

Fully Sealed Container Cermet Potentiometers Military and Professional Grade



P13 potentiometers fully conform to CECC 41301-001 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.

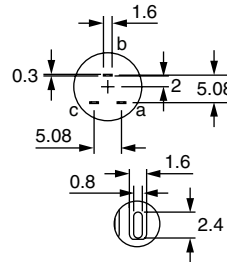
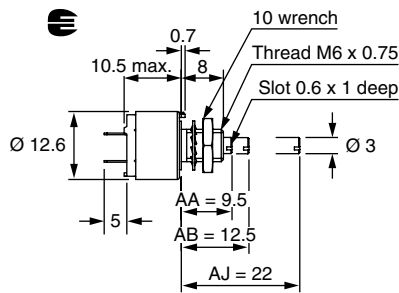
FEATURES

- High power rating 1.5 W at 70 °C
- CECC 41 301-001 (A, B, C)
- GAM T1
- Fully sealed case
- Tight temperature coefficient (± 75 ppm/°C typical)
- Mechanical strength
- Lead (Pb)-free and RoHS compliant since 0501
- Compliant to RoHS directive 2002/95/EC

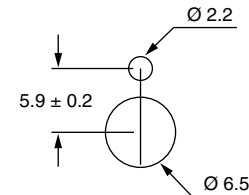


DIMENSIONS in millimeters (± 0.5)

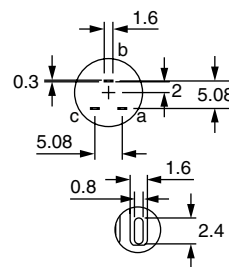
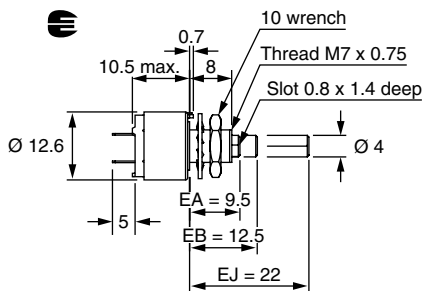
P13T-(PC32) A



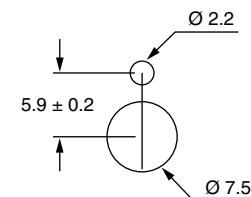
Panel Cutout



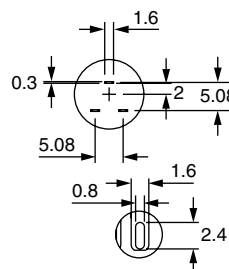
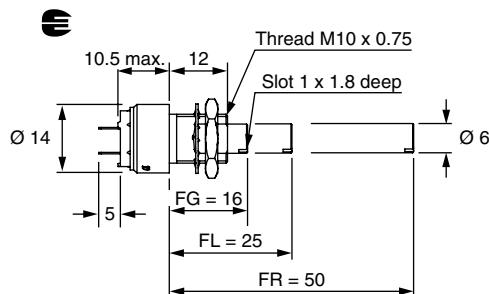
P13Q-B



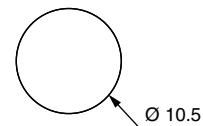
Panel Cutout



P13V-(PC33) C



Panel Cutout



Undergoes European Quality Insurance System

ELECTRICAL SPECIFICATIONS		
Resistive Element	Cermet	
Electrical Travel	270° ± 10°	
Resistance Range	Linear Law	22 Ω to 10 MΩ
	Logarithmic Laws	1 kΩ to 2.2 MΩ
Standard Series E3	1, 2.2, 4.7 and on request 1, 2, 5	
Tolerance	Standard	± 20 %
	On Request	± 10 % to ± 5 %
Variation Law		
Circuit Diagram		
Power Rating	<p>Linear 1.5 W at 70 °C</p> <p>Logarithmic 0.75 W at 70 °C</p>	
Temperature Coefficient (Typical)	<p>± 150 ppm/°C</p> <p>For values ≥ 100 Ω and in temperature range + 20 °C to + 70 °C, the typical temperature coefficient is ± 75 ppm/°C</p>	
Limiting Element Voltage (Linear Law)	350 V	
Contact Resistance Variation	3 % R _n or 3 Ω	
End Resistance (Typical)	1 Ω	
Dielectric Strength (RMS)	2000 V	
Insulation Resistance (300 VDC)	10 ⁶ MΩ	
Independent Linearity (Typical)	± 5 %	



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Military and Professional Grade

Vishay Sfernice

STANDARD RESISTANCE ELEMENT DATA							
STANDARD RESISTANCE VALUES	LINEAR LAW			LOGS LAW			TYPICAL TCR - 55 °C + 125 °C
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	
Ω	W	V	mA	W	V	mA	ppm/°C
22	1.5	5.74	261				± 150
47	1.5	8.4	177				
100	1.5	12.2	122				
220	1.5	18.2	82.6				
470	1.5	26.5	56.5				
1K	1.5	38.7	38.7	0.75	27	27	
2.2K	1.5	57.5	26.1	0.75	40	18	
4.7K	1.5	84	17.9	0.75	59	12	
10K	1.5	122.5	12.2	0.75	87	8.7	
22K	1.5	182	8.26	0.75	128	5.8	
47K	1.5	265	5.65	0.75	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	0.05	350	0.16	
4.7M	0.026	350	0.074				
10M	0.012	350	0.035				

MECHANICAL SPECIFICATIONS		
Mechanical Travel	300° ± 5°	
Operating Torque (Typical)	2 Ncm max.	2.85 oz. inch max.
End Stop Torque		
Style T, Q	35 Ncm max.	3.1 lb inch max.
Style V	80 Ncm max.	7.1 lb inch max.
Tightening Torque of Mounting Nut		
Style T, Q	150 Ncm max.	13.3 lb inch max.
Style V	250 Ncm max.	22.1 lb inch max.
Unit Weight	6 g to 18 g max.	0.22 oz. to 0.64 oz.
Terminals	e3: pure Sn	

ENVIRONMENTAL SPECIFICATIONS	
Temperature Range	- 55 °C to 125 °C
Climatic Category	55/100/56
Sealing	Fully sealed - Container IP67

OPTIONS	
Special Feature Command Shaft	Length is measured from the mounting surface to the free end of the shaft. The screwdriver slot is aligned with the wiper within $\pm 10^\circ$. Special shafts are available, in accordance to drawings supplied by customers. We recommend that customers should not machine tool shafts, in order to avoid damage. Bending or torsion of terminals should also be avoided.
Panel Sealing	<p>Potentiometers P13T and P13V can be fitted with a device providing sealing between the threaded bushing and the front panel. Their designation is P13T and P13N respectively or with a locating peg P13T...E and P13N...E.</p> <p>Panel sealed version P13T P13T...E: Including locating peg</p>
	<p>Panel sealed version P13N P13N...E: Including locating peg</p>

OPTIONS	
Shaft Locking	<p>On potentiometers equipped with a 3 mm Ø shaft, shaft locking can be obtained:</p> <ul style="list-style-type: none"> • Either by a taper nut tightening a slotted bushing. Ask for P130 type. These devices are normally equipped with an AB type shaft (12.5 mm with a slot). <p>P130</p> <ul style="list-style-type: none"> • 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. <p>These devices are ordered separately. Please consult Vishay Sfernice.</p> <p>P13V DBAN</p> <ul style="list-style-type: none"> • No locking on shaft Ø 4 mm.
RV6 (P13T-F55)	<p>Product in conformity with RN6/MIL-R-94/3G</p> <p>P13T-F55</p>

MARKING

Printed:

- VISHAY trademark
- Part number (including ohmic value code, tolerance code and resistance law)
- Manufacturing date
- Marking of terminals a

PACKAGING

In box

PERFORMANCE						
CECC 41 301 - 001					TYPICAL VALUES AND DRIFTS	
TESTS	CONDITIONS	$\frac{\Delta RT}{RT}$ (%)	REQUIREMENTS	$\frac{\Delta R1-2}{R1-2}$ (%)	$\frac{\Delta RT}{RT}$ (%)	$\frac{\Delta R1-2}{R1-2}$ (%)
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 40 °C 93 % HR	± 10 %	Dielectric strength: 250 V Insulation resistance: > 100 MΩ	± 10 %	± 0.5 %	± 1 %
Rotational Life	25 000 cycles	± 10 %	Contact res. variation: < 7 % Rn		± 3 %	Contact res. variation: < 2 % Rn
Load Life	1000 h at rated power 90°/30° - ambient temp. 70 °C	± 10 %	Contact res. variation: < 7 % Rn		± 1 %	Contact res. variation: < 3 % Rn
Rapid Temperature Change	5 cycles - 55 °C at + 125 °C	± 3 %			± 0.5 %	
Shock	50 g at 11 ms 3 successive shocks in 3 directions	± 2 %			± 0.1 %	± 0.2 %
Vibration	10 Hz to 55 Hz 0.75 mm or 10 g during 6 h	± 2 %			± 0.1 %	$\frac{\Delta V_{1-2}}{V_{1-3}} < \pm 0.2 \%$

ORDERING INFORMATION (Part Number 18 digits)																	
P	1	3	P	A	B	1	0	3	M	L	B	1	7	E			
MODEL	BUSHING			SHAFT			OHMIC VALUE	TOLERANCE	TAPER	PACKAGING	SPECIAL						
P13	Ø	L	Old Codes	Ø	L	Old Codes	Linear law from 22 Ω to 10 MΩ Logarithmic law from 1 kΩ to 2.2. MΩ 103 = 10 kΩ	M = 20 % On request K = 10 %	A = Linear L = Clockwise logarithmic F = Inverse clockwise logarithmic	Bushing L or N: Shaft < 45 mm B10 = Box of 10 pieces Shaft > 45 mm B08 = Box of 8 pieces Other bushings: Shaft < 20 mm B17 = Box of 25 pieces Shaft > 20 mm B12 = Box of 15 pieces	E = Locating peg or special code given by Vishay						
	T	6	8	T	AA	3	9.5	K									
	Q	7	8	Q	AB	3	12.5	L, M									
	L	10	12	V	AJ	3	22	R									
	O	6	11	H	EA	4	9.5	E									
	P	6	8	TP	EB	4	12.5	F									
	N	10	9.5	VP	EJ	4	22	G									
					FG	6	16	AC									
					FL	6	25	AM									
					FR	6	50	AL									
					FE	6	13	AC									
					FK	6	22	AM									
					FQ	6	47	AL									

PART NUMBER DESCRIPTION (for information only)													
P13	T	PE	M	10K	20 %	L		BO					e3
MODEL	BUSHING	SPECIAL	SHAFT	VALUE	TOLERANCE	TAPER	SPECIAL	PACKAGING	SPECIAL	SHAFT	SPECIAL	LEAD (Pb)-FREE	



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