Fully Sealed Container Cermet Potentiometers
Military and Professional Grade

P13V

P13T

P13 potentiometers fully conform to CECC 41301-001 specification, and exceed all performances required for RV6 type - MIL-R-94/3G specification. Their excellent performances are due to the use of a cermet-track sealed in a large case. P13 interchangeability with RV6, combined with the excellent stability of its rated characteristics make it fully acceptable for military and professional uses.

FEATURES

- 1.5 Watt at 70°C
- CECC 41 301-001 (A, B, C)
- MIL-R-94 (RV6)
- GAM T1
- High power rating
- High stability
- Fully sealed case
- Tight temperature coefficient
- Mechanical strength

ELECTRICAL SPECIFICATIONS

Resistive Element		cermet
Electrical Travel		270° ± 10°
Resistance Range		
	Linear Law	22Ω to 10MΩ
	Logarithmic Laws	100Ω to 2.2MΩ
Standard Series E3		1 - 2.2 - 4.7 and on request 1 - 2 - 5
Tolerance	**Standard**	± 20%
	On Request	± 10% - ± 5%
Power Rating	**Linear**	1.5 W at + 70°C
	Logarithmic	0.75 W at + 70°C
Temperature Coefficient		See Standard Resistance Element Data
Limiting Element Voltage (Linear Law)		350V
Contact Resistance Variation		3% Rn or 3Ω
End Resistance (Typical)		1Ω
Dielectric Strength (RMS)		2000V
Insulation Resistance (500 VDC)		10^6MΩ

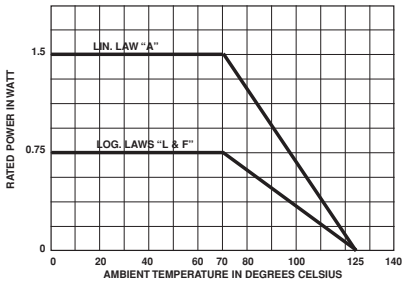
MECHANICAL SPECIFICATIONS

Mechanical Travel	300° ± 5°
Operating Torque (max. Ncm)	2 typical
End Stop Torque (max. Ncm)	style T.Q: 35 - V: 80
Tightening Torque (max. Ncm)	T.Q: 150 - V: 250
Unit Weight (max. g)	6 to 18

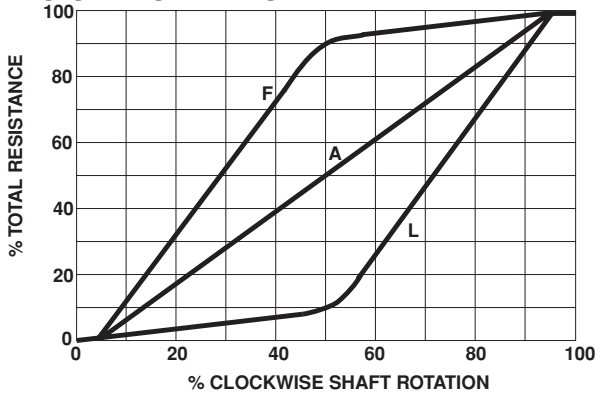
ENVIRONMENTAL SPECIFICATIONS

Temperature Range	– 55°C + 125°C
Climatic Category	55/125/56
Sealing	fully sealed container IP67

POWER RATING CHART



RESISTANCE LAWS

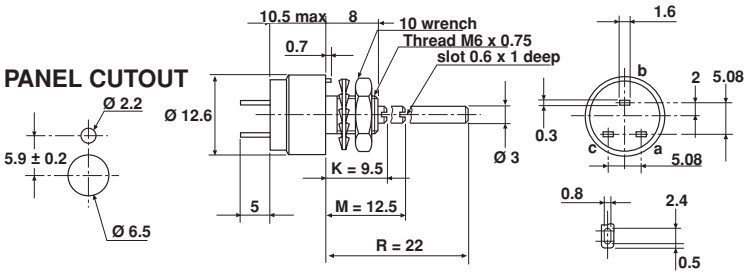


GUARANTEED TEMPERATURE COEFFICIENT

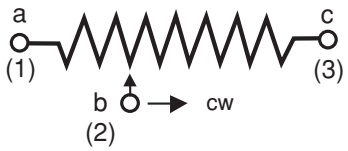
For values ≥ 100 ohms and in the temperature range + 20°C to + 70°C, the guaranteed temperature coefficient is ± 75 ppm/°C.

DIMENSIONS in millimeters

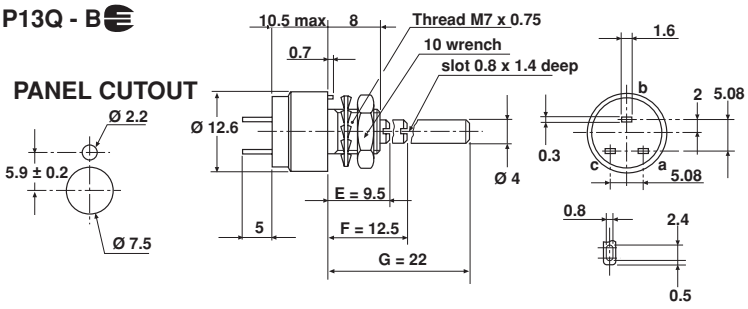
P13T - (PC32) A



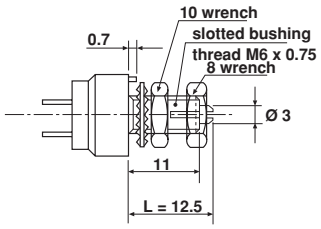
CIRCUIT DIAGRAM



P13Q - B

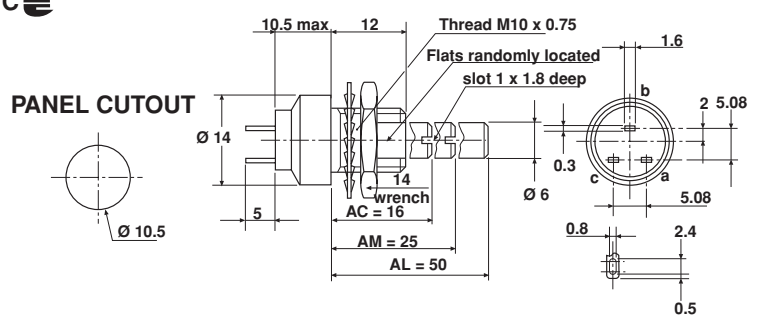


P13H

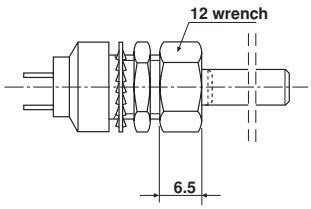


No locking on shaft Ø4mm

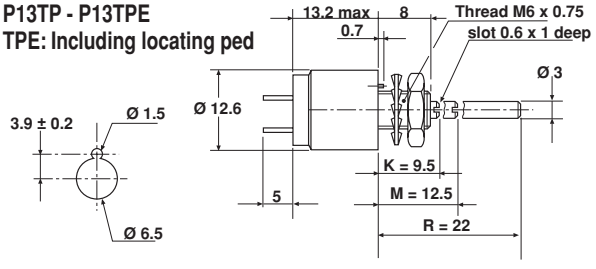
P13V - (PC33) C



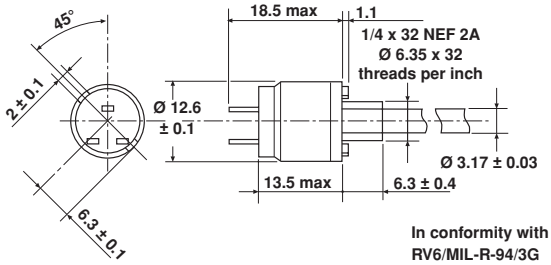
P13V DBAN



Panel sealed version
P13TP - P13TPE
TPE: Including locating ped

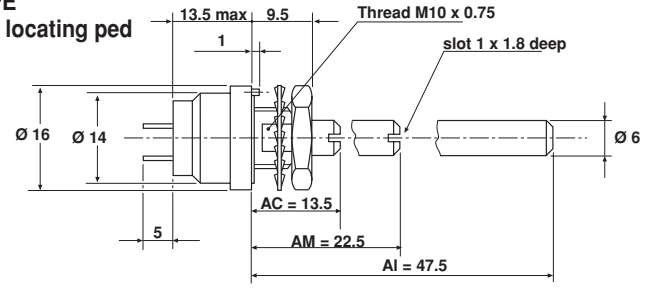


P13T - F55

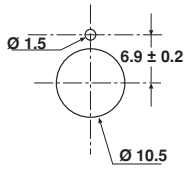


In conformity with
RV6/MIL-R-94/3G

Panel sealed version
P13VP - P13VPE
VPE: Including locating ped



PANEL CUTOUT



Undergoes European Quality Insurance System (CECC)

Tolerance unless otherwise specified ± 0.5

PERFORMANCE

NF C 83-253				TYPICAL VALUES AND DRIFTS	
TESTS	CONDITIONS	$\frac{\Delta RT}{RT}$(%) REQUIREMENTS	$\frac{\Delta R_{1-2}}{R_{1-2}}$(%)	$\frac{\Delta RT}{RT}$(%)	$\frac{\Delta R_{1-2}}{R_{1-2}}$(%)
Climatic Sequence	Phase A dry heat 125°C Phase B damp heat Phase C cold – 55°C Phase D damp heat 5 cycles	± 10%	± 10%	± 0.5%	± 1%
Long Term Damp Heat	56 days	± 10% Dielectric strength : 250 V Insulation resistance : > 100 MΩ	± 10%	± 0.5% Dielectric strength : 1000 V Insulation resistance : > 10^4 MΩ	± 1%
Rotational Life	25000 cycles	± 10 % Contact res. variat.: < 7% Rn		± 3% Contact res. variat.: < 2% Rn	
Load Life	1000 h at rated power 90'/30' - ambient temp. 70°C	± 10 % Contact res. variat.: < 7% Rn		± 1% Contact res. variat.: < 3% Rn	
Rapid Temperature Change	5 cycles – 55°C at + 125°C	± 3%		± 0.5%	
Shock	50 g 11 ms 3 successive shocks in 3 directions	± 2%		± 0.1%	± 0.2%
Vibration	10-55 Hz 0.75 mm or 10 g during 6 hours	± 2%		± 0.1%	$\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 0.2\%$

STANDARD RESISTANCE ELEMENT DATA

STANDARD RESISTANCE VALUES	LINEAR LAW			LOG LAWS			T.C. – 55°C + 125°C
	MAX. POWER AT +70°C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH ELEMENT	MAX. POWER AT +70°C	MAX. WORKING VOLTAGE	Max. cur. through element	
Ω	W	V	mA	W	V	mA	ppm/°C
22	1.5	5.74	261				0
47	↓	8.4	177				+ 200
100		12.2	122				
220		18.2	82.6				
470		26.5	56.5				
1k		38.7	38.7	0.75	27	27	
2.2k		57.5	26.1	↓	40	18	
4.7k		84	17.9		59	12	
10k		122,5	12.2		87	8.7	
22k		182	8.26		128	5.8	± 100
47k	1.5	265	5.65	↓	187	3.9	
100k	1.22	350	3.5	0.75	273	2.7	
220k	0.56	350	1.6	0.56	350	1.6	
470k	0.26	350	0.74	0.26	350	0.74	
1M	0.12	350	0.35	0.12	350	0.35	
2.2M	0.05	350	0.16				
4.7M	0.026	350	0.74				
10M	0.012	350	0.035				

MARKING

Printed VISHAY trademark, series, style, ohmic value (in Ω, kΩ or MΩ), tolerance in %, resistance law, manufacturing date, marking of terminals a.

SPECIAL FEATURES

PANEL SEALING

Potentiometers P13T and P13V can be fitted with a device providing sealing between the threaded bushing and the front panel. Their designation is P13TP and P13VP respectively or with a locating peg P13TPE and P13VPE.

SHAFT

Shaft lengths are measured from the mounting surface to the free end of the potentiometer. Special shafts are available, provided customer supplies a drawing.

The shaft slot is aligned to the wiper within ±10°.

SHAFT LOCKING

On potentiometers equipped with a 3 mm ø shaft, shaft locking can be obtained :

– either by a taper nut tightening a slotted bushing. Ask for P13H type. These devices are normally equipped with an L type shaft (12.5 mm with a slot),

– or by a tightening nut locked by a screw. Ask for ES1 type.

On potentiometers equipped with a ø 6 mm shaft, locking can be obtained by a taper nut applying pressure on a slotted notched washer. This device is supplied in a box as an accessory. Ask for DBAN.

These devices can be ordered separately. Please consult VISHAY SFERNICE.

ORDERING INFORMATION

P13	T	P or PE	M	22 kΩ	± 20%	A	XX	BO
SERIES	STYLE	PANEL SEALING	SHAFT	OHMIC VALUE	TOLERANCE	LAW	SPECIAL FEATURES	PACKAGING
	T 6 mm dia, 3 mm dia. shaft		**K** 9.5 mm, slotted **M** 12.5 mm, slotted **R** 22 mm, plain		**± 20%** standard **± 10%** on request	**A** linear **L** clockwise logarithmic **F** inverse clockwise logarithmic	F55 DBAN F32 (PCB Style)	
	Q 7 mm dia, 4 mm dia. shaft		**E** 9.5 mm, slotted **F** 12.5 mm, slotted **G** 22 mm, plain					
	V 10 mm dia, 6 mm dia. shaft		**AC** 16 mm, slotted **AM** 25 mm, slotted **AL** 50 mm, plain					
	H **locking** 6 mm dia, 3 mm dia. shaft		**L** 12.5 mm, slotted **AP** special shafts					