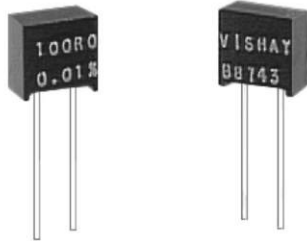


# Bulk Metal® Foil Technology Industrial Miniature Precision Resistor with TCR of $\pm 4 \text{ ppm}/^\circ\text{C}$ and Tolerance to $\pm 0.01 \%$



Any value at any tolerance available with resistance range

The VRM style is a miniaturized version of the now famous S102C. It is made with a Bulk Metal® Foil element so it retains all of the inherent performance of foil resistors. It does not, however, have the value range, power rating, TCR or lead spacing of the S102C. It is a size for size replacement for certain wirewounds and finds application in situations where size constraints dictate the use of this miniature precision resistor.

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

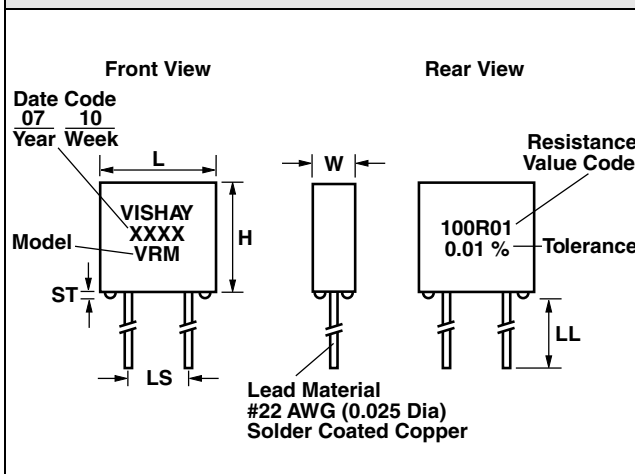
## FEATURES

- Temperature Coefficient of Resistance:
  - $\pm 4 \text{ ppm}/^\circ\text{C}$  ( $0^\circ\text{C}$  to  $+60^\circ\text{C}$ );
  - $\pm 8 \text{ ppm}/^\circ\text{C}$  ( $-55^\circ\text{C}$  to  $+125^\circ\text{C}$ ,  $25^\circ\text{C}$  Ref.)
- Resistance Range:  $5 \Omega$  to  $50 \text{ k}\Omega$
- Tolerance: to  $\pm 0.01 \%$
- Power Rating:  $0.25 \text{ W}$  at  $+70^\circ\text{C}$ ;  $0.125 \text{ W}$  at  $+125^\circ\text{C}$
- Load Life Stability:  $\pm 0.05 \%$  Maximum  $\Delta R$  at  $+70^\circ\text{C}$  at Rated Power for 2000 hours
- Non Inductive:  $< 0.08 \mu\text{H}$
- Thermal EMF:  $< 0.1 \mu\text{V}/^\circ\text{C}$
- Long Term Stability:  $\pm 0.0025 \%$  (25 ppm) per year under low power and room temperature conditions
- Voltage Coefficient:  $< 0.1 \text{ ppm}/\text{V}$
- Maximum Working Voltage:  $250 \text{ V}$
- Terminal Finishes Available: Lead (Pb)-free Tin/Lead Alloy
- Any value available within resistance range (e.g. 1K234)
- Prototype samples available from 48 hours. For more information, please contact [foil@vishay.com](mailto:foil@vishay.com)
- For better performances, please see S-Series datasheet



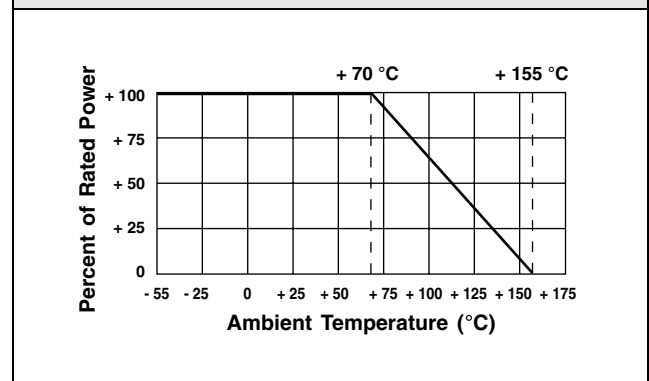
**RoHS\***  
COMPLIANT

**FIGURE 1 - IMPRINTING AND DIMENSIONS**



| DIMENSIONS | INCHES            | mm              |
|------------|-------------------|-----------------|
| L:         | $0.250 \pm 0.010$ | $6.35 \pm 0.25$ |
| H:         | $0.250 \pm 0.010$ | $6.35 \pm 0.25$ |
| W:         | $0.125 \pm 0.010$ | $3.18 \pm 0.25$ |
| ST:        | $0.020 \pm 0.010$ | $0.51 \pm 0.25$ |
| LL:        | 0.750 Minimum     | 19.05 Minimum   |
| LS:        | $0.125 \pm 0.005$ | $3.18 \pm 0.13$ |

**FIGURE 2 - POWER DERATING CURVE**

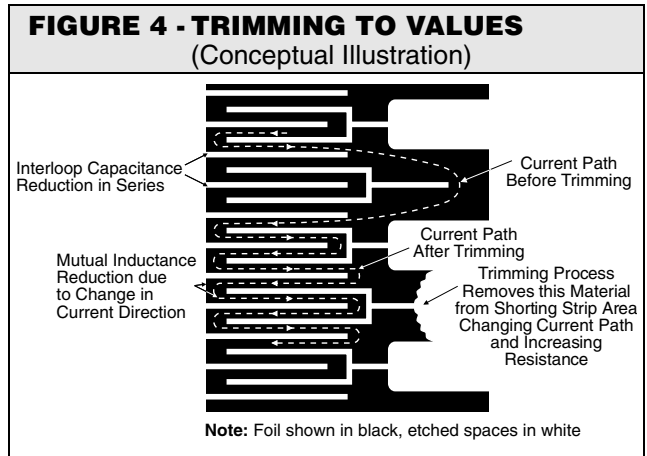
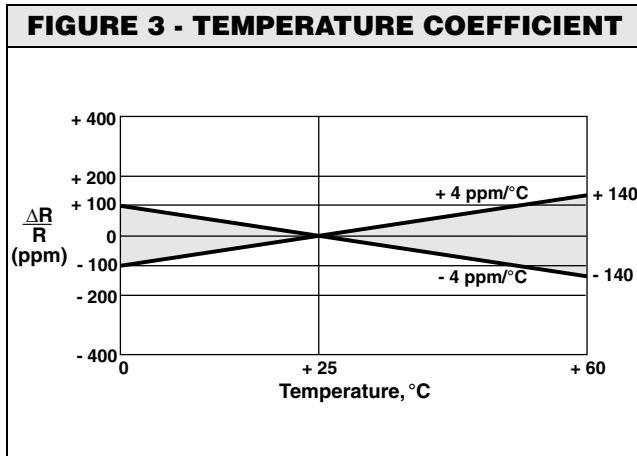


**TABLE 1 - RESISTANCE VALUES VS TOLERANCE**

| 5 $\Omega$ to 50 $\Omega$ | 50 $\Omega$ to 50 $\text{k}\Omega$ |
|---------------------------|------------------------------------|
| $\pm 0.1 \%$              | $\pm 0.01 \%$                      |
| $\pm 0.25 \%$             | $\pm 0.02 \%$                      |
| $\pm 0.5 \%$              | $\pm 0.05 \%$                      |
| $\pm 1.0 \%$              | $\pm 0.1 \%$                       |
|                           | $\pm 0.25 \%$                      |
|                           | $\pm 0.5 \%$                       |
|                           | $\pm 1.0 \%$                       |

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

Vishay Foil Resistors Bulk Metal® Foil Technology Industrial Miniature Precision Resistor with TCR of  $\pm 4 \text{ ppm}/^\circ\text{C}$  and Tolerance to  $\pm 0.01 \%$



**TABLE 2 - GLOBAL PART NUMBER INFORMATION**

NEW GLOBAL PART NUMBER: Y007345K4540Q9L (preferred part number format)

|                            |  |  |
|----------------------------|--|--|
| DENOTES PRECISION<br>Y     | VALUE<br>R = $\Omega$<br>K = $k\Omega$   | AER*<br>0 = Standard<br>9 = Lead (Pb)-free<br>1 - 999 = Custom |
| Y 0 0 7 3                  | 4 5 K 4 5 4 0  | Q 9 L  |
| PRODUCT CODE<br>0073 = VRM | RESISTANCE TOLERANCE<br>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 = $\pm 1.0 \%$ | PACKAGING<br>L = Bulk Pack                                     |

FOR EXAMPLE: ABOVE GLOBAL ORDER Y0073 45K4540 Q 9 L:  
 TYPE: VRM  
 VALUE: 45.454  $k\Omega$   
 ABSOLUTE TOLERANCE:  $\pm 0.02 \%$   
 TERMINATION: Lead (Pb)-free  
 PACKAGING: Bulk Pack

HISTORICAL PART NUMBER EXAMPLE: VRMT 45K454 Q B (will continue to be used)

|                     |   |   |   |                                 |
|---------------------|---|---|---|---------------------------------|
| VRM<br>MODEL<br>VRM | T<br>TERMINATION<br>T = Lead (Pb)-free<br>None = Tin/Lead alloy | 45K454<br>OHMIC VALUE<br>45.454 $k\Omega$ | Q<br>RESISTANCE TOLERANCE<br>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<br>PACKAGING<br>B = Bulk Pack |
|---------------------|---|---|---|---------------------------------|

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



## Disclaimer

All product specifications and data are subject to change without notice.

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