



# 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	B	20	F	2	N	103	B1

Code	Spec.
B	Horizontal/Side Mount Bushingsless, PC Pins, 6.5mm Height
M	Horizontal/Side Mount Sleeve Bushing, PC Pins, 6.5mm Height
S	Horizontal/Side Mount Thread Bushing, PC Pins, 6.5mm Height
H	Vertical/Rear Mount Thread Bushing, PC Pins
K	Vertical/Rear Mount Sleeve Bushing, PC Pins
U	Vertical/Rear Mount Bushingsless, PC Pins

Code	Spec.
B	Knurled (18 teeth)
F	Flatted
L	Knurled (40 teeth)

Code	Spec.
N	No Detent
C	Center Detent

Code	Spec.**
A2	10% Log
A3	15% Log
B1	linear
C3	15% Antilog

Code	Spec.
1	280°
2	300°

Code	Spec.
502	5kΩ
103	10kΩ
203	20kΩ
503	50kΩ
104	100kΩ
254	250kΩ
504	500kΩ

Code	Spec.
1	Single

Code	Spec.*
15	15 mm
20	20 mm
25	25 mm
30	30 mm

\* See shaft trim options for available lengths.

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

## Electrical Specifications

	Min	Typical	Max	Unit
Total Resistance Tolerance	-20	–	+20	%
Power Rating	–	+0.05	–	watt
Operating Voltage	–	–	+20	VDC
Residual Resistance	–	+300	–	$\Omega$
Slider Noise	–	–	+100	mV
Insulation Resistance	250 VDC for 1 min.	+100		M $\Omega$
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

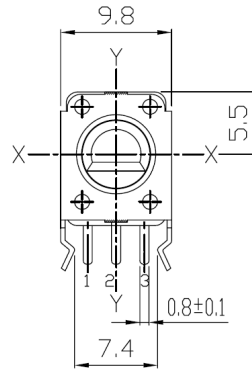
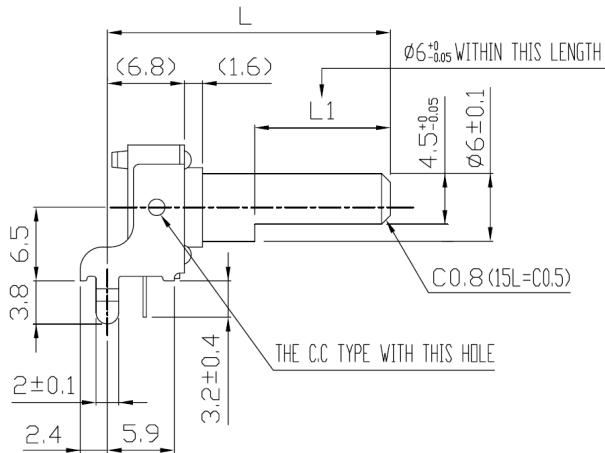
## Environmental

	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			

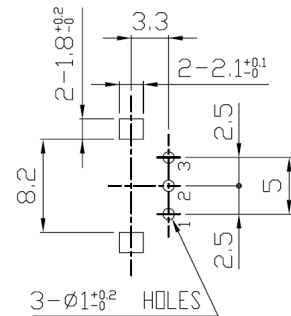
All testing is performed at room ambient conditions except as noted. Users should verify device actual performance in their specific applications.  
This product is compliant to RoHS3 Directive 2015/863 Amendments of Annex II on 31 March 2015, and REACH SVHC Directive EC 1907/2006 Amendments of Annex 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 09VR Horizontal/Side Mount Bushingless

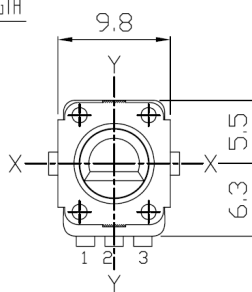
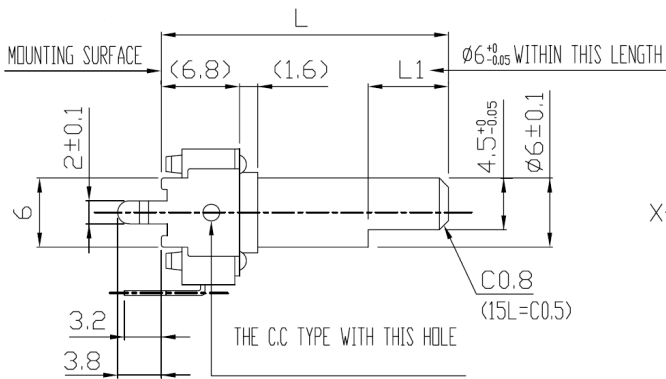


PCB MOUNTING DETAIL  
(TOLERANCE ± 0.1)

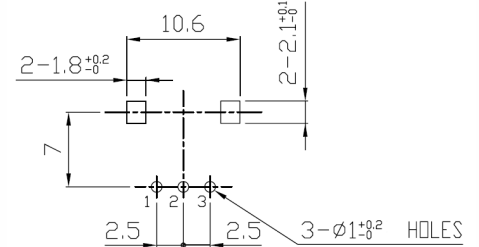


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

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

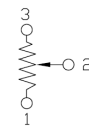


PCB MOUNTING DETAIL  
(TOLERANCE ± 0.1)

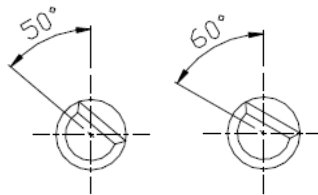
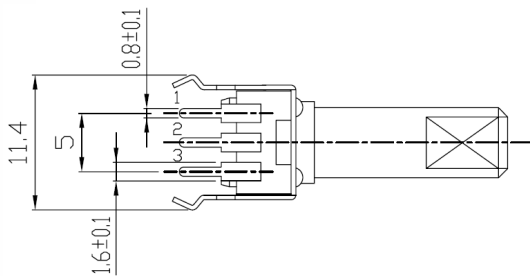


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

CIRCUIT DIAGRAM



LENGTH	
L	L1
15	6
20	7
25	12
30	12



280° ROTATION      300° ROTATION

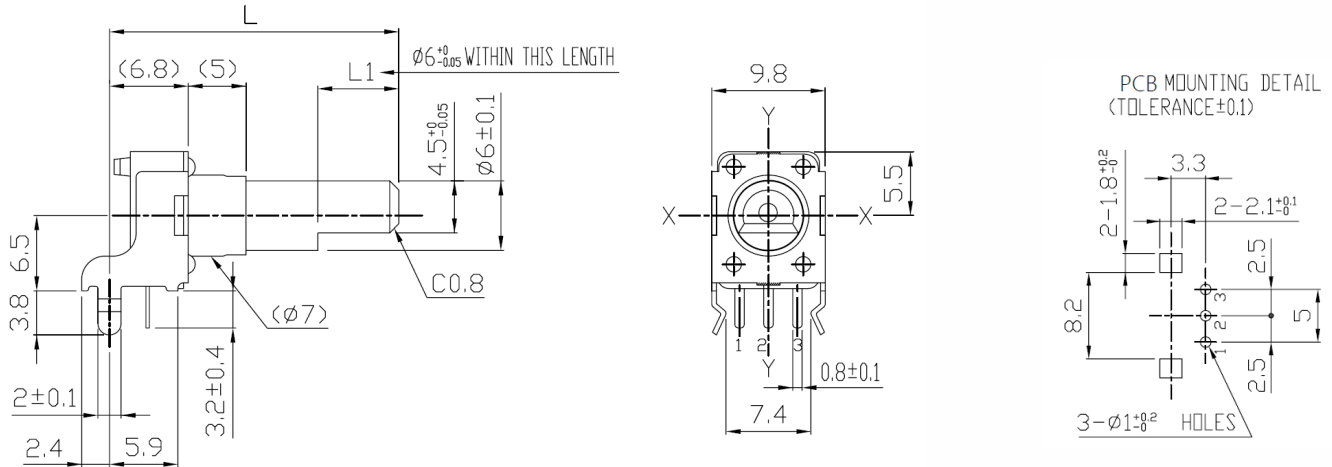
SHAFT SHOWN IN FULL CCW POSITION

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

Unit: mm

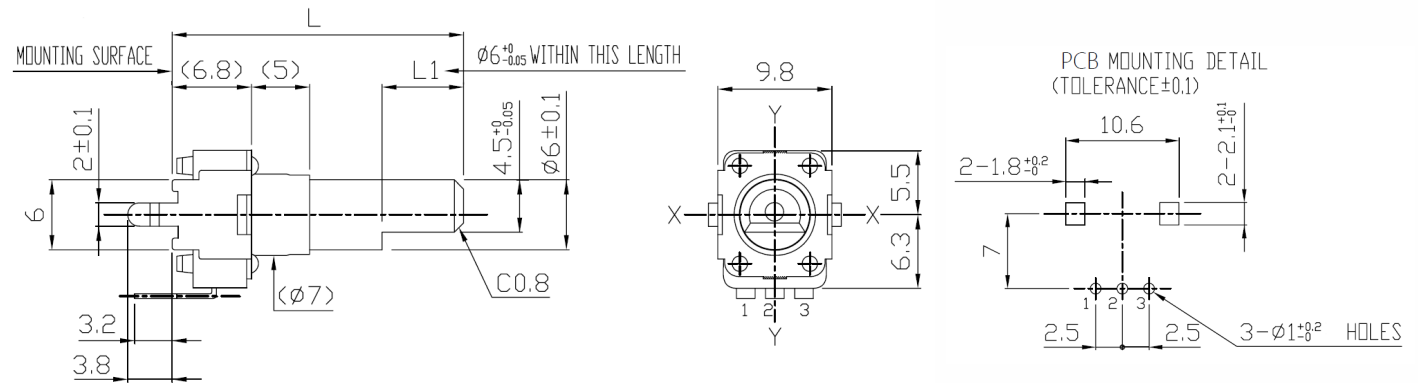
### Mechanical Specifications

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



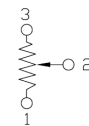
SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

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

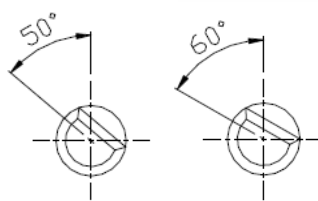
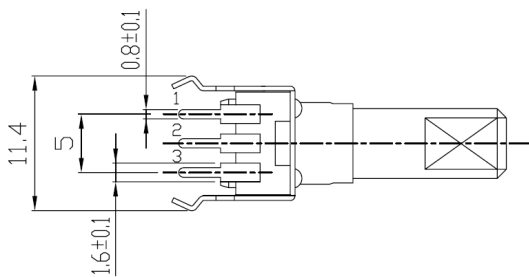


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

CIRCUIT DIAGRAM



LENGTH	
L	L1
20	7
25	7
30	12



280° ROTATION      300° ROTATION

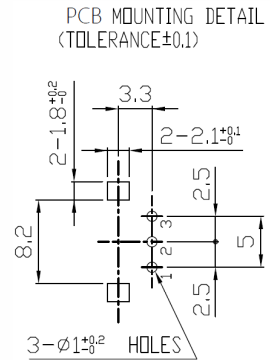
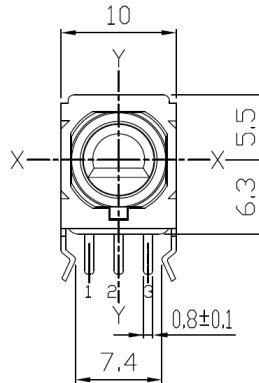
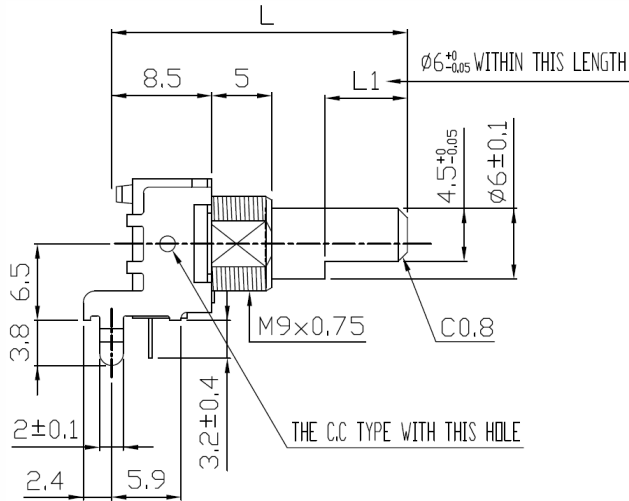
SHAFT SHOWN IN FULL CCW POSITION

Unit: mm

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

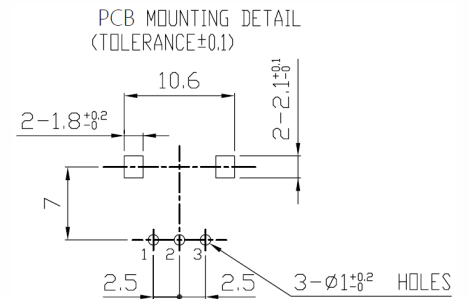
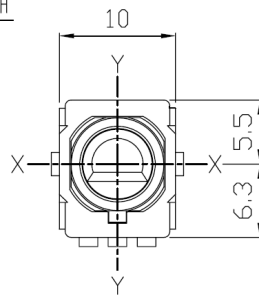
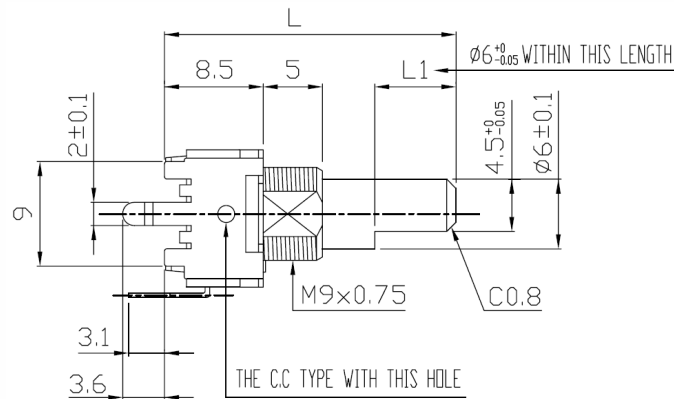
### Mechanical Specifications

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



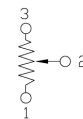
SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

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

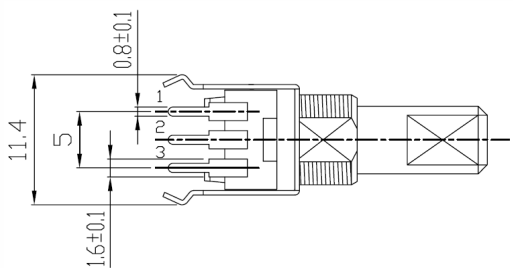


SHAFT SHOWN IN CENTER POSITION  
OR CENTER CLICK POSITION

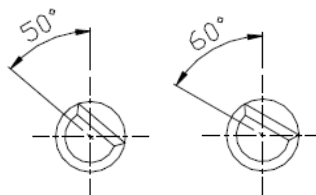
CIRCUIT DIAGRAM



LENGTH	
L	L1
25	7
30	12



Unit: mm



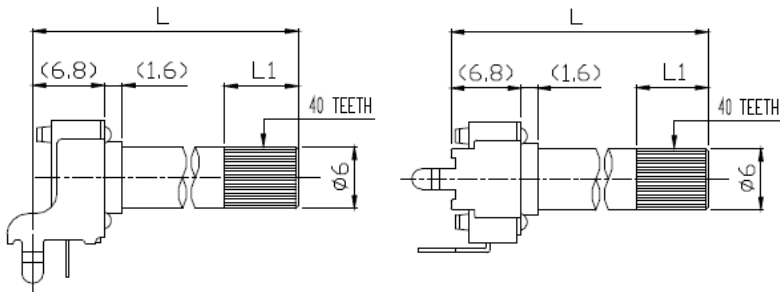
280° ROTATION      300° ROTATION

SHAFT SHOWN IN FULL CCW POSITION

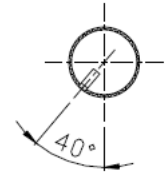
TOLERANCES UNLESS OTHERWISE SPEC	
$L \leq 10$	$\pm 0.3$
$10 < L \leq 100$	$\pm 0.5$
$100 < L$	$\pm 0.8$
ANGULAR DIMENSION	$\pm 5^\circ$

### Mechanical Specifications

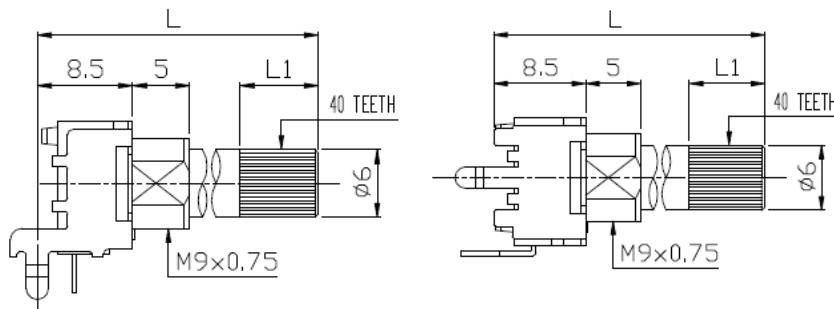
#### 40 Tooth Knurl Shaft Trim Option



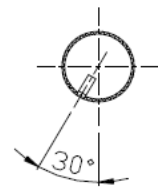
LENGTH	
L	L1
15	6
20	7
25	7
30	7



280° ROTATION



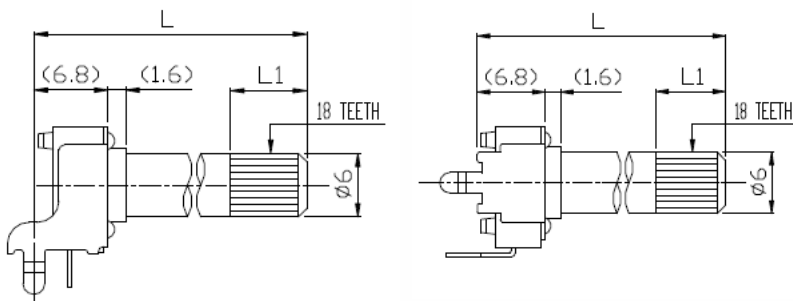
LENGTH	
L	L1
25	7
30	7



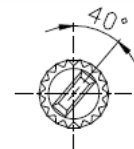
300° ROTATION

SHAFT SHOWN IN FULL CCW POSITION

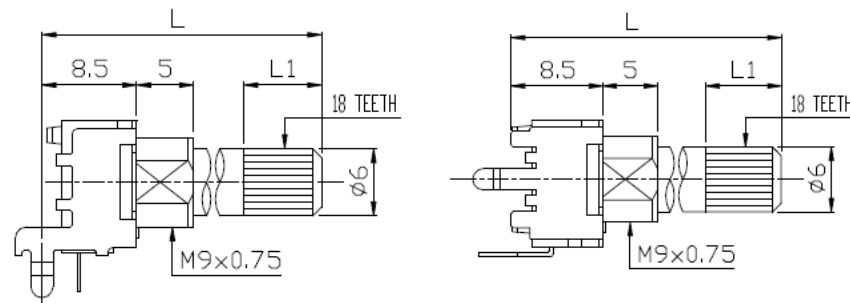
#### 18 Tooth Knurl Shaft Trim Option



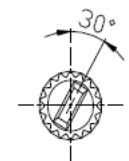
LENGTH	
L	L1
20	7
25	7



280° ROTATION



LENGTH	
L	L1
25	7



300° ROTATION

Unit: mm

SHAFT SHOWN IN FULL CCW POSITION