**Vishay Sfernice** 





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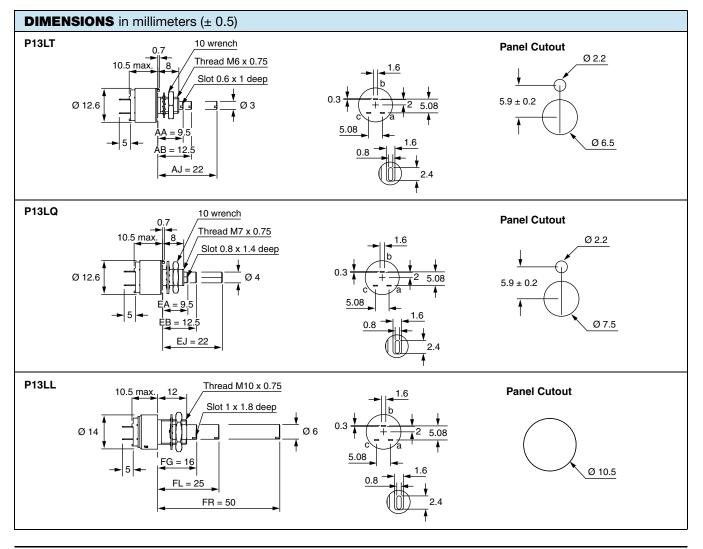
Their excellent performances are due to the use of a cermet-track sealed in a large case.

P13 interchangeability with RV6, combined with the excellent stability of its rated characteristics make it fully acceptable for industrial and professional uses.

### FEATURES

- 2 million cycles for bushing L and N
- 1 million cycles for bushing T, Q, O, and P
- High power rating 1.5 W at 70 °C
- Test according to CECC 41000 or IEC 60393-1
- Cermet element
- Fully sealed case
- Mechanical strength
- Custom designs on request
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

QUICK REFERENCE DATA	
Multiple module	No
Switch module	n/a
Detent module	n/a
Special electrical laws	A: linear, L: logarithmic, F: reverse logarithmic
Sealing level	IP 67
Lifespan	1M cycles
Encopan	



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1 For technical questions, contact: <u>sferpottrimmers@vishay.com</u> Document Number: 51065

RoHS

COMPLIANT

**P13L** 

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**P13L** 

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<b>ELECTRICAL SPECIFICATIONS</b>							
Resistive element			Cermet				
Electrical travel		270° ± 10°					
Standard resistance value		1 kΩ, 5 kΩ, 10 kΩ, 50 kΩ					
Tolerance		± 20 %					
Taper		BULLSISE SHAFT ROTATION					
Circuit diagram		(	$\begin{array}{c}a\\b\\c\\1)\\b\\c\\2\end{array}$	√_° (3)			
Power rating	Linear 1.5 W at 70 °C Logarithmic 0.75 W at 70 °C	1.5 LIN. TAPER A 1 LOG. TAPER L and F L and F					
		Lines	r Taper	Nen Lin	ear Taper		
Standard resistance element data	Resistance Value (kΩ)	Max. Power at 70 °C (W) 1.5 1.5	Max. Working Voltage (V) 38.7 86.6	Max. Power at 70 °C (W) 0.75 0.75	Max. Working Voltage (V) 27.4 61.2		
	10 50	1.5 1.5	122 274	0.75 0.75	87 194		
Temperature coefficient (typical)			± 150 ppm/°C	;			
Limiting element voltage (linear law)			350 V				
End resistance (typical)			1 Ω				
Dielectric strength (RMS)			2000 V				
Insulation resistance (300 V <sub>DC</sub> )			$10^6 \mathrm{M}\Omega$				
Independent linearity (typical)			±5%				

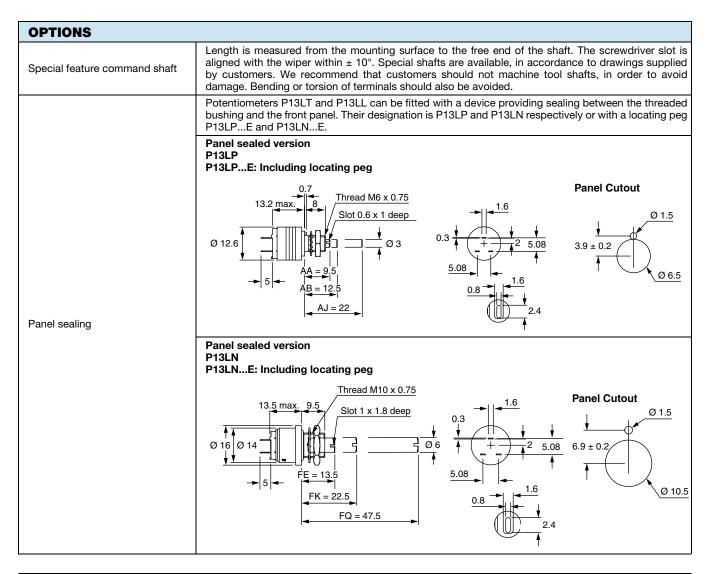
2



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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 L	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 L	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: F	Pure Sn						

ENVIRONMENTAL SPECIFICATIONS						
Temperature range	-55 °C to +125 °C					
Climatic category	55/125/56					
Sealing	Fully sealed - container IP67					



Revision: 30-Jul-2021

3

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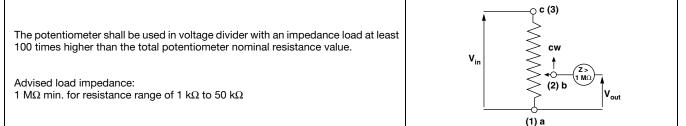
OPTIONS	
	<ul> <li>On potentiometers equipped with a 3 mm Ø shaft, shaft locking can be obtained:</li> <li>Either by a taper nut tightening a slotted bushing. Ask for P13LO type. These devices are normally equipped with an AB type shaft (12.5 mm with a slot).</li> </ul>
	P13LO 10 wrench
	$\begin{array}{c} 0.7 \\ \hline & \\ \hline \\ \hline$
Shaft locking	<ul> <li>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.</li> <li>These devices are ordered separately. Please consult Vishay Sfernice.</li> </ul>
	P13LL DBAN
	No locking on shaft Ø 4 mm.

#### MARKING

Printed:

- Vishay trademark
- Part number (including ohmic value code, tolerance code and taper)
- Manufacturing date code
- Marking of terminals a

#### **APPLICATION NOTE**



#### PACKAGING

- In box of 8 pieces for shafts FR and FQ
- In box of 10 pieces for shafts FE, FL, FG, and FK
- In box of 15 pieces for shafts AJ and EJ
- In box of 25 pieces for shafts AB, AA, EA, and EB

Hardware: nuts, washer, and O-ring are separately supplied (not mounted on the potentiometer), in a small bag placed in the packaging.

4



# Vishay Sfernice

PERFORMANCE									
		TYPICAL VALUES AND DRIFTS							
TESTS	CONDITIONS	∆R <sub>T</sub> /R <sub>T</sub> (%)	∆R <sub>1-2</sub> /R <sub>1-2</sub> (%)	OTHER					
Electrical endurance	1000 h at rated power 90'/30' - ambient temperature 70 °C	± 20 %	± 20 %	-					
Climatic sequence	Phase A dry heat 125 °C Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles	± 0.5 %	±1%	-					
Damp heat, steady state	56 days, 40 °C 93 % HR	± 0.5 %	±1%	Dielectric strength: 1000 V Insulation resistance: > $10^4 M\Omega$					
Change of temperature	5 cycles, -55 °C at +125 °C	± 0.5 %	-	-					
Mechanical endurance	Bushings L and N: 2 000 000 cycles Bushings T, Q, O, and P: 1 000 000 cycles at rated power Turn angle ± 60° Temperature ± 20 °C	± 20 %	-	Independent linearity: ± 10 %					
Shock	50 g's at 11 ms, 3 successive shocks in 3 directions	± 0.1 %	± 0.2 %	-					
Vibration	10 Hz to 55 Hz, 0.75 mm or 10 <i>g</i> 's during 6 h	± 0.1 %	-	$\Delta V_{1-2}/V_{1-3} < \pm 0.2$ %					

Note

• Nothing stated herein shall be construed as a guarantee of quality or durability

ORDEF	ORDERING INFORMATION (part number)											
	P	1		3	L	Q	E	A S	1 0 3		E	
MODEL	BU	ISHII	NG		S	HAFT		SHAFT END	OHMIC VALUE	TOLERANCE	TAPER	SPECIAL
P13L	т	Ø 6	L 8		ø	L	Only with bushing	S = slotted F = flatted R = round	102 = 1 kΩ 502 = 5 kΩ 103 = 10 kΩ	M = 20 %	A = linear L = clockwise logarithmic	E = locating peg or
	Q L	7 10	8 12	AA AB	3 3	9.5 12.5	T, P T, P, O	D = custom	503 = 50 kΩ		F = inverse clockwise logarithmic	special code given by Vishay
	0	6	11	AJ	3	22	T, P				0	,
	Ρ	6	8	EA	4	9.5	Q					
	Ν	10	9.5	EB	4	12.5	Q					
				EJ	4	22	Q					
				FG	6	16	L					
				FL	6	25	L					
				FR FE	6 6	50 13	L N					
				FK	6	22	N					
				FQ	6	47.5	N					

PART	PART NUMBER DESCRIPTION (for information only)										
P13L	Q	E	EA	10K	20 %	L		BO25			e3
MODEL	BUSHING	SPECIAL	SHAFT	VALUE	TOLERANCE	TAPER	SPECIAL	PACKAGING	SHAFT	SPECIAL	LEAD (Pb)-FREE

#### **RELATED DOCUMENTS** APPLICATION NOTES

Potentiometers and Trimmers	www.vishay.com/doc?51001
Guidelines for Vishay Sfernice Resistive and Inductive Components	www.vishay.com/doc?52029

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