Long Life Potentiometer - 2 Million Cycles, Heavy Duty - Cermet, Fully Sealed

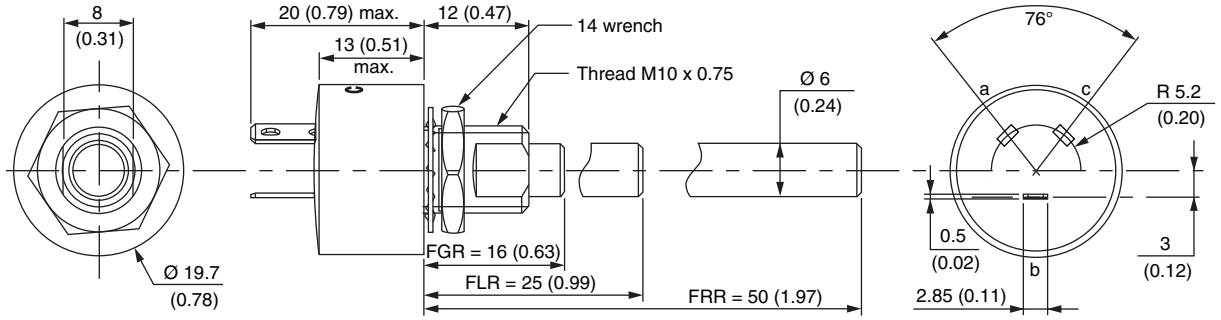
FEATURES

- 2 million cycles
- High power rating 3 W at 70 °C
- Cermet element
- Low temperature coefficient (± 150 ppm/°C typical)
- Custom designs on request
- Tests according to CECC 41000 or IEC 60393-1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

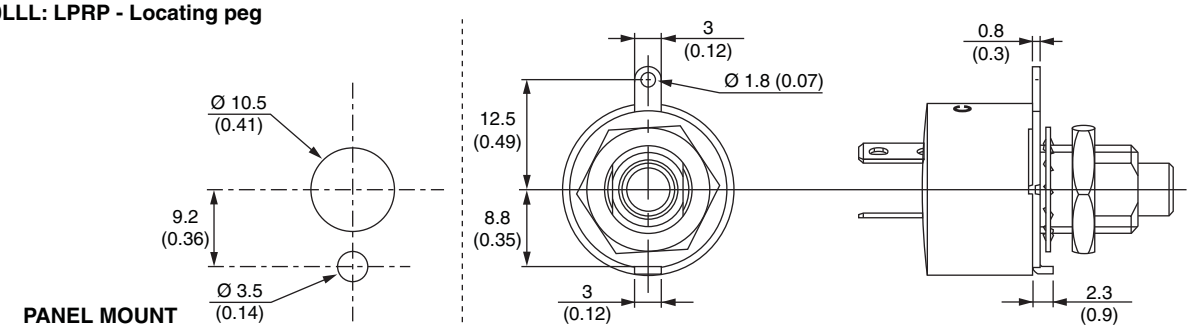
RoHS COMPLIANT

DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02")

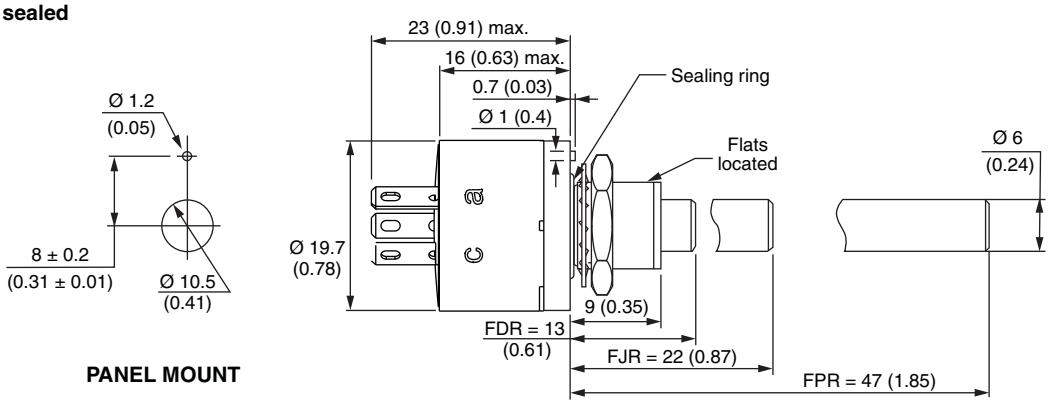
P30LL



P30LLL: LPRP - Locating peg

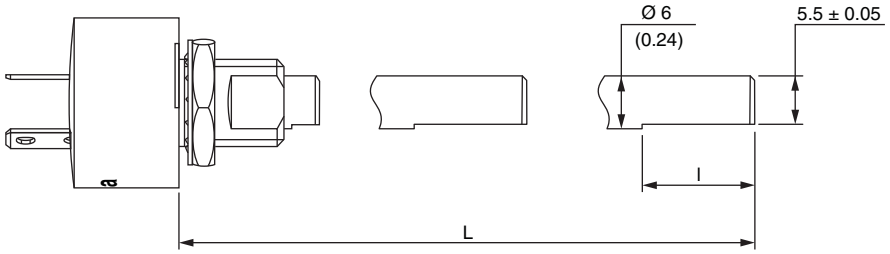


P30LME: Panel sealed



DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02")

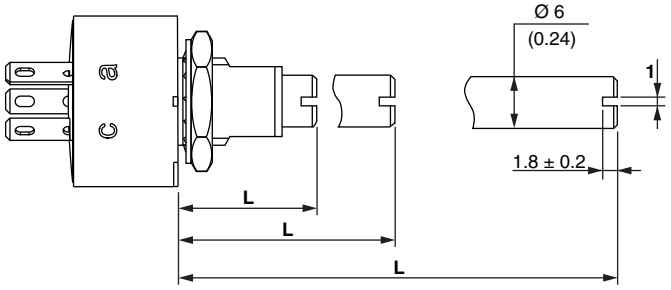
Standard shaft style F (flatted)



Model	Shaft codification	L (mm)	l (mm)
P30LL	FGF	16	3.17
	FLF	25	12
	FRF	50	12
P30LM	FDF	13	3.17
	FJF	22	12
	FPF	47	12

Shaft shown at center position
Flat opposite to the wiper

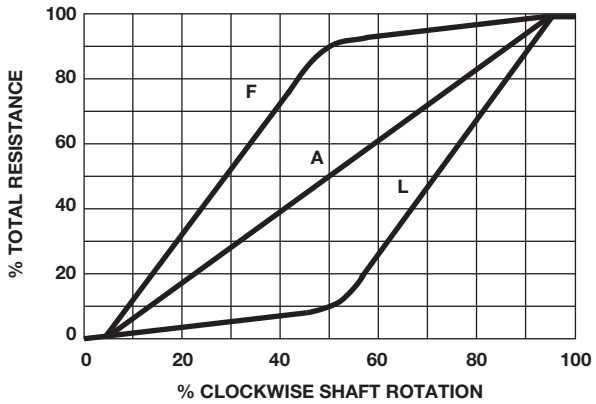
Standard shaft style S (slotted)



Model	Shaft codification	L (mm)
P30LL	FGS	16
	FLS	25
	FRS	50
P30LM	FDS	13
	FJS	22
	FPS	47

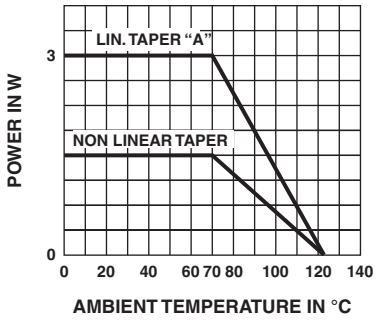
Slot aligned to the wiper at ± 10°

ELECTRICAL SPECIFICATIONS

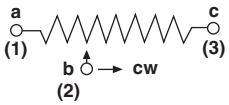
Resistive Element	Cermet
Electrical Travel	270° ± 10°
Standard Resistance Values	1 kΩ - 5 kΩ - 10 kΩ - 50 kΩ
Tolerance	20 %
Taper	

ELECTRICAL SPECIFICATIONS

Power Rating	Linear Non-linear Taper	3 W at 70 °C 1.5 W at 70 °C



Circuit Diagram



Standard Resistance Element Data

Resistance Value (kΩ)	Linear Taper		Non-linear Taper	
	Max. Power at 70 °C (W)	Max. Working Voltage (V)	Max. Power at 70 °C (W)	Max. Working Voltage (V)
1	3	54.8	1.5	38.7
5	3	122	1.5	86.6
10	3	173	1.5	122
50	1.8	300	1.5	274

Temperature Coefficient (Typical)	± 150 ppm/°C
Limiting Element Voltage	300 V
End Resistance (Typical)	1 Ω
Dielectric Strength (RMS)	2500 V
Insulation Resistance (300 V_{DC})	10^5 MΩ
Independent Linearity (Typical)	± 5 %

MECHANICAL SPECIFICATIONS

Mechanical Travel	300° ± 5°	
Operating Torque (Typical)	3 Ncm max.	4.25 oz.-inch max.
End Stop Torque	70 Ncm max.	99 oz.-inch max.
Tightening Torque of Mounting Nut	250 Ncm max.	22.13 lb-inch max.
Unit Weight	23 g to 32 g max.	0.8 oz. to 1.13 oz.
Terminals	e3: Pure Sn	

ENVIRONMENTAL SPECIFICATIONS

Temperature Range	-55 °C to +125 °C
Climatic Category	55/125/56
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 ± 10°. 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	The panel sealing device consists of a ring located in a groove on the potentiometer face. Sealing is obtained by tightening the ring against the panel when mounting the potentiometer.
Locating Peg	Location is obtained by fitting a special washer on the mounting face of the potentiometer.

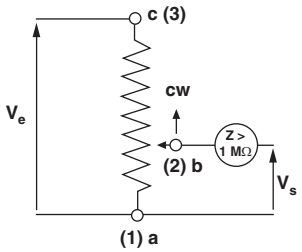
MARKING

- Vishay trademark
- Part number (including model, ohmic value code, tolerance code)
- Manufacturing date code
- Marking of terminals 3, and a, b, c

APPLICATION NOTE

The potentiometer shall be used in voltage divider with an impedance load at least 100 times higher than the total potentiometer nominal resistance value.

Advised load impedance:
1 MΩ min. for resistance range of 1kΩ to 50 kΩ



PERFORMANCES

TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS		
		$\Delta R_T/R_T$ (%)	$\Delta R_{1\text{-}2}/R_{1\text{-}2}$ (%)	OTHER
Electrical Endurance	1000 h at rated power 90'/30' - ambient temp. 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, Staedy State	56 days 40 °C 93 % HR	± 0.5 %	± 1 %	Insulation resistance: > 100 MΩ
Change of Temperature	5 cycles -55 °C at +125 °C	± 0.5 %	-	-
Mechanical Endurance	2 000 000 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 *g*'s during 6 h	± 0.1 %	± 0.2 %	-

Note

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

ORDERING INFORMATION (part number)

P	3	0	L	L	0	F	G	R	1	0	3	M	A				

MODEL	BUSHING	OPTION	SHAFT			RESISTANCE CODE/TOLERANCE CODE/TAPER			SPECIAL NUMBER
			Diameter	Length	End Shaft Shape	Ohmic Value	Tolerance	Taper	
P30L	L = M10 x 0.75 M = Panel sealed M10 x 0.75	0 = None E = With locating peg (for M bushing only) L = LPRP	F = Ø 6 mm AP = Custom shaft	For L bushing G = 16 mm L = 25 mm R = 50 mm For M bushing D = 13 mm J = 22 mm P = 47 mm	R = Round On request: S = Slotted D = Custom end shaft F = Flatted	102 = 1 kΩ 502 = 5 kΩ 103 = 10 kΩ 503 = 50 kΩ	M = 20 %	A = Linear L = Logarithmic F = Inverse clockwise logarithmic	(If applicable) Given by Vishay for custom design

PART NUMBER DESCRIPTION (for information only)

P30L	L	0	FGR	10K	20 %	A		BO10			e3
MODEL	BUSHING	OPTION	SHAFT	VALUE	TOLERANCE	TAPER	SPECIAL	PACKAGING	SPECIAL	SPECIAL	LEAD (Pb)-FREE

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.