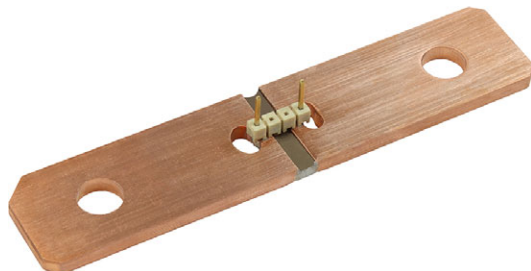


# Power Metal Strip® Shunt Resistor, Low TCR (Down to $< \pm 10 \text{ ppm}/^\circ\text{C}$ ), Very Low Value (Down to $15 \mu\Omega$ )



## FEATURES

- High power capability that enables current sensing to 1825 A
- 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  $< 1.25 \mu\text{V}/^\circ\text{C}$ )
- AEC-Q200 qualified
- 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)

## LINKS TO ADDITIONAL RESOURCES



## 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 |
|--------------|------|---------------------------------------------|-----------------------|---------------------------------------|---------------------------------------------------------------------|--------------------------|
| WSBE8518     | 8518 | 36                                          | 5                     | $30\mu$ to $100\mu$                   | $100\mu$                                                            | 36                       |
| WSBE8536     | 8536 | 50                                          | 5                     | $15\mu$ to $50\mu$                    | $50\mu$                                                             | 72                       |

### Note

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

## TECHNICAL SPECIFICATIONS

| PARAMETER                   | UNIT                         | RESISTOR CHARACTERISTICS     |                             |
|-----------------------------|------------------------------|------------------------------|-----------------------------|
|                             |                              | WSBE8518                     | WSBE8536                    |
| Temperature coefficient     | $\text{ppm}/^\circ\text{C}$  | $\pm 10$ for $100 \mu\Omega$ | $\pm 10$ for $50 \mu\Omega$ |
| 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                            | $(P/R)^{1/2}$                |                             |

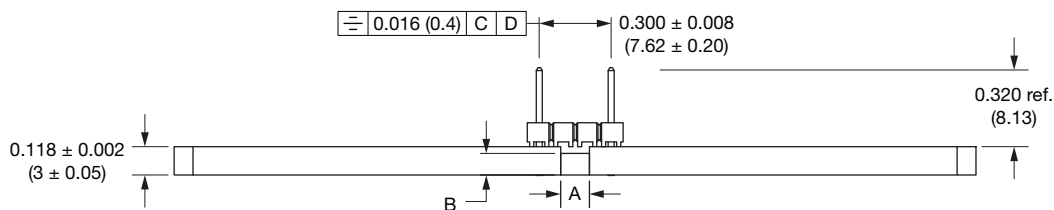
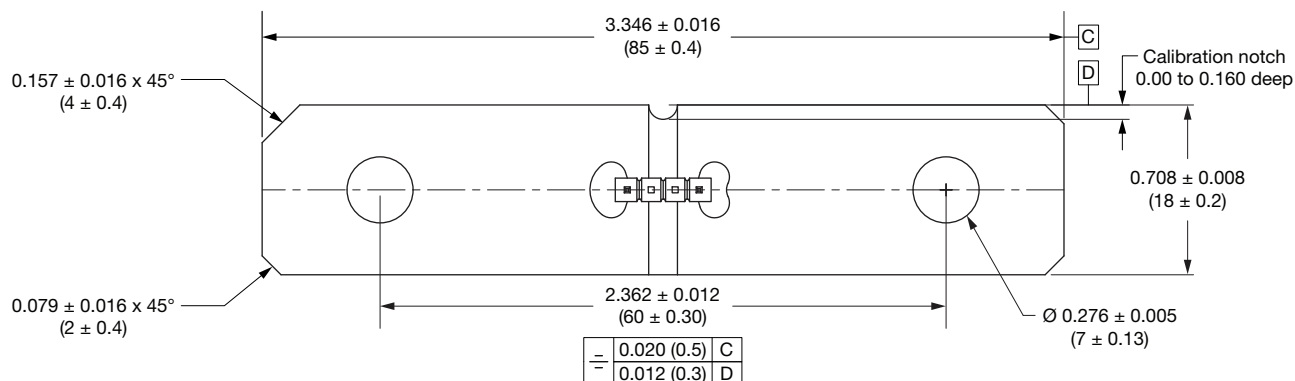
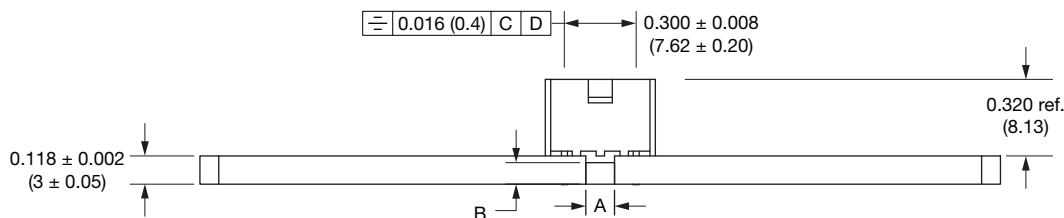
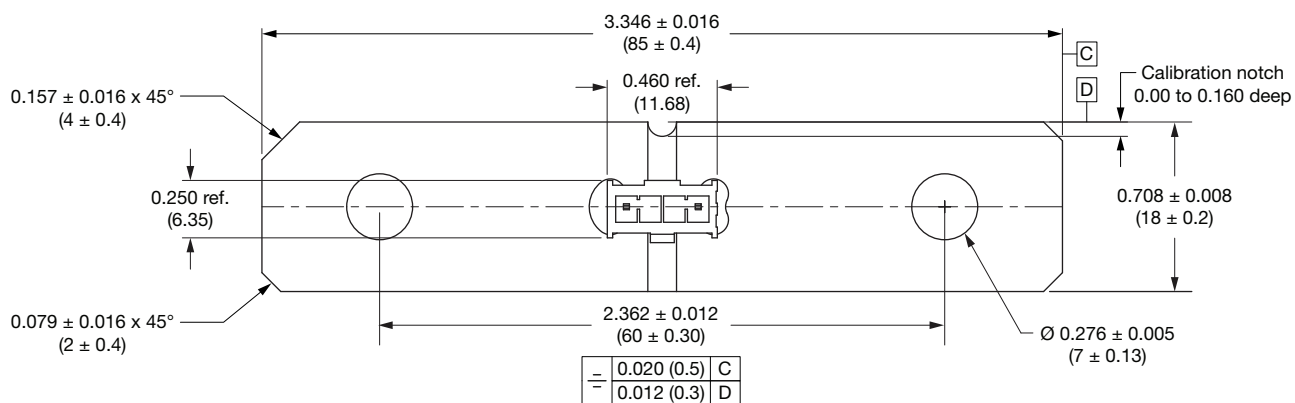
## GLOBAL PART NUMBER INFORMATION

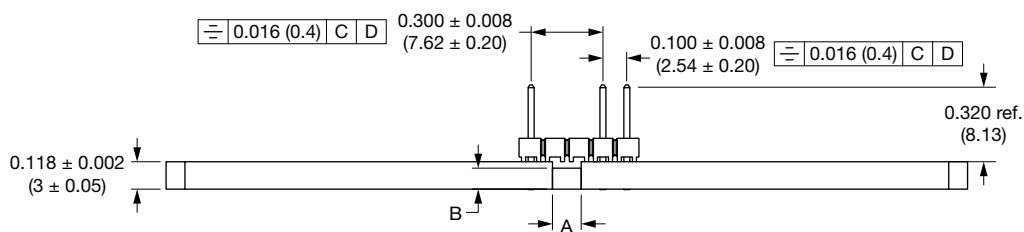
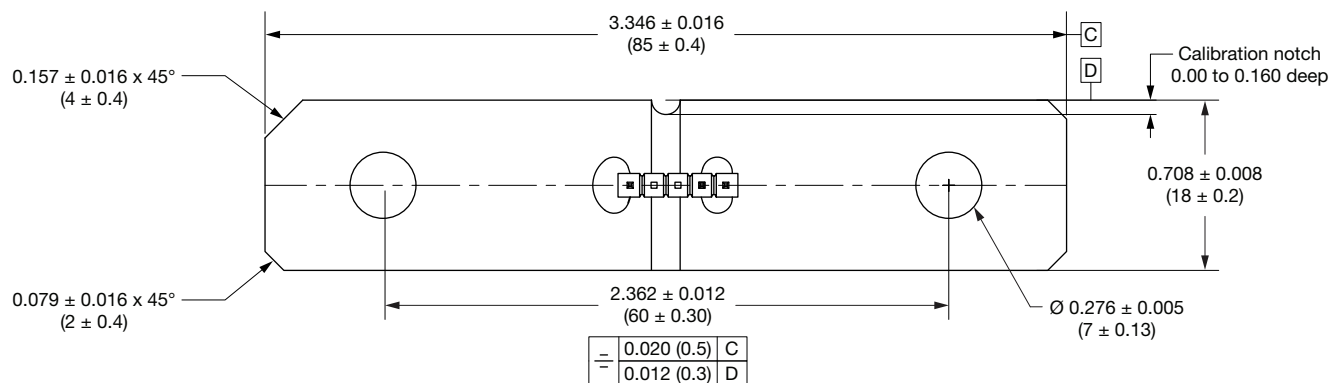
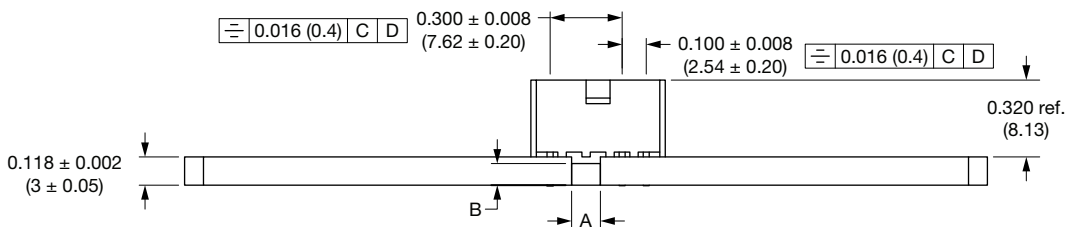
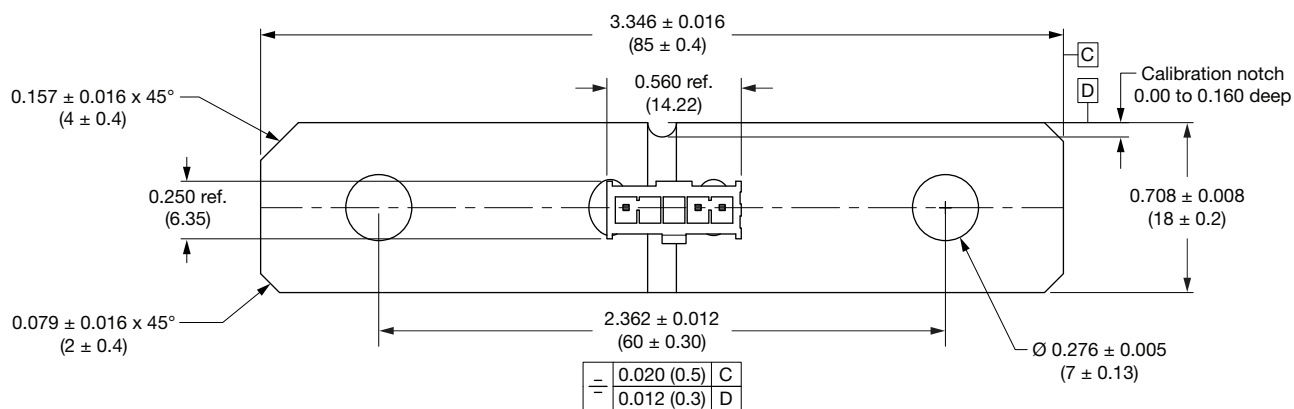
**GLOBAL PART NUMBERING: WSBE8518L1000JTA2 (WSBE8518...A2,  $0.0001 \Omega$ ,  $\pm 5 \%$ , tray pack)**

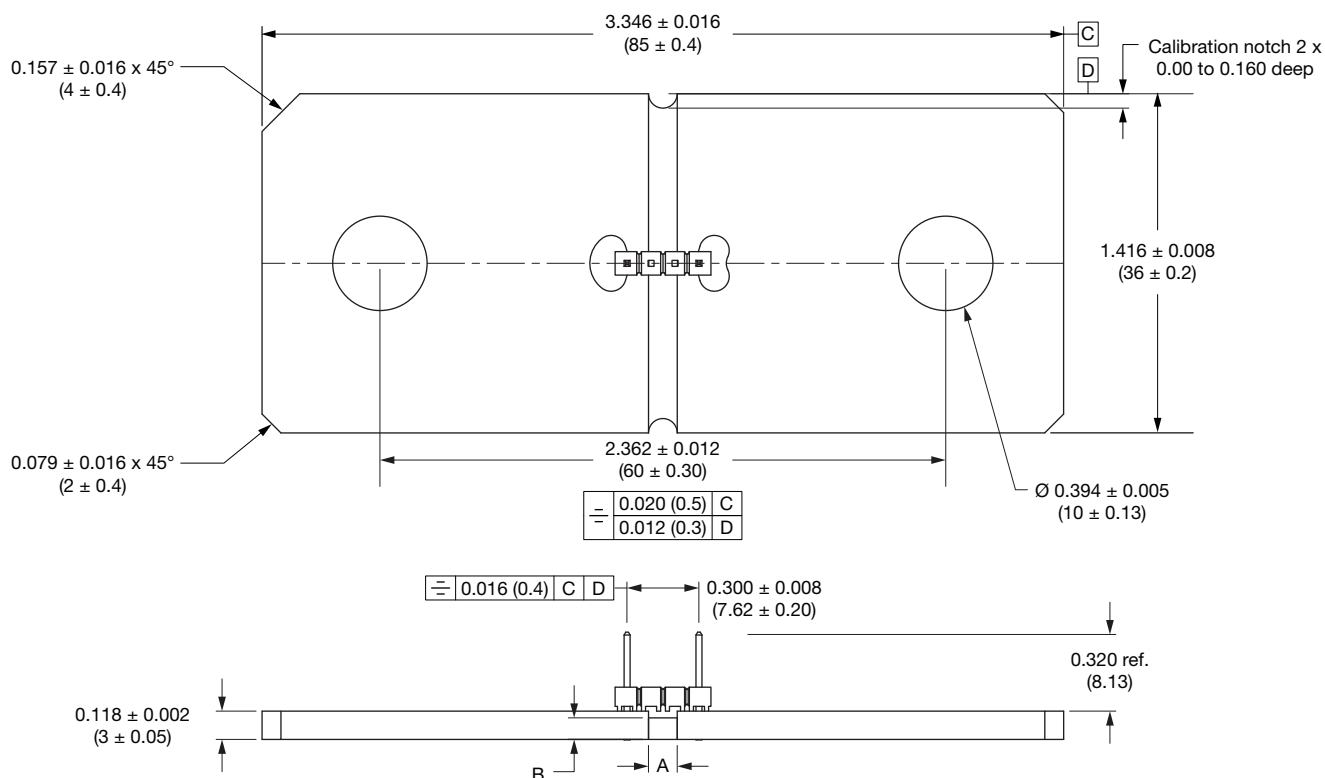
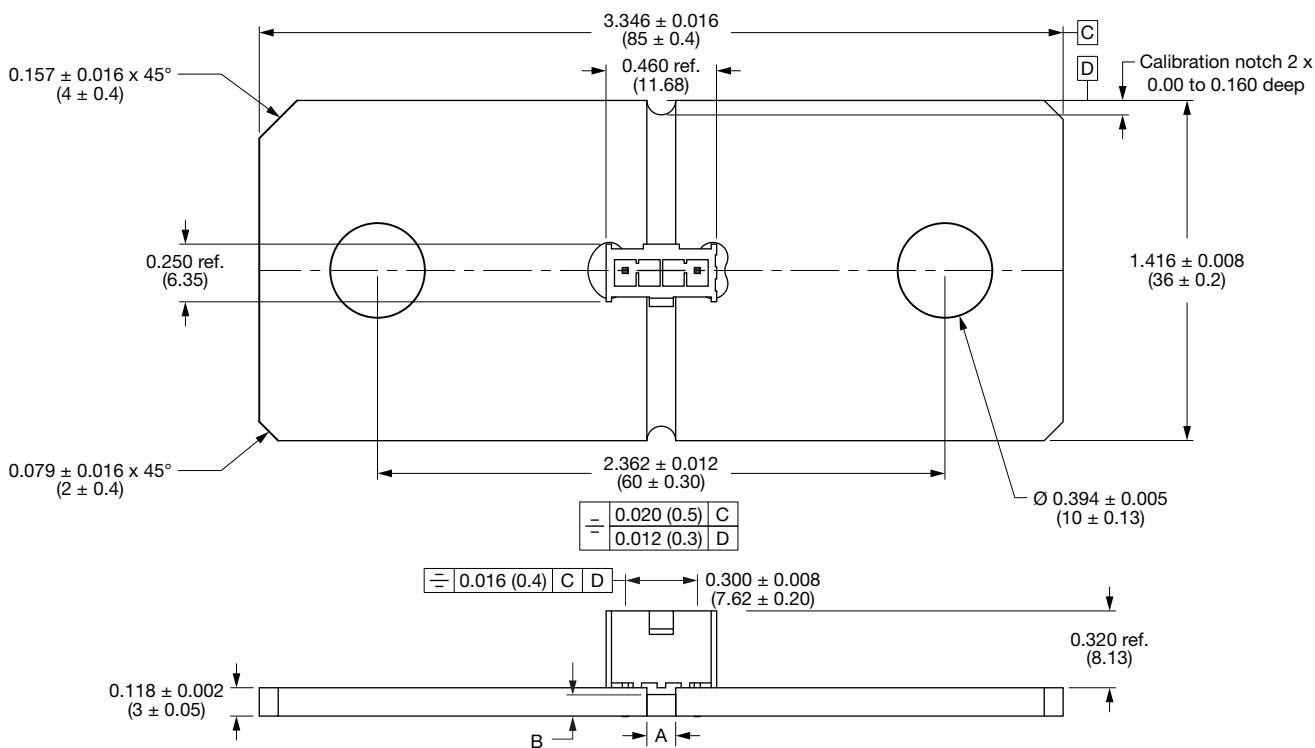
|                      |   |                            |   |                |   |                                |   |                                                                                          |   |                                    |   |   |   |   |   |   |  |
|----------------------|---|----------------------------|---|----------------|---|--------------------------------|---|------------------------------------------------------------------------------------------|---|------------------------------------|---|---|---|---|---|---|--|
| W                    | S | B                          | E | 8              | 5 | 1                              | 8 | L                                                                                        | 1 | 0                                  | 0 | 0 | J | T | A | 2 |  |
| GLOBAL MODEL         |   | RESISTANCE VALUE           |   | TOLERANCE CODE |   | PACKAGING CODE                 |   | SPECIAL                                                                                  |   | PLATING OPTIONS                    |   |   |   |   |   |   |  |
| WSBE8518<br>WSBE8536 |   | L = mΩ<br>L1000 = 0.0001 Ω |   | J = ± 5 %      |   | K = bulk pack<br>T = tray pack |   | Blank = no pins<br>A2 / A3 =<br>2 / 3 pins<br>B2 / B3 =<br>2 / 3 shrouded<br>header pins |   | Blank = unplated<br>P = tin plated |   |   |   |   |   |   |  |

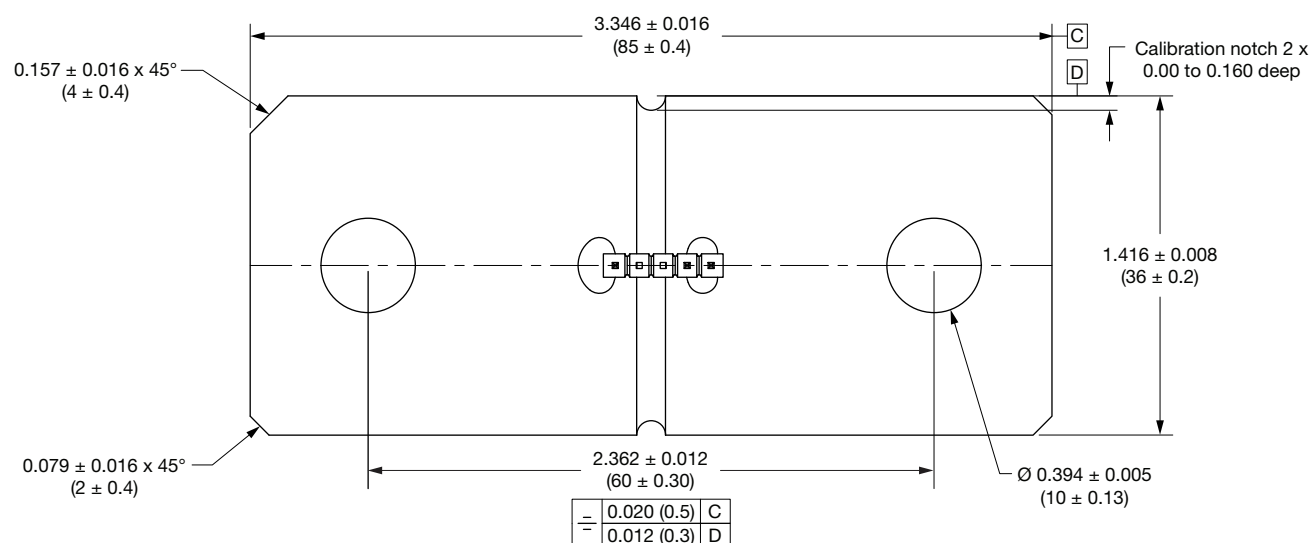
**PATENT(S):** [www.vishay.com/patents](http://www.vishay.com/patents)

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

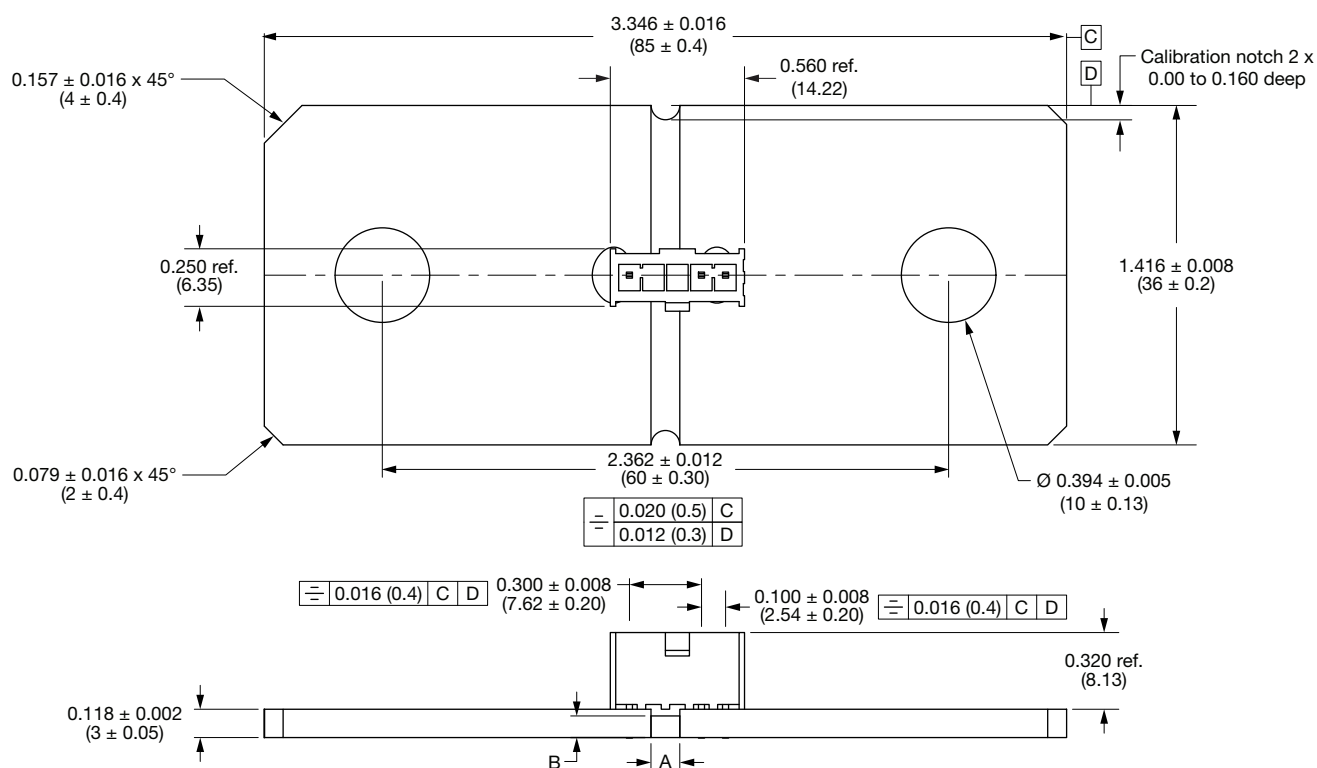
**DIMENSIONS** in inches (millimeters)

**WSBE8518L1000JTA2**

**WSBE8518L1000JTB2P**


**WSBE8518L1000JTA3**

**WSBE8518L1000JTB3P**


**WSBE8536L0500JTA2**

**WSBE8536L0500JTB2**

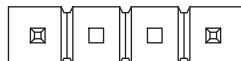


**WSBE8536L0500JTA3**



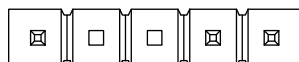
**WSBE8536L0500JTB3**

## CONNECTION OPTIONS



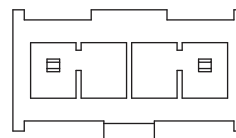
Voltage sense pins in position 1 and 4,  
position 2 and 3 are blank.

**A Series**



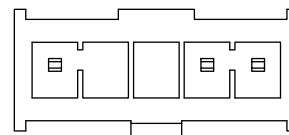
Voltage sense pins in position 1 and 4,  
ground pin in position 5,  
position 2 and 3 are blank.

**A3 Series**



Voltage sense pins in position 1 and 4,  
position 2 and 3 are blank.

**B Series**



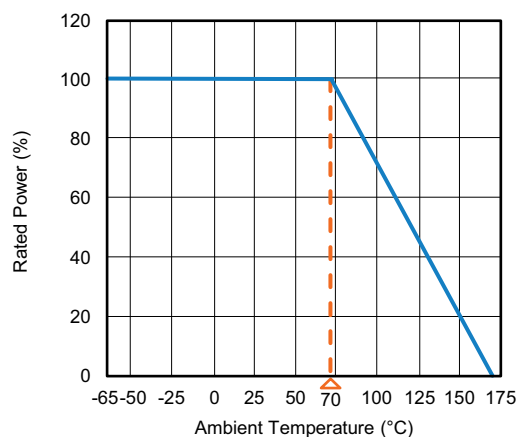
Voltage sense pins in position 1 and 4,  
ground pin in position 5,  
position 2 and 3 are blank.

**B3 Series**

### Notes

- Connection options are examples. Other configurations available upon request (links to external website)
  - [A series connector](#) - modified with the middle two pins removed
  - [B series connector](#) - modified with the middle two pins removed
  - [B series female connector](#)
  - [Connector specifications datasheet](#)
- [Reference Designs | Vishay](#) - click for the landing page of all Vishay provided reference designs
- [High Voltage Intelligent Battery Shunt Sensor - \(HV-IBSS-CANFD\) Reference Design](#) - click for a BMS reference design using CANBUS communication protocol

## DERATING



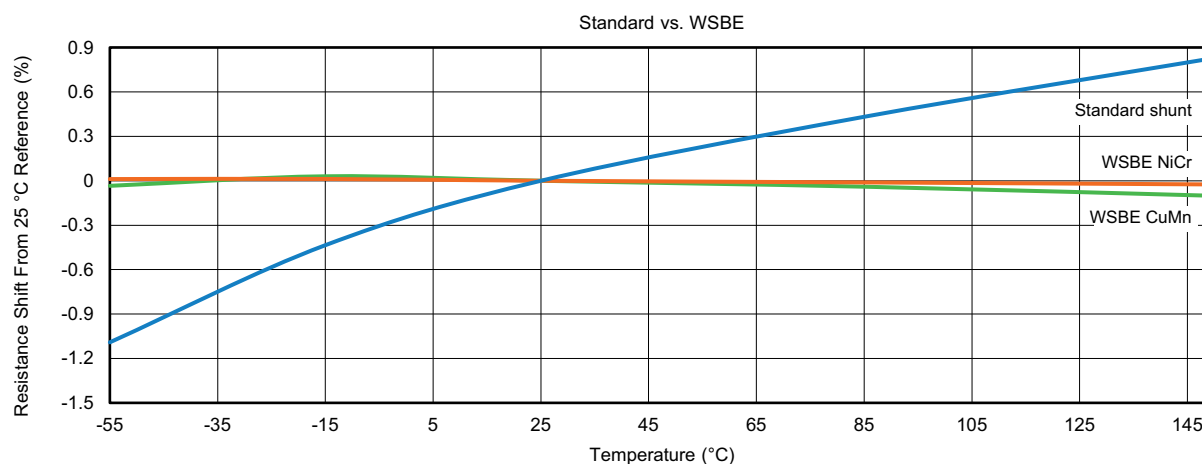
| SIZE | RESISTANCE VALUE ( $\mu\Omega$ ) | ELEMENT MATERIAL | A REF.       | B REF.       |
|------|----------------------------------|------------------|--------------|--------------|
| 8518 | 100                              | NiCr             | 0.120 (3.05) | 0.090 (2.29) |
| 8536 | 50                               | NiCr             | 0.120 (3.05) | 0.090 (2.29) |

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

UNLESS OTHERWISE LISTED



## TCR COMPARISON



### Note

- [www.vishay.com/doc?30405](http://www.vishay.com/doc?30405) - click for more information on TCR and the way it affects your application

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



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