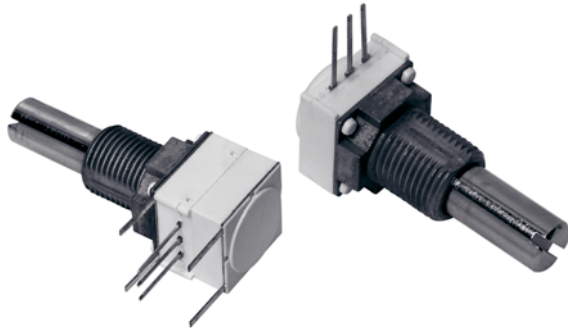


# 1/2" (12.7 mm) Conductive Plastic and Cermet Potentiometer

## FEATURES

- Robust construction
- High rotational life (50 000 cycles)
- Up to three sections PC support plates
- Rotary switches and solder lug terminals available
- Tests according to CECC 41000 or IEC 60393-1
- Compliant to RoHS Directive 2002/95/EC



## 148 FEATURES

- Conductive plastic element
- Quiet electrical output

## 149 FEATURES

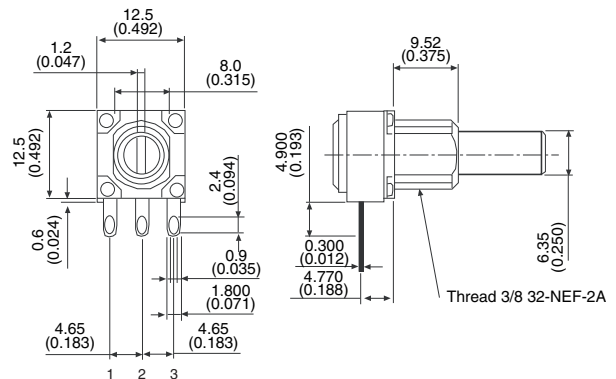
- Cermet element
- Low temperature coefficient ( $\pm 150$  ppm/ $^{\circ}$ C)

## DIMENSIONS in millimeters (inches) $\pm 0.5$ mm ( $\pm 0.02$ "

### Single, dual or triple



### Solder lug terminals



### Front and rear support plates E = Flush with board surface





1/2" (12.7 mm) Conductive Plastic and Cermet  
Potentiometer

Vishay Spectrol

| ELECTRICAL SPECIFICATIONS          |            |   |                               |
|------------------------------------|------------|---|-------------------------------|
| PARAMETER                          |            | 148   | 149                           |
| Resistance Range                   | Linear     | 1 kΩ to 1 MΩ  | 100 Ω to 2 MΩ                 |
|                                    | Non-Linear | 500 Ω to 500 kΩ   | 250 Ω to 1 MΩ                 |
| Tolerance                          | Linear     | 10 %  | 10 %                          |
|                                    | Non-Linear | 20 % on request 10 %  | 10 %                          |
| Linearity (Typical)                |            | ± 5 % independent   |                               |
| End Resistance                     |            | 4 Ω maximum each end  |                               |
| Power Rating                       |            | 0.5 W at 70 °C<br>0 W at 120 °C                                   | 1 W at 70 °C<br>0 W at 150 °C |
|                                    |            | Non-Linear or PC mount, derate 50 %                               |                               |
| Circuit Diagram                    |            |   |                               |
| Effective Rotation                 |            | 270° ± 10° without rotary switch<br>240° ± 10° with rotary switch |                               |
| Contact Resistance Variation       |            | 1.5 % of total resistance   | 3 % of total resistance       |
| Maximum Continuous Working Voltage |            | 350 V <sub>AC</sub> across end terminals, but within power rating |                               |
| Dielectric Withstanding Voltage    |            | Sea level - 750 V <sub>AC</sub>                                   |                               |

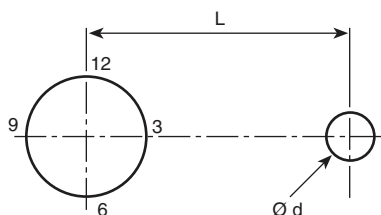
| MECHANICAL SPECIFICATIONS  |                     |  |  |
|----------------------------|---------------------|--|--|
| Mechanical Travel          |                     | 300° ± 5°  |  |
| Operating Torque (Typical) |                     | Single section 0.2 oz. to 3.0 oz. - in dual or triple section 0.3 oz.-inch to 4.5 oz.-inch |  |
| End Stop Torque            | Bushing A and B     | 2.1 lb-inch max.   |  |
|                            | Bushing F           | 6.8 lb-inch max.   |  |
| Weight (approx.)           | Single              | 0.19 oz.   |  |
|                            | Dual                | 0.27 oz.   |  |
|                            | Triple              | 0.35 oz.   |  |
| Terminals                  | Electrical Elements | e3: Pure Sn  |  |
|                            | Switch Elements     | e4: Gold plated  |  |

| ENVIRONMENTAL SPECIFICATIONS           |  |  |
|--|--|--|
|  | 148  | 149  |
| Operating Temperature                  | - 40 °C to + 125 °C                        | - 40 °C to + 125 °C                        |
| Storage Temperature                    | - 55 °C to + 125 °C                        | - 55 °C to + 125 °C                        |
| Temperature Cycling (5 Cycles)         | - 40 °C to + 125 °C (4 % ΔR <sub>T</sub> ) | - 40 °C to + 125 °C (3 % ΔR <sub>T</sub> ) |
| Load Life (1000 h Rated Load at 70 °C) | 10 % ΔR <sub>T</sub>                       | 5 % ΔR <sub>T</sub>                        |
| Mechanical Endurance                   | 50 000 cycles                              |  |
| TCR (Typical)                          | ± 500 ppm/°C                               | ± 150 ppm/°C                               |
| Sealing                                | IP64                                       |  |

**LOCATING PEGS (Anti-Rotation Lug)**

The locating peg is provided by a plate mounted on the bushing and positioned by the module sides. Four set positions are available, clock face orientation: 12, 3, 6, 9.

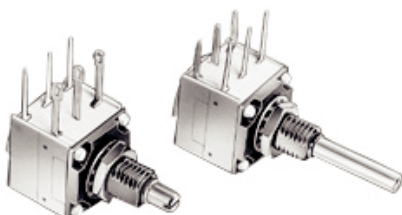
All 148, 149 bushings have a double flat. When panel mounting holes have been punched accordingly, an anti-rotation lug is not necessary.



| CODE | VERSION | BUSHING A, B | BUSHING F | EFFECTIVE HIGH PEG |
|------|---------|--------------|-----------|--------------------|
| A    | Ø d mm  | 2            | 2         | 0.7                |
|      | L mm    | 6.2          | 6.2       | -                  |
| B    | Ø d mm  | 2            | 2         | 0.7                |
|      | L mm    | 7.75         | 7.75      | -                  |
| C    | Ø d mm  | -            | 3.5       | 1.1                |
|      | L mm    | -            | 13.5      | -                  |

Locating pegs are supplied in separate bags with nuts and washers

**RSID OPTION: ROTARY SWITCH MODULES**



- Rotary switches
- Current up to 2 A
- SPDT: Single pole, changeover switch in CCW position - 3 pins
- Sealing IP60

**MODULES: RS ON/OFF SWITCH  
RSI CHANGEOVER SWITCH**

The position of each module is free. RS and RSI rotary switches are housed in a standard 148, 149 module size 12.7 mm x 12.7 mm x 5.08 mm (0.5" x 0.5" x 0.2"). They have the same terminal styles as the assembled electrical modules.

An assembly can comprise 1 or more switch modules.

Switch actuation is described as seen from the shaft end. D: means actuation in maximum CCW position

The switch actuation travel is 25° with a total mechanical travel of 300° ± 5° and electrical travel of electrical modules is 238° ± 10°.

**RSID SINGLE POLE CHANGEOVER**

In full CCW position, the contact is made between 3 and 2 and open between 3 and 1. Switch actuation (CW direction) reverses these positions.

**SWITCH SPECIFICATIONS**

|  |  |
|--|--|
| Switching Power Maximum                | 62.5 VA $\sqrt{}$<br>15 VA =               |
| Switching Current Maximum              | 0.25 A 250 V $\sqrt{}$<br>0.5 A 30 V =     |
| Maximum Current Through Element        | 2 A  |
| Contact Resistance                     | 100 mΩ                                     |
| Dielectric Strength                    | Terminal to Terminal 1000 V <sub>RMS</sub> |
|  | Terminal to Bushing 2000 V <sub>RMS</sub>  |
| Maximum Voltage Operation              | 250 V $\sqrt{}$<br>30 V =                  |
| Insulation Resistance Between Contacts | 10 <sup>6</sup> MΩ                         |
| Life at P <sub>max.</sub>              | 10 000 actuations                          |
| Minimal Travel                         | 25°  |
| Operating Temperature                  | - 40 °C to + 85 °C                         |

**ELECTRICAL DIAGRAM**

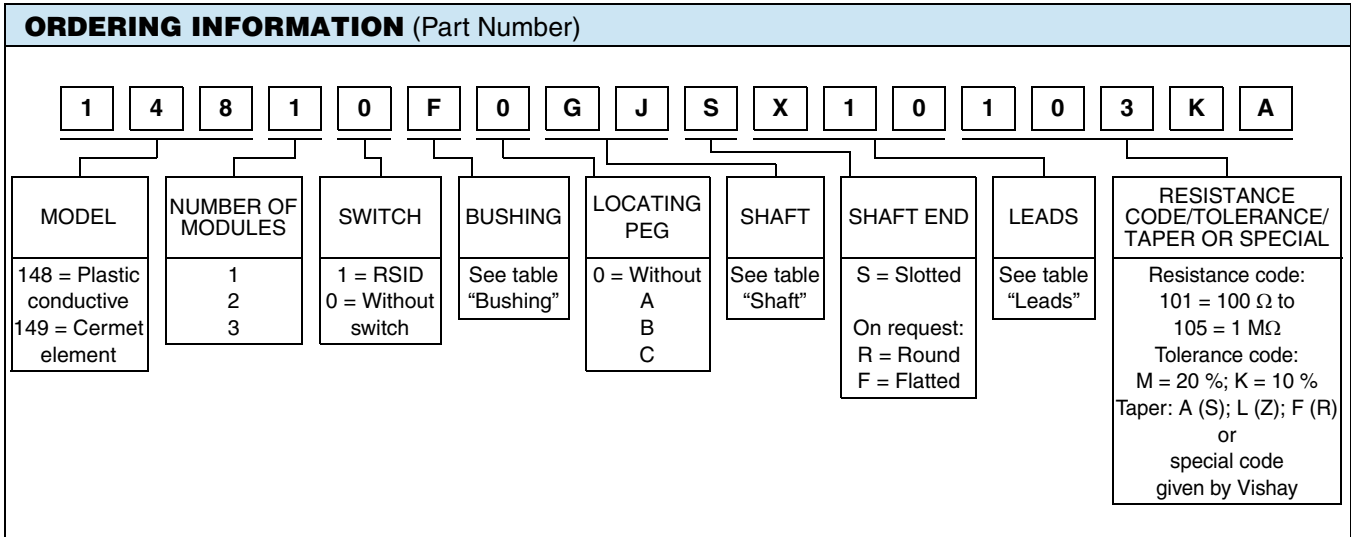


**Note**  
(1) Common



1/2" (12.7 mm) Conductive Plastic and Cermet  
Potentiometer

Vishay Spectrol



| BUSHING |      |      |           |
|---------|------|------|-----------|
|         | Ø    | L    | OLD CODES |
| A       | 1/4" | 1/4" | N         |
| B       | 1/4" | 3/8" | J         |
| F       | 3/8" | 3/8" | G         |

| SHAFT |      |        |           |
|-------|------|--------|-----------|
|       | Ø    | L      | OLD CODES |
| BB    | 1/8" | 1/2"   | 32        |
| BG    | 1/8" | 5/8"   | 40        |
| BH    | 1/8" | 3/4"   | 48        |
| BJ    | 1/8" | 7/8"   | 56        |
| GB    | 1/4" | 1/2"   | 32        |
| GG    | 1/4" | 5/8"   | 40        |
| GH    | 1/4" | 3/4"   | 48        |
| GJ    | 1/4" | 7/8"   | 56        |
| GL    | 1/4" | 1"     | 64        |
| GN    | 1/4" | 1 1/4" | 80        |

| LEADS |                             |                  |                       |           |
|-------|-----------------------------|------------------|-----------------------|-----------|
|       | TYPE                        | PIN SPACING      | SPACE BETWEEN MODULES | OLD CODES |
| X10   | PCB pins                    | 2.54 mm (0.100") | n/a                   | P         |
| X13   |                             |                  | 7.62 mm (0.300")      |           |
| A10   | PCB pins and support plates | 2.54 mm (0.100") | n/a                   | E         |
| A13   |                             |                  | 7.62 mm (0.300")      |           |
| Y00   | Sold, lugs                  | 4.65 mm (0.183") | n/a                   | S         |
| Y03   |                             |                  | 7.62 mm (0.300")      |           |

| PART NUMBER DESCRIPTION (for information only) |         |        |         |              |       |       |       |       |       |      |       |         |         |             |
|--|---------|--------|---------|--------------|-------|-------|-------|-------|-------|------|-------|---------|---------|-------------|
| 148  | 1       | 0      | F       | 0            | GJ    | S     | X10   | BO50  | 10K   | 10 % | A     |         |         | e3          |
| MODEL  | MODULES | SWITCH | BUSHING | LOCATING PEG | SHAFT | SHAFT | LEADS | PACK. | VALUE | TOL. | TAPER | SPECIAL | SPECIAL | LEAD FINISH |



## 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.**

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9