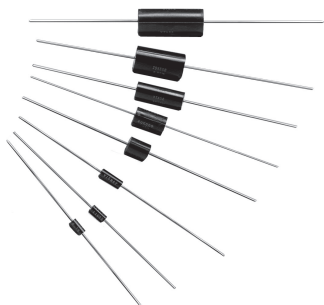


## Bulk Metal® Foil Technology Tubular Axial-Lead Resistors, Meets or Exceed MIL-R-39005 Requirements



### Any value and tolerance available within resistance range

This series of axial leaded resistors is made using the same foil technology as the S102C. The difference is axial versus radial leads. Axial leads have the advantage of readily available auto insertion equipment while the radial leaded devices may require additional tooling. Also, when converting from metal film (RNC 55) to foil (VMTA 55) boards may already be laid out for the axial leaded device. It is worth noting that for new designs the S102C footprint is the smallest in the industry (taking into account the need for lead exit to board pad length allowance).

Our Application Engineering Department is available to advise and to make recommendations. For non-standard technical requirements and special applications, please contact us.

**TABLE 1 - TCR** (for values under 50R)

| VALUES       | 0 °C to + 60 °C | - 55 to + 125 °C,<br>+ 25 °C Ref. |
|--------------|-----------------|-----------------------------------|
| 25R - 50R    | ± 5 ppm/°C      | ± 8 ppm/°C                        |
| 15R - 24R999 | ± 6 ppm/°C      | ± 10 ppm/°C                       |
| 5R - 14R999  | ± 8 ppm/°C      | ± 12 ppm/°C                       |
| 1R - 4R999   | ± 15 ppm/°C     | ± 20 ppm/°C                       |

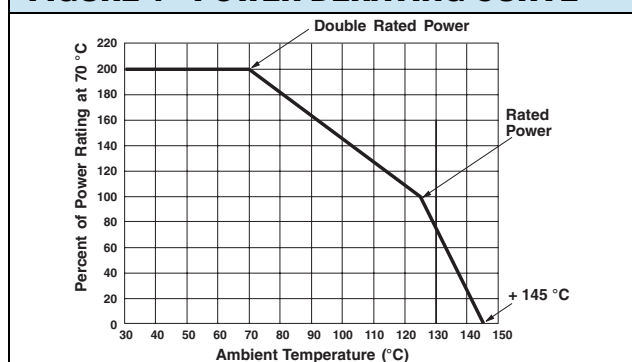
### FEATURES

- Temperature Coefficient of Resistance (TCR):  
± 8 ppm/°C (- 55 °C to + 125 °C, + 25 °C Ref.)  
± 4 ppm/°C (0 °C to + 60 °C)
- Tolerance: to ± 0.01 %
- Load Life Stability:  
± 0.05 % at 25 °C, 2000 hours at Rated Power  
± 0.0025 % at 25 °C, 2000 hours at Low Power
- Electrostatic Discharge (ESD) above 25 000 Volts
- Resistance Range: 5 Ω to 500 kΩ
- Power Rating: 0.2 W to 1.0 W at 70 °C
- Non-Inductive, Non-Capacitive Design
- Thermal EMF: 0.1 μV/°C maximum, 0.05 μV/°C typical
- Voltage Coefficient: < 0.1 ppm/V
- Terminal Finishes available: Lead (Pb)-free  
Tin/Lead
- For better performances, please contact Application Engineering
- Any value available within resistance range (e.g. 1K2345)
- Prototype samples available from 48 hours. For more information, please contact [foil@vishaypg.com](mailto:foil@vishaypg.com)



**RoHS\***  
COMPLIANT

**FIGURE 1 - POWER DERATING CURVE**



**TABLE 2 - MODEL SELECTION**

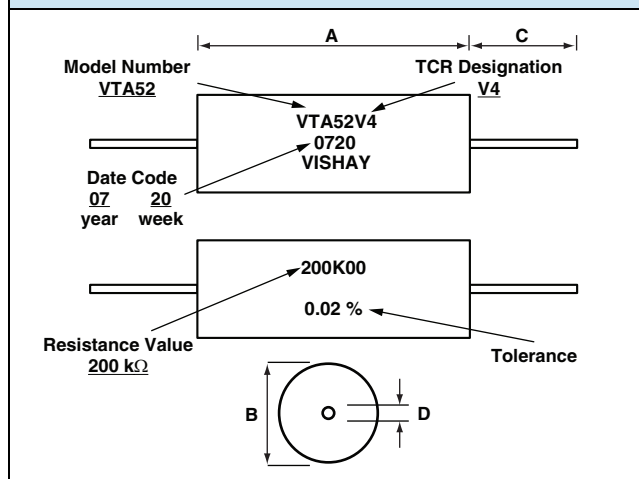
| VISHAY<br>MODEL | MIL<br>STYLE | POWER      |             | MAXIMUM<br>WORKING VOLTAGE | RESISTANCE<br>RANGE <sup>1)</sup> (Ω) | TIGHTEST<br>TOLERANCE | TCR RANGE <sup>2)</sup> |
|-----------------|--------------|------------|-------------|----------------------------|---------------------------------------|-----------------------|-------------------------|
|                 |              | at + 70 °C | at + 125 °C |                            |                                       |                       |                         |
| VTA56           | RBR56        | 0.25 W     | 0.125 W     | 300 V                      | 5 to 24R9<br>25 to 150K               | ± 0.1 %<br>± 0.01 %   | V4<br>V3, V2            |
| VTA55           | RBR55        | 0.3 W      | 0.15 W      | 300 V                      | 5 to 24R9<br>25 to 150K               | ± 0.1 %<br>± 0.01 %   | V4<br>V3, V2            |
| VTA54           | RBR54        | 0.5 W      | 0.25 W      | 300 V                      | 5 to 24R9<br>25 to 300K               | ± 0.1 %<br>± 0.01 %   | V4<br>V3, V2            |
| VTA53           | RBR53        | 0.66 W     | 0.33 W      | 300 V                      | 5 to 24R9<br>25 to 300K               | ± 0.1 %<br>± 0.01 %   | V4<br>V3, V2            |
| VTA52           | RBR52        | 1.0 W      | 0.5 W       | 300 V                      | 5 to 24R9<br>25 to 500K               | ± 0.1 %<br>± 0.01 %   | V4<br>V3, V2            |
| VMTA55          | RNC55        | 0.2 W      | 0.1 W       | 200 V                      | 5 to 49R9<br>50 to 30K                | ± 0.1 %<br>± 0.01 %   | V4<br>V3, V2            |
| VMTB60          | RNC60        | 0.25 W     | 0.125 W     | 250 V                      | 5 to 49R9<br>50 to 60K                | ± 0.1 %<br>± 0.01 %   | V4<br>V3, V2            |

### Notes

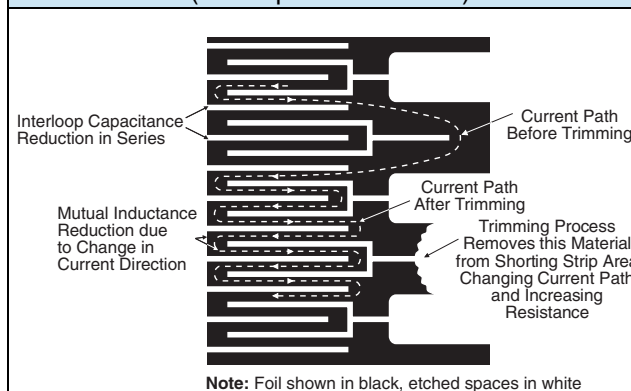
1. For higher/lower resistance values, consult the Application Engineering Department
2. TCR options for values > 50 Ω  
V4 = ± 4 ppm/°C (0 to + 60 °C); ± 8 ppm/°C (- 55 °C to + 125 °C, + 25 °C Ref.)  
V3 = ± 3 ppm/°C (0 to + 60 °C); ± 5 ppm/°C (- 55 °C to + 125 °C, + 25 °C Ref.)  
V2 = ± 2 ppm/°C (0 to + 60 °C); ± 5 ppm/°C (- 55 °C to + 125 °C, + 25 °C Ref.)

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

**FIGURE 2 - VTA/VMTA SERIES STANDARD PRINTING**



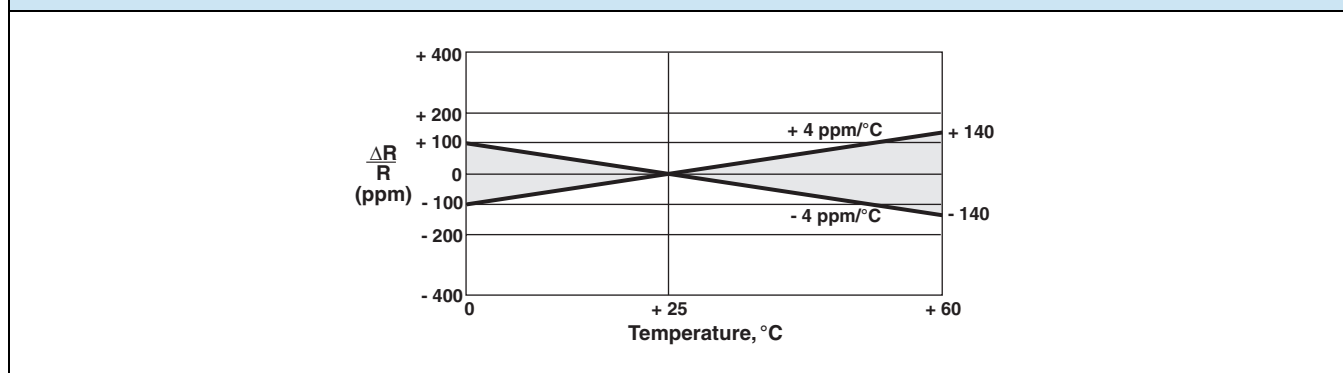
**FIGURE 3 - TRIMMING TO VALUES**  
(Conceptual Illustration)



**TABLE 3 - VTA/VMTX DIMENSIONS**

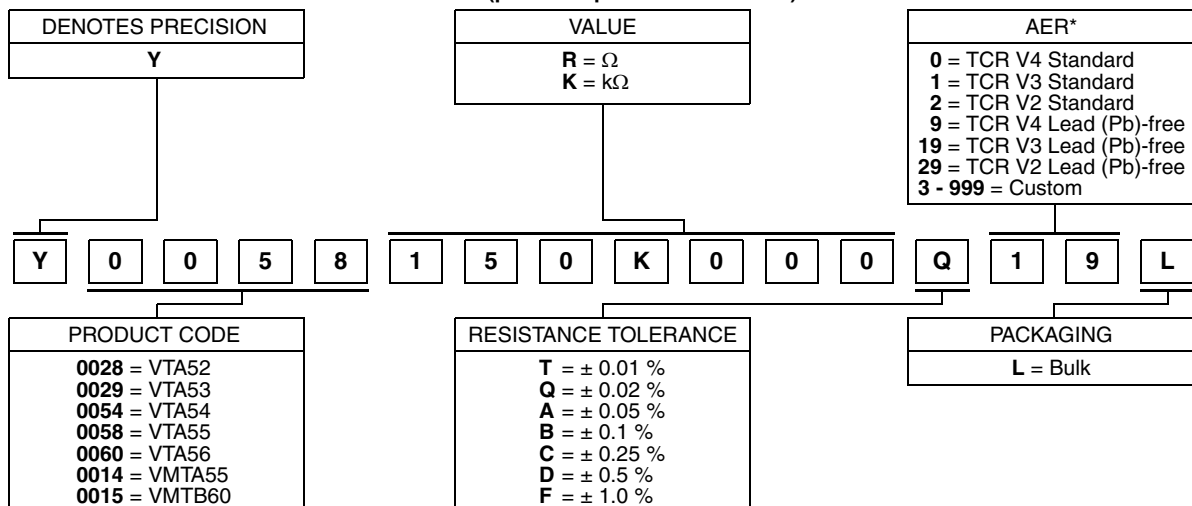
| VISHAY<br>MODEL | MIL<br>SIZE | BODY              |                         |                  |                       |              |                         |      |                       | LEAD         |       |              |      |
|-----------------|-------------|-------------------|-------------------------|------------------|-----------------------|--------------|-------------------------|------|-----------------------|--------------|-------|--------------|------|
|                 |             | LENGTH (A)        |                         |                  |                       | DIAMETER (B) |                         |      |                       | LENGTH (C)   |       | DIAMETER (D) |      |
|                 |             | INCH              |                         | mm               |                       | INCH         |                         | mm   |                       | INCH         | mm    | INCH         | mm   |
| VTA56           | RBR56       | 0.356             | $\frac{+0.005}{-0.010}$ | 9.04             | $\frac{+0.13}{-0.25}$ | 0.260        | $\frac{+0.005}{-0.015}$ | 6.60 | $\frac{+0.13}{-0.38}$ | 1.5 Minimum  | 38.10 | 0.032        | 0.81 |
| VTA55           | RBR55       | $0.500 \pm 0.020$ |                         | $12.70 \pm 0.51$ |                       | 0.260        | $\frac{+0.005}{-0.010}$ | 6.60 | $\frac{+0.13}{-0.25}$ | 1.5 Minimum  | 38.10 | 0.032        | 0.81 |
| VTA54           | RBR54       | 0.750             | $\frac{+0.020}{-0.032}$ | 19.05            | $\frac{+0.51}{-0.81}$ | 0.260        | $\frac{+0.005}{-0.010}$ | 6.60 | $\frac{+0.13}{-0.25}$ | 1.5 Minimum  | 38.10 | 0.032        | 0.81 |
| VTA53           | RBR53       | $0.750 \pm 0.020$ |                         | $19.05 \pm 0.51$ |                       | 0.375        | $\pm 0.015$             | 9.53 | $\pm 0.38$            | 1.5 Minimum  | 38.10 | 0.032        | 0.81 |
| VTA52           | RBR52       | 1.000             | $\frac{+0.020}{-0.032}$ | 25.40            | $\frac{+0.51}{-0.81}$ | 0.375        | $\pm 0.015$             | 9.53 | $\pm 0.38$            | 1.35 Minimum | 34.29 | 0.032        | 0.81 |
| VMTA55          | RNC55       | $0.270 \pm 0.005$ |                         | $6.86 \pm 0.13$  |                       | 0.120        | $\frac{+0.005}{-0.010}$ | 3.05 | $\frac{+0.13}{-0.25}$ | 1.5 Minimum  | 38.10 | 0.025        | 0.64 |
| VMTB60          | RNC60       | $0.375 \pm 0.005$ |                         | $9.53 \pm 0.13$  |                       | 0.160        | $\pm 0.005$             | 4.06 | $\pm 0.13$            | 1.5 Minimum  | 38.10 | 0.025        | 0.64 |

**FIGURE 4 - TEMPERATURE COEFFICIENT OF RESISTANCE**



**TABLE 4 - GLOBAL PART NUMBER INFORMATION**

**NEW GLOBAL PART NUMBER: Y0058150K000Q19L (preferred part number format)**



FOR EXAMPLE: ABOVE GLOBAL ORDER Y0058 150K000 Q 19 L:

TYPE: VTA55

VALUE: 150.0 k $\Omega$

ABSOLUTE TOLERANCE:  $\pm 0.02\%$

TCR: V3

TERMINATION: Lead (Pb)-free

PACKAGING: Bulk

**HISTORICAL PART NUMBER: VTA55V3T 150K00 Q B (will continue to be used)**

| VTA55                                                         | V3             | T                                           | 150K00                    | Q                                                                                                                                     | B         |
|---------------------------------------------------------------|----------------|---------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------|
| MODEL                                                         | TCR            | TERMINATION                                 | OHMIC VALUE               | RESISTANCE TOLERANCE                                                                                                                  | PACKAGING |
| VTA52<br>VTA53<br>VTA54<br>VTA55<br>VTA56<br>VMTA55<br>VMTB60 | V4<br>V3<br>V2 | T = Lead (Pb)-free<br>None = Tin/Lead alloy | 150K00 = 150.0 k $\Omega$ | T = $\pm 0.01\%$<br>Q = $\pm 0.02\%$<br>A = $\pm 0.05\%$<br>B = $\pm 0.1\%$<br>C = $\pm 0.25\%$<br>D = $\pm 0.5\%$<br>F = $\pm 1.0\%$ | B = Bulk  |

**Note**

\* For non-standard requests, please contact Application Engineering.

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