Panel Potentiometer
Model P09x Series

Features:
- Multi-ganged—up to 8 gangs
- Excellent 100,000 cycles life
- Rotary and Momentary Switch options
- Push-lock options
- Concentric shaft option
- Centre tap option
- PCB pins

Description:
9mm Rotary Potentiometer, with metal shaft and bushing. Options include audio and linear tapers; knurled, flatted and slotted shafts.

Applications:
- Audio / video equipment / Amplifiers / Mixers
- TV and multimedia sound systems / Portable electronics

Model Styles Available:
- Side Adjust, 1 to 8 gangs P09xN
- Side Adjust, 1 to 4 gangs, w/Rotary switch P09xS
- Side Adjust, 1 to 4 gangs, w/Momentary switch P09xM
- Top Adjust, 1 or 2 gangs P09x5N
- Side Adjust, with Push-Lock, 1 or 2 gangs P09xP
- With Concentric shaft, 2 to 4 gangs P09xC
- With Centre Tap, 2 gangs only P09xT

Electrical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance Range</td>
<td>1KΩ to 1MΩ</td>
</tr>
<tr>
<td>Standard Resistance Tolerance</td>
<td>± 20%</td>
</tr>
<tr>
<td>Residual Resistance</td>
<td>20 ohms max</td>
</tr>
<tr>
<td>Resistance Taper</td>
<td>Audio (10A, 15A, 15C), Linear (1B) - see note 3</td>
</tr>
<tr>
<td>Maximum Operating Voltage</td>
<td>50Vac</td>
</tr>
<tr>
<td>Rated Power</td>
<td>Linear Taper B: 0.05W</td>
</tr>
<tr>
<td></td>
<td>Other Tapers: 0.025W</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>300 Vac, 1 minute</td>
</tr>
<tr>
<td>Rotational Noise</td>
<td>100mV max</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>&gt;100M ohms at 250 Vdc</td>
</tr>
<tr>
<td>Gang Error (Multi-ganged)</td>
<td>-40dB to 0dB, ±3dB</td>
</tr>
</tbody>
</table>

TA = 25°C unless otherwise noted
### Switch Characteristics

$T_A = 25^\circ C$ unless otherwise noted

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Circuit</td>
<td>SPST</td>
</tr>
<tr>
<td>Contact Resistance</td>
<td>$&lt;100 \text{ mohms}$</td>
</tr>
<tr>
<td>Rated Power</td>
<td>3.0 A at 16 Vdc</td>
</tr>
<tr>
<td>Switch Life</td>
<td>15,000 cycles min.</td>
</tr>
</tbody>
</table>

### Mechanical Characteristics

$T_A = 25^\circ C$ unless otherwise noted

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Travel (Rotational angle)</td>
<td>$300^\circ \pm 10^\circ$</td>
</tr>
<tr>
<td>Rotational Torque</td>
<td>35 to 90 gf.cm</td>
</tr>
<tr>
<td>Rotational Stop Strength, Minimum</td>
<td>3.0 kgf.cm</td>
</tr>
<tr>
<td>Shaft Pull Strength, Minimum</td>
<td>6.0 kgf</td>
</tr>
<tr>
<td>Detent Torque</td>
<td>50 to 200 gf.cm</td>
</tr>
<tr>
<td>Nut Tightening Strength, Minimum</td>
<td>8.0 kgf</td>
</tr>
<tr>
<td>Rotational Life</td>
<td>100,000 cycles</td>
</tr>
</tbody>
</table>

### Environmental Characteristics

$T_A = 25^\circ C$ unless otherwise noted

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>$-10^\circ C$ to $70^\circ C$</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP50</td>
</tr>
<tr>
<td>Soldering Condition</td>
<td>Compatible with Industry standard soldering processes:</td>
</tr>
<tr>
<td></td>
<td>Manual: SAC 270 °C max. for 3 seconds.</td>
</tr>
<tr>
<td></td>
<td>Wave: SAC 260 °C max. for 5 seconds.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Please refer to TT Electronics Website</td>
</tr>
<tr>
<td>REACH</td>
<td>Please refer to TT Electronics Website</td>
</tr>
</tbody>
</table>
Panel Potentiometer
Model P09x Series

Ordering Information

Part Family
9mm Rotary

Number of Gangs
x = x gangs
1 = single gang
to
8 = 8 gangs (maximum)

Model Style
Omit = Side Adjust
5 = Top Adjust (1-2 gang)

Switch type
N = No switch
S = Rotary switch
M = Momentary switch
P = Push-Lock (1-2 gang)
C = Concentric Shaft (2 or 4 gang only)
T = Center Tap (2 gang only)

Number of Detents
Omit = No detent
1 = Center only
2 = 11
3 = 21
4 = 41

Shaft Type
E = Slotted
F = Flatted
Q = Split knurled
(see Note 1)

Total Resistance
See Resistance table below

Resistance Taper
A = Audio (15A)
B = Linear (1B)
C = Rev. Audio (15C)
D = Audio (10A)
(see Note 3)

Shaft Length - L
10 = 10mm
15 = 15mm
17 = 17.5mm
20 = 20mm
25 = 25mm
30 = 30mm
35 = 35mm
(See Note 1)

Full CCW Position
A = 300°
B = 120°
C = 30°
D = 210°
(see Note 2)

Resistance table

<table>
<thead>
<tr>
<th>Resistance (Ohms)</th>
<th>1,000</th>
<th>2,000</th>
<th>5,000</th>
<th>10,000</th>
<th>20,000</th>
<th>50,000</th>
<th>100,000</th>
<th>200,000</th>
<th>500,000</th>
<th>1,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>1K</td>
<td>2K</td>
<td>5K</td>
<td>10K</td>
<td>20K</td>
<td>50K</td>
<td>100K</td>
<td>200K</td>
<td>500K</td>
<td>1MEG</td>
</tr>
</tbody>
</table>

General Note
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Panel Potentiometer
Model P09x Series

Note 1: Shaft type and Length

Shaft Types: P09xN, P09xS, P09x5N, P09xT

- **E-TYPE**
  - L: 10, 15, 20, 25, 30
  - T: 4, 7, 12, 12, 12

- **F-TYPE**
  - L: 10, 15, 20, 25, 30
  - T: 4, 7, 12, 12, 12

- **Q-TYPE**
  - L: 10, 15, 20, 25, 30
  - T: 4, 6, 12, 12, 12

Shaft Types: P09xP (Push-Lock)

- **E-TYPE**
  - L: 25, 30, 35
  - T: 4.5, 7, 12

- **F-TYPE**
  - L: 25, 30, 35
  - T: 3, 6, 12

- **Q-TYPE**
  - L: 25, 30, 35
  - T: 3, 6, 12

Shaft Types: P09xM (Momentary Switch)

- **F-TYPE**
  - L: 10, 15, 20, 25, 30
  - T: 4, 7, 12, 12, 12

- **Q-TYPE**
  - L: 10, 15, 20, 25, 30
  - T: 4, 6, 12, 12, 12

Shaft Types: P09xC (Concentric Shafts)

- **E-TYPE**
  - L: 20

- **F-TYPE**
  - L: 15, 17, 20, 25

- **Q-TYPE**
  - L: 10, 10, 15

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Note 2: Shaft Position

Models: P09xN, P09xS, P09xM, P09x5N, P09xP, P09xT

F Shaft Type

E /Q Shaft Type

Models: P09xC
Panel Potentiometer
Model P09x Series

Outline Drawings

Model P09xN (Side Adjust, PCB pins, up to 8 gangs)

Model P09xS and P09xM (Side Adjust, PCB pins, up to 4 gangs with Switch)

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Outline Drawings

Model P09x5N (Top Adjust, PCB pins, up to 2 gangs)

Model P09xP (Side Adjust, PCB pins, with Push-Lock, up to 2 gangs)

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Outline Drawings

Model P09xC (Side Adjust, PCB pins with Concentric Shaft, 2 to 4 gangs)
Panel Potentiometer
Model P09x Series

Outline Drawings
Model P09xT (Side Adjust, PCB pins, with Center Tap, 2 gangs only)

Panel Layout

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Note 3: Standard Tapers

<table>
<thead>
<tr>
<th>Package Type</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Packaging</td>
<td>Two flat washers and mounting nut</td>
</tr>
<tr>
<td>Plastic Trays</td>
<td></td>
</tr>
</tbody>
</table>

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