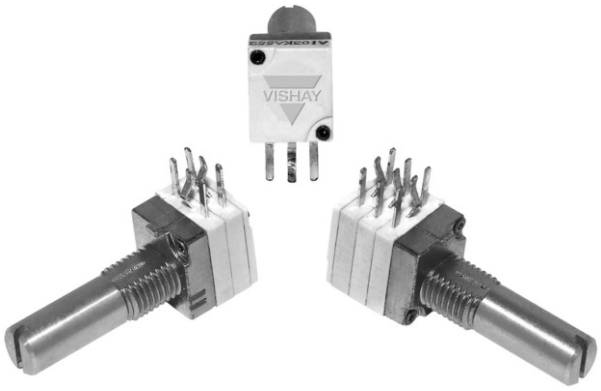
9 mm Multi-Ganged Potentiometer



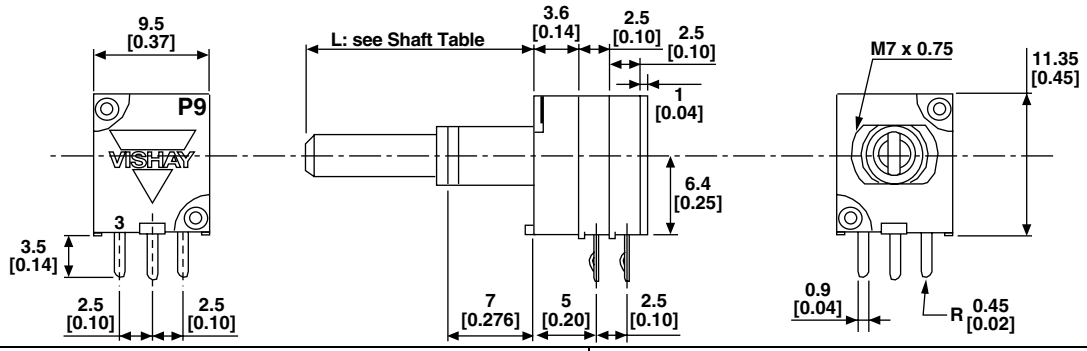
FEATURES

- Conductive plastic element
- Ultra compact (extra miniature module size)
- Multiple assemblies (up to seven modules)
- Shaft and panel sealed option
- Center mechanical detent fully integrated in option
- Center tap option
- Custom designs available on request

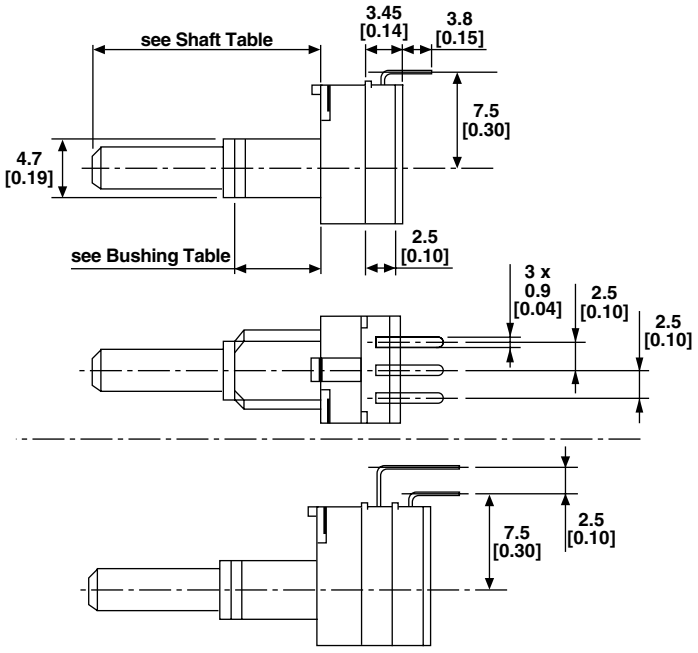
RoHS COMPLIANT

DIMENSIONS in millimeters [inches] (± 0.5 mm)

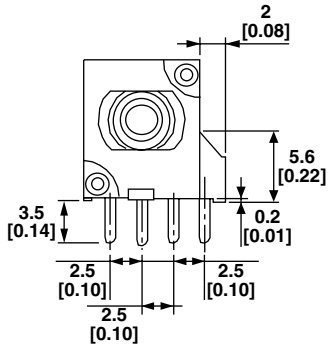
P9A



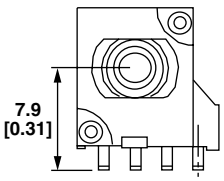
P9A: Vertical Mounting



P9A Center Tap:



P9A Center Tap: Vertical Mounting



P9 - GENERAL SPECIFICATIONS

ELECTRICAL		
Resistive Element		Conductive Plastic
Electrical Travel		270° ± 10°
Resistance Range	**linear law**	1 kΩ up to 1 MΩ
	non linear law	2.2 kΩ up to 500 kΩ
Power Rating at 70 °C	**linear law**	0.1 W
	non linear law	0.05 W
	multiple assemblies linear law	0.05 W per module
	multiple assemblies non linear law	0.025 W per module
Temperature Coefficient (Typical)		± 500 ppm
Limiting Element Voltage		10 V_{DC} 50 V_{AC}
End Resistance (Typical)		3 Ω
Contact Resistance Variation	**linear law (typical)**	2 % of nominal resistance
Independent Linearity	**linear law (typical)**	± 5 %
Insulation Resistance		100 MΩ at 250 V_{DC}
Dielectric Strength		300 V_{AC} during 1 min
Attenuation (Typical)		90 dB max./0.05 dB min.

MECHANICAL	
Mechanical Rotational Life	25 000 cycles min.
Mechanical Travel	300° ± 5
Operating Torque	0.2 Ncm up to 2.5 Ncm (0.3 to 3.5 oz.inch)
End Stop Torque	50 Ncm max. (4.4 lbinch max.)
Shaft Push/Pull Force	7 DaNcm max. (15.7 lbf max.)
Weight (One Module)	6.25 g (without nut and washer) (0.22 oz.)

ENVIRONMENTAL	
Temperature Range	- 55 °C up to 100 °C
Climatic Category	55/100/21

MARKING

- Type of element
- Code for tolerance
- Code for ohmic value
- Taper
- Code for date code

PACKAGING

- B2 = Box of 25 pieces
- B4 = Box of 100 pieces

PERFORMANCES

TESTS	CONDITIONS	TYPICAL VALUE AND DRIFTS		
		$\Delta R_T/R_T$ (%)	$\Delta R_{1\text{-}2}/R_{1\text{-}2}$ (%)	OTHER
Load Life	1000 h under nominal power at 70 °C (90 ON/30 OFF)	± 5 %	± 10 %	Contact resistance variation < 5 % Rn
Temperature Cycle	- 55 °C to + 100 °C 5 cycles	± 0.5 %	-	-
Moisture	21 days at 40 ± 2 °C and 90 - 95 % relative humidity	± 5 %	-	Insulation resistance > 10 MΩ
Rotational Life	25 000 cycles at rated power 90 % of electrical travel 16 cycles per minute Temperature: 20 °C	± 6 %	± 12 %	Contact resistance variation
Shock	50 g, 11 ms 3 shocks - 3 directions	± 0.2 %	± 0.5 %	-
Vibration	10 - 55 Hz 0.75 mm or 10 g 6 h	± 0.2 %	-	± 0.5 %

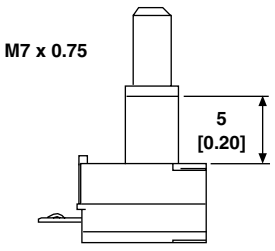
SAP ORDERING INFORMATION (Part Number 18 digits)

P	9	A	1	R	1	0	0	F	I	R	X	1	1	0	3	M	A

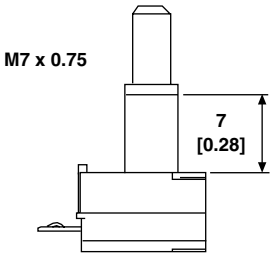
MODEL	NUMBER OF MODULES	BUSHING	LOCATING PEG	PANEL SEALED	DETENT OPTION	SHAFT	PIN STYLE	RESISTANCE CODE/ TOLERANCE CODE/ TAPER
	1 to 7	R = M7 x 0.75 - 7 mm X = M7 x 0.75 - 5 mm						

BUSHING

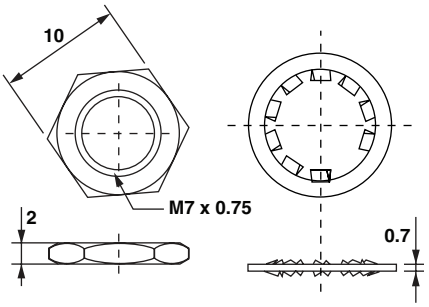
X: Bushing



R: Bushing



- Nut tightening torque M7 bushing 120 Ncm max. (10.6 lbinch max.)
- Nut and washer are delivered in standard packaging

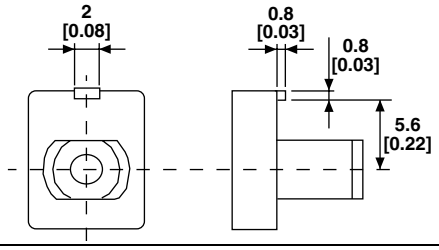


SAP ORDERING INFORMATION (Part Number 18 digits)

P	9	A	1	R	1	0	0	F	I	R	X	1	1	0	3	M	A

MODEL	NUMBER OF MODULES	BUSHING	LOCATING PEG	PANEL SEALED	DETENT OPTION	SHAFT	PIN STYLE	RESISTANCE CODE/ TOLERANCE CODE/ TAPER
			0 = without 1 = with	0 = without P = with	0 = without M = center detent	see code below		

LOCATING PEG

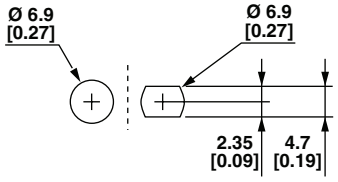


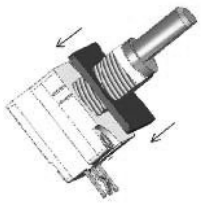
DETENT OPTION

- Stable position and in Mid mechanical travel
- Rotational life: 10 000 actuations

PANEL SEALED

- Only for R bushing without locating peg.
- Front mounting surface for R bushing with panel sealed option is: 6.2 mm ± 0.5
- The ring is delivered with nut and washer.
- The seal should be placed between panel and body. Sealing is obtained by tightening the seal against the panel when mounting the potentiometer. Tightening torque 50 Ncm up to 100 Ncm
- Advised Panel Hole dimensions



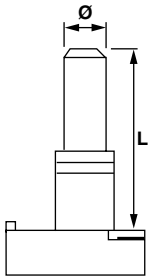
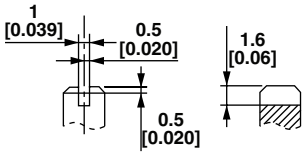
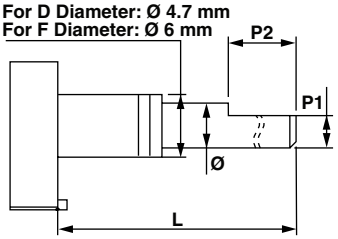
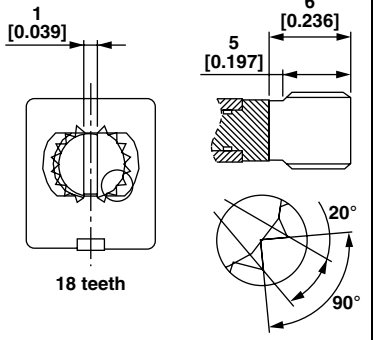


SHAFT DIAMETER - FMS - STYLE

L (mm)	15				20			25			30		
Style	**Round**	**Slotted**	**Flat**	**Knurled**	**Round**	**Slotted**	**Flat**	**Round**	**Slotted**	**Flat**	**Round**	**Slotted**	**Flat**
Ø 3.5	DFR	DFS	DFF	-	DIR	DIS	DIF	DLR	DLS	DLF	DMR	DMS	DMF
Ø 6	FFR	FFS	FFF	FGK (1)	FIR	FIS	FIF	FLR	FLS	FLF	FMR	FMS	FMF

Note

(1) For X bushing (16 mm)

Round	Slotted	Flat	Knurled
			

P1	Ø 3.5 = 2.5 mm Ø 6 = 4.5 mm
P2	L = 15 mm → 7 mm L > 15 mm → 12 mm

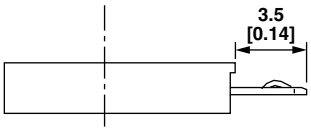
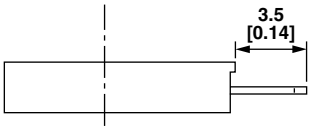
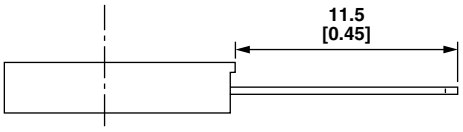
SAP ORDERING INFORMATION (Part Number 18 digits)

P	9	A	1	R	1	0	0	F	I	R	X	1	1	0	3	M	A

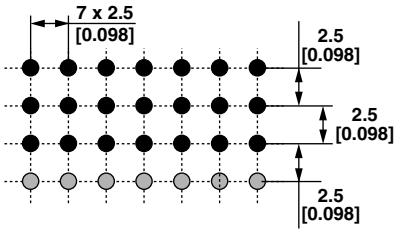
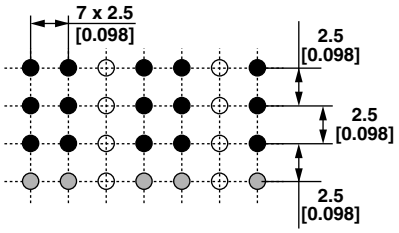
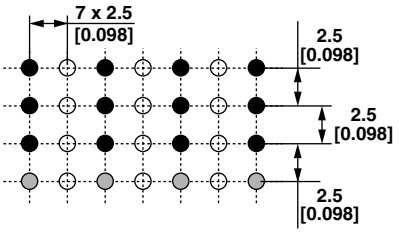
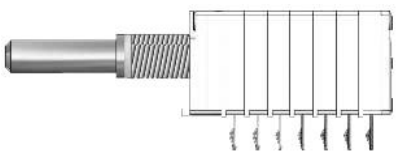
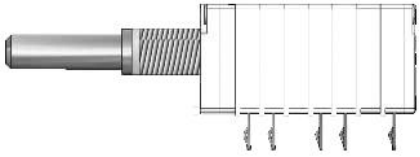
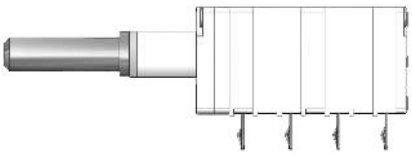
MODEL	NUMBER OF MODULES	BUSHING	LOCATING PEG	PANEL SEALED	DETENT OPTION	SHAFT	PIN STYLE	RESISTANCE CODE/ TOLERANCE CODE/ TAPER
							see Pin Table First digit: Pin type X, J, S, Z, P, L W or N Second digit: Pin Configuration 1, 2, 3, 4 or N	

PIN STYLE - HORIZONTAL MOUNTING

PIN TYPE

X	PC mount		
J	PC mount center tap		
S	Soldering style		
Z	Center tap soldering style		
L	Long pin		
P	Center tap with long pin		
NN	If different types of pin style in the same potentiometer		

PIN CONFIGURATION

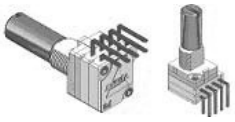
1	2	3
		
		
2.5 mm between gang	2.5 - 5 - 2.5 mm between gang	5 mm between gang

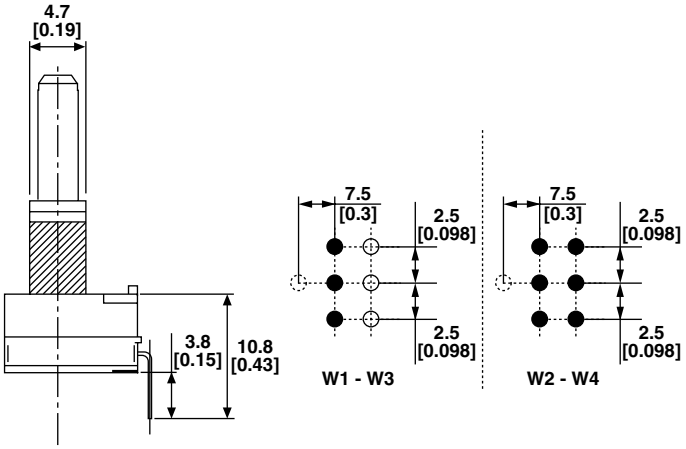
SAP ORDERING INFORMATION (Part Number 18 digits)

P	9	A	1	R	1	0	0	F	I	R	X	1	1	0	3	M	A
MODEL	NUMBER OF MODULES		BUSHING		LOCATING PEG	PANEL SEALED		DETENT OPTION		SHAFT	PIN STYLE			RESISTANCE CODE/ TOLERANCE CODE/ TAPER			

see Pin Table
First digit:
Pin type
X, J, S, Z, P, L W or N
Second digit:
Pin Configuration
1, 2, 3, 4 or N

PIN STYLE - VERTICAL MOUNTING

W1	Single gang vertical mounting	
W2	Dual gang vertical mounting	
W3	Single gang with center tap vertical mounting	
W4	Dual gang with center tap vertical mounting	



SAP ORDERING INFORMATION (Part Number 18 digits)

P	9	A	1	R	1	0	0	F	I	R	X	1	1	0	3	M	A

MODEL	NUMBER OF MODULES	BUSHING	LOCATING PEG	PANEL SEALED	DETENT OPTION	SHAFT	PIN STYLE	RESISTANCE CODE/ TOLERANCE CODE/ TAPER
								Resistance code: 102 = 1 kΩ to 105 = 1 MΩ Tolerance code: M = 20 % - K = 10 % Taper: A, L, W, F, S, R or Special code given by VISHAY

RESISTANCE CODE

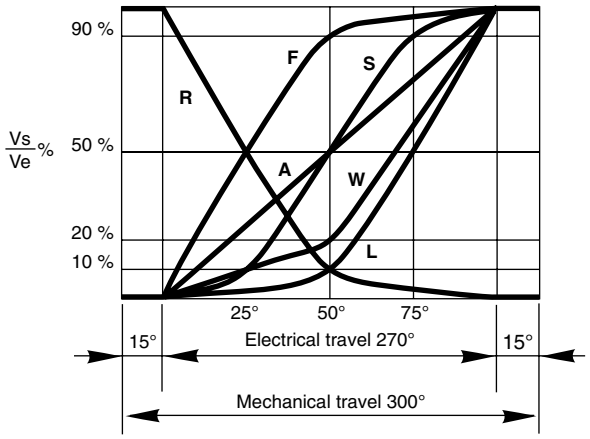
See Conversion Table for ohmic value

TOLERANCE

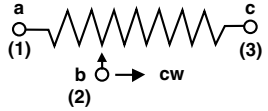
Standard: M = ± 20 %

On request: K = ± 10 %

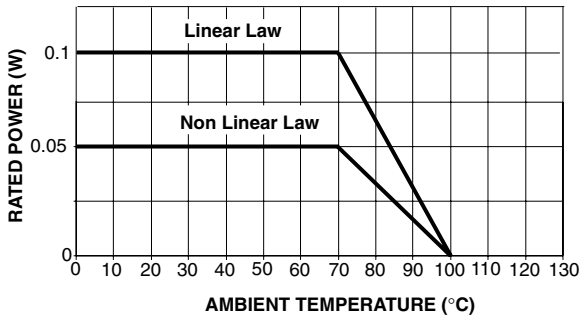
VARIATION LAWS



CIRCUIT DIAGRAM



POWER RATING CHART



SPECIAL CODES GIVEN BY VISHAY

OPTIONS AVAILABLE

- Custom shaft
- Design on request
- Specific linearity
- Specific interlinearity
- Specific variation law

PART NUMBER DESCRIPTION (for information only)

P9A	1	R	1	0	0	FI	R	X1	10K	20 %	A			e3
MODEL	MODULES	BUSHING	LOCATING PEG	SEALING OPTIONS	DETENT OPTIONS	SHAFT	SHAFT	LEADS	VALUE	TOL.	TAPER	SPECIAL	SPECIAL	LEAD (Pb)-FREE

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