



# 1 5/16" (33.3 mm) Industrial Single Turn, Bushing Mount, Conductive Plastic Potentiometer



### FEATURES

- Center tap available
- Continuous rotation and mechanical stops both standard
- Suitable model for all types of industrial applications
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS COMPLIANT

QUICK REFERENCE DATA	
Sensor type	ROTATIONAL, conductive plastic
Output type	Output by turrets
Market appliance	Industrial
Dimensions	1 5/16" (33.3 mm)

ELECTRICAL SPECIFICATIONS		
PARAMETER	MIL-PRF-39023 TEST PROCEDURES APPLY	
	STANDARD	SPECIAL
Ohmic Value Range	1 kΩ to 50 kΩ	1 kΩ to 50 kΩ
Tolerance	± 10 %	± 5 %
Linearity (independent)	STANDARD	BEST PRACTICAL
	± 0.5 %	± 0.25 %
Output Smoothness	0.1 % maximum	
Power Rating	40 °C ambient 2 W derated to zero at 125 °C	
Electrical Angle		
Continuous	345° ± 4°	
Stops	340° ± 5°	
Insulation Resistance	1000 MΩ minimum at 500 V <sub>DC</sub>	
Dielectric Strength	1000 V <sub>RMS</sub> , 60 Hz	
Absolute Minimum Resistance	1.0 % of total resistance	
Minimum Voltage	0.5 % maximum	
Temperature Coefficient of Resistance	± 600 ppm/°C maximum	

MATERIAL SPECIFICATIONS	
Housing	Molded glass filled thermoplastic
Rear Lid	Glass filled thermoset plastic
Shaft	Stainless steel, non-magnetic
Terminals	Brass, plated for solderability, non-passivated
Mount Hardware	
Lockwasher Internal Tooth:	Steel, nickel plated
Panel nut:	Brass, nickel plated

ENVIRONMENTAL SPECIFICATIONS	
Vibration	15 g thru 2000 Hz
Shock	50 g
Salt Spray	48 h
Rotational Life	
Shaft Revolutions	2 million
Operating Temperature Range	-55 °C to +125 °C

### Note

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

ORDERING INFORMATION												
1	3	8	B	2	0	5	0	2	X	X	X	X
MODEL		STYLE		MECHANICAL OPTIONS		FEATURES		VALUE		SPECIAL REQUEST		
138		B: bushing		0 = continuous 2 = stops		0 = standard 1 = center tap		470 = 47 Ω 222 = 2,200 Ω 103 = 10 kΩ For ohmic value range see electrical specification		Custom reference		



PART NUMBER DESCRIPTION (for information only)				
138-	2-	1-	502	xxxx
MODEL	MECHANICAL OPTIONS	FEATURES	OHMIC VALUE	SPECIAL

**DIMENSIONS** in inches (millimeters)

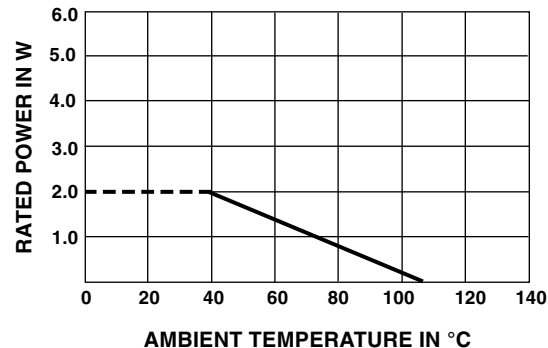
MODEL 138B/138-...

$0.875 \pm 0.031$  (22.22)  
 $0.625 \pm 0.015$  (15.88)  
 $0.375 \pm 0.015$  (9.52)  
 $0.187 \pm 0.015$  (4.75)  
 $0.062$  (1.57)  
 $0.032 \pm 0.010$  (0.81)  
 $0.032 \pm 0.0020$  (0.81)  
 $0.032 \pm 0.0003$  (0.81)  
 $0.030 \text{ MAX.}$  (0.76)  
 $0.562$  (14.27)  
 $0.032$  (0.81)  
 $0.125$  (3.18)  
 $0.062$  (1.57)  
 $0.500 \pm 0.015$  (12.70) BC  
 $60^\circ$   
 $3/8 - 32 \text{ UNEF} - 2A$   
 MTG. SURFACE  
 SCHEMATIC

TOLERANCES: UNLESS OTHERWISE NOTED.  
 DECIMALS  $\pm 0.005$  ANGLES  $\pm 2^\circ$

MECHANICAL SPECIFICATIONS		
PARAMETER		
Rotation	360° (continuous) 340° $\pm 5^\circ$ stops	
Bearing Type	Sleeve	
Torque (maximums)	<b>STARTING</b> 1.0 oz. - in (72 g - cm)	<b>RUNNING</b> 0.7 oz. - in (50.40 g - cm)
Runouts (maximums)		
Shaft Runout (TIR)	0.002" (0.05 mm)	
Pilot Dia. Runout (TIR)	0.003" (0.08 mm)	
Lateral Runout (TIR)	0.005" (0.13 mm)	
Shaft End Play	0.008" (0.20 mm)	
Shaft Radial Play	0.003" (0.08 mm)	
Weight	1.0 oz. maximum (28.35 g)	
Stop Strength	8.0 in - lbs (9.21 kg - cm) (stops version only)	

**POWER RATING CHART**



MARKING	
Unit Identification	Units shall be marked with Vishay Spectrol name, model number, resistance and tolerance, linearity, terminal identification, and data code Applicable test procedures: MIL-R-39023 Example of a marking for a standard part: 138-2-0-502



## **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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.