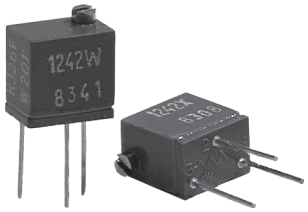
Bulk Metal® Foil Technology Ultra High Precision Trimming Potentiometers, QPL Approved 1/4" Square, Qualified to MIL-PRF-22097, Char. F, RJ26 with a Smooth and Unidirectional Output



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 (4) (- 55 °C to + 150 °C ref. at + 25 °C); through the wiper (5); ± 25 ppm/°C
- A smooth and unidirectional resistance with leadscrew adjustment
- Load life stability: 0.1 % typical ΔR, 1.0 % maximum ΔR under full rated power of 0.25 W at 85 °C for 1000 h
- Settability: 0.05 % typical; 0.1 % maximum
- Setting stability: 0.1 % typical; 0.5 % maximum, ΔSS
- Power rating: 0.25 W at + 85 °C
- Resistance range: 20 Ω to 5 kΩ
- Resistance tolerance: ± 10 %
- Electrostatic discharge (ESD) up to 25 000 V
- Terminal finish: gold plated (tin/lead finish is available on request)

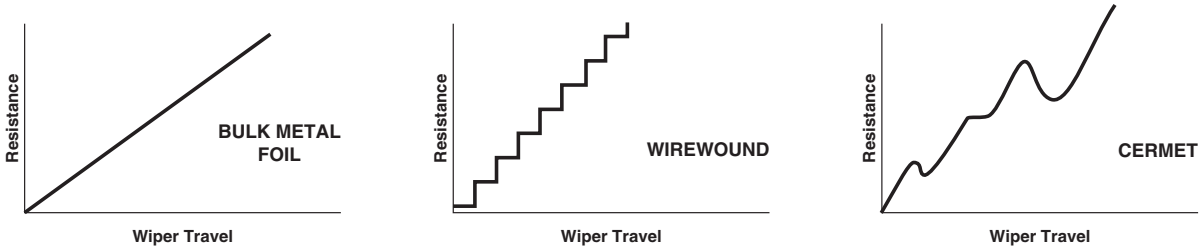


TABLE 1 - MODEL SELECTION

MODEL	TERMINATION STYLE	AVERAGE WEIGHT (g)	STANDARD RESISTANCE VALUES (in Ω) (1)	STANDARD TOLERANCE (2)	POWER RATING at + 85 °C AMBIENT	NO. OF TURNS
1242 (RJ26)	W-edge mount, top adjust	0.4	20, 50, 100, 200, 500, 1K, 2K, 5K	± 10 %	0.25 W	21 ± 2
	X-edge mount, side adjust					

Note
• See figure 1

TABLE 2 - 1242 (RJ26) SERIES ELECTRICAL SPECIFICATIONS (3)

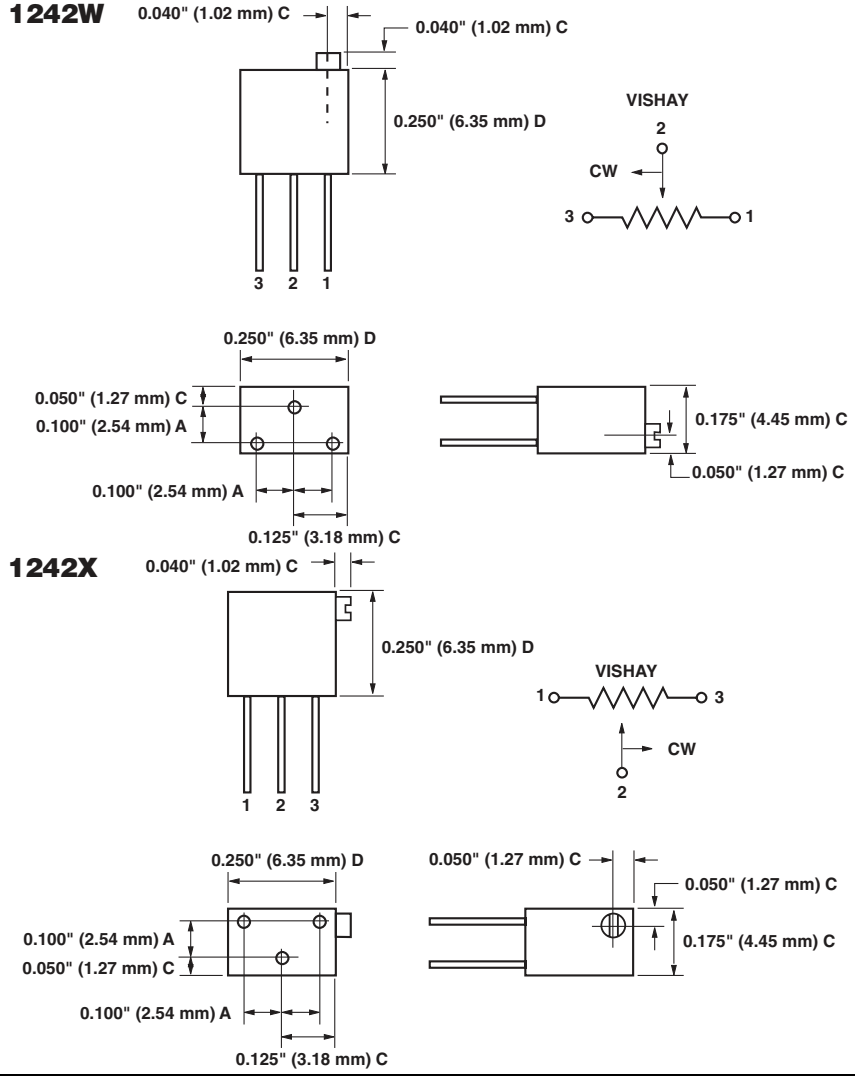
Temperature Coefficient of Resistance (TCR), 50 Ω to 10 kΩ End-to-end (4)	± 10 ppm/°C maximum (- 55 °C to + 150 °C, 25 °C ref.)
Temperature Coefficient of Resistance (TCR), 5 Ω, 10 Ω and 20 Ω End-to-end (4) Through the wiper (5)	 ± 20 ppm/°C ± 25 ppm/°C
Stability Load life at 1000 h	0.1 % typical ΔR 1.0 % maximum ΔR (under full rated power of 0.25 W at + 85 °C)
Power Rating (at + 85 °C) (6)	0.25 W
Settability	0.05 % typical; 0.1 % maximum
Setting Stability	0.1 % typical; 0.5 % maximum ΔSS
Contact Resistance Variation - CRV (noise)	± 3 % or 3 Ω (7)
Hop-off	0.25 % typical; 1.0 % maximum
High-Frequency Operation Rise time Inductance Capacitance	 1.0 ns without ringing 0.08 µH typical 0.5 pF typical
Operating Temperature Range	- 55 °C to + 150 °C

Note
• See page 3 for footnotes

TABLE 3 - MECHANICAL SPECIFICATIONS

Adjustment Turns	21 ± 2
Mechanical Stops	Wiper idles - no discontinuity
Internal Terminations	All welded - no flux
Case Material	Diallyl-phthalate: green (DAP)
Shaft Torque	3 oz. in. maximum
Backlash	0.005 % typical

FIGURE 1 - SCHEMATIC AND DIMENSIONS in Inches (Millimeters)



STANDARD MARKING:

Model No.
Date Code
Resistance Value
Tolerance

NOTES:

Adjustment screw 0.070" (1.78 mm) diameter with 0.020" (0.51 mm) X 0.020" (0.51 mm) slot. Model 1242 has gold plated terminal pins 0.016" (0.41 mm) ± 0.001" (0.03 mm) diameter, 0.200" (5.08 mm) length minimum.

TOLERANCES:

A = ± 0.005" (0.13)
C = ± 0.010" (0.25)
D = ± 0.020" (0.51)

FIGURE 2 - POWER DERATING CURVE

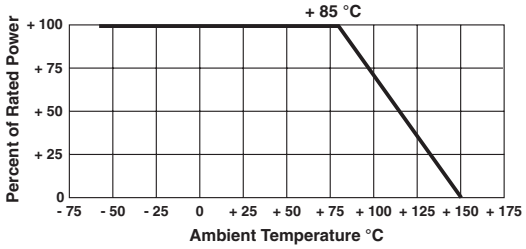


TABLE 4 - COMPARISON		
	MIL-PRF-22097/5 CHARACTERISTIC F [8]	(RJ26) 1242 SPECIFICATIONS
TEST GROUP I		
Visual and mechanical	No failures	No failures
Total resistance	± 10 %	± 10 %
Actual effective electrical travel	10 to 25 turns	21 ± 2 turns
End resistance	± 2 % or 20 Ω [7]	2 Ω (values ≤ 1 kΩ) ; 5 Ω (values ≥ 2 kΩ)
Contact resistance variation - CRV (noise)	± 3.0 % or 3 Ω [7]	± 3.0 % or 3 Ω [7]
Dielectric withstanding voltage - DWV Per MIL-STD-202, methods 301 and 105		
Atmospheric pressure	600 V_{AC}, 1 min	600 V_{AC}, 1 min
Barometric pressure	250 V_{AC}, 1 min	250 V_{AC}, 1 min
Insulation resistance	> 1000 MΩ	> 1000 MΩ
Shaft torque	3 oz. in. maximum	3 oz. in. maximum
Thermal shock	± 1.0 %	0.1 % typical; 0.5 % maximum
TEST GROUP II		
Resistance temperature characteristic - TCR	± 0.01 %/°C (± 100 ppm/°C)	± 0.001 %/°C (± 10 ppm/°C)
Moisture resistance	± 1.0 %	± 0.5 %
Contact resistance variation - CRV (noise)	± 3.0 % or 3 Ω [7]	± 3.0 % or 3 Ω [7]
TEST GROUP III		
Shock (specified pulse)	± 1.0 %	± 0.5 %
Vibration (high-frequency)	± 1.0 %	± 0.5 %
Contact resistance variation - CRV (noise)	± 3.0 % or 3 Ω [7]	± 3.0 % or 3 Ω [7]
Salt spray	No corrosion	No corrosion
TEST GROUP IV		
Solder heat	± 1.0 %	± 0.1 %
Life (1000 h at 85 °C)	± 2.0 %	± 1.0 %
Contact resistance variation - CRV (noise)	± 3.0 % or 3 Ω [7]	± 3.0 % or 3 Ω [7]
TEST GROUP V		
Low-temperature operation	± 1.0 %	± 0.5 %
High-temperature exposure	± 2.0 %	± 0.5 %
Contact resistance variation - CRV (noise)	± 3.0 % or 3 Ω [7]	± 3.0 % or 3 Ω [7]
TEST GROUP VI		
Rotational life	± 2.0 %	± 2.0 %
Contact resistance variation - CRV (noise)	± 3.0 % or 3 Ω [7]	± 3.0 % or 3 Ω [7]
Terminal strength	2 lbs.	2 lbs.
TEST GROUP VII		
Solderability	MIL-STD-202 method 208	MIL-STD-202 method 208
Immersion	No continuous stream of bubbles	No continuous stream of bubbles
TEST GROUP VIII	MIL-STD-810 method 508	MIL-STD-810 method 508
Fungus	No mechanical damage	No mechanical damage

Notes

(1) 5 Ω and 10 Ω resistance values available on special order.

(2) 5 % resistance tolerance available on special order.

(3) Maximum is 1.0 % A.Q.L. standard for all specifications except TCR. (For TCR information, see notes 4 and 5.) “Typical” is a designers reference which represents that 85 % of the lots supplied, over a long period of time, will be at least the figure shown or better.

(4) 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.)

(5) 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 2 is a 2 s distribution typifying the behavior of the device when used with 40 % or more of the total resistance in use.

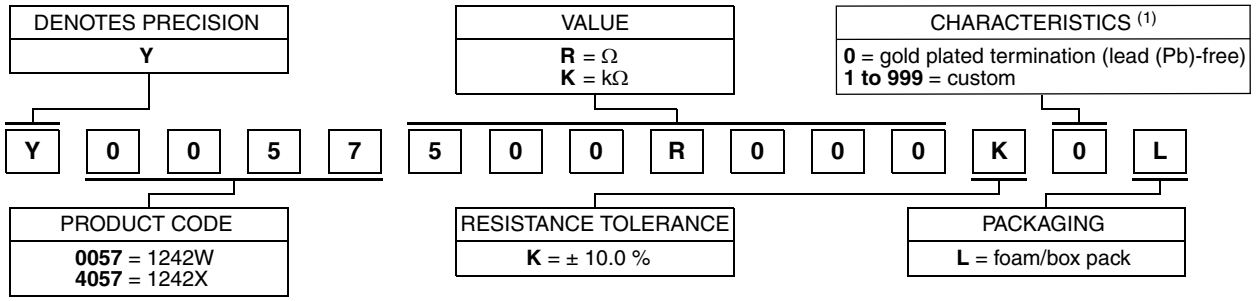
(6) Derated linearly from full power at + 85 °C to zero power at + 150 °C. See figure 2 on previous page.

(7) Whichever is greater.

(8) All ΔR’s are measured to the tolerance specified + 0.01 Ω.

TABLE 5 - GLOBAL PART NUMBER INFORMATION

NEW GLOBAL PART NUMBER: Y0057500R000K0L (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y0057 500R000 K 0 L:

TYPE: 1242W
VALUE: 500.0 Ω
ABSOLUTE TOLERANCE: ± 10.0 %
TERMINATION: gold plated (lead (Pb)-free)
PACKAGING: foam/box pack

HISTORICAL PART NUMBER: RJ26 F W 501 (will continue to be used)

RJ26	F	W	501
MODEL	CHARACTERISTIC	MOUNTING TYPE	RESISTANCE VALUE
RJ26	Having specifications per table 1 of MIL-PRF-22097 (i.e., TCR of 100 ppm/°C, power rating of 0.25 W at + 85 °C and improved environmental specifications)	W, PC pins (edge mount, top adjust) X, PC pins (edge mount, side adjust)	First 2 digits significant, last digit represents the number of zeros (i.e., 501 = 500 Ω)

Note

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

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