

# Power Metal Strip® Battery Shunt Resistor W/Molded Enclosure Very Low Value (50 $\mu\Omega$ , 100 $\mu\Omega$ , 125 $\mu\Omega$ , and 500 $\mu\Omega$ )



## FEATURES

- High power to resistor size ratio
- Proprietary processing technique produces extremely low resistance values
- All welded construction
- Solid metal manganese-copper alloy or nickel-chrome alloy resistive element with low TCR (< 20 ppm/°C)
- Molded enclosure allows for easy PCB connection
- Includes 4-pin male connector that mates with a Molex type MX150 #33472-4001 female connector
- Very low inductance (< 5 nH)
- Low thermal EMF (as low as < 1  $\mu\text{V}/^\circ\text{C}$ )
- 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)

**DESIGN TOOLS** (click logo to get started)



| STANDARD ELECTRICAL SPECIFICATIONS |      |   |                       |                                       |   |  |
|------------------------------------|------|---|-----------------------|---------------------------------------|---|--|
| GLOBAL MODEL                       | SIZE | POWER RATING<br>$P_{70} \text{ } ^\circ\text{C}$<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                         |
| WSBM8518                           | 8518 | 36  | 5, 10                 | 50 $\mu$ to 500 $\mu$                 | 50 $\mu$ , 100 $\mu$ , 125 $\mu$                                    | 50 $\mu$ = 61.3,<br>100 $\mu$ / 125 $\mu$ = 59.8 |
| WSBM8518                           | 8518 | 25  | 5, 10                 | 50 $\mu$ to 500 $\mu$                 | 500 $\mu$   | 56.8   |

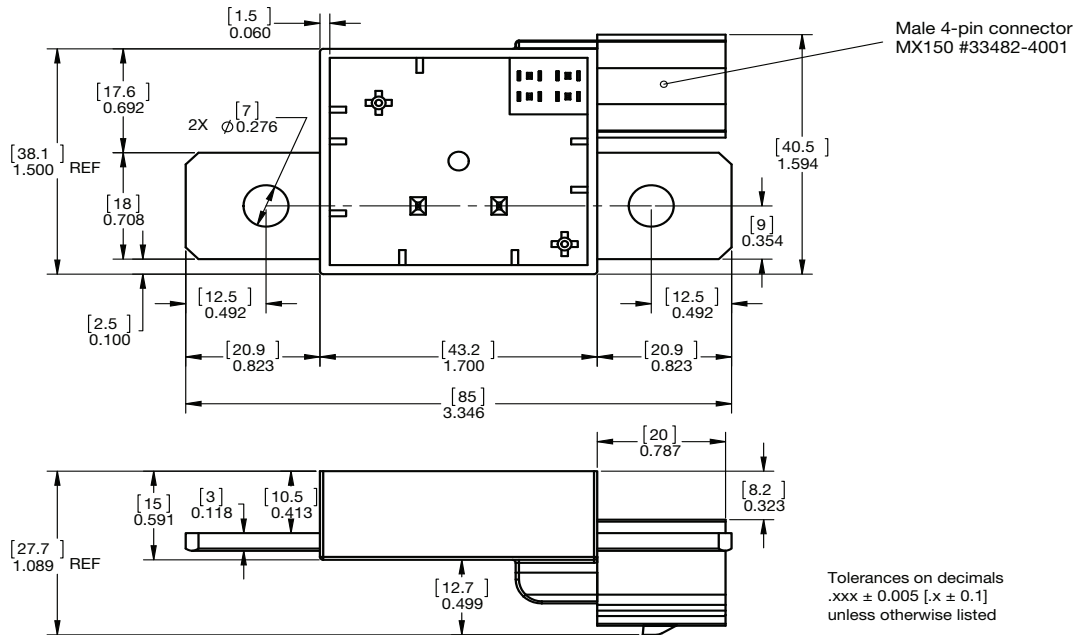
**Note**

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

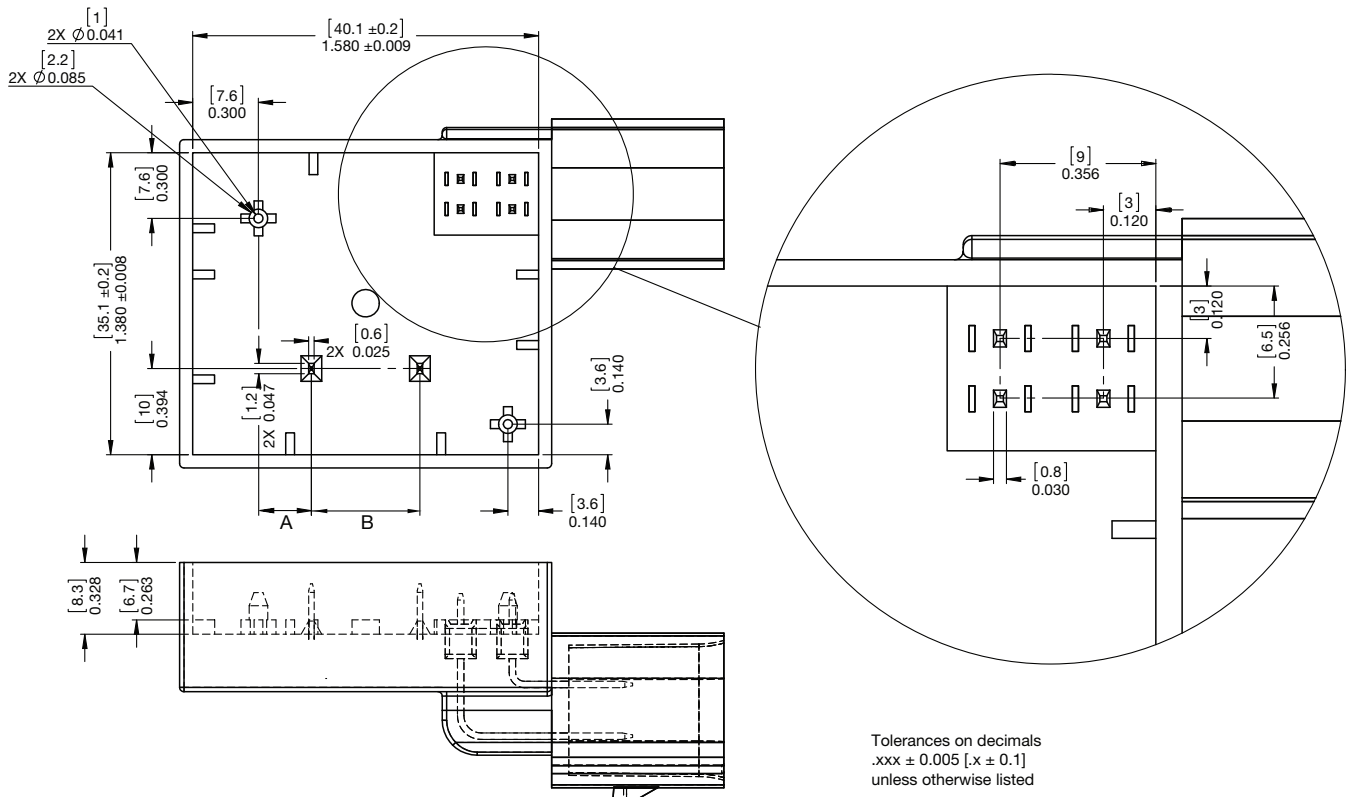
| TECHNICAL SPECIFICATIONS                   |                              |  |
|--|------------------------------|--|
| PARAMETER                                  | UNIT                         | RESISTOR CHARACTERISTICS   |
| Temperature coefficient                    | ppm/°C                       | $\pm 200$ for 50 $\mu\Omega$   |
|  |                              | $\pm 175$ for 100 $\mu\Omega$ / 125 $\mu\Omega$  |
|  |                              | $\pm 10$ for 500 $\mu\Omega$   |
| Temperature coefficient (element material) | ppm/°C                       | $\pm 20$   |
| Operating temperature range                | °C                           | -65 to +170  |
| Thermal EMF                                | $\mu\text{V}/^\circ\text{C}$ | < 1 for 50 $\mu\Omega$ and < 3 for 100 $\mu\Omega$ , 125 $\mu\Omega$ , 500 $\mu\Omega$ |
| Inductance                                 | nH                           | < 5  |
| Maximum current rating                     | A                            | $(P/R)^{1/2}$  |

| GLOBAL PART NUMBER INFORMATION  |  |  |   |   |
|---|--|--|---|---|
| GLOBAL PART NUMBERING: WSBM8518L1000JT (WSBM8518, 0.0001 $\Omega$ , $\pm 5 \%$ , tray pack) |  |  |   |   |
| W   | S  | B  | M   | 8   |
| 5   | 1  | 8  | L   | 1   |
| 0   | 0  | 0  | J   | T   |
|   |  |  |   |   |
| GLOBAL MODEL<br>(8 digits)<br><b>WSBM8518</b>   | RESISTANCE VALUE<br>(5 digits)<br>L = m $\Omega$<br>L0500 = 0.000050 $\Omega$<br>L1000 = 0.000100 $\Omega$<br>L1250 = 0.000125 $\Omega$<br>L5000 = 0.000500 $\Omega$ | TOLERANCE CODE<br>(1 digit)<br>J = $\pm 5 \%$<br>K = $\pm 10 \%$ | PACKAGING CODE<br>(1 digit)<br>K = bulk pack<br>T = tray pack | SPECIAL<br>(up to 2 digits)<br>(dash number)<br>from 1 to 99 as<br>applicable |

**EXTERNAL DIMENSIONS** in inches [millimeters]



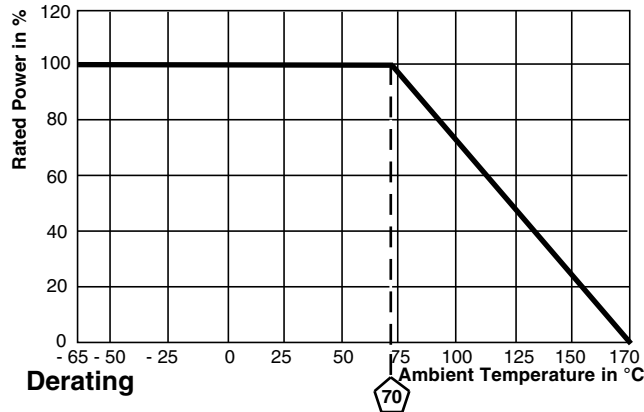
**INTERNAL DIMENSIONS** in inches [millimeters]



| RESISTANCE VALUE ( $\mu\Omega$ ) | ELEMENT MATERIAL | A REF.        | B ± 0.005 [ $\pm$ 0.13] |
|----------------------------------|------------------|---------------|-------------------------|
| 50                               | Mn-Cu            | 0.423 [10.74] | 0.135 [3.43]            |
| 100                              | Mn-Cu            | 0.242 [6.15]  | 0.495 [12.57]           |
| 125                              | Mn-Cu            | 0.197 [5.00]  | 0.585 [14.86]           |
| 500                              | Ni-Cr            | 0.143 [3.63]  | 0.695 [17.65]           |



DERATING



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



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