

Bulk Metal® Foil Ultra High Technology Precision Trimming Potentiometers, 1 1/4" Rectilinear, RJ12 Style, Designed to Meet or Exceed The Requirements of MIL-PRF-22097, Char. F with Smooth and Unidirectional Output



INTRODUCTION

Vishay Foil precision trimmers have the Bulk Metal® Foil resistive element which possesses a unique inherent temperature and load life stability. Plus, their advanced virtually back lash-free adjustment mechanism makes them easy to set quickly and accurately and keeps the setting exactly on target.

FEATURES

- Temperature coefficient of resistance (TCR): ± 10 ppm/°C maximum ⁽³⁾ (- 55 °C to + 150 °C ref. at + 25 °C); through the wiper ⁽⁴⁾; ± 25 ppm/°C
- A smooth and unidirectional resistance with leadscrew adjustment
- Load life stability: 0.1 % typical ΔR , 0.5 % maximum ΔR under full rated power at + 85 °C for 2000 h
- Settability: 0.05 % typical; 0.1 % maximum
- Setting stability: 0.1 % typical; 0.5 % maximum, ΔSS
- Power rating: 0.5 W at + 85 °C
- Resistance range: 2 Ω to 20 k Ω
- "O"-ring prevents ingress of fluids during any board cleaning operation
- Electrostatic discharge (ESD) up to 25 000 V
- Terminal finish: gold plated (tin/lead finish is available on request)



RoHS*
COMPLIANT

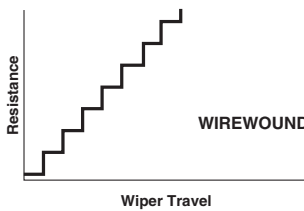
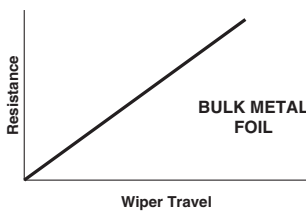


TABLE 1 - MODEL SELECTION				
MODEL	TERMINATION STYLE	AVERAGE WEIGHT (g)	POWER RATING at + 85 °C AMBIENT	NO. OF TURNS
1202	P-In line PC pins	2.5	0.5 W	25 \pm 2
	Y-staggered PC pins ⁽¹⁾	2.5		
	L-flexible wire leads	3.3		
	LB-flexible wire leads with bushings	5.1		

TABLE 2 - VALUES VS. TOLERANCES	
STANDARD RESISTANCE VALUES (in Ω)	STANDARD TOLERANCES
2, 5, 10	± 10 % ⁽²⁾ , ± 20 %
20, 50, 100, 200, 250, 500, 1K, 2K, 5K, 10K, 20K	5 %, 10 %

Note

- See Figures 1 and 2

TABLE 3 - 1202 (RJ12) SERIES ELECTRICAL SPECIFICATIONS	
Temperature Coefficient of Resistance (TCR), 50 Ω and up End-to-end ⁽³⁾ 2 Ω , 5 Ω , 10 Ω , 20 Ω Through the wiper ⁽⁴⁾	± 10 ppm/°C maximum (- 55 °C to + 25 °C) ± 10 ppm/°C maximum (+ 25 °C to + 150 °C) ± 20 ppm/°C (- 55 °C to + 150 °C, ref. + 25 °C) ± 25 ppm/°C (- 55 °C to + 150 °C, ref. + 25 °C)
Stability Load life at 2000 h, under full rated power of 0.5 W at + 85 °C Load life at 10 000 h, under full rated power of 0.5 W at + 85 °C	0.1 % typical ΔR ; 0.5 % maximum ΔR 0.1 % typical ΔR ; 1.0 % maximum ΔR
Power Rating ⁽⁵⁾	0.5 W at + 85 °C
Settability	0.05 % typical; 0.1 % maximum
Setting Stability	0.1 % typical; 0.5 % maximum
Contact Resistance variation - CRV (noise)	3 Ω typical; 10 Ω maximum
Hop-off	0.25 % typical; 1.0 % maximum
High-Frequency Operation Rise time Inductance Capacitance	to 100 MHz 10 ns at 1 k Ω 0.08 μ H typical 0.5 pF typical
Operating Temperature Range	- 55 °C to + 150 °C

Note

- Refer to page 4 for footnotes

* Pb containing terminations are not RoHS compliant, exemptions may apply

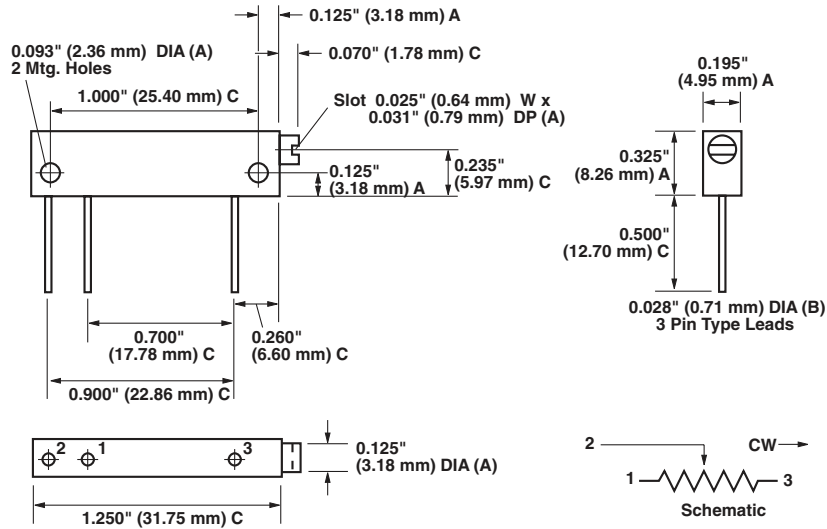
TABLE 4 - MECHANICAL SPECIFICATIONS

Adjustment Turns	25 ± 2	Case Material	Glass fortified diallyl-phthalate (DAP); black
Mechanical Stops	Wiper idles - no discontinuity	Shaft Torque	8 oz. in. maximum; 3 oz. in. typical
Internal Terminations	All welded - no flux	Backlash	0.05 % typical

FIGURE 1 - SCHEMATIC AND DIMENSIONS in Inches (Millimeters)

1202P

(In-Line Pins) ⁽¹⁾



1202Y

(Staggered Pins) ⁽¹⁾



TOLERANCES:

- A = ± 0.005" (0.13 mm)
- B = ± 0.003" (0.08 mm)
- C = ± 0.010" (0.25 mm)

Note

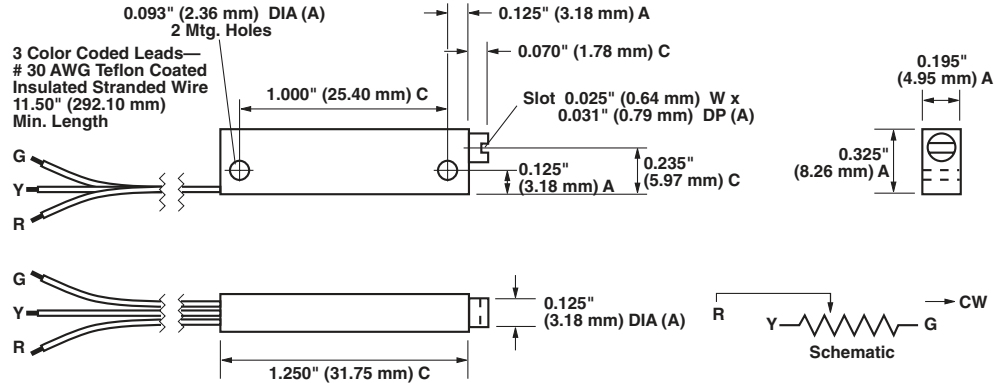
⁽¹⁾ Pin leads are gold plated nickel which are solderable or weldable.

STANDARD MARKING ILLUSTRATION:

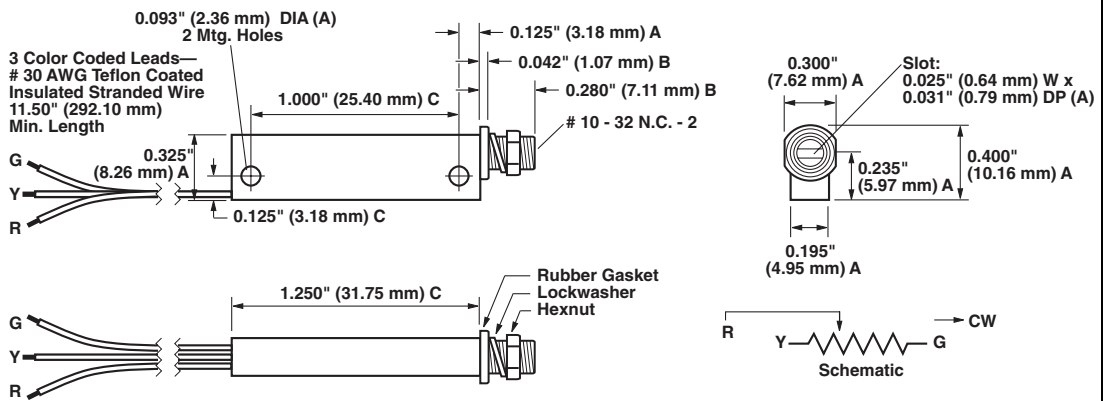


FIGURE 2 - SCHEMATIC AND DIMENSIONS in Inches (Millimeters)

1202L
(Flexible Leads)



1202LB
(Panel Mounted)



TOLERANCES:
A = ± 0.005" (0.13 mm)
B = ± 0.003" (0.08 mm)
C = ± 0.010" (0.25 mm)

Standard marking shown on previous page.

FIGURE 3 - POWER DERATING CURVE

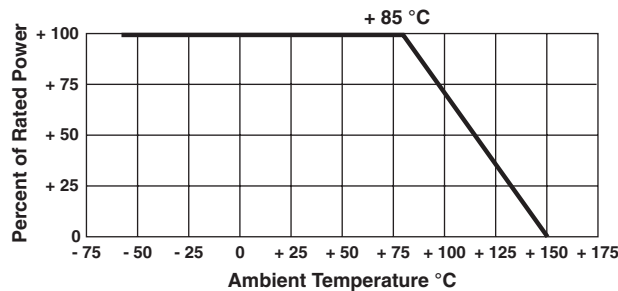


TABLE 5 - COMPARISON

	MIL-PRF-22097/2 CHARACTERISTIC F ⁽⁷⁾	1202 MAXIMUM (Worst Case)
TEST GROUP I Visual and mechanical Total resistance Actual effective electrical travel End resistance Contact resistance variation - CRV (noise) Dielectric withstanding voltage - DWV Per MIL-STD-202, methods 301 and 105 Atmospheric pressure Barometric pressure Insulation resistance Shaft torque Thermal shock	No failures ± 10 % 17 to 27 turns ± 2 % or 20 Ω ⁽⁷⁾ ± 3.0 % or 3 Ω ⁽⁷⁾ 900 V _{AC} , 1 min 350 V _{AC} , 1 min ≥ 1000 MΩ 8 oz. in. maximum ± 1.0 %	No failures ± 10 % 25 ± 2 turns 2 Ω 3 Ω typical, 10 Ω maximum 900 V _{AC} , 1 min 350 V _{AC} , 1 min ≥ 1000 MΩ 8 oz. in. maximum ± 1.0 %
TEST GROUP II Resistance temperature characteristic - TCR Moisture resistance Contact resistance variation - CRV (noise)	± 0.01 % (± 100 ppm/°C) ± 1.0 % 3.0 % or 3 Ω ⁽⁷⁾	± 0.001 % (± 10 ppm/°C) ± 0.5 % 3 Ω typical, 10 Ω maximum
TEST GROUP III Shock (specified pulse) Vibration (high-frequency) Contact resistance variation - CRV (noise) Salt spray	± 1.0 % ± 1.0 % ± 3.0 % or 3 Ω ⁽⁷⁾ No corrosion	± 0.5 % ± 0.5 % 3 Ω typical, 10 Ω maximum No corrosion
TEST GROUP IV Solder heat Life (1000 h at + 85 °C) ⁽⁸⁾ Contact resistance variation - CRV (noise)	± 1.0 % ± 2.0 % ± 3.0 % or 3 Ω ⁽⁷⁾	± 0.05 % ± 0.5 % 3 Ω typical, 10 Ω maximum
TEST GROUP V Low-temperature operation High-temperature exposure Contact resistance variation - CRV (noise)	± 1.0 % ± 2.0 % ± 3.0 % or 3 Ω ⁽⁷⁾	± 0.5 % ± 0.5 % 3 Ω typical, 10 Ω maximum
TEST GROUP VI Rotational life Contact resistance variation - CRV (noise) Terminal strength	± 2.0 % ± 3.0 % or 3 Ω ⁽⁷⁾ 2 lbs	± 2.0 % 3 Ω typical, 10 Ω maximum 2 lbs
TEST GROUP VII Solderability (excluding terminations L and LB) Immersion (excluding terminations L and LB)	MIL-STD-202 method 208 No continuous stream of bubbles	MIL-STD-202 method 208 No continuous stream of bubbles
TEST GROUP VIII Fungus	MIL-STD-810 method 508 No mechanical damage	MIL-STD-810 method 508 No mechanical damage

Notes

- (1) Preferred termination style for current 1-1/4 inch rectilinear trimmers (staggered PC pins present a sturdier mounting arrangement for shock, vibration, and impact situations).
- (2) 10 Ω at ± 5 % available on special order.
- (3) Maximum TCR applies to the 3 σ (sigma) limit or 99.73 % of a production lot. (Measured end-to-end with wiper off the element.)
- (4) Measurements of TCR through the wiper are influenced more by setting stability and the percentage of the total resistance in use (at the wiper) than by fundamental resistance change due to temperature alone. The parameter shown in Table 3 is a 2 σ distribution typifying the behavior of the device when used with 40 % or more of the total resistance in use.
- (5) Derated linearly from full power at + 85 °C to zero power at + 150 °C. See Figure 3 in this datasheet.
- (6) All ΔR's are measured to the tolerance specified + 0.01 Ω.
- (7) Whichever is greater.
- (8) Load-Life test performed at nominal rated power, 0.5 W, at + 85 °C.

Special Available Options:

- Special marking
- Special lengths for lead wires (L, LB Style)
- Hooked leads
- Alternate bushing and PC combinations
- Power conditioning and screening operations

VISHAY TRIMMERS ARE INSPECTED

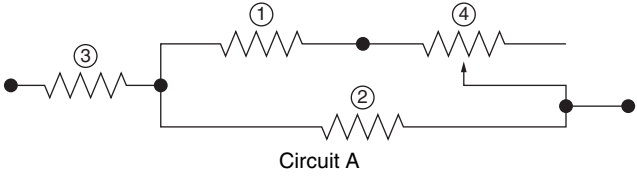
100 % for:

- Immersion
- Resistance tolerance check
- End resistance
- Visual-mechanical
- Dynamic tests for continuity, CRV

By sample for:

- TCR
- DWV

Circuit A is a conventional circuit employing a high value wire wound trimmer (4) linearized by two padding resistors (1 and 2) for the purpose of trimming resistor (3) to within less than 100 ppm absolute resistance.



Circuit B uses only a low value infinite resolution Vishay trimming potentiometer (5) to accomplish the same results. Saving in cost and board space is achieved. A low value wire wound trimmer cannot be used because of poor resolution.

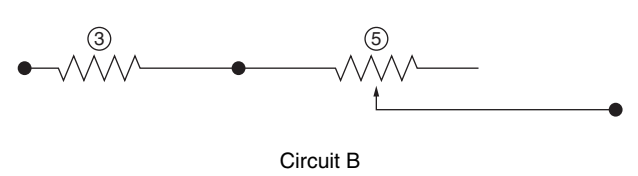


TABLE 6 - GLOBAL PART NUMBER INFORMATION														
NEW GLOBAL PART NUMBER: Y5050500R000K0L (preferred part number format)														
DENOTES PRECISION		VALUE				CHARACTERISTICS ⁽¹⁾								
Y		R = Ω K = kΩ				0 = gold plated termination (lead (Pb)-free) 1 to 999 = custom								
Y	5	0	5	0	5	0	0	R	0	0	0	K	0	L
PRODUCT CODE					TOLERANCE			PACKAGING						
5050 = 1202L 0050 = 1202LB 0051 = 1202P 6050 = 1202PB 5051 = 1202Y 7050 = 1202YB					J = ± 5 % K = ± 10 % M = ± 20 %			L = foam/box pack						
FOR EXAMPLE: ABOVE GLOBAL ORDER Y5050 500R000 K 0 L:														
TYPE: 1202L														
VALUE: 500.0 Ω														
ABSOLUTE TOLERANCE: ± 10.0 %														
TERMINATION: gold plated (lead (Pb)-free)														
PACKAGING: foam/box pack														
HISTORICAL PART NUMBER: 1202L 500R00 K B (will continue to be used)														
1202L			500R00			K			B					
MODEL			RESISTANCE VALUE			TOLERANCE			PACKAGING					
1202L 1202LB 1202P 1202PB 1202Y 1202YB			500.0 Ω			J = ± 5 % K = ± 10 % M = ± 20 %			B = bulk pack					

Note
⁽¹⁾ For non-standard requests, please contact application engineering.

Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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

The product specifications do not expand or otherwise modify Vishay Precision Group's terms and conditions of purchase, including but not limited to, the warranty expressed therein.

Vishay Precision Group makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, Vishay Precision Group 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.**

Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on Vishay Precision Group's knowledge of typical requirements that are often placed on Vishay Precision Group products. 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.

No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of Vishay Precision Group.

The products shown herein are not designed for use in life-saving or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay Precision Group products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay Precision Group for any damages arising or resulting from such use or sale. Please contact authorized Vishay Precision Group personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.