seal.
- Self retaining plastic screws for lid.
- Made of dark grey 'VO' Rated ABS.

Part Number	Length *L	Width *W	Height *H
26-SR2015	200	150	75

\*External Dimensions

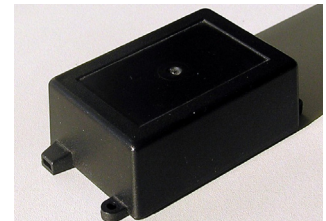


## ABS Utility Box

- High impact ABS plastic.
- Close fitting interlocking lid.
- Continuous max. operating temp. 70°C.
- External mounting brackets.
- Provision for cable inlet/outlets.
- Colour: Lightly textured black.

\*Outside Dimensions

Part Number	Length *L	Width *W	Height *H
26-UB1019	82	57	33



## ABS Connector Box

- High impact ABS plastic UL94V0
- Close fitting interlocking lid.
- Designed for PCB with terminal block or connector accessible.

- External mounting flanges
- Colour: Lightly textured black.

\* Outside dimensions of assembled box

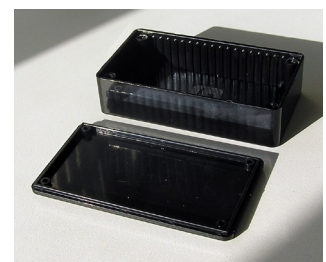
Part Number	Length Box	Length Incl. flange	Width Box	Width Overall	Height *H	Mounting Hole Centres
26-UB9278	92	118	56	78	30	50 x 105



## Hammond Plastic Project Boxes

- General purpose splash proof box.
- Guides for PCBs
- Material: General purpose ABS (Black or Grey).

\*External Dimensions

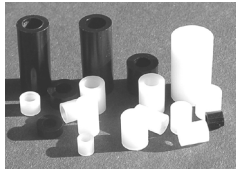


Refer to our Catalogue HM1-2004 for the extensive range of Hammond Plastic and Diecast Aluminium Boxes. Visit the Hammond site [www.hammondmfg.com](http://www.hammondmfg.com) Some of the more popular types stocked by us are shown below:

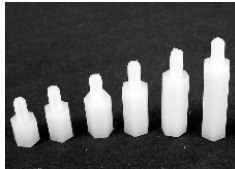


## Assorted Kits

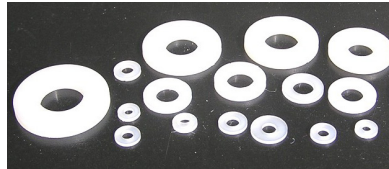
Clearance & Threaded Spacers, Washers, Rivets & Panel Clips, Screws & Nuts, Clip & Adhesive Mount PCB Supports, 'P' Clips, Insul. Bushes & Grommets, Hole Plugs & T Plugs/Caps.



Clearance Spacers



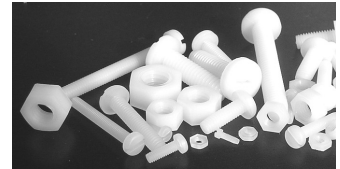
Threaded Spacers



Washers



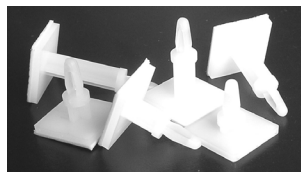
Rivets & Clips



Screws & Nuts



PCB Supports



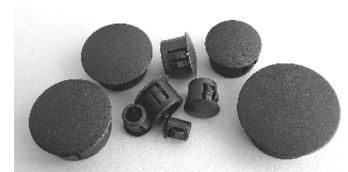
PCB Supports (Adhesive)



P' Type Cable Clips



Insulating Bushes

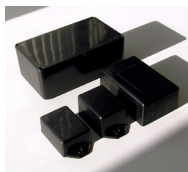


Hole Plugs & 'T' Plugs/Caps

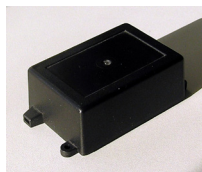
## Plastic and Diecast Aluminium Boxes

**Refer to our Hammond Catalogue (Cat HM1-2004) for our full stock range and details on these parts**

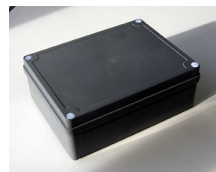
General Purpose Utility, Project Boxes, Instrument, Desktop, Console Polystyrene, ABS & Diecast Aluminium, Watertight, Flanged Lid, Flanged Base



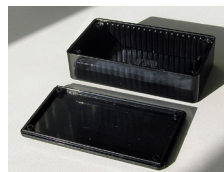
General Purpose



ABS Utility



SR Type



Project Boxes



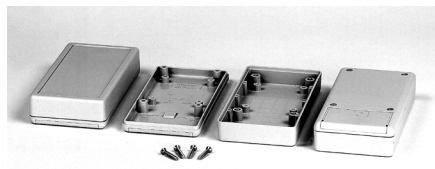
Extruded Aluminium



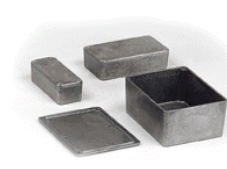
General Purpose



Flanged Lid or Base



Hand Held



Diecast Aluminium



Diecast Aluminium Flanged Base



Diecast Aluminium Flanged Lid

## End Caps and Plugs

**Refer to our Plugs and Caps Catalogue (SC1-2004) for our full stock range of Stock Cap Products**



Short Caps



Long Caps



End Caps



Vinyl Plus Caps



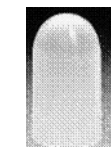
Threaded Caps



T Plugs/Caps



Tube Inserts



Silicone Caps/Plugs



EPDM Caps/Plugs



Tapes & Discs

## General Purpose Series 1591

- General purpose IP54 splash proof box.
- Integral guides for PCBs.
- Sizes range from 85x56x21 to 191x110x57mm
- Flame Retardant rating UL94VO (ABS & Polycarbonate)

Material: General purpose Black or Grey **ABS and Polystyrene** and **Translucent Polycarbonate** in Red, Blue and Clear.



## Flanged Lid or Flanged Base ABS Box Series 1591

- General purpose splash proof box.
- Integral guides for PCBs
- Sizes range from 85x56x21 to 191x110x57mm
- Allows for easy mounting and access for service.

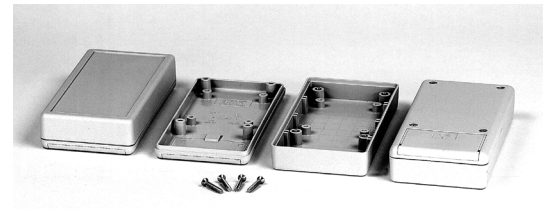
Material: General purpose Black or Grey **ABS and Polystyrene**.



## Hand Held Box Series 1593 & 1599

- Provision for mounting PCBs.
- Protection against dust and splashes.
- Designed for a comfortable fit in the users hand.
- Sizes range from 66x66x28 to 220x140x40mm.
- Accessories include Infrared panel and Belt or Pocket clip.

Material: General purpose Black or Grey **ABS**.



## Extruded Aluminium Box Series 1455

- Rugged body constructed from extruded aluminium.
- Available in clear or black anodized finish in two versions.
- Designed to house PC boards or for equipment interfacing.
- PC boards mount horizontally by sliding into extruded internal slots .
- Two versions offering choice of bezels and panels.
- Hardware and self adhesive rubber feet included.



## Diecast Aluminium Box Series 1590

Designed as electronic instrument enclosure with or without provision for mounting PCBs.

- Rugged, diecast aluminium alloy . Tough yet easy to machine.
- Sizes range from 50x50x31 to 192x111x61mm.
- Provides for improved EMI / RFI shielding.
- Protection against dust & splashing water. Meets IP 54
- Painted version is painted with tough polyester powder.
- Assembled with 6-32 x 1/2" machine screws.



## Diecast Aluminium Box Series 1590

- General purpose splash proof box. Meets IP54
- Sizes range from 50x50x31 to 192x111x61mm.
- With or without guides for PCBs
- Rugged, diecast aluminium alloy . Meets IP 54.
- Allows for easy mounting and access for service.



**Refer to our Catalogue HM1-2004 for the extensive range of Hammond Plastic and Diecast Aluminium Boxes. Visit the Hammond site [www.hammondmfg.com](http://www.hammondmfg.com) Some of the more popular types stocked by us are shown below:**



## Endcaps & Plugs



### Short Form Introduction

Please refer to our **Catalogue SC6-2013** for details of the extensive range of StockCap End Caps and Plugs.



### Short Caps SC Series - Flexible Vinyl

#### Applications

Thread protectors, Tubing end protectors, Cable end seals, Grips, Insulators.

#### Features

Available in any length from 5mm in 1mm increments, up to around 45mm. Huge range of sizes, colours, lengths and textures.



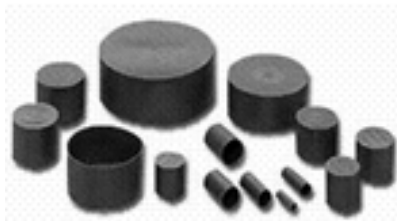
### Long Caps - Flexible Vinyl

#### Applications

Thread protectors, Tubing end protectors, Cable end seals, Grips, Insulators.

#### Features

Long caps are available in lengths up to 610mm. Ideal for protecting long bolts or tube ends.



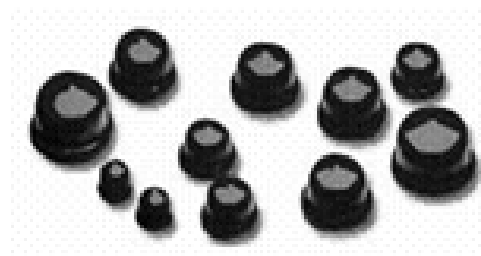
### End Caps C Series - Polyethylene

#### Applications

Tubing, Rods, Pipes and shipping containers. Use C Series End Caps to protect threaded or non-threaded tubing, rods pipe or shipping tubes.

#### Features

Low Cost. Use on parts with or without threads.



### Vinyl Plus Plugs - Flexible Vinyl

#### Applications

Thread protectors, Shipping protectors, Moisture and contamination barriers, Masks (painting, plating, coating, shot blasting).

#### Features

More flexible than rigid poly plugs. One size fits several different ports. plugs will not shred, split or crack.



### Threaded Caps and Plugs - Polyethylene

#### Applications - BSP/NPT JIC/UNF

Hydraulic & Pneumatic fittings.

#### Features

Protect critical threads, prevent interior damage and contamination. Positive seal for low pressure needs.

## Endcaps & Plugs - Continued

Refer to our StockCap Catalogue SC6-2013 for the full range of these items.



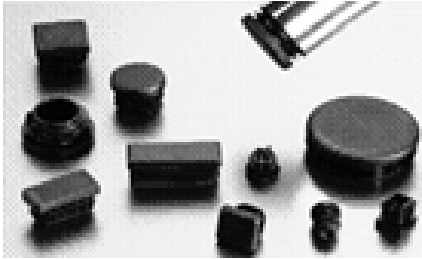
### T – Plugs/Caps - Polyethylene

#### Applications

A low-cost, effective product to protect tubing ends, threads and ports during shipping and storage. Can be used as a cap or plug.

#### Features

The tapered design goes on easily and stays put.



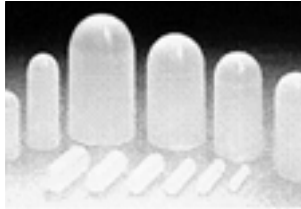
### Tube Inserts - Polyethylene

#### Applications

Securely protect and block tubing ends, leaving a good finish.

#### Features

Round, square and rectangular tube inserts come in various sizes.



### Silicone Rubber Caps & Plugs

#### Applications

Designed specifically for powder coating and E-coating.

#### Features

Withstand multiple passes through most coating processes. Resists temperatures up to 316°C.



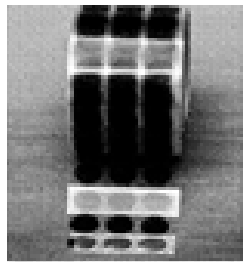
### EPDM Rubber Caps & Plugs

#### Applications

Painting coating, masking and finishing applications.

#### Features

EPDM Caps & Plugs provide good chemical resistance and an inexpensive alternative to silicone. Temp. to 246°C.



### Tape & Discs – Polyester & Kapton

#### Applications

Polyester and Polyimide Kapton Tapes & Discs are the industry standard for most powder coating and E-coating applications.

#### Features

Low adhesive tape strips off with no residue.



### Assorted Kits

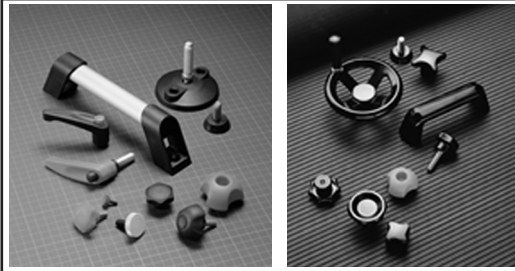
#### Applications

Service Industries, Product Development, Prototypes

#### Kits Available

JIC Threaded Plugs & Caps Kit,  
BSP Threaded Plugs & Caps Kit,  
'T' Plug/Cap Kit,  
End Cap 'C' Series Kit,  
EPDM Rubber Plugs & Caps Kit,  
Silicon Plugs & Caps Kit  
Metric 'O' ring - Plugs and Sealing Caps

## Knobs & Handles



### Short Form Introduction

Please refer to our **Calogue TG4-2013** for details of the extensive range of **Industrial Components**.



### Ball Knobs - Duroplast

#### Applications

Hand operated machines, machinery, equipment.

#### Features

Moulded threads, threaded brass inserts.

Grooved, smooth, oval. Available in Black and red colours.



### Star Knobs - Duroplast

#### Applications

Hand operated machines, machinery, equipment.

#### Features

Moulded threads, threaded brass inserts, treated steel inserts, treated steel studs. Range of finger grip shapes.



### Hand Wheels - Duroplast

#### Applications

Hand operated machines, machinery, equipment.

#### Features

Treated steel inserts.



### Handles & Levers

#### Applications

Hand operated machines, machinery, equipment, cabinets.

#### Features

Fixed & revolving, tapered, with coloured caps, thru holes, adjustable lever.



### Handles & Levers

#### Applications

Machinery, equipment & furniture.

#### Features

Treated steel threaded studs

Brass threaded inserts

Stainless steel threaded studs & feet

Available with fixing holes

Reinforced P.A.6 plastic feet

Non skid rubber pads available

Reinforced polyamide tube ends



## Mechanical, Thermal & Electrical Properties of Plastic Materials

Property	Units	Test Method	ABS	ABS FR	Polystyrene	Polycarbonate	GRP
Tensile Strength@ Yield	PSI	ASTMD638	5,890	5,250	3,200	10,000	6,000
Tensile Elongation@ Break	%	ASTMD638	22	15	50	100	0.5
Tensile Modulus	PSI	ASTMD638	290,000	260,000	285,000	810,000	1,600,000
Flexural Modulus	PSI	ASTMD790	290,000	260,000	285,000	810,000	1,600,000
Flexural Strength	PSI	ASTMD790	8200	6800	18,100	17,000	15,000
Izon Impact (1/8") - notched	Ft Lb/ Inch	ASTMD256	4.5	3.9	2.1	16	4.5
Specific Gravity - Solid	-	ASTMD792	1.04	1.22	1.17	1.2	1.95
Hardness, Rockwell R	R	ASTMD785	100	100	40	118	40
Melt Index	GM/10Min	ASTMD1288	3	4	3	7	-
Heat Deflection@ 455 KPA	° C	ASTMD648	96	85	87	140	200
Temperature @ 1820 KPA	° C	ASTMD648	83	74	-	131	-
Vican Softening Temp.	° C	ASTMD1525	103	88	95	154	-
Flame Characteristics	-	UL94	HB	VO	HB	HB	VO
Thermal Conductivity	W/M.C	ASTMC177	0.19	-	0.16	0.19	0.001
Specific Volume Resistance	Ω/cm	ASTMD257	10 E 15	10 E 13	10 E 16	10 E 16	10 E 15
Dielectric Strength	V/Mil	ASTMD149	140	400	215	160	400
Water Absorbtion	%	ASTMD570	0.3	-	0.1	0.15	0.16

Values may vary between material manufacturers and within normal manufacturing tolerances.

### Resistance of material at room temperature to different media.

Simultaneous exposure to different media may alter the resistive properties of a material.

To be safe, it is advisable to trial test the boxes for sufficient resistance to the media.

Material	Polystyrene	AB	FR ABS	Polycarbonate
Gasoline	Unstable	Relatively Stable	Relatively Stable	Unstable
Diesel Oil	Unstable	Stable	Stable	Relatively Stable
Sea Water	Stable	Stable	Stable	Unstable
Hydrochloric Acid 10%	Stable	Stable	Relatively Stable	Stable
Weak Alkaline	Stable	Stable	Stable	Unstable
Strong Alkaline Solution	Stable	Stable	Stable	Unstable
Atmospheric Influences	Relatively Stable	Relatively Stable	Relatively Stable	Stable
Lactic Acid	Stable	Stable	Stable	Stable
Acetone	Unstable	Unstable	Unstable	Unstable

### I.P. Protection Classification

Degrees of water protection

1st Digit	Protection	Brief Explanation	2nd Digit	Protection	Brief Explanation
3	Small foreign bodies	Protection of personnel from accidental touching active parts with objects larger than 2,5mm in dia.	3	Spray Water	Water drops falling at any angle up to 15° from the vertical not to have any harmful effect.
4	Granular foreign bodies	Protection of personnel from touching internal parts with tools or objects thicker than 1mm.	4	Splash Water	Water splashing on the object from all directions not to have harmful effect.
5	Deposits of dust	Total protection from touching voltage or internal moving parts. Protection from harmful deposit of dust. Access of dust is not completely prevented. Access of dust is not completely prevented.	5	Jet Water	A jet of water nozzled from all directions must not have any harmful effect.
6	Access of dust	Total protection from touching voltage or internal moving parts. Protection from access of dust.	6	Flooding	Water from temporary flooding, such as heavy seas, must not enter in harmful quantity.
			7	Dipped state	If the object is dipped into water, water must not enter in harmful qty.
			8	Submerged state	If the object is submerged in water, water must not enter in harmful qty.



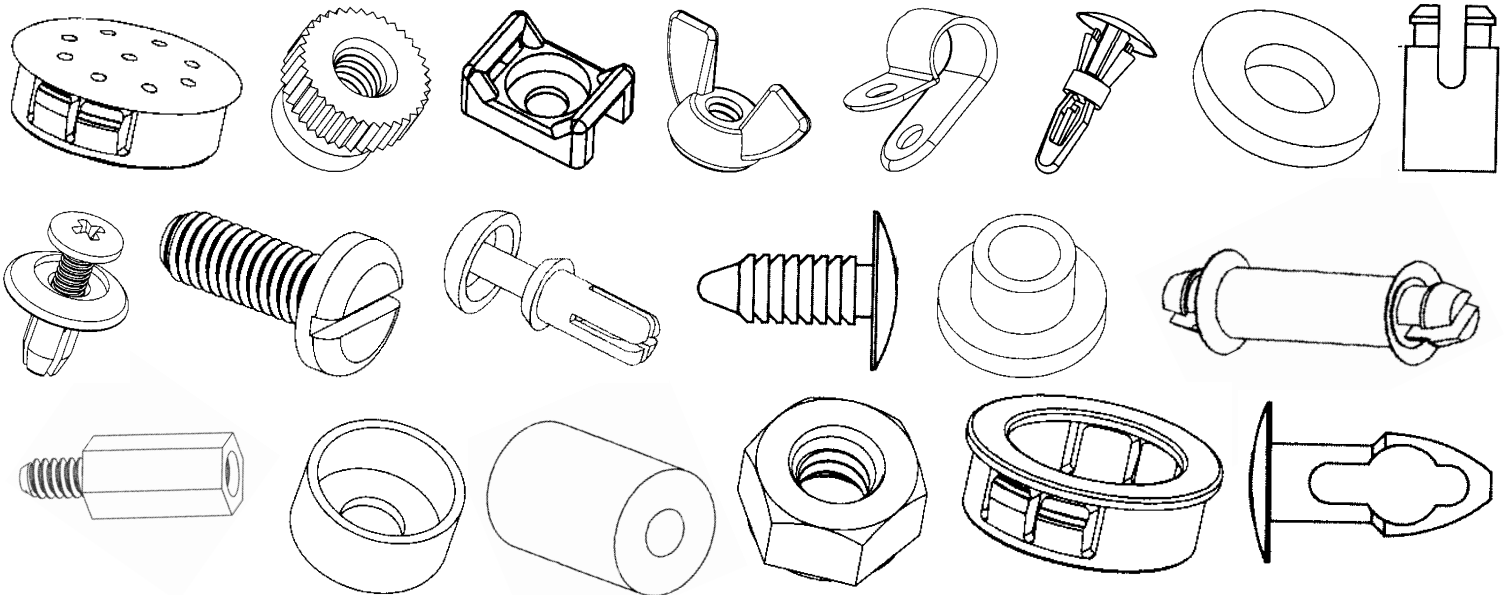
## Industrial Knobs, Handles, Adjustable Feet

For machinery, engineering, equipment



## Hi-Q Plastic Components

For the electronics, electrical and general manufacturing industries



## StockCap Protective Caps and Plugs

For Powder Coating, Electroplating, Refrigeration, Hydraulic and General Industry



Wide range of stock available

Notes:

