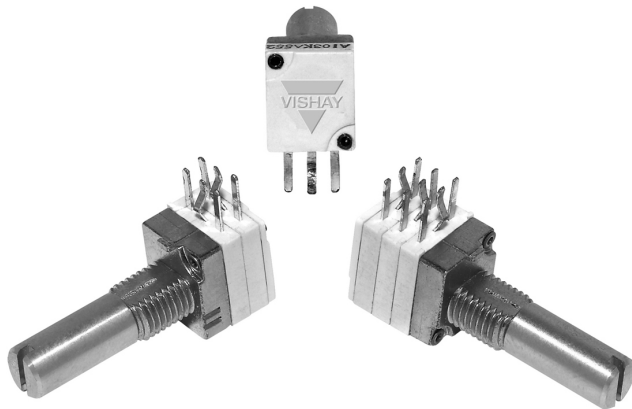


# 9mm Multi-Ganged Potentiometer

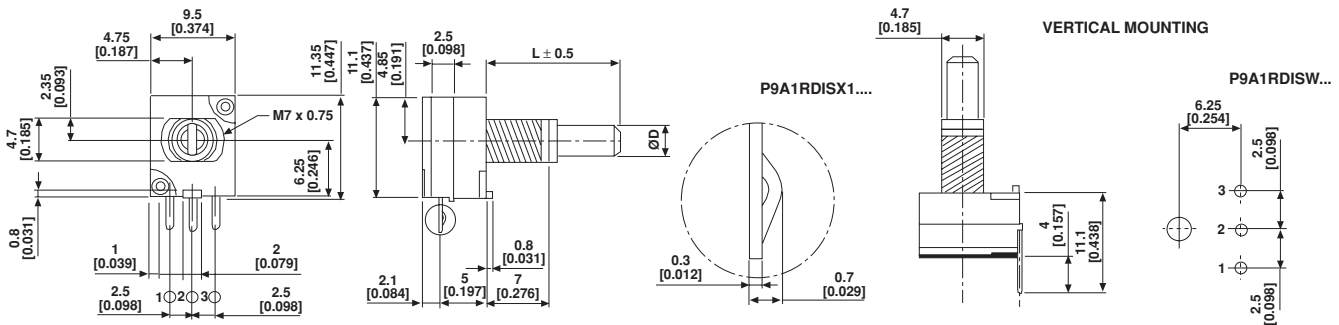


## FEATURES

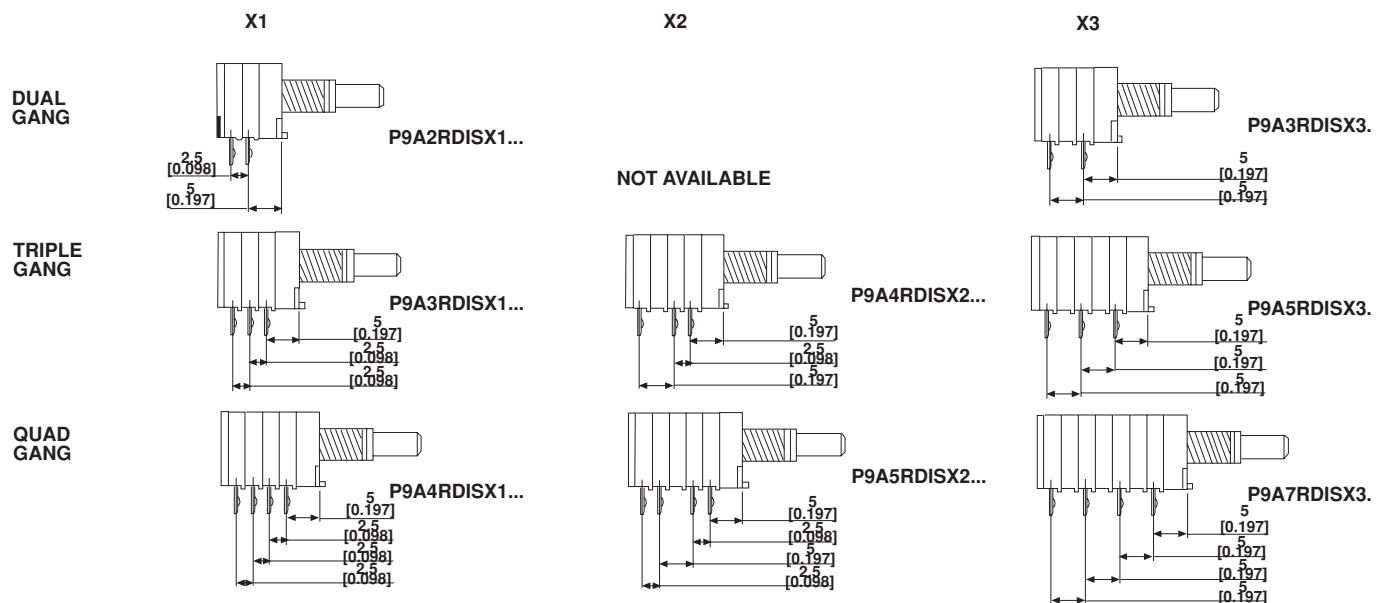
- CERMET (P9S) element for industrial and military applications
- Conductive Plastic (P9A) element for professional audio applications
- Ultra compact (Extra miniature module size)
- Multiple assemblies (up to seven modules)
- Center mechanical detent fully integrated, in option
- Custom version available on request
- Fully sealed option

VERSATILE	MODULAR	ULTRA-COMPACT	ROBUST
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**DIMENSIONS** in millimeters [inches] - General tolerance:  $\pm 0.5\text{mm}$  **Note:** Shaft is shown in mid-travel

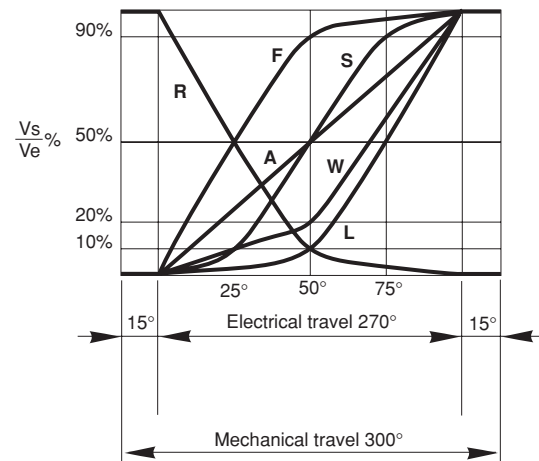


## MOST COMMON PINS STYLES - OTHERS AVAILABLE ON REQUEST



<b>ELECTRICAL SPECIFICATIONS</b>			
		<b>P9A</b>	<b>P9S</b>
<b>Resistive element</b>		Conductive Plastic	CERMET
<b>Electrical travel</b>		270° ±10°	270° ± 10°
<b>Resistance range</b>	<b>Linear Law</b>	1 KΩ up to 1 MΩ	47Ω up to 2.2MΩ
	<b>Non-Linear Law</b>	2K2 up to 500KΩ	100Ω up to 1MΩ
<b>Tolerance</b>	<b>Standard</b>	± 20%	± 20%
	<b>On request</b>	-	± 5% or ± 10%
<b>Power rating</b>	<b>Linear Law</b>	0.1W at 70°C	0.2W at 70°C
	<b>Non linear Law</b>	0.05W at 70°C	0.1W at 70°C
	<b>Multiple assemblies</b>	0.05 W per module	0.1W per module
	<b>Linear Law</b>		
	<b>Multiple assemblies</b>	0.025 W per module	0.05W per module
	<b>Non linear Law</b>		
<b>Temperature coefficient</b>		± 1000ppm	± 150ppm
<b>Limiting element voltage</b>		10V (DC)	20V (DC)
		50V (AC)	100V (AC)
<b>End resistance (typical)</b>		2Ω	2Ω
<b>Contact Resistance Variation</b>	<b>Linear Law</b>	1% of nominal resistance	2% of nominal resistance
<b>Independent Linearity (typical)</b>		± 5%	± 5%
<b>Insulation Resistance</b>		100MΩ at 250VDC	100MΩ at 250VDC
<b>Dielectric strength</b>		300V <sub>AC</sub> during 1 min	300V <sub>AC</sub> during 1 min
<b>Attenuation (typical)</b>		90dB max/0.05dB min	-

<b>MECHANICAL SPECIFICATIONS P9S AND P9A</b>	
<b>Mechanical travel</b>	300 ± 5°
<b>Mechanical rotational life</b>	50000 cycles
<b>Operating torque</b>	0.2N.cm up to 2.5N.cm
<b>End Stop torque</b>	50N.cm
<b>Nut tightening torque</b>	
<b>M7 bushing</b>	120N.cm
<b>Push/Pull force</b>	10DaN
<b>Weight</b>	6.25g (without nut and washer)

**VARIATION LAWS**




ENVIRONMENTAL SPECIFICATIONS		
	P9S	P9A
Temperature Range	-55°C up to + 125°C	-55°C up to +125°C
Climatic Category	55 / 125 / 56	55 / 125 / 21
Sealing (optional)	IP 64 (IP67)	IP 64 (IP 67)

**SOLDERING CONDITION**

Soldering Condition 300°C max within 3s max

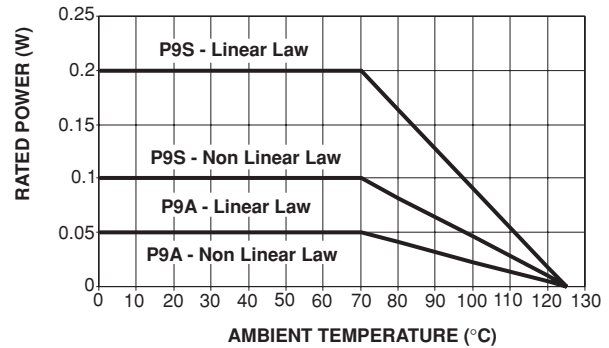
**AVAILABLE OPTIONS**

- Custom shafts or design on request
- Rotational mechanical detents without any raising dimensions
- Bushing with or without locating PEG (with as a standard at 6 o' clock position)
- Spacer module(s) to increase the distance between rows of pins (by step of 2.5mm - 3 spacers max)
- Center tap
- Specific linearity/ interlinearity on request
- Sealing: IP67

**MARKING**

- Type of element: A-conductive plastic, S-cermet
- Code for tolerance
- Code for ohmic value
- Taper
- Code for date code

**POWER RATING CHART**



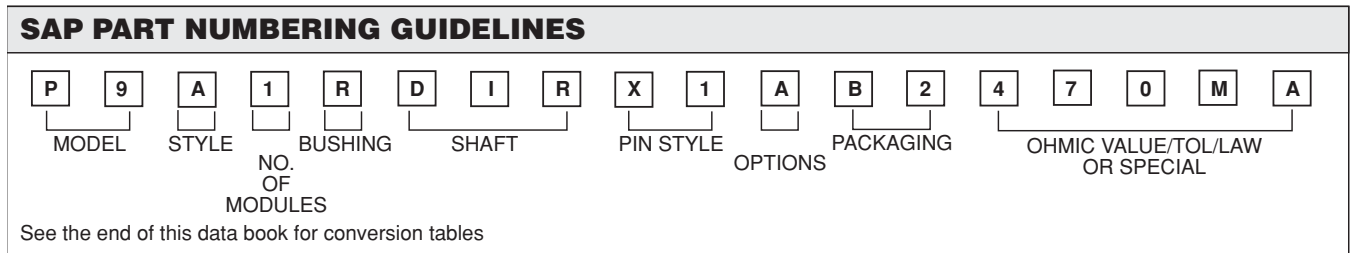
PERFORMANCES				
TESTS	CONDITIONS	TYPICAL VALUE AND DRIFTS		
			P9A	P9S
Load Life	1000 hours under nominal power at 70°C (90 on/30 off)	Total resistance shift	± 5% of nominal resistance	± 2% of nominal resistance
		Contact resistance variation	Less than 5% of nominal resistance	Less than 4% nominal resistance
Temperature Cycle	- 55°C to + 125°C 5 cycles	Total resistance shift	± 0.5%	± 0.2%
Moisture	56 days (P9S) or 21 days (P9A) at 40 ± 2°C and 90 - 95% relative humidity	Total resistance shift Insulation resistance	± 5% of nominal resistance > 10MΩ	± 2% of nominal resistance > 10MΩ
Rotational Life	50,000 cycles without electrical load 600 cycles/hour and 5000 up to 8000 cycles a day over 90% of the effective rotational angle (total travel)	Total resistance shift	± 6% of nominal resistance  Slider noise less than 2% of nominal resistance	± 5% of nominal resistance  Slider noise less than 5% of nominal resistance
Climatic Sequence	Dry heat at + 125°C/damp heat/cold - 55°C/damp heat 5 cycles	Total resistance shift	-	± 1%
Shock	50g 11ms 3 shocks - 3 directions	Total resistance shift	± 0.2%	± 0.2%
		Resistance setting change	± 0.5%	± 0.5%
Vibration	10 - 55Hz 0.75mm or 10g 6 hours	Total resistance shift	± 0.2%	± 0.2%
		Voltage setting change	± 0.5%	± 0.5%



SHAFT STYLES																	
Diameter (mm)	L (mm)	15				20				25				30			
	STYLE	ROUND	SLOTTED	FLAT	KNURLED	ROUND	SLOTTED	FLAT	KNURLED	ROUND	SLOTTED	FLAT	KNURLED	ROUND	SLOTTED	FLAT	KNURLED
	3.5	DFR	DFS	DFF	DFK	DIR	DIS	DIF	DIK	DLR	DLS	DLF	DLK	DMR	DMS	DMF	DMK
6	FFR	FFS	FFF	FFK	FIR	FIS	FIF	FIK	FLR	FLS	FLF	FLK	FMR	FMS	FMF	FMK	

Note: The grey shaded cells show the most common dimensions.

ORDERING INFORMATION								
P9 MODEL	A STYLE	1 NUMBER OF MODULE	R BUSHING	DIR SHAFTS	X1 PIN STYLE	A OPTIONS	B2 PACKAGING	470MA RESISTANCE CODE/TOL/TAPER OR SPECIAL
General term for 9mm potentiometer	S = CERMET element A = Conductive Plastic element (size)	1 = one module 2 = two modules 3 = three modules 4 = four modules 5 = five modules 6 = six modules 7 = seven modules	R = M7 x 0.75 Length = 7mm	Dimensions Shafts: Standard shafts = See above (Example DI) Custom shafts = AP  Style: R = Round S = Slotted F = Flat K = Knurled	X1 = PC pins for horizontal mounting (2.5mm between gangs) X2 = PC pins for horizontal mounting (2.5 - 5 - 2.5mm between gangs) X3 = PC pins for horizontal mounting (5mm between gangs) W = PC pins for vertical mounting (only for one gang potentiometer)	A = Locating peg with centre detent B = Locating peg without detent C = Centre detent without locating peg 0 = Without Locating peg without center detent  Note: locating peg at 6 o clock position	B2 = boxes of 25 pieces B4 = boxes of 100 pieces  Note: minimum packaging unit = 25 pieces	Given by VISHAY to determine different ohmic value, tolerance, taper, custom design, etc OR Resistance code (see table below) in case of unique value, tolerance and taper for all modules
					Note: pitch between pins = 2.5mm (0.1 inch)			





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