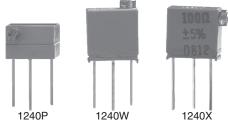
# Accutrim<sup>™</sup> 1240 (RJ26 Style)

Vishay Foil Resistors

## Bulk Metal<sup>®</sup> Foil Technology Ultra High Precision Trimming Potentiometers, $\frac{1}{4}$ " Square, RJ26 Style, Designed to Meet or Exceed The Requirements of MIL-PRF-39035, Char. H with a Smooth and Unidirectional Output



### INTRODUCTION

VISHAY PRECISION

GROUP

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):  $\pm$  10 ppm/°C. (- 55 °C to + 150 °C ref. at + 25 °C); through the wiper <sup>(3)</sup>;  $\pm$  25 ppm/°C (see table 2 for low values)



- A smooth and unidirectional resistance with COMPLIANT leadscrew adjustment
- Load life stability: 0.1 % typical  $\Delta R$ , 1.0 % maximum  $\Delta R$ under full rated power at + 85 °C for 10 000 h
- Settability: 0.05 % typical; 0.1 % maximum
- Setting stability: 0.1 % typical; 0.5 % maximum, DSS
- Power rating: 0.25 W at + 85 °C
- Resistance range: 5  $\Omega$  to 10 k $\Omega$
- Tolerance: ± 5 %, ± 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)	POWER RATING at + 85 °C AMBIENT	NO. OF TURNS		
1240	W-edge mount, top adjust			21 ± 2		
	X-edge mount, side adjust	0.4	0.25 W			
	P-horizontal mount, side adjust					

0.25 % typical; 1.0 % maximum

0.5 pF typical

1.0 ns without ringing 0.08 µH typical

- 55 °C to + 150 °C

	, <b>, ,</b>				
Note • See Figure 1, next page					
TABLE 2 - 1240 (RJ26) SERIES   ELECTRICAL SPECIFICATIONS					
Temperature Coefficient of Resistance (TCR) 50 $\Omega$ to 10 k $\Omega$ End-to-end <sup>(2)</sup>	± 10 ppm/°C maximum (- 55 °C to + 150 °C, + 25 °C ref.)				
Temperature Coefficient of Resistance 5, 10 and 20 $\Omega$	± 20 ppm/°C				
Through the wiper <sup>(3)</sup>	± 25 ppm/°C				
<b>Stability</b> Load life at 10 000 h End-to-end <sup>(2)</sup>	0.1 % typical $\Delta R$ 1.0 % maximum $\Delta R$ (under full rated power of 0.25 W at + 85 °C)				
Power Rating <sup>(4)</sup>	0.25 W at + 85 °C				
Settability	0.05 % typical; 0.1 % maximum				
Setting Stability	0.1 % typical; 0.5 % maximum				
Contact Resistance Variation - CRV (noise) <sup>(5)</sup>	3 Ω typical; 10 Ω maximum				

TABLE 3 - VALUES VS. TOLERANCES				
STANDARD RESISTANCE VALUES (in $\Omega$ )	STANDARD TOLERANCE			
5, 10	± 10 %			
20, 50, 100, 200, 500, 1K, 2K, 5K, 10K	± 5 %			

TABLE 4 - MECHANICAL SPECIFICATIONS				
Adjustment Turns	21 ± 2			
Mechanical Stops	Wiper idles - no discontinuity			
Internal Terminations	All welded - no flux			
Case Material	1240X - diallyl-phthalate: green (DAP) 1240W - diallyl-phthalate: green (DAP) 1240P - thermoplastic: black			
Shaft Torque	3 oz. in. maximum			
Backlash	0.005 % typical			

**High-Frequency Operation** 

**Operating Temperature Range** 

Hop-off

Rise time

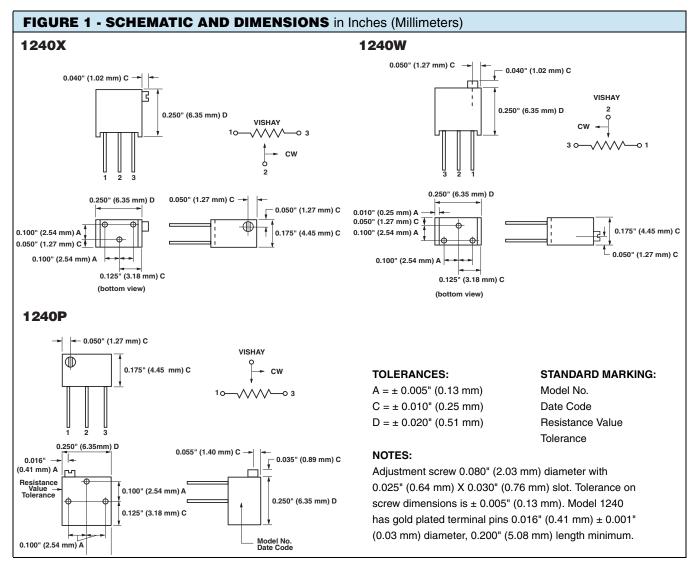
Inductance

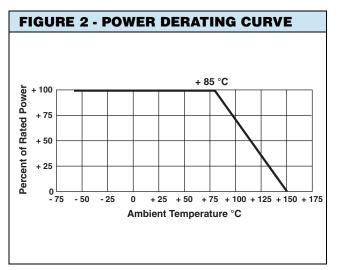
Capacitance

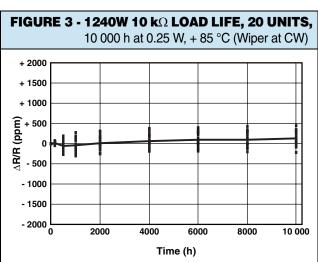
# Accutrim<sup>™</sup> 1240 (RJ26 Style)

## **Vishay Foil Resistors**











# Accutrim<sup>™</sup> 1240 (RJ26 Style)

**Vishay Foil Resistors** 

TABLE 5 - COMPARISON					
	MIL-PRF-39035/3 CHARACTERISTIC H (6)	MODEL 1240 MAXIMUM			
<b>TEST GROUP I</b> Conditioning Contact resistance variation - CRV (noise) Immersion	$\pm$ 1.0 % $\pm$ 3.0 % or 3 $\Omega^{(7)}$ No continuous stream of bubbles	$\pm$ 0.5 % 3 $\Omega$ typical, 10 $\Omega$ maximum No continuous stream of bubbles			
<b>TEST GROUP I a</b> Visual and mechanical Actual effective electrical travel End resistance	No failures 10 to 25 turns 2 % or 2 $\Omega$ <sup>(7)</sup>	No failures $21 \pm 2$ turns $2 \Omega$ for values $\leq 1 k\Omega$ ; $5 \Omega$ for values $\geq 2 k\Omega$ ;			
Dielectric withstanding voltage - DWV Per MIL-STD-202, methods 301 and 105 Atmospheric pressure Barometric pressure Insulation resistance Shaft torque Thermal shock Setting stability	$\begin{array}{c} 600 \; V_{ACr} \; 1 \; min \\ 250 \; V_{ACr} \; 1 \; min \\ \geq 1000 \; M\Omega \\ \textbf{3 oz. in. maximum} \\ \; \pm \; 1.0 \; \% \\ \; \pm \; 1.0 \; \% \end{array}$	$\begin{array}{c} 600 \ V_{AC,} \ 1 \ min \\ 250 \ V_{AC,} \ 1 \ min \\ > 1000 \ M\Omega \\ 3 \ oz. \ in. \ maximum \\ \pm \ 0.5 \ \% \\ \pm \ 0.5 \ \% \end{array}$			
TEST GROUP II Solderability	Per MIL-STD-202, method 208	Per MIL-STD-202, method 208			
<b>TEST GROUP III</b> Resistance temperature characteristic - TCR Moisture resistance Contact resistance variation - CRV (noise)	$\pm$ 0.005 %/°C (± 50 ppm/°C) ± 1.0 % 3.0 % or 3 Ω <sup>(7)</sup>	± 0.001 %/°C (± 10 ppm/°C) ± 0.5 % 3 Ω typical, 10 Ω maximum			
TEST GROUP IV Settability Shock Setting stability Vibration Setting stability Contact resistance variation - CRV (noise) Salt spray	$\begin{array}{c} \pm 1.0 \% \\ 3.0 \% \text{ or } 3 \Omega ^{(7)} \\ \text{No corrosion} \end{array}$	± 0.1 % ± 0.5 % ± 0.5 % ± 0.5 % ± 0.5 % 3 Ω typical, 10 Ω maximum No corrosion			
TEST GROUP V Solder heat Low-temperature operation Setting stability Low-temperature storage High-temperature exposure Setting stability Contact resistance variation - CRV (noise) Integrity of shaft	$\begin{array}{c} \pm 1.0 \% \\ \pm 1.0 \% \\ \pm 2.0 \% \\ \pm 3.0 \% \\ \pm 3.0 \% \\ \pm 2.0 \% \\ \pm 3.0 \% \\ \pm 2.0 \% \\ 3 \% \text{ or } 3 \Omega ^{(7)} \\ \text{No loosening or breakage} \end{array}$	$\pm 0.1 \%$ $\pm 0.5 \%$ $\pm 0.5 \%$ $\pm 0.5 \%$ $\pm 0.5 \%$ $\pm 0.5 \%$ $\pm 0.5 \%$ 3 Ω typical, 10 Ω maximum No loosening or breakage			
<b>TEST GROUP VI</b> Rotational life (200 cycles) Contact resistance variation - CRV (noise) Terminal strength	± 2.0 % 3 % or 3 Ω <sup>(7)</sup> 2 lbs.	$\pm$ 2.0 % 3 $\Omega$ typical, 10 $\Omega$ maximum 2 lbs.			
<b>TEST GROUP VII</b> Life (2000 h) at + 85 °C Life (10 000 h) at + 85 °C	± 3.0 % ± 5.0 %	± 0.1 % typical, ± 1.0 % maximum ± 0.1 % typical, ± 1.0 % maximum			
TEST GROUP VIII Solvent resistance	No failures	No failures			

#### Notes

- (1) Maximum is 1.0 % A.Q.L. standard for all specifications except TCR. (For TCR information, see notes 2 and 3.)
- <sup>(2)</sup> Maximum TCR applies to the 3  $\sigma$  (sigma) limit or 99.73 % of a production lot. (Measured end-to-end with wiper off the element.)
- (3) 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.
- <sup>(4)</sup> Derated linearly for full power at + 85 °C to zero power at + 150 °C. See Figure 2 on previous page.
- (5) Independent of resistance value. 3 Ω maximum available on special request.
- $^{(6)}$  All  $\Delta R$  's are measured to the tolerance specified + 0.01  $\Omega.$
- <sup>(7)</sup> Whichever is greater.
  - Special Available Options:
    - Special marking Burn-in and screening operations.

### VISHAY TRIMMERS ARE INSPECTED

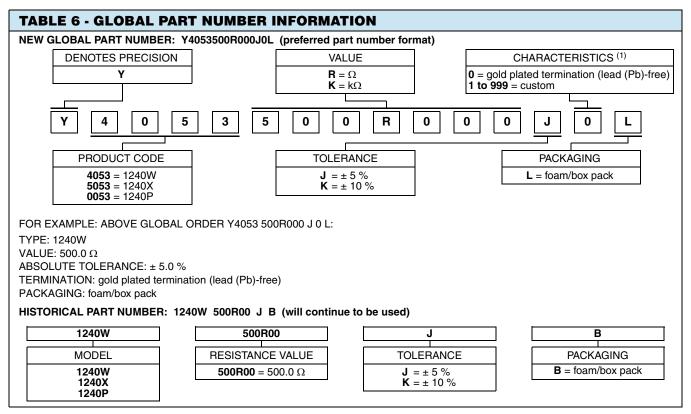
- 100 % for:
- Immersion
- Resistance tolerance check
- End resistance
- · Visual-mechanical
- Dynamic tests for continuity, CRV

By sample for:

- TCR
- DWV

## **Vishay Foil Resistors**





### Note

<sup>(1)</sup> For non-standard requests, please contact application engineering.



Vishay Precision Group

# Disclaimer

All 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.

Vishay Precision Group disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. 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, which apply to these products.

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 Precision Group.

The products shown herein are not designed for use in medical, 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.