

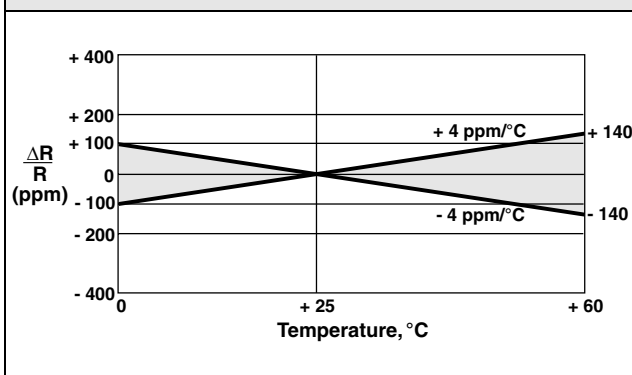
## Bulk Metal<sup>®</sup> Foil Technology Industrial Grade Miniature Voltage Divider with TCR Tracking of 1.5 ppm/°C and Ratio Stability of 0.001 % (10 ppm)



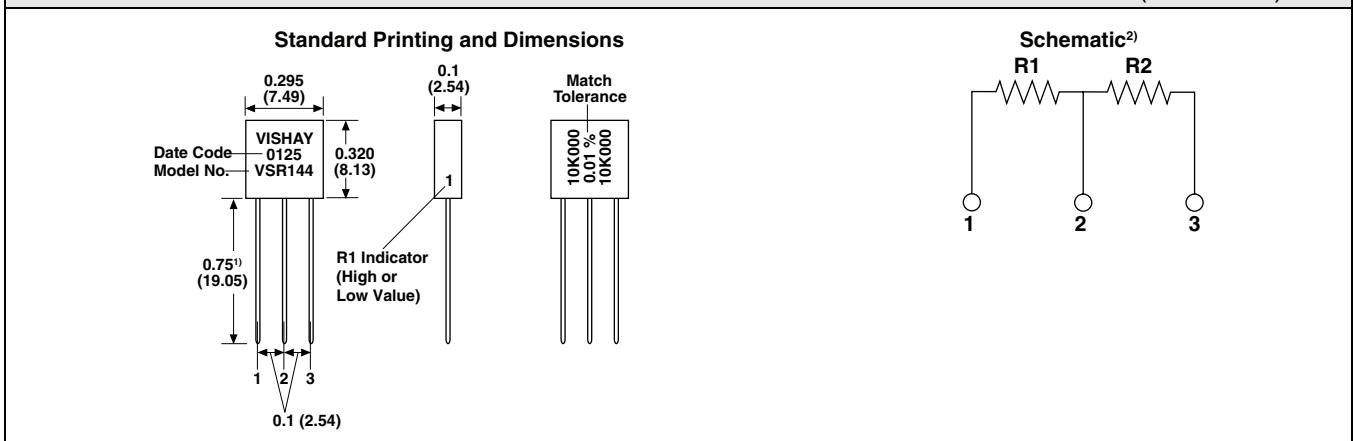
**Any value at any ratio available within resistance range**

The VSR144 is an industrial version of the 300144. This device has the stability that is inherent in foil but does not offer the tight match, TCR, or TCR tracking of the 300144. This product is quite satisfactory for most industrial purposes and should be considered when the total performance of the 300144 is not necessary.

**FIGURE 1 - TEMPERATURE COEFFICIENT**



**FIGURE 2 - MODEL VSR144 STANDARD PRINTING AND DIMENSIONS** in inches (millimeters)



**Notes**

Tolerance:  $\pm 0.010$ "

1. Lead wires: #22 AWG solder coated copper, 0.75" minimum length.

2. Each resistor contains 1 chip of two resistive elements.

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

**FEATURES**

- Temperature Coefficient of Resistance (TCR):  
Absolute:  $\pm 4$  ppm/°C (0 °C to + 60 °C)  
 $\pm 8$  ppm/°C (- 55 °C to + 125 °C,  
+ 25 °C Ref.)  
Tracking: 1.5 ppm/°C
- Tolerance: Absolute and Matching to  $\pm 0.02$  %
- Power Rating: 0.2 W at 85 °C, for the entire resistive element R1 + R2, divided proportionally between the two elements
- Ratio Stability: < 0.001 % (10 ppm) 0.2 W at 70 °C for 2000 hours
- Maximum Working Voltage: 200 V
- Electrostatic Discharge (ESD) above 25 000 V
- Non Inductive, Non Capacitive Design
- Rise Time: 1 ns without ringing
- Current Noise: < - 40 dB
- Thermal EMF: 0.05  $\mu$ V/°C typical
- Voltage Coefficient: < 0.1 ppm/V
- Non Inductive: < 0.08  $\mu$ H
- Non Hot Spot Design
- 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 300144 and 300144Z datasheets



**RoHS\***  
COMPLIANT

**TABLE 1 - MODELS VSR144 SPECIFICATIONS**

VISHAY MODEL	POWER RATING <sup>1, 2</sup>	STANDARD RESISTANCE TOLERANCE		TCR TRACKING AVAILABLE TO
		ABSOLUTE AVAILABLE TO	RATIO MATCH AVAILABLE TO	
VSR144	0.2 W at + 85 °C (for the entire resistive element R1 + R2) divided proportionally between the two elements.	± 0.02 %	± 0.02 %	< ± 1.5 ppm/°C For Like Values < ± 2.0 ppm/°C Standard

**Notes**

1. Power is proportional to the divider ratio.

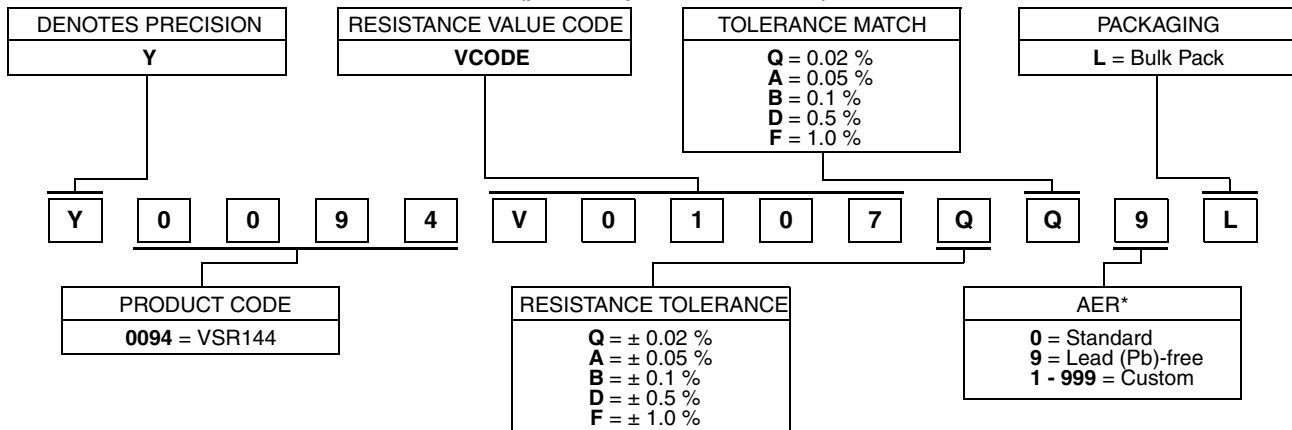
Example: In a VSR144 (1K/10K dual), the power rating would be 18 mW on the 1K and 182 mW on the 10K, for a total of 200 mW on R1 + R2.

$$P1 = \left(\frac{R1}{R1+R2}\right)P \quad P2 = \left(\frac{R2}{R1+R2}\right)P$$

2. Maximum working voltage is 200 V.

**TABLE 2 - GLOBAL PART NUMBER INFORMATION**

NEW GLOBAL PART NUMBER: Y0094V0107QQ9L (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y0094 V0107 Q Q 9 L:

TYPE: VSR144

VALUE: 6K/20K

ABSOLUTE TOLERANCE: ± 0.02 %

TOLERANCE MATCH: ± 0.02 %

TERMINATION: Lead (Pb)-free

PACKAGING: Bulk Pack

HISTORICAL PART NUMBER: VSR144T 6K/20K TCR2 Q Q B (will continue to be used)

VSR144	T	6K/20K	TCR2	Q	Q	B
MODEL	TERMINATION	OHMIC VALUE	TCR Characteristic	ABSOLUTE TOLERANCE	TOLERANCE MATCH	PACKAGING
VSR144	T = Lead (Pb)-free None = Tin/Lead alloy	R1 = 6.0 kΩ R2 = 20.0 kΩ		Q = ± 0.02 % A = ± 0.05 % B = ± 0.1 % D = ± 0.5 % F = ± 1.0 %	Q = 0.02 % A = 0.05 % B = 0.1 % D = 0.5 % F = 1.0 %	B = Bulk Pack

**Note**

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



Bulk Metal<sup>®</sup> Foil Technology Industrial Grade Vishay Foil Resistors  
Miniature Voltage Divider with TCR Tracking of  
1.5 ppm/°C and Ratio Stability of 0.001 % (10 ppm)

**TABLE 3 - VSR144 RATIOS** (more ratios available upon request)

VCODE	R1	R2	VCODE	R1	R2
V0009	20K	20K	V0002	5K	5K
V0010	20K	10K	V0026	3K	19K2
V0100	20K	2K	V0156	3K	6K
V0055	19K4	9K7	V0158	2K7	10K
V0223	17K5	20K	V0058	2K	20K
V0097	15K	15K	V0030	2K	18K
V0094	10K	20K	V0029	2K	4K
V0001	10K	10K	V0103	2K	3K
V0042	10K	8K323	V0059	2K	2K
V0006	10K	2K	V0103	1K5	3K
V0226	9K	10K	V0032	1K	16K
V0003	9K	1K	V0121	1K	2K
V0013	8K	16K	V0004	1K	1K
V0107	6K	20K	V0022	511R	16K2
V0014	6K	7K	V0162	500R	15K
V0159	5K5	7K7	V0091	500R	500R
V0005	5K	10K	V0061	300R	300R



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