

# Series 09VR

## 9mm Panel Potentiometer

- Miniature 9 mm package size
- Rotational life (5,000 cycles)
- Wide temperature range (-10°C to +70°C)
- Mechanical travel options (280° and 300°)
- Variety of standard resistances and tapers

### Applications

- Consumer portable electronics
- Commercial appliances
- Instrument amplifiers and guitar effects
- Keyboards and synthesizers
- Communications equipment



### Ordering Information

Series	Element	Terminal Configuration	Shaft Length	Shaft Trim	Mechanical Travel	Detent Option	Resistance Code	Resistance Taper																																						
09VR	1	M	20	F	2	N	103	B1																																						
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\* See shaft trim options for available lengths on next page.

\*\* Other JIS tapers are available. See charts.



### Available Shaft Trim Combinations by Terminal Configuration And Shaft Length

	Shaft Trim Options	Shaft 15mm length	Shaft 20mm length	Shaft 25mm length	Shaft 30mm length
09VR1M	Knurled (18 teeth)		•	•	
	Flatted	•	•	•	•
	Knurled (40 teeth)	•	•	•	•
09VR1B	Knurled (18 teeth)		•	•	
	Flatted		•	•	•
	Knurled (40 teeth)		•	•	•
09VR1S	Knurled (18 teeth)			•	
	Flatted			•	•
	Knurled (40 teeth)			•	•
09VR1H	Knurled (18 teeth)			•	
	Flatted			•	•
	Knurled (40 teeth)			•	•
09VR1K	Knurled (18 teeth)		•	•	
	Flatted		•	•	•
	Knurled (40 teeth)		•	•	•
09VR1U	Knurled (18 teeth)		•	•	
	Flatted	•	•	•	•
	Knurled (40 teeth)	•	•	•	•

### Electrical Specifications

		Min	Typical	Max	Unit
Total Resistance Tolerance		-20	–	+20	%
Power Rating		–	+0.05	–	watt
Operating Voltage		–	–	+20	VDC
Residual Resistance		–	+300	–	Ω
Slider Noise		–	–	+100	mV
Insulation Resistance	250 VDC for 1 min.	+100			MΩ
Dielectric Strength	250 VAC for 1 min. no arcing				
Taper	Linear and audio options (see charts)				

### Mechanical

Total Mechanical Travel	280° ± 5° 300° ± 5°
Operating Torque	10 to 80 gf-cm
Starting Torque	100 gf-cm max.
Shaft Wobble	
Bushingsless	0.8 x L/20mm p-p max.; L = Shaft Length
With Bushing	0.5 x L/20mm p-p max.; L = Shaft Length
Shaft Push-Pull Strength	5 kgf for 3 sec.
Stop Strength	3 kgf-cm min.
Detent Position	
280° travel	140° ± 5°
300° travel	150° ± 5°
Detent Torque	30 to 300 gf-cm
Rotational Life	5,000 cycles
Panel Nut Tightening Torque	6 kgf-cm
IP Rating	40



Mounting Hardware	One flat washer and one mounting hex nut supplied with bushing option
Packaging	Bulk
Weight	2 grams

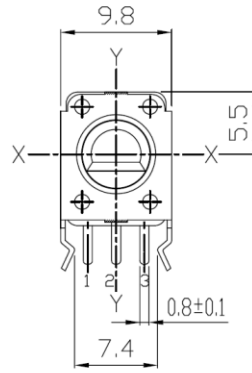
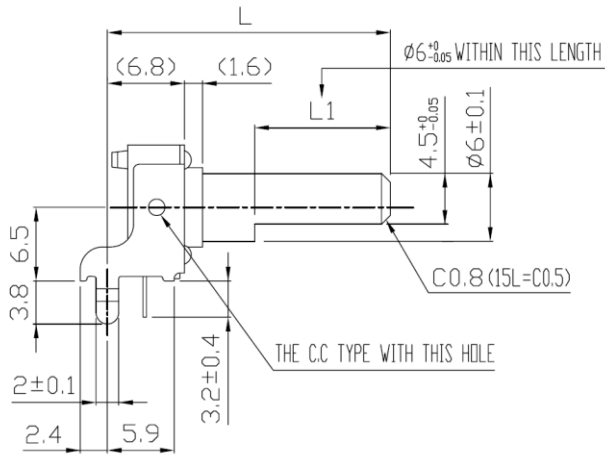
## Environmental

	Min	Typical	Max	Unit
Operating Temperature	-10	–	+70	°C
Storage Temperature	-30	–	+70	°C
Soldering Conditions				
Wave Solder	Preheat: 100°C max for 2 min max; Solder temperature: 260°C ± 5°C for 5 sec max.; No clean foam flux recommended			
Manual Solder	350°C ± 5°C for 3 sec max.; Sn95Ag5 no clean solder			
Wash	Not recommended			
Moisture Sensitivity Level	1			
ESD Classification (HBM)	Not applicable			

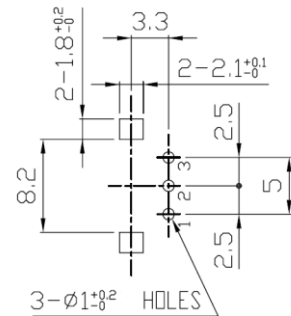
*All testing is performed at room ambient conditions except as noted. Users should verify device actual performance in their specific applications .  
This product is compliant to RoHS3 Directive 2015/863 Amendments of Annex II on 31 March 2015, and REACH SVHC Directive EC 1907/2006 Amendments of Annex XIV & Annex XVII on 15 January 2018.  
Custom and value-added options available on request. Please contact your sales representative for additional information.*

### Mechanical Specifications

#### Series 09VR1M Horizontal/Side Mount Bushingless

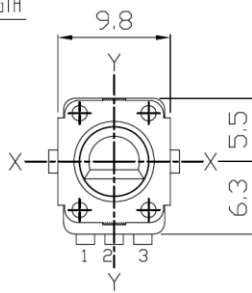
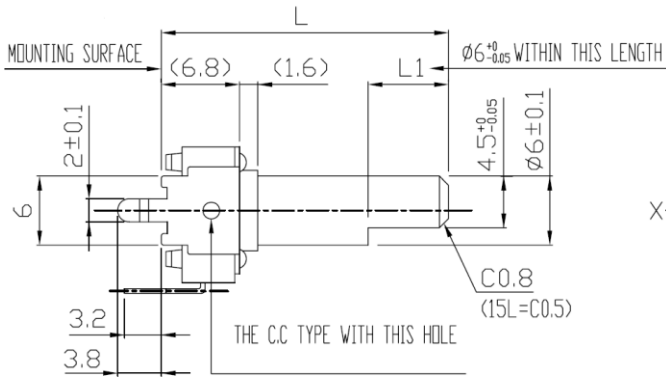


PCB MOUNTING DETAIL  
(TOLERANCE ±0.1)

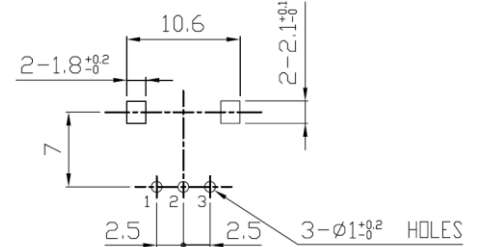


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

#### Series 09VR1U Vertical/Rear Mount Bushingless

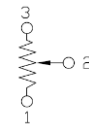


PCB MOUNTING DETAIL  
(TOLERANCE ±0.1)

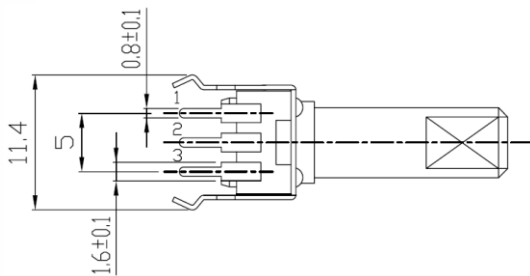


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

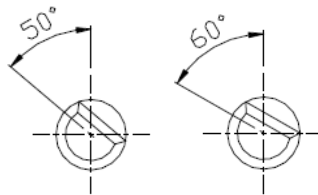
CIRCUIT DIAGRAM



LENGTH	
L	L1
15	6
20	7
25	12
30	12



Unit: mm



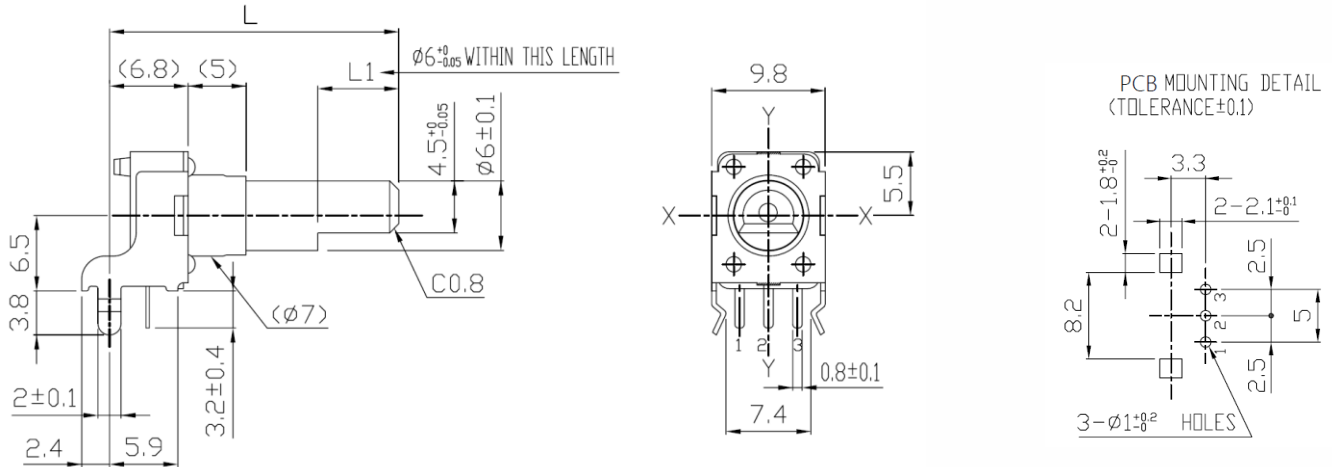
280° ROTATION      300° ROTATION

SHAFT SHOWN IN FULL CCW POSITION

TOLERANCES UNLESS OTHERWISE SPEC	
$L \leq 10$	±0.3
$10 < L \leq 100$	±0.5
$100 < L$	±0.8
ANGULAR DIMENSION	±5°

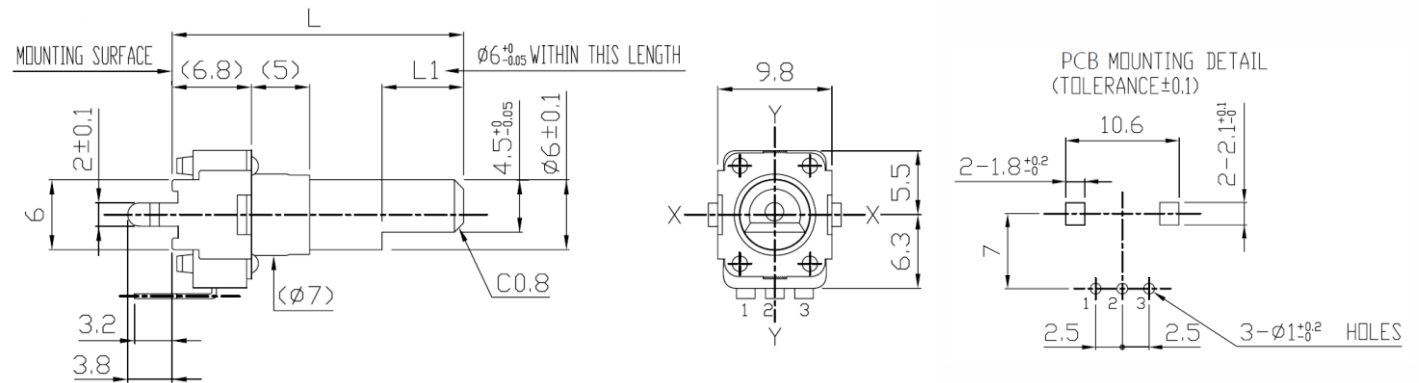
### Mechanical Specifications

#### Series 09VR1B Horizontal/Side Mount Sleeve Bushing



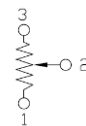
SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

#### Series 09VR1K Vertical/Rear Mount Sleeve Bushing

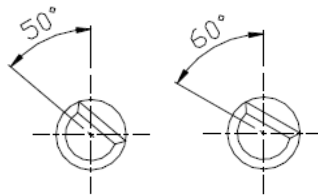
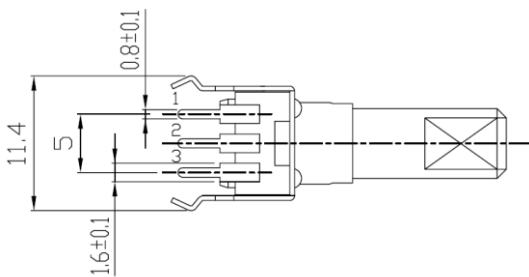


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

CIRCUIT DIAGRAM



LENGTH	
L	L1
20	7
25	7
30	12



280° ROTATION      300° ROTATION

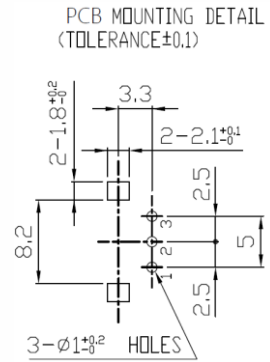
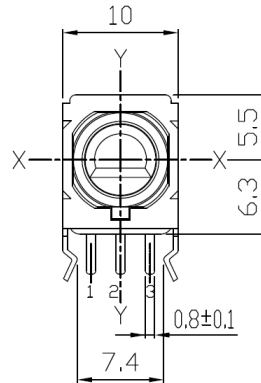
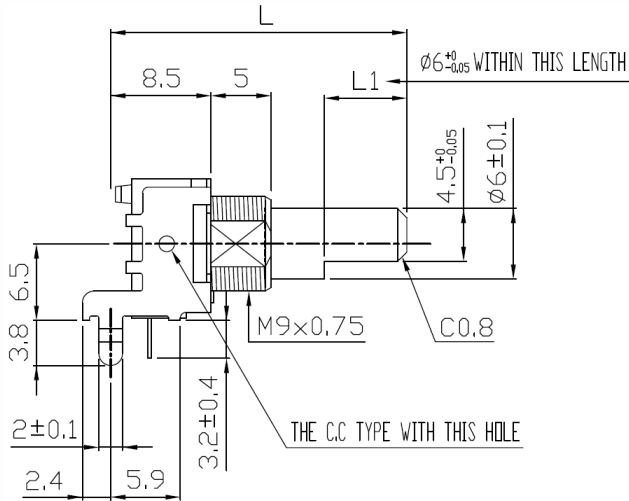
SHAFT SHOWN IN FULL CCW POSITION

Unit: mm

TOLERANCES UNLESS OTHERWISE SPEC	
L ≤ 10	±0.3
10 < L ≤ 100	±0.5
100 < L	±0.8
ANGULAR DIMENSION	±5°

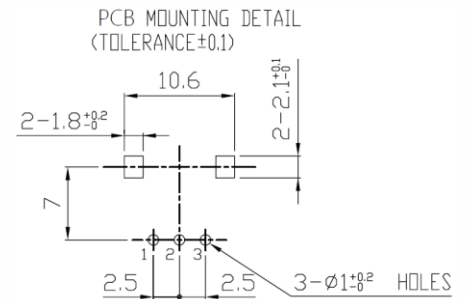
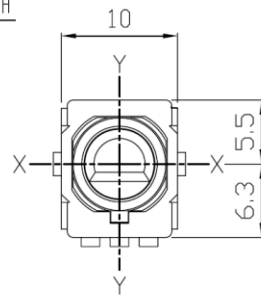
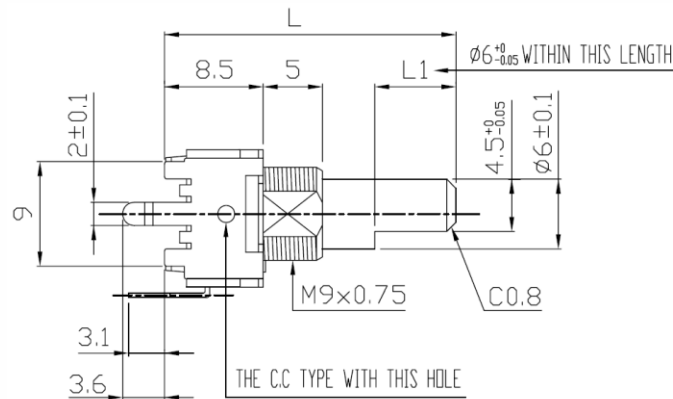
### Mechanical Specifications

#### Series 09VR1S Horizontal/Side Mount with Threaded Bushing



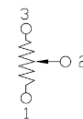
SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

#### Series 09VR1H Vertical/Rear Mount with Threaded Bushing

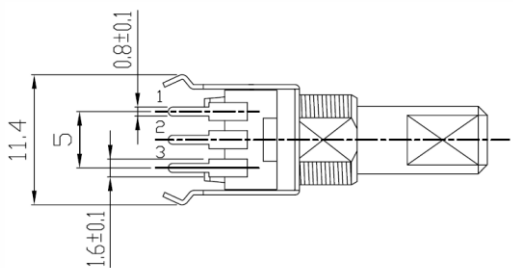


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

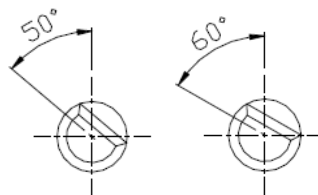
CIRCUIT DIAGRAM



LENGTH	
L	L1
25	7
30	12



Unit: mm



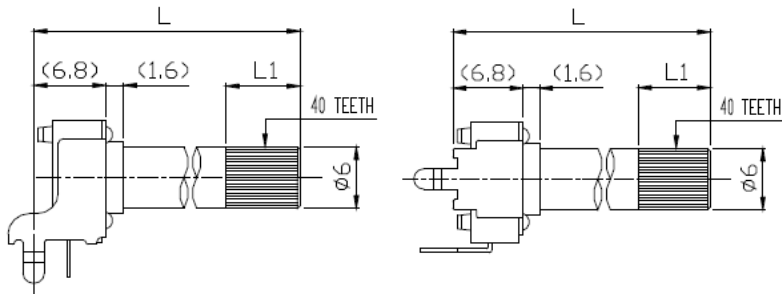
280° ROTATION      300° ROTATION

SHAFT SHOWN IN FULL CCW POSITION

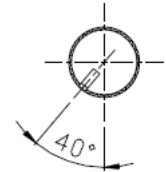
TOLERANCES UNLESS OTHERWISE SPEC	
$L \leq 10$	$\pm 0.3$
$10 < L \leq 100$	$\pm 0.5$
$100 < L$	$\pm 0.8$
ANGULAR DIMENSION	$\pm 5^\circ$

### Mechanical Specifications

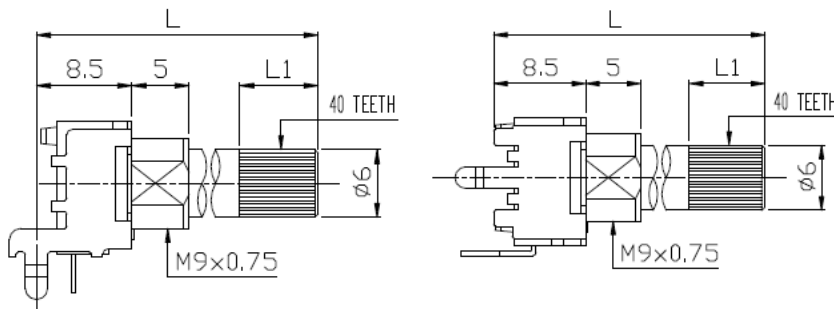
#### 40 Tooth Knurl Shaft Trim Option



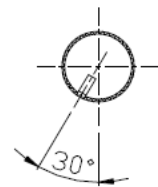
LENGTH	
L	L1
15	6
20	7
25	7
30	7



280° ROTATION



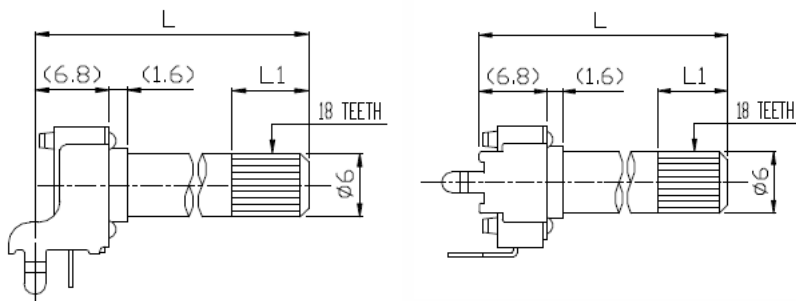
LENGTH	
L	L1
25	7
30	7



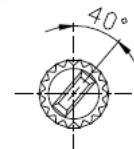
300° ROTATION

SHAFT SHOWN IN FULL CCW POSITION

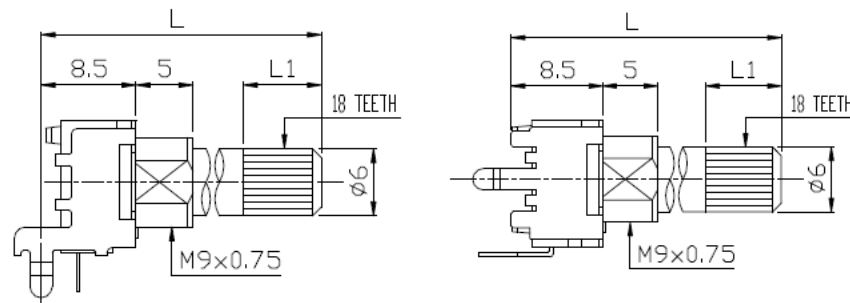
#### 18 Tooth Knurl Shaft Trim Option



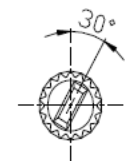
LENGTH	
L	L1
20	7
25	7



280° ROTATION



LENGTH	
L	L1
25	7



300° ROTATION

Unit: mm

SHAFT SHOWN IN FULL CCW POSITION



Electrical Specification  
Series 09VR Taper Graphs

