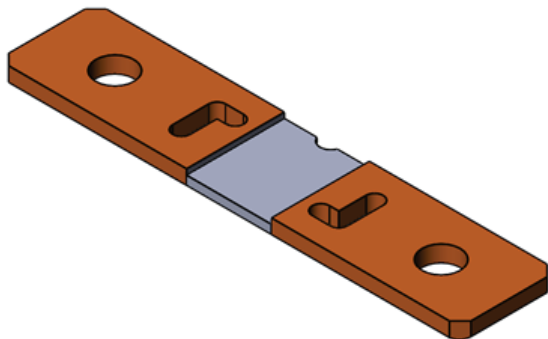


# Power Metal Strip® Shunt Resistor, Low TCR (Down to $< \pm 10 \text{ ppm}/^\circ\text{C}$ ), Very Low Value ( $100 \mu\Omega$ , $500 \mu\Omega$ , and $1000 \mu\Omega$ )



## FEATURES

- High power to resistor size ratio
- Proprietary processing technique produces extremely low resistance values
- All welded construction
- Solid metal nickel-chrome alloy resistive element with unique design for low TCR (down to  $\pm 10 \text{ ppm}/^\circ\text{C}$ )
- Very low inductance ( $< 5 \text{ nH}$ )
- Low thermal EMF (as low as  $< 1.25 \mu\text{V}/^\circ\text{C}$ )
- PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

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## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL  | SIZE | POWER RATING<br>$P_{70^\circ\text{C}}$<br>W | TOLERANCE<br>$\pm \%$ | RESISTANCE VALUE<br>RANGE<br>$\Omega$ | RESISTANCE VALUES<br>CURRENTLY AVAILABLE <sup>(1)</sup><br>$\Omega$ | WEIGHT<br>(typical)<br>g |
|---------------|------|---------------------------------------------|-----------------------|---------------------------------------|---------------------------------------------------------------------|--------------------------|
| WSBS8518...34 | 8518 | 36                                          | 5, 10                 | $100\mu$ to $1000\mu$                 | $100\mu$                                                            | 36.0                     |
| WSBS8518...34 | 8518 | 25                                          | 5, 10                 | $100\mu$ to $1000\mu$                 | $500\mu$                                                            | 33.4                     |
| WSBS8518...34 | 8518 | 20                                          | 5, 10                 | $100\mu$ to $1000\mu$                 | $1000\mu$                                                           | 31.3                     |

### Note

<sup>(1)</sup> Other values may be available, contact factory

## TECHNICAL SPECIFICATIONS

| PARAMETER                   | UNIT                         | RESISTOR CHARACTERISTICS      |
|-----------------------------|------------------------------|-------------------------------|
| Temperature coefficient     | $\text{ppm}/^\circ\text{C}$  | $\pm 65$ for $100 \mu\Omega$  |
|                             |                              | $\pm 10$ for $500 \mu\Omega$  |
|                             |                              | $\pm 25$ for $1000 \mu\Omega$ |
| Operating temperature range | $^\circ\text{C}$             | -65 to +170                   |
| Thermal EMF                 | $\mu\text{V}/^\circ\text{C}$ | $< 1.25$                      |
| Inductance                  | nH                           | $< 5$                         |
| Maximum current rating      | A                            | $(P/R)^{1/2}$                 |

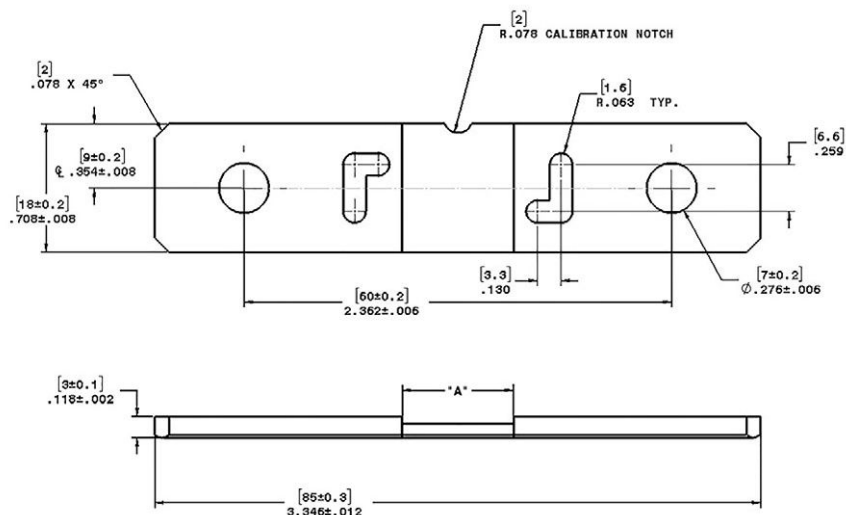
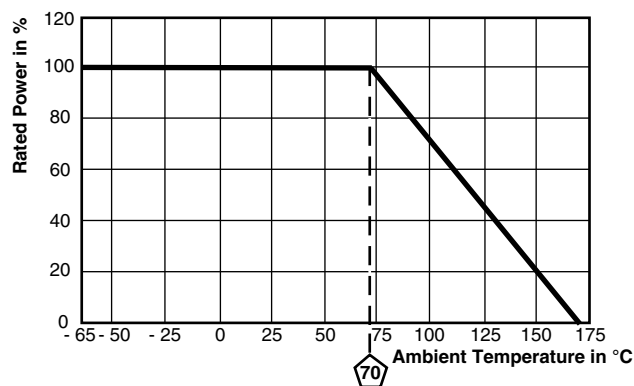
## GLOBAL PART NUMBER INFORMATION

GLOBAL PART NUMBERING: WSBS8518L5000JT34 (WSBS8518...34,  $0.0005 \Omega$ ,  $\pm 5 \%$ , tray pack)

|              |   |   |   |                                                                                                              |   |   |   |                                   |   |                                                  |   |   |   |              |   |   |
|--------------|---|---|---|--------------------------------------------------------------------------------------------------------------|---|---|---|-----------------------------------|---|--------------------------------------------------|---|---|---|--------------|---|---|
| W            | S | B | S | 8                                                                                                            | 5 | 1 | 8 | L                                 | 5 | 0                                                | 0 | 0 | J | T            | 3 | 4 |
| GLOBAL MODEL |   |   |   | RESISTANCE VALUE                                                                                             |   |   |   | TOLERANCE CODE                    |   | PACKAGING CODE                                   |   |   |   | SPECIAL      |   |   |
| WSBS8518     |   |   |   | $L = \text{m}\Omega$<br>$L1000 = 0.000100 \Omega$<br>$L5000 = 0.000500 \Omega$<br>$L10000 = 0.001000 \Omega$ |   |   |   | $J = \pm 5 \%$<br>$K = \pm 10 \%$ |   | $K = \text{bulk pack}$<br>$T = \text{tray pack}$ |   |   |   | 34 = low TCR |   |   |

PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)

This Vishay product is protected by one or more United States and International patents.

**DIMENSIONS** in inches (millimeters)**DERATING**

TOLERANCES ON DECIMALS  
 $.xxx \pm 0.005$  [ $x \pm 0.1$ ]

UNLESS OTHERWISE LISTED

| RESISTANCE VALUE ( $\mu\Omega$ ) | ELEMENT MATERIAL | A REFERENCE   |
|----------------------------------|------------------|---------------|
| 100                              | Ni-Cr            | 0.120 [3.05]  |
| 500                              | Ni-Cr            | 0.615 [15.62] |
| 1000                             | Ni-Cr            | 0.900 [22.86] |

**PERFORMANCE**

| TEST                      | CONDITIONS OF TEST                                             | TEST LIMITS           |
|---------------------------|----------------------------------------------------------------|-----------------------|
| Thermal shock             | -55 °C to +150 °C, 1000 cycles, 15 min at each extreme         | $\pm 0.5 \% \Delta R$ |
| Short time overload       | 5x rated power for 5 s                                         | $\pm 0.5 \% \Delta R$ |
| Low temperature storage   | -65 °C for 24 h                                                | $\pm 0.2 \% \Delta R$ |
| High temperature exposure | 1000 h at +170 °C                                              | $\pm 1.0 \% \Delta R$ |
| Bias humidity             | +85 °C, 85 % RH, 10 % bias, 1000 h                             | $\pm 0.5 \% \Delta R$ |
| Mechanical shock          | 100 g's for 6 ms, 5 pulses                                     | $\pm 0.2 \% \Delta R$ |
| Vibration                 | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h | $\pm 0.2 \% \Delta R$ |
| Load life                 | 1000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"                      | $\pm 1.0 \% \Delta R$ |
| Moisture resistance       | MIL-STD-202, method 106, 0 % power, 7b not required            | $\pm 0.2 \% \Delta R$ |



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