



**THE DATASHEET OF
309NPC5MEG**



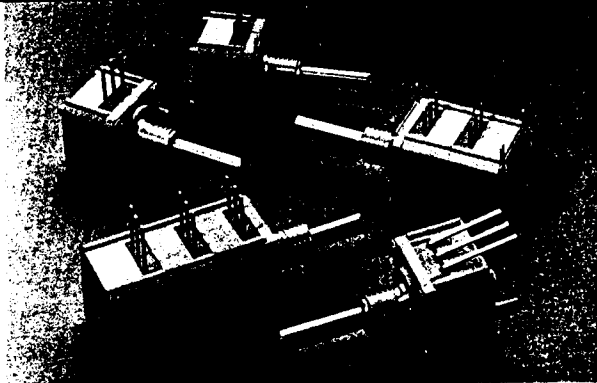
DATA SHEET

Series 308/309 Potentiometer

HAWKER

CLAROSTAT

SIDDELEY



308: Modular Style, Conductive Plastic

309: Modular Style, Thick-Film Cermet

Description

The series 308 and 309 are high-performance, low cost potentiometers. They are also available with S.P.S.T. or S.P.D.T. rotary switch modules, S.P.S.T. momentary switch modules and/or potentiometer modules in multiple sections up to three sections.

Features

- **Compact** - 1/2 in. (12.7mm) miniature, modular size.
- **Cost-effective** - Design simplicity through fewer component parts.
- **Robust** - Horizontal or vertical mountings with support plates. Nickel-plated brass shaft and bushings in various diameters and lengths. Insert molded gold plated terminals for strength.
- **Precision Made** - screen-printed conductive plastic and thick-film cermet elements.
- **Stability** - Series 308 - 40°C to +120°C; Series 309 - 40°C to 150°C operating temperature.

Series 308 Electrical Specifications

<i>Resistance Tolerance</i>	100Ω to 5 Megohms, linear; 500Ω to 2 Megohms, non-linear
<i>Resistance Range</i>	Linear, thru 500KΩ, ±10%; above 500K to 5 Megohms, ±20%. Non-linear thru 100KΩ, ±10%; above 100Ω ±20%.
<i>End Resistance</i>	Linear, 4Ω maximum each end. Taper low side. 4Ω maximum. High side 1% of total R.
<i>Power Rating</i>	.5 watt @70°C. Derated linearly to zero watts at 120°C. See Chart B, page 29. For non linear tapered units or PC mounting, derate by 50%. Trimmer style, derate by 50%.
<i>Effective Rotation</i>	265° ±5° without rotary switch; 240° ±5° with rotary switch.
<i>Dynamic Noise</i>	Standard: Linear single controls maximum initial noise level of 1.5% of total resistance. Measurement made using constant current source and oscilloscope detection technique. Special: 1%.

Series 309 Electrical Specifications

<i>Resistance Tolerance</i>	Linear: 5Ω to 5 Megohms Taper: 100Ω to 2 Megohms
<i>Resistance Range</i>	±10% standard; ±5% special. Trimmers ±20%.
<i>End Resistance</i>	2Ω maximum. 5Ω to 2500Ω. 4Ω maximum. 5KΩ and above.
<i>Power Rating</i>	1 watt @ 85°C. Derate linearly to zero watts at 150°C. For tapered units, trimmers or PC mounting, derate 50%.
<i>Effective Rotation</i>	250° +10° -5° without rotary switch; 225° +10° -5° with rotary switch.
<i>Dynamic Noise</i>	Standard: Linear single controls maximum initial noise level of 3% of total resistance. Measurement made using constant current source and oscilloscope detection technique. Special: 1.5%

Electrical Specifications continued, next page

Electrical Specifications continued from previous page

<i>Electrical Rotation</i>	295° ±5°	295° ±5°
<i>Working Voltage</i>	350 Vdc across end terminals, but power not to exceed rating.	350 Vdc across end terminals, but power not to exceed rating.
<i>Resistance Temperature Characteristics</i>	See Chart C.	See Chart C.
<i>Linearity</i>	±5% independent	±5% independent
<i>Non-linear Tapers</i>	Right or left-hand available. See Chart A.	Right or left-hand available. See Chart A.
<i>Taper Tolerance</i>	±20% of nominal resistance @ 50% ±3% of mechanical rotation.	±20% of nominal resistance @ 50% ±3% of mechanical rotation.
<i>Voltage Coefficient</i>	.008%/Volt maximum	.008%/Volt maximum
<i>Dielectric Withstanding Voltage</i>	750 Vac for 60 seconds @ ATM pressure. 350 Vac for 6 seconds @ 3.4 in. Hg.	900 Vac for 60 seconds @ ATM pressure. 350 Vac for 60 seconds @ 3.4 in. Hg.

Series 308/309 Mechanical Specifications

Mechanical Rotation
295° ±5°

Stop Torque
3 lb. in. minimum (metal shaft)
Other torque options available. Please consult factory

Torque Range
.20 to 3.0 oz. in. (Single); .3 to 3.5 oz. in. (Dual);
.4 to 4.5 oz. in. (Triple).
Other torque options available. Please consult
Factory.

Torque Variation
Within control .5 oz. in. maximum

Bushing
Material: Brass nickel plated
Diameters: Supplied in .250" – 32 NEF 2A thread
(6.35mm) and .375" – 32 NEF 2A thread
(9.53mm).
Lengths: Available in .250"(6.35mm),
.375"(9.53mm), and .500"(12.7mm).
Styles: Plain, locking and trimmer.

Shaft
Material: Brass nickel plated and stainless steel
Diameters: Single shaft: .125"(3.18mm) and
.250"(6.35mm)
Concentric: .078"/.125"(1.98/3.18mm)
and .125"/.250"(3.18/6.35mm)
Lengths: Maximum of 3"(76.2mm) from bushing
mounting surface. .025"(.635mm)
minimum on trimmer bushing
Styles: Plain, slotted, flatted and concentric

Push Momentary Switch
S.P.S.T., 125ma, 28Vdc, push momentary switch. Type DJ

Rotary Switch
S.P.S.T. and S.P.D.T., CCW or CW, 125ma, 28Vdc.
Type AL

Center Detent
Indent device which provide an indexing position.
Indent torque: .6 to 3 oz. in.
Rotational torque: .3 to 2.5 oz. in.
Indent position: Single at 50% mechanical rotation
Rotational life: 25,000 cycles

Housing
Thermoplastic polyester, blue. (U.L. SE-O rating).

Hardware
Nut: brass, nickel-plated
Lockwasher: phosphorous bronze, nickel-plated

Solvent Resistance
Housing resistant to trichlorethylene, *Chlorethene NU,
Freon TMS, **Freon TMC, toluene, MEK, ethyl acetate
and gasoline. For solvents not listed, please consult
Factory. **Note:** Units not immersion sealed

Terminals
Gold-coated PC terminals or solder hook style. PC pins fit
.100 grid spacing. Terminal mounting options available.

Weight (approx.)
Metal shaft & bushing: (Single) .19 oz., (Dual) .27 oz.,
(Triple) .35 oz.

*T.M. Dow Chemical Co.

**T.M. DuPont

Mechanical Specifications continued, next column

Series 308/309 Operational Specifications

Operating Temperature Range

Series 308: -40°C to +120°C

Series 309: -40°C to +150°C

Storage Temperature Range

Series 308: -55°C to +120°C

Series 309: -55°C to +150°C

Rotational Life

Series 308: linear control, 50,000 cycles under load.
(plain bushing).

Change not to exceed 10% R.

Trimmer life under load is 5,000 cycles.

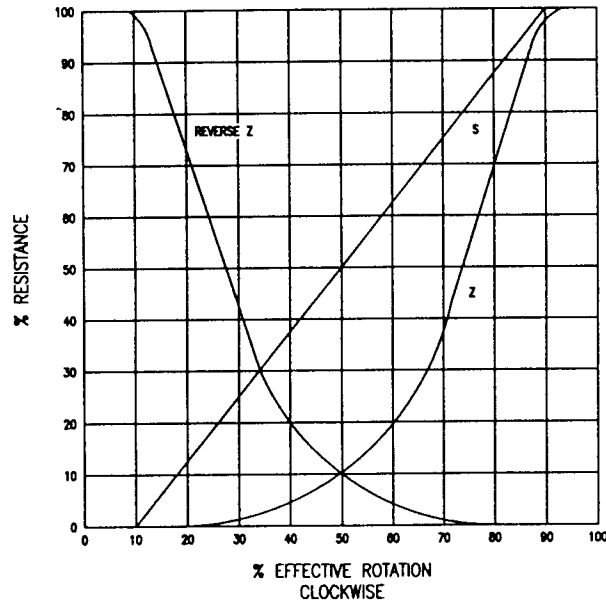
Series 309: linear control, 25,000 cycles under load.
(plain bushing).

Change not to exceed 5% R.

Trimmer life under load is 5,000 cycles.

Figure 1

Chart A



Curves Standard

The "S" taper is linear, the change in resistance value being directly proportional to the degree of rotation. It can be used either as right-hand or left-hand taper.

The "Z" taper attains 10% resistance value at 50% of clockwise rotation (left-hand).

The reverse "Z" taper attains 10% resistance values at 50% of counter-clockwise rotation (right-hand).

For conformity and special output curves, consult Factory

AL Switch Specifications

Rating

125ma 28Vdc (dry circuit)

Rotational Life

25,000 cycles under rated load

DJ Switch Specifications

Rating

125ma 28Vdc

Rotational Life

25,000 under rated load

Figure 2

Chart B

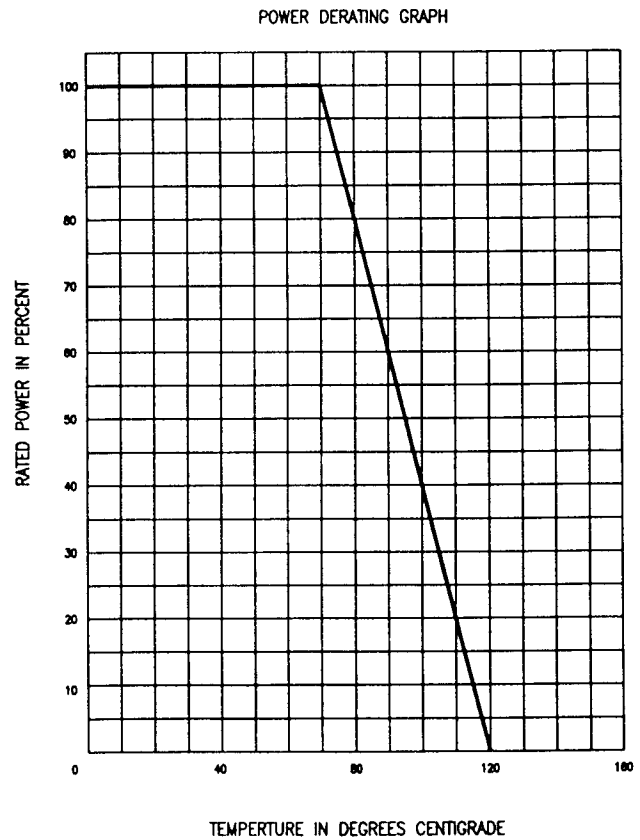


Figure 7

Series 308/309 Single, Dual, or Triple with Panel and Rear Support Plates, Horizontal Mounting

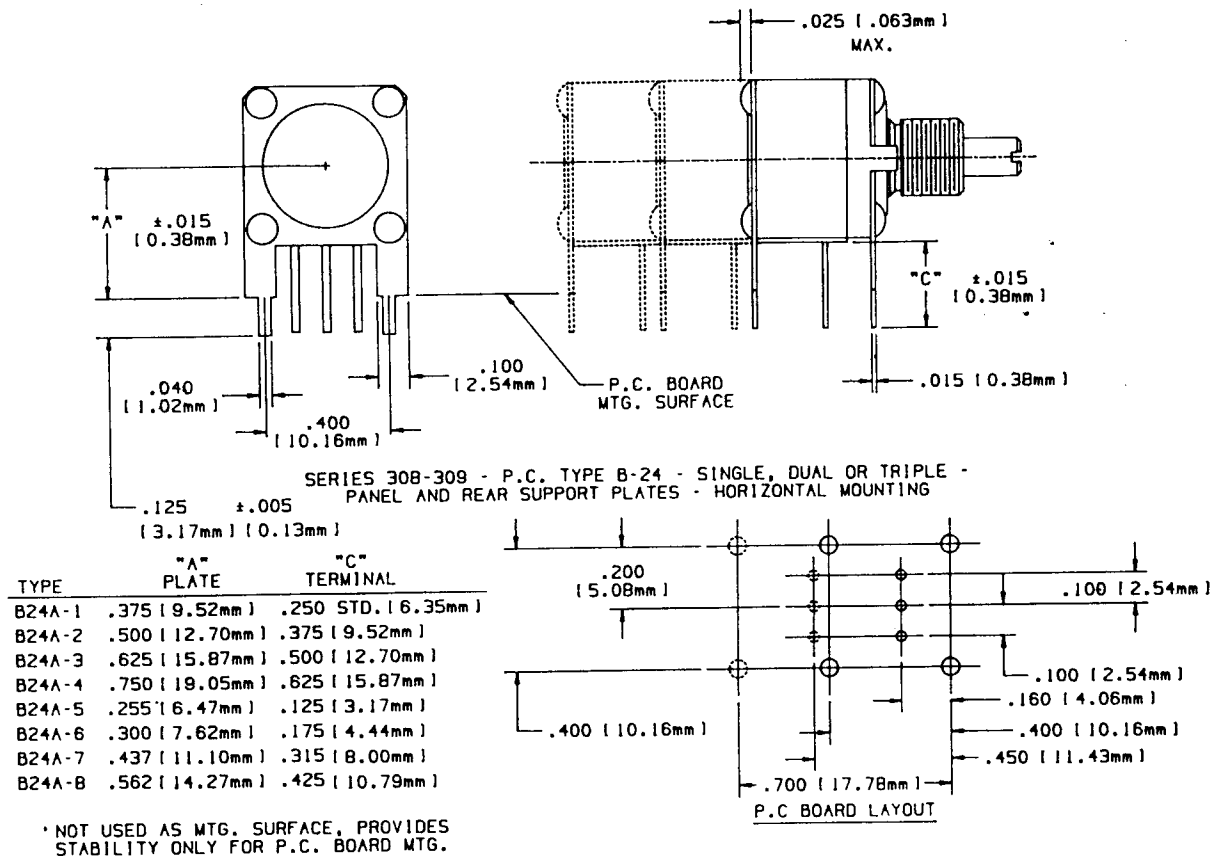


Figure 8

Series 308/309 Single or Dual with Center Detent

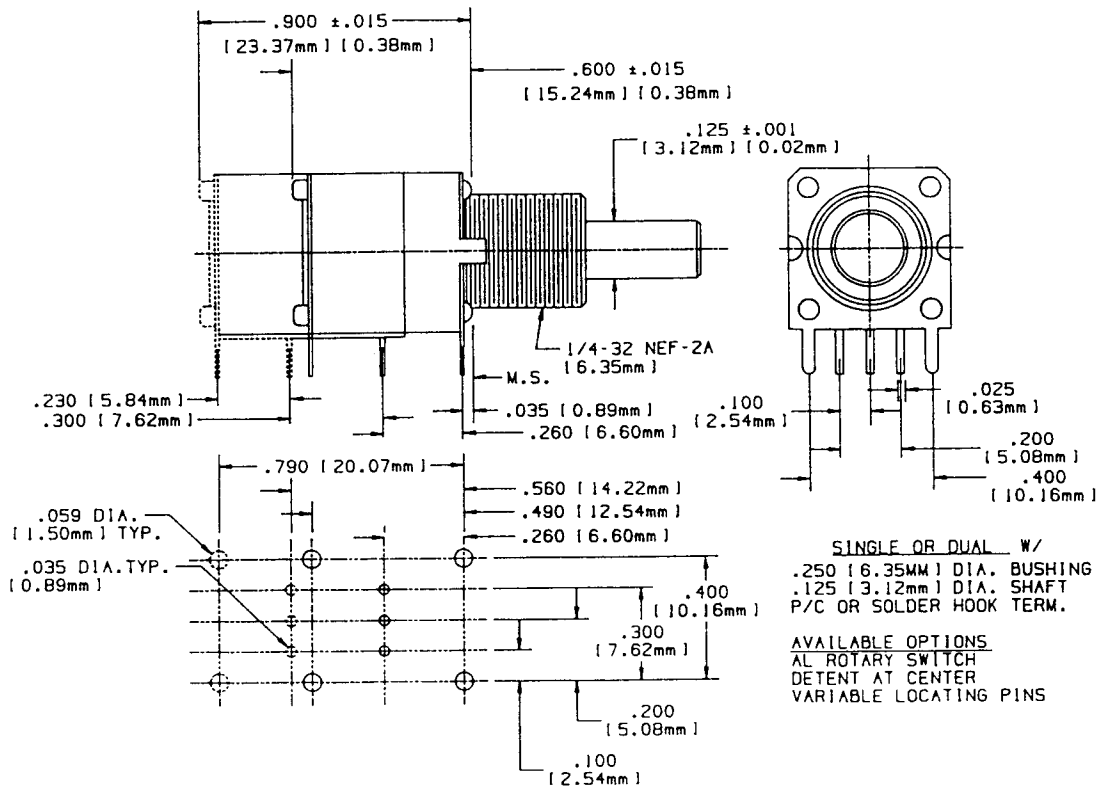


Figure 9

Series 308/309 Single or Dual with Center Detent

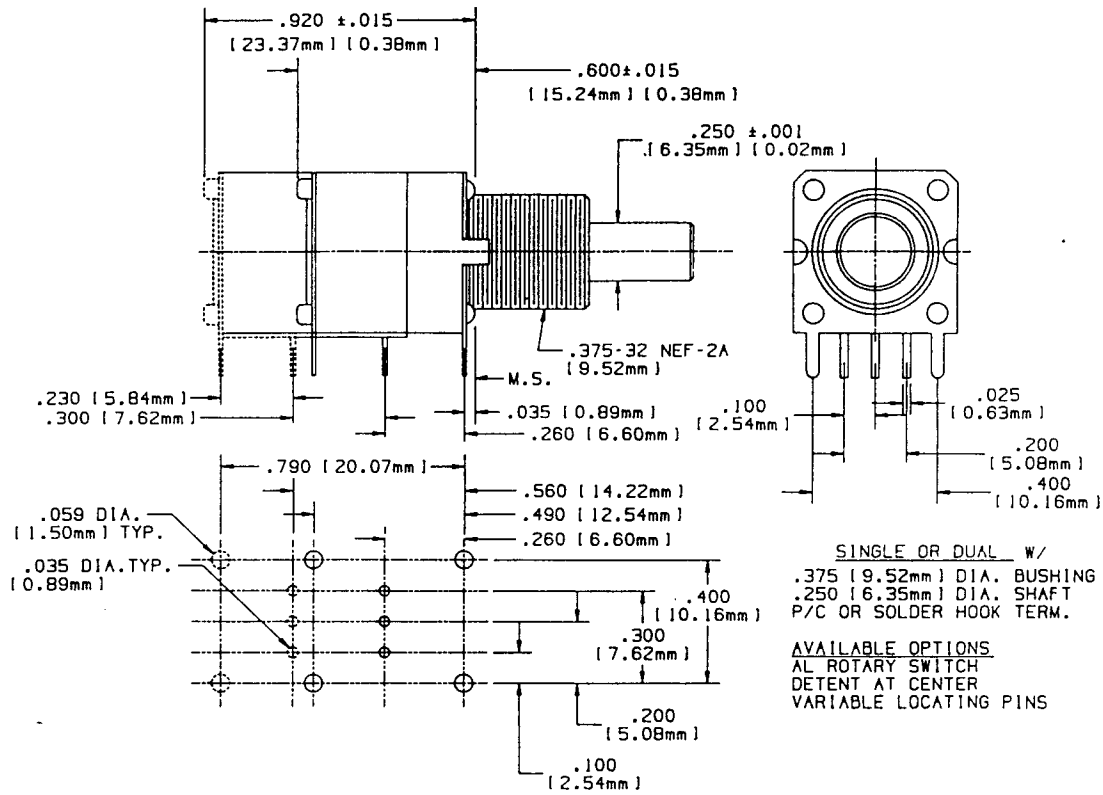


Figure 10

Series 308/309 Single, Dual or Triple with High Rotational Torque

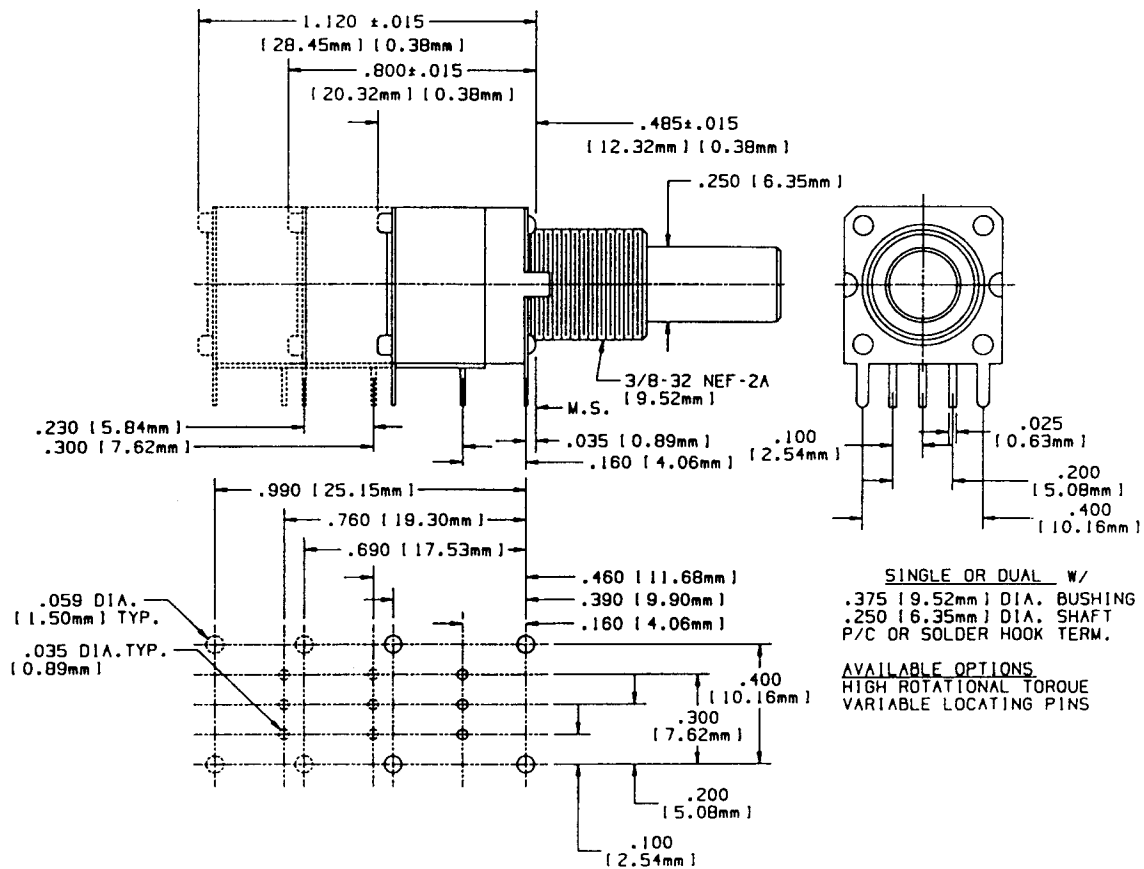


Figure 11

Series 308/309 Dual Concentric

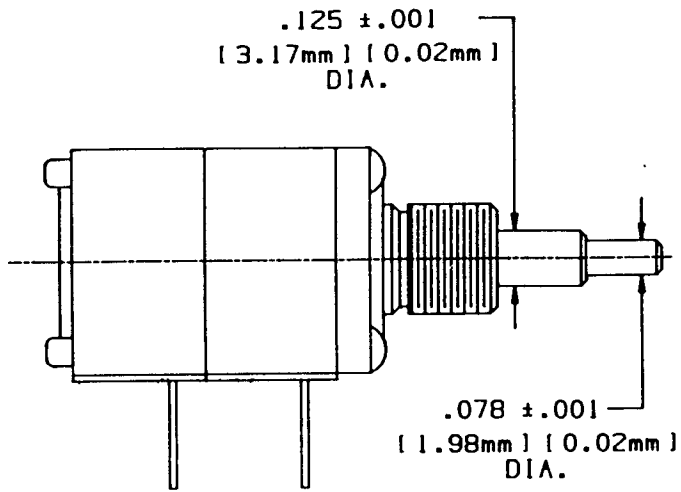


Figure 12

Series 308/309 Type C-10A Printed Circuit Terminals

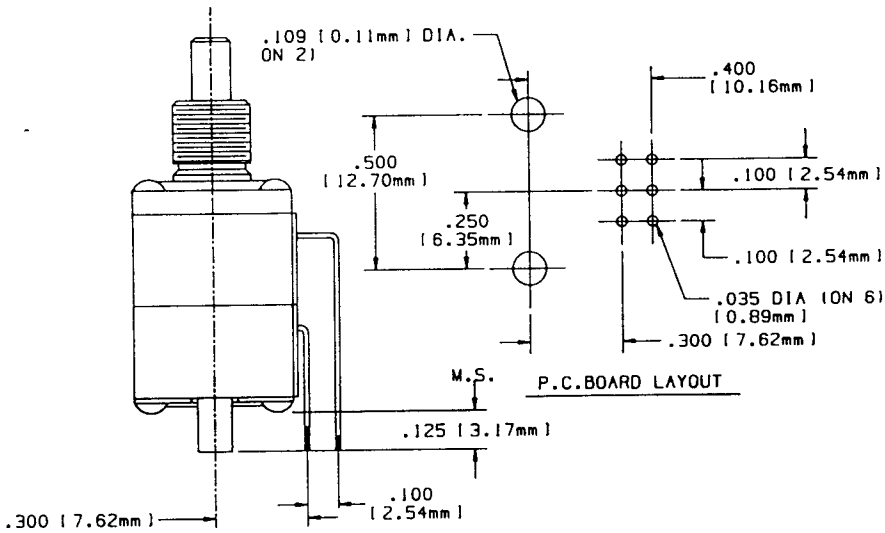


Figure 13

Series 308/309 Type A - 18A Printed Circuit Terminals

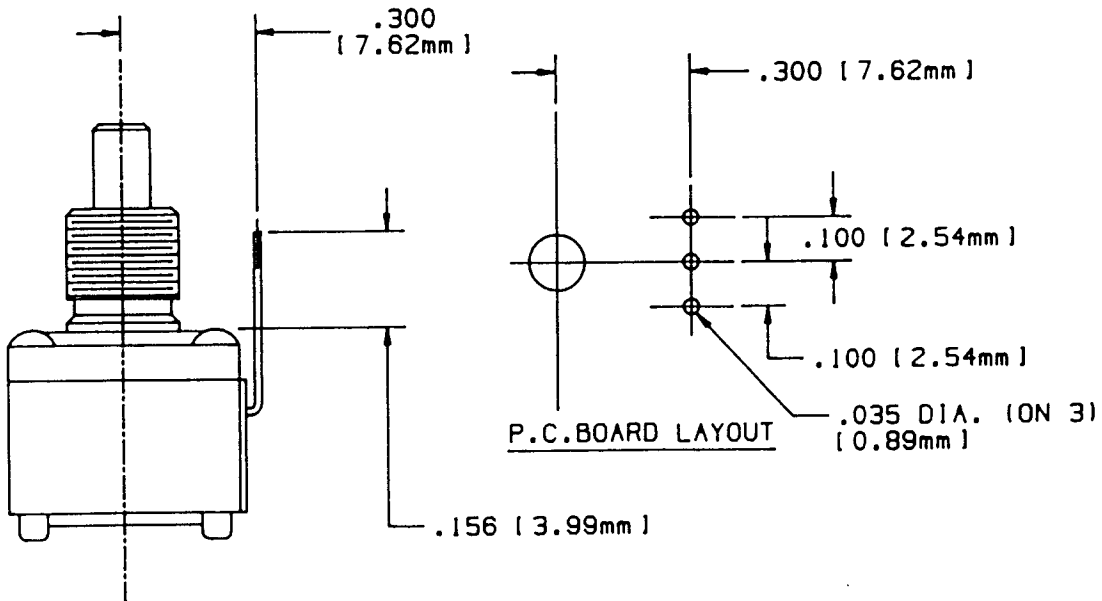


Figure 14

Series 308/309 Type C - 8A Printed Circuit Terminals

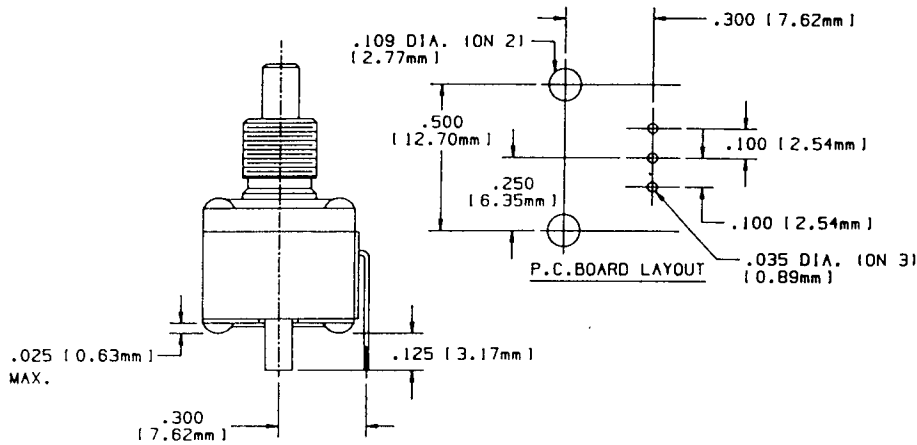
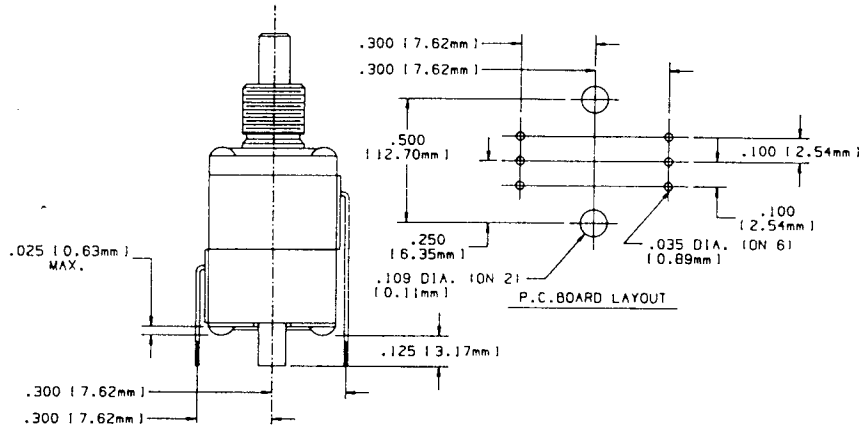


Figure 15

Series 308/309 Type C - 9A Printed Circuit Terminals



Series 308/309 Standard Resistance Values

Stock Values (Ohms)

308N				
100	1000	10K	100K	1Meg
250	2500	25K	250K	1.5Meg
500	5000	50K	500K	5Meg
308N - PC				
100	1000	10K	100K	1Meg
250	2500	25K	250K	2.5Meg
500	5000	50K	500K	5Meg
308L				
500	10K	100K		
1000	25K	250K		
5000	50K	500K		
309N				
100	10K	10K	100K	1Meg
250	25K	25K	250K	2.5Meg
500	50K	50K	500K	5Meg

309L/D308/T308/D309/T309

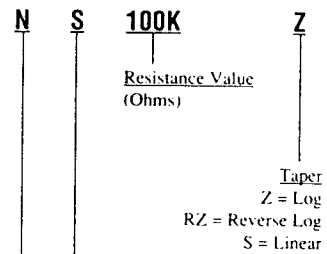
Please consult factory for price and delivery.

Series 308/309 How To Order

Example: D308-N-PPS-100-Z

D308

- Series
 308 = Single
 Conductive Plastic -
 1/2 watt
 D308 = Dual
 Conductive Plastic -
 1/2 watt
 T308 = Triple
 Conductive Plastic -
 1/2 watt
 309 = Single
 Cermet - 1 watt
 D309 = Dual
 Cermet - 1 watt
 T309 = Triple
 Cermet - 1 watt



Switches

- S = Rotary switch S.P.D.T.
 PM = Push Momentary S.P.S.T.
 PPS = Push/pull switch S.P.D.T.
 No switch requirement = Blank

Shaft & Bushing

- N = Shaft: 1/8 in. (3.18mm) diameter x 3/4 in. (19.05mm) FMS screwdriver slotted
 Bushing: 1/4 in. (6.35mm) diameter x 1/4 in. (6.35mm) length
 L = Shaft: 1/8 in. (3.17mm) diameter x 7/16 in. (11.1mm) FMS screw driver slotted
 Locking Bushing: 3/8 in. (9.52mm) x 1/4 in. (6.35mm) - 32-NEF 2A thread



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