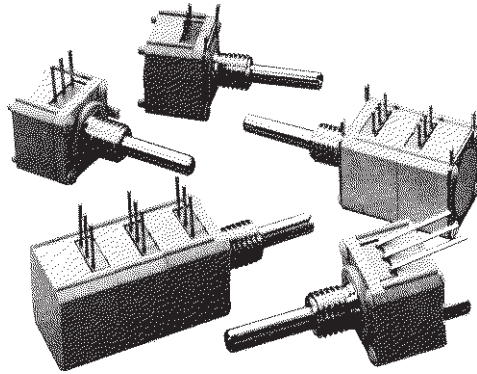


Series 308 Potentiometer  
 1/2 in. sq. 0.5 Watt  
 Series 309 Potentiometer  
 1/2 in. sq. 1.0 Watt



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</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 100KΩ ±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 Figure 2, page 3 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</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, next page

Electrical Rotation	295° ±5°	295° ±5°
Working Voltage	350 Vdc across end terminals, but power not to exceed rating.	350 Vdc across end terminals, but power not to exceed rating.
Resistance Temperature Characteristics	See Chart C.	See Chart C.
Linearity	±5% independent	±5% independent
Non-linear Tapers	Right or left-hand available. See Chart A.	Right or left-hand available. See Chart A.
Taper Tolerance	±20% of nominal resistance @ 50%; ±3% of mechanical rotation	±20% of nominal resistance @ 50%; ±3% of mechanical rotation
Voltage Coefficient	.008%/Volt maximum.	.008%/Volt maximum
Dielectric Withstanding Voltage	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 6 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 contact State Electronics.

### 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 contact State Electronics.

### 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

### Shafts

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" (6.35mm) minimum on trimmer or bushing  
Styles: Plain, slotted flattened and concentric

Mechanical Specifications continued, next column

### Push Momentary Switch

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

### Rotary Switch

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

### Center Detent

Indent device which provides 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

## 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.

## AL Switch Specifications

### Rating

125ma 28Vdc (dry circuit)

### Rotational Life

25,000 cycles under rated load

## BL and BLM Switch Specifications

### Rating

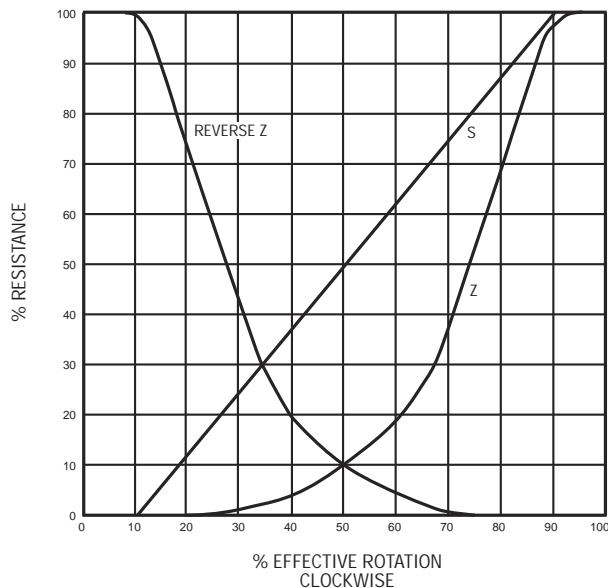
125ma 30Vdc (dry circuit)

### Rotational Life

15,000 cycles under rated load

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).

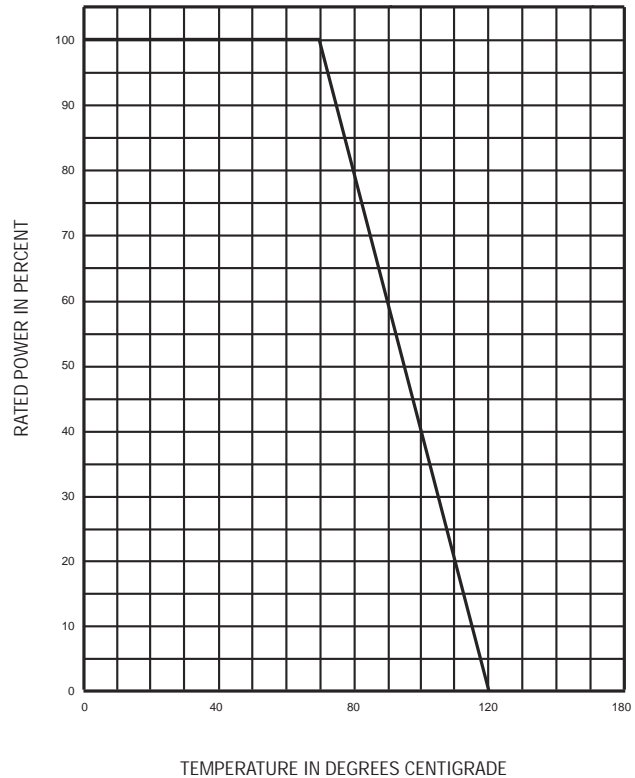
The reverse "Z" taper attains 10% resistance value at 50% of counter-clockwise rotation (right-hand).

For conformity and special output curves, contact State Electronics.

Figure 2

Chart B

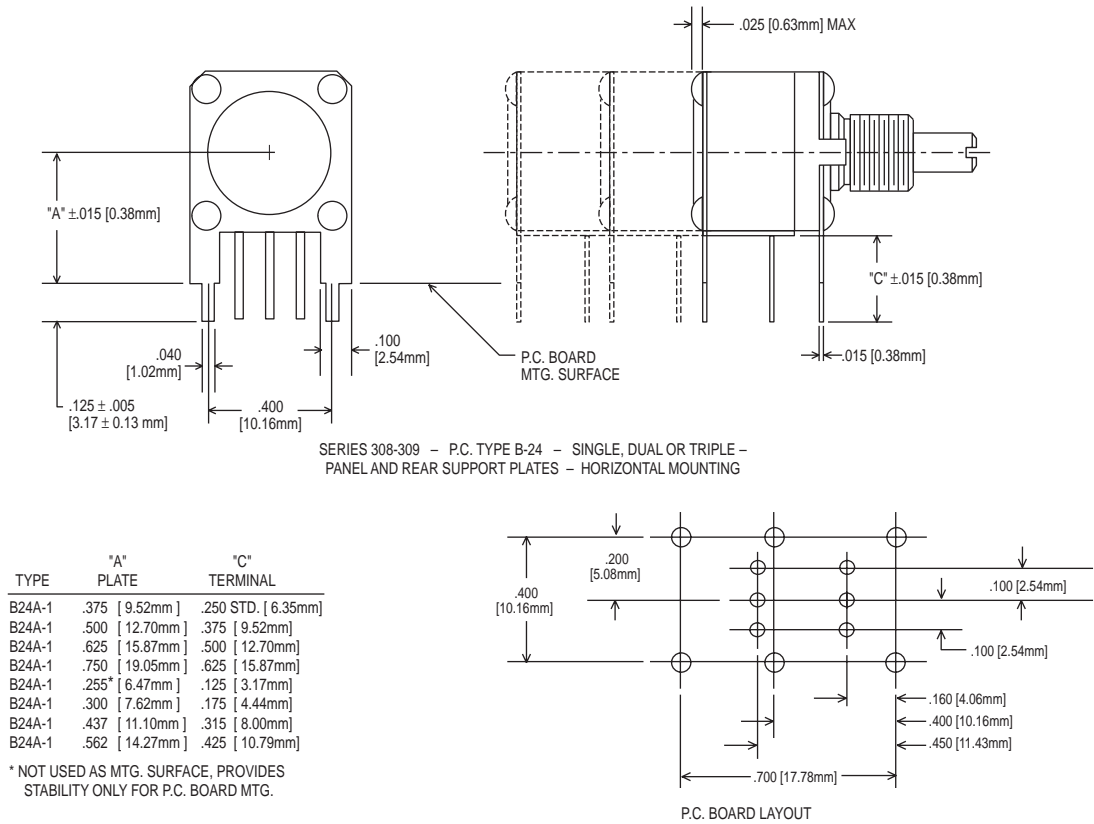
POWER DERATING GRAPH





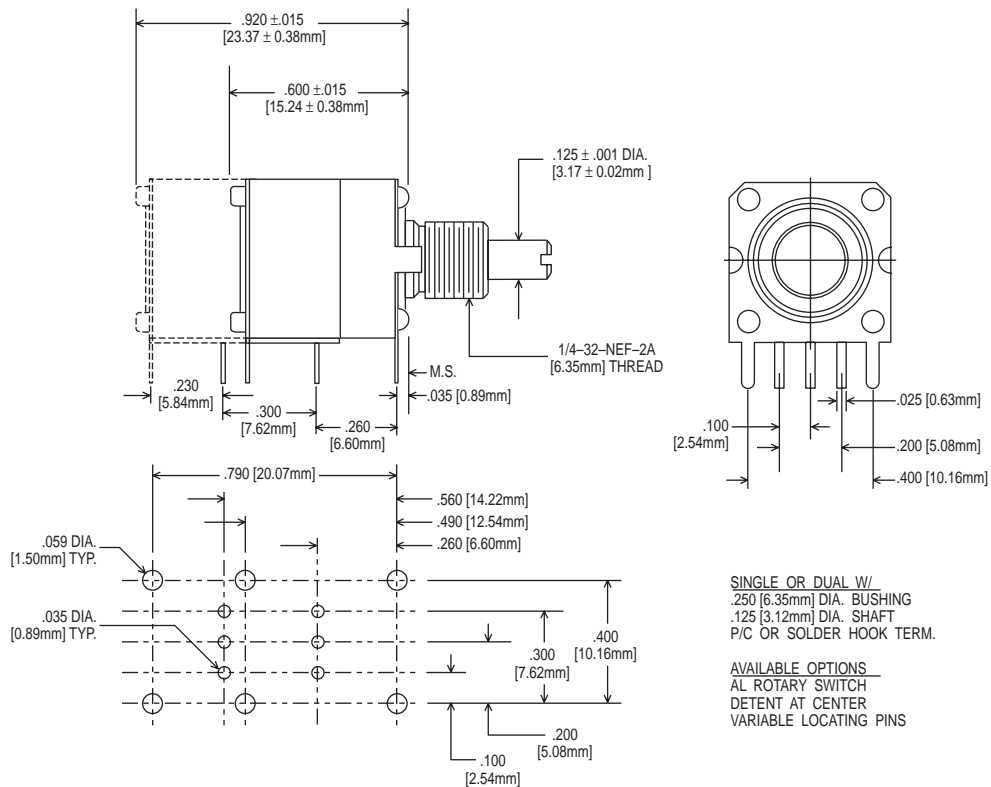
**Figure 7**

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



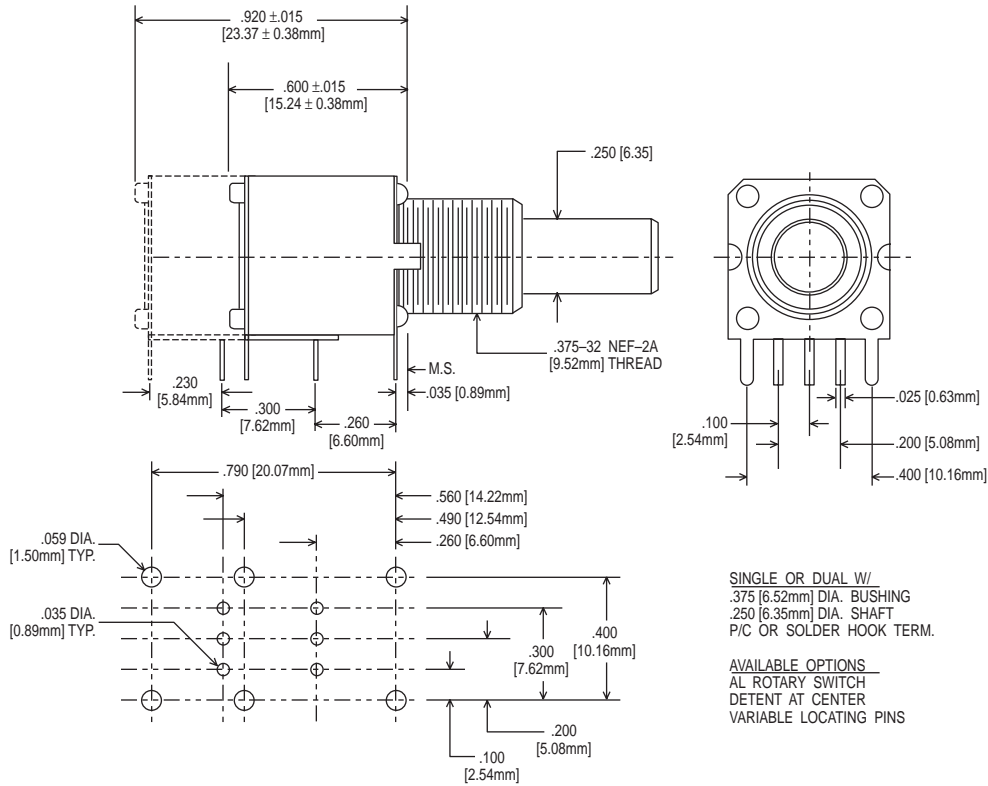
**Figure 8**

**Series 308/309 Single or Dual with Center Detent**



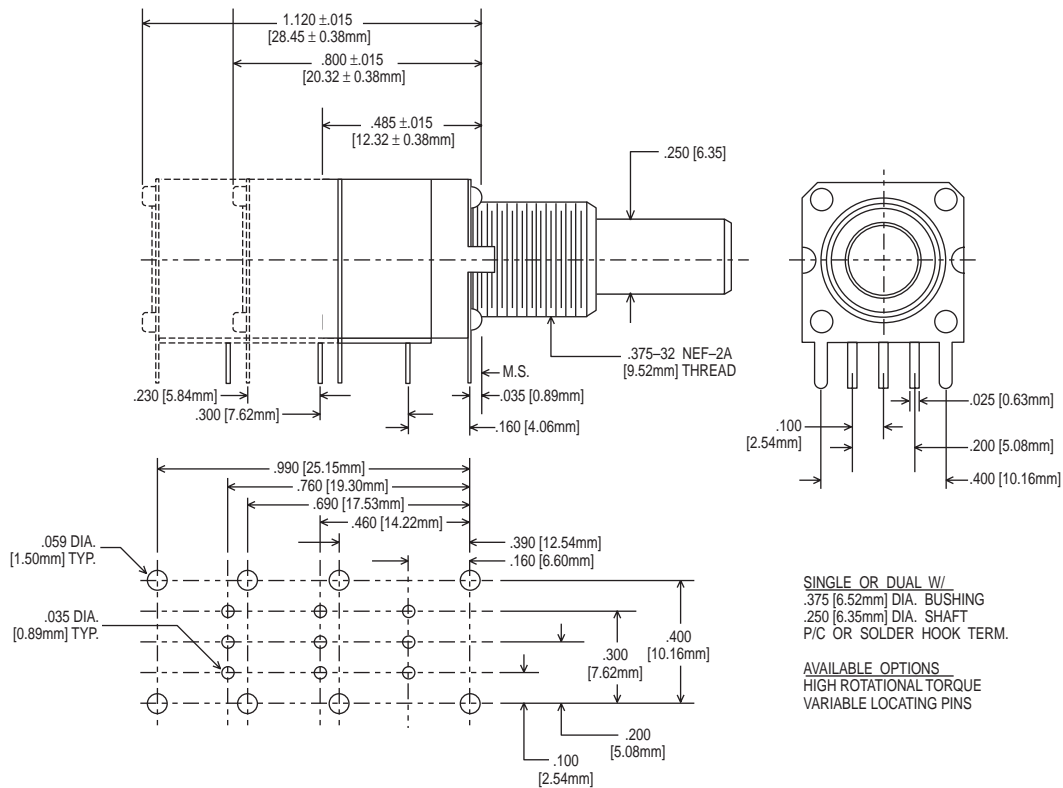
**Figure 9**

**Series 308/309 Single or Dual with Center Detent**



**Figure 10**

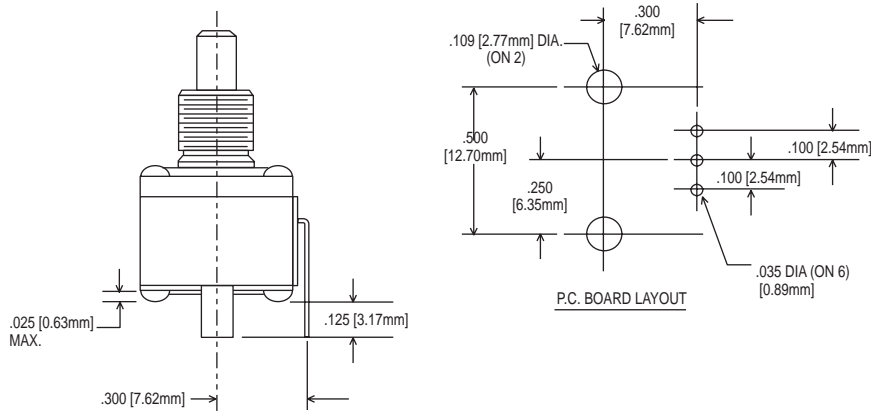
**Series 308/309 Single or Triple with High Rotational Torque**





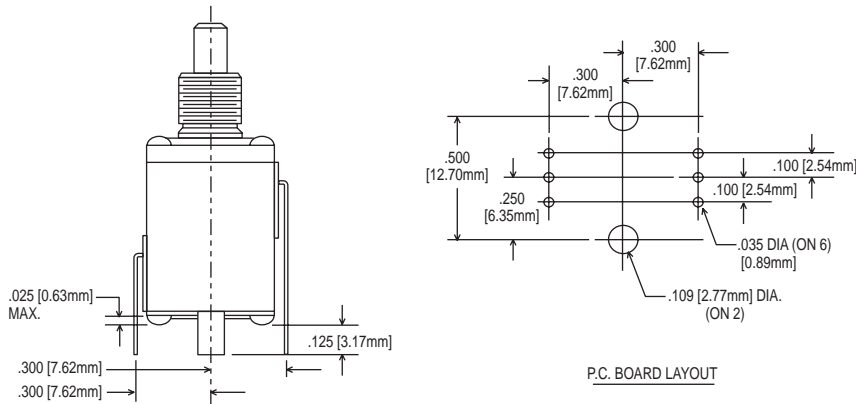
**Figure 14**

**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**      **Series 308/309 How to Order**

**Stock Values (Ohms)**

<b>308N</b>				
100	1000	10K	100K	1Meg
250	2500	25K	250K	2.5Meg
500	5000	50K	500K	5Meg

<b>308N - PC</b>				
100	1000	10K	100K	1Meg
250	2500	25K	250K	2.5Meg
500	5000	50K	500K	5Meg

<b>308L</b>				
500	10K	100K		
1000	25K	250K		
5000	50K	500K		

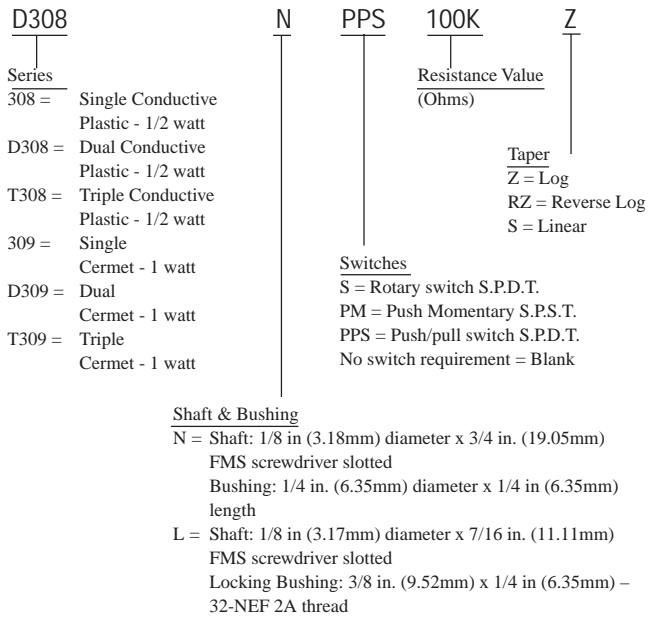
  

<b>309N</b>				
100	1000	10K	100K	1Meg
250	2500	25K	250K	2.5Meg
500	5000	50K	500K	5Meg

**309L/D308/T308/D309/T309**

Please contact State Electronics for price and delivery

Example: D308-N-PPS-100-Z





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