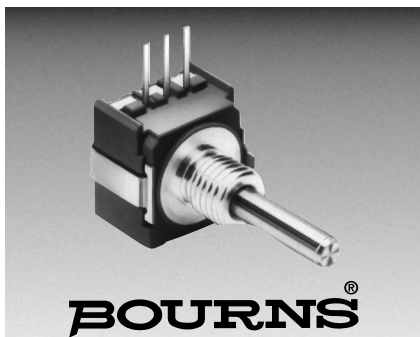




Features

- Conductive plastic or cermet
- Linear and audio tapers
- PC board and bushing mount
- Gangable
- Metal bushing and shaft
- Sealed for board washing

51/52/53 - Sealed 1/2" (12.5mm) Square Control

Electrical Characteristics ¹	Conductive Plastic	Cermet
Standard Resistance Range		
Linear.....	1K ohms to 1 megohm.....	150 ohms to 1 megohm
Audio	1K ohms to 1 megohm.....	1K ohms to 1 megohm
Total Resistance Tolerance		
Linear Tapers	±10% OR ±20%	±10% OR ±5%
Audio Tapers	±10% OR ±20%	±10%
Independent Linearity	±5%	±5%
Absolute Minimum Resistance	2 ohms maximum.....	2 ohms maximum
Effective Electrical Angle	270°±5°	270°±5°
Contact Resistance Variation.....	2.0%	2.0%
Dielectric Withstanding Voltage		
Sea Level	1,500 VAC minimum.....	1,500 VAC minimum
70,000	500 VAC minimum.....	500 VAC minimum
Insulation Resistance.....	1,000 megohms minimum.....	1,000 megohms minimum
Power Rating At 70°C (Derate To 0 At 125°C)		
(Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less)		
Linear Tapers	0.5 watt	1.0 watt
Audio Tapers	0.25 watt	0.5 watt
Tracking (Multiple Sections)	3 db	3 db
Environmental Characteristics¹		
Operating Temperature.....	+1°C to +125°C	+1°C to +125°C
Storage Temperature	-55°C to +125°C	-55°C to +125°C
TCR (Over Storage Temperature Range)	±1,000ppm/°C.....	±150ppm/°C
Vibration (Single Section).....	15G	15G
Total Resistance Shift.....	±2% maximum.....	±2% maximum
Voltage Ratio Shift.....	±5% maximum.....	±5% maximum
Shock (Single Section).....	30G	30G
Total Resistance Shift.....	±2% maximum.....	±2% maximum
Voltage Ratio Shift.....	±5% maximum.....	±5% maximum
Load Life (1,000 Hours).....	±10% TRS maximum	±5% TRS maximum
Rotational Life-No Load (50,000 Cycles) ²	±10% TRS maximum	±10% TRS maximum
CRV @ 25,000 Cycles	±2%	±4%
Moisture Resistance	±10% TRS.....	±5% TRS
Mechanical Characteristics		
Stop Strength.....	5 in-lb.	5 in-lb.
Mechanical Angle.....	290° ±5°	290° ±5°
Torque		
Running (Single Section)	0.2 to 2.0 oz.-in. (0.15 to 1.4Ncm)	0.2 to 2.0 oz.-in. (0.15 to 1.4 Ncm)
Running (Dual or Triple Section)	0.5 to 2.5 oz.-in. (0.35 to 1.8 Ncm)	0.5 to 2.5 oz.-in. (0.35 to 1.8 Ncm)
Starting (All Sections)	Running torque +0.5 oz.-in.	Running torque +0.5 oz.-in.
	(+0.35 Ncm) maximum	(+0.35 Ncm) maximum
Weight (Single Section).....	5.5 grams	5.5 grams
Each Additional Section	3.0 grams	3.0 grams
Terminals.....	PC pin or solder lug	PC pin or solder lug
Marking	Manufacturer's symbol and part number, date code and resistance value	

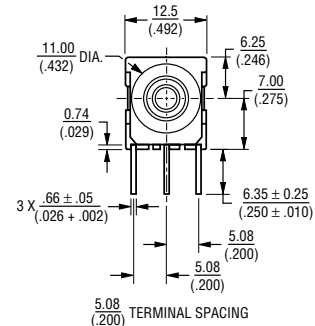
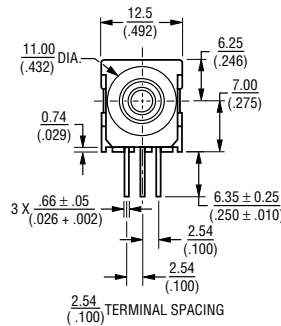
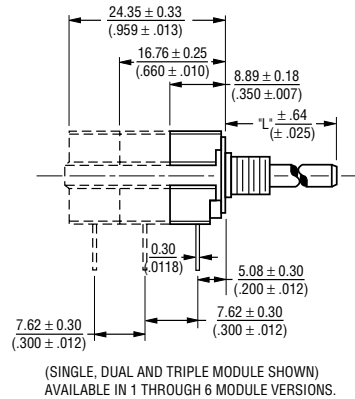
¹At room ambient: +25°C nominal and 50% relative humidity nominal, except as noted.

²Conductive Plastic, 25,000 cycles for cermet elements.

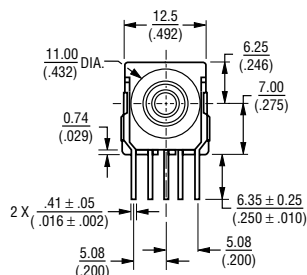
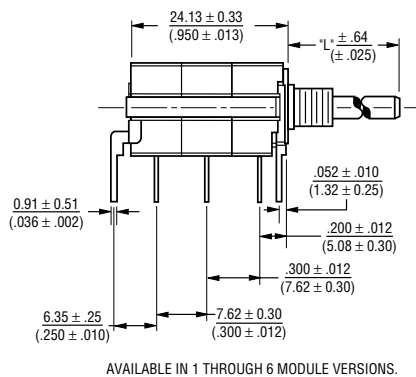
51/52/53 - Dimensions and Tolerances

BOURNS®

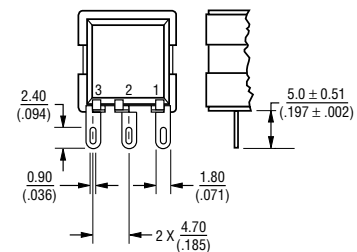
PACKAGE DIMENSIONS



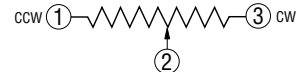
PACKAGE DIMENSIONS PCB MOUNTING BRACKET



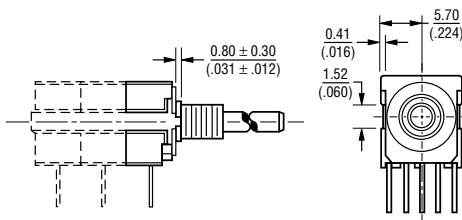
SOLDER LUG TERMINALS



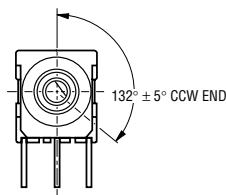
ELECTRICAL SCHEMATIC



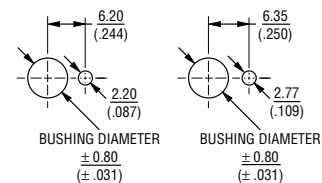
ANTI-ROTATION LUG (Style "A", 90° CW Shown)



SHAFT FLAT ORIENTATION



SUGGESTED PANEL LAYOUTS The Model 50 can be used with either of the two panel layouts shown below.



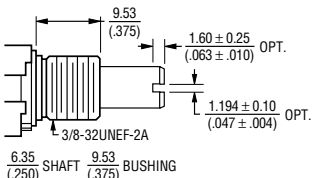
FOR TOLERANCES SHOWN: .XX = ± .25 (.010)
.XXX = ± .13 (.005)
SHAFT DIMENSIONS ± .80 (1/32)

DIMENSIONS ARE: MM
(INCHES)

51/52/53 - Dimensions and Tolerances

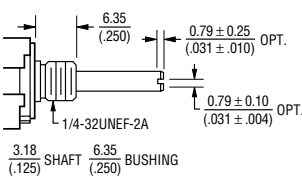
BOURNS®

Shaft/Bushing Styles



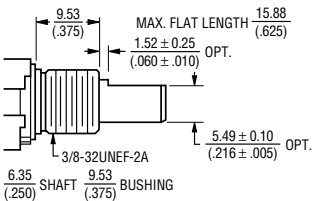
A Style Bushing

STD. LENGTH 'L'
.500 (12.7)
.625 (15.88)
.750 (19.05)
.875 (22.23)
1.000 (25.4)



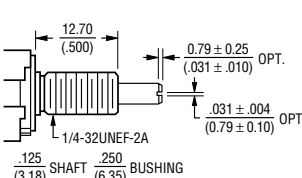
C Style Bushing

STD. LENGTH 'L'
.375 (9.53)
.500 (12.7)
.625 (15.88)
.750 (19.05)
.875 (22.23)
1.000 (25.4)



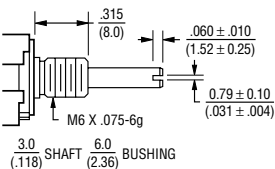
A Style Bushing - Flatted Shaft

STD. LENGTH 'L'
.625 (15.88)
.750 (19.05)
.875 (22.23)
1.000 (25.4)



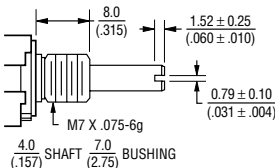
F Style Bushing

STD. LENGTH 'L'
.625 (15.88)
.750 (19.05)
.875 (22.23)
1.000 (25.4)



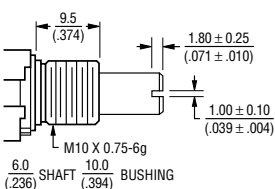
S Style Bushing

STD. LENGTH 'L'
.394 (10.0)
.512 (13.0)
.630 (16.0)
.866 (22.0)
.984 (25.0)



U Style Bushing

STD. LENGTH 'L'
.394 (10.0)
.512 (13.0)
.630 (16.0)
.866 (22.0)
.984 (25.0)



R Style Bushing

STD. LENGTH 'L'
.512 (13.0)
.630 (16.0)
.866 (22.0)
.984 (25.0)

How To Order

51	A	A	D	-	B	28	-	A	15
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MOUNTING BRACKET/ANTI-ROTATION LUG

Code	Description
A	AR Lug 90°CW
C	AR Lug 270°CW
D	No AR Lug or Bracket
L	Front Bracket
M	Rear Bracket
N	Front and Rear Bracket

SECTIONS/DETENTS

Code	Description
A	Single No Detent
B	Double No Detent
C	Triple No Detent
D	Quad No Detent
E	Single w/Center Detent
F	Double w/Center Detent
G	Triple w/Center Detent
H	Quad w/Center Detent
J	Five Section
K	Six Section
L	Five Section w/Detent
M	Six Section w/Detent

BUSHING CONFIGURATION

Code	Description
A	3/8"D x 3/8"L
C	1/4"D x 1/4"L
F	1/4"D x 1/2"L
R	10mmD x 9.5mmL
S	6mmD x 8mmL
U	7mmD x 8mmL

MODEL

Code	Description
51	PC Pins (.100" centers)
52	PC Pins (.200" centers)
53	Solder Lugs

ELEMENT TAPER TYPE/TOLERANCE		RESISTANCE (CODE)	
Code	Description	VALUE IN OHMS	
(A) (H)	Linear Cermet ±10% Linear Cermet ±5%	(28) — 150 (06) — 200 (07) — 250 (08) — 500 (09) — 750 (10) — 1K (29) — 1.5K (11) — 2K (12) — 2.5K	(13) — 5K (14) — 7.5K (15) — 10K (30) — 15K (16) — 20K (17) — 25K (18) — 50K (19) — 75K (20) — 100K
(B) (E)	Linear C-P ±20% Linear C-P ±10%	(10) — 1K (12) — 2.5K (13) — 5K (15) — 10K (16) — 20K (17) — 25K	(18) — 50K (20) — 100K (22) — 250K (23) — 500K (25) — 1M
(C)	CW Audio Cermet ±10%	(10) — 1K (12) — 2.5K	(17) — 25K
(F)	CCW Audio Cermet ±10%	(13) — 5K (15) — 10K	(18) — 50K (20) — 100K
(D) (S)	CW Audio C-P ±20% CW Audio C-P ±10%	(10) — 1K (12) — 2.5K (13) — 5K (15) — 10K (17) — 25K	(18) — 50K (20) — 100K (22) — 250K (23) — 500K (25) — 1M
(G)	CCW Audio C-P ±20%	(10) — 1K (12) — 2.5K	(18) — 50K (20) — 100K
(T)	CCW Audio C-P ±10%	(13) — 5K (15) — 10K (17) — 25K	(22) — 250K (23) — 500K (25) — 1M
(Y)	CW Dual Audio Taper C-P ±20%	(10) — 1K (12) — 2.5K (13) — 5K (15) — 10K (17) — 25K	(18) — 50K (20) — 100K (22) — 250K (23) — 500K (25) — 1M

SHAFT TYPE		AVAILABLE ONLY IN BUSHINGS	
Code	Description	Code	Description
A	Single Plain 1/4"D	A	20,24,28,32
B	Single Slotted 1/4"D	A	12,16,20,24,28,32
C	Single Flatted 1/4"D	A	20,24,28,32
D	Single Plain 1/8"D	C, F	16,20,24,28,32
E	Single Slotted 1/8"D	C, F	12,16,20,24,28,32
R	Single Slotted 6mmD	R	10,13,16,22,25
T	Single Slotted 4mmD	U	10,13,16,22,25
U	Single Slotted 3mmD	S	10,13,16,22,25

SHAFT LENGTH (FMS)		AVAILABLE ONLY IN BUSHING
Code	Description	Code
12	3/8"	C
16	1/2"	A, C
20	5/8"	A, C, F
24	3/4"	A, C, F
28	7/8"	A, C, F
32	1"	A, C, F
Metric		
10	10mm	R, S, U, T
13	13mm	R, S, U, T
16	16mm	R, S, U, T
22	22mm	R, S, U, T
25	25mm	R, S, U, T

DIMENSIONS ARE: $\frac{\text{MM}}{\text{(INCHES)}}$

Boldface features are Bourns standard options. All others are available with higher minimum order quantities.