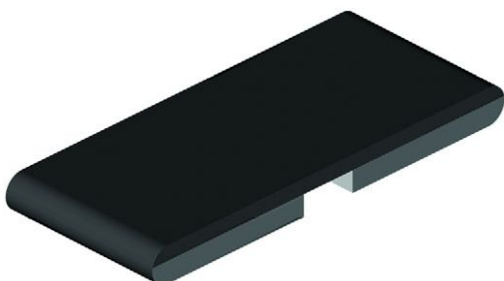




## Power Metal Strip® Resistors, High Power (5 W), Low Value (down to 0.001 Ω), Surface Mount



### Product Termination Notice: PCN-DR-028-2015-Rev-0

For documentation go to: [www.vishay.com/quality/pcn-search/](http://www.vishay.com/quality/pcn-search/).  
Enter search for resistors, Vishay Dale, and product termination.

Technical Note: WSHM / WSH Side by Side Comparison for a  
Drop-In Replacement Part: [www.vishay.com/doc?30305](http://www.vishay.com/doc?30305).

### FEATURES

- Improved thermal management incorporated into design
- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments, power amplifier
- Proprietary processing technique produces extremely low resistance values
- All welded construction
- Very low inductance (< 5 nH)
- Excellent frequency response to 50 MHz
- Solid metal nickel-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified <sup>(1)</sup>
- Compliant to RoHS Directive 2002/95/EC

AUTOMOTIVE  
GRADE

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

### Note

<sup>(1)</sup> Flame retardance test may not be applicable to some resistor technologies.

### STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | SIZE | POWER RATING<br>$P_{70\text{ }^{\circ}\text{C}}$<br>W | TOLERANCE<br>± % | RESISTANCE<br>VALUE RANGE<br>Ω | WEIGHT<br>(typical)<br>g/1000 pieces |
|--------------|------|-------------------------------------------------------|------------------|--------------------------------|--------------------------------------|
| WSH2818      | 2818 | 5 <sup>(2)</sup>                                      | 1.0              | 0.001 to 0.1                   | 126                                  |

### Note

<sup>(2)</sup> The WSH2818 is rated at 5 W with maximum surface temperature of 200 °C.

### TECHNICAL SPECIFICATIONS

| PARAMETER                   | UNIT   | RESISTOR CHARACTERISTICS                             |
|-----------------------------|--------|------------------------------------------------------|
| Temperature coefficient     | ppm/°C | ± 200 for 1 mΩ to 5.99 mΩ<br>± 75 for 6 mΩ to 100 mΩ |
| Inductance                  | nH     | < 5                                                  |
| Operating temperature range | °C     | -65 to +170                                          |
| Maximum continuous current  | A      | $(P/R)^{1/2}$                                        |

### GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: WSH2818R1000FEA

W S H 2 8 1 8 R 1 0 0 0 F E A

GLOBAL MODEL

WSH2818

RESISTANCE VALUE

L = mΩ\*

R = Decimal

4L000 = 0.004 Ω

R0100 = 0.01 Ω

\* Use "L" for resistance  
values < 0.01 Ω

TOLERANCE CODE

F = ± 1.0 %

J = ± 5.0 %

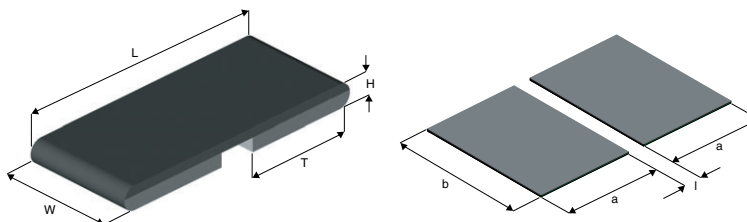
PACKAGING CODE

EA = lead (Pb)-free, tape/reel

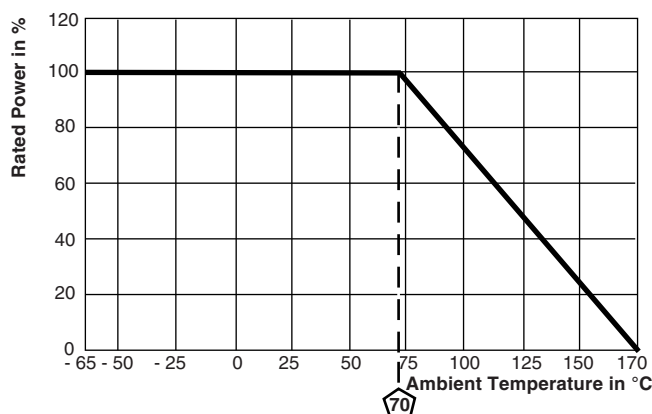
EK = lead (Pb)-free, bulk

SPECIAL

(dash number)  
(up to 2 digits)  
from 1 to 99  
as applicable

**DIMENSIONS** in inches (millimeters)

| MODEL   | RESISTANCE RANGE<br>$\Omega$ | DIMENSIONS                            |                                       |                                         |                                        | SOLDER PAD DIMENSIONS |                |                 |
|---------|------------------------------|---------------------------------------|---------------------------------------|-----------------------------------------|----------------------------------------|-----------------------|----------------|-----------------|
|         |                              | L                                     | W                                     | H                                       | T                                      | a                     | b              | l               |
| WSH2818 | 0.006 to 0.1                 | $0.280 \pm 0.010$<br>(7.1 $\pm$ 0.25) | $0.180 \pm 0.010$<br>(4.6 $\pm$ 0.25) | $0.032 \pm 0.010$<br>(0.813 $\pm$ 0.25) | $0.125 \pm 0.010$<br>(3.18 $\pm$ 0.25) | 0.138<br>(3.5)        | 0.200<br>(5.1) | 0.024<br>(0.61) |
|         | 0.001 to 0.0059              |                                       |                                       | $0.045 \pm 0.010$<br>(1.143 $\pm$ 0.25) |                                        |                       |                |                 |

**DERATING**

| 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       | 4x rated power for 5 s                                         | $\pm 1.0 \% \Delta R$ |
| Low temperature operation | -65 °C for 45 min                                              | $\pm 0.5 \% \Delta R$ |
| 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                                     | $\pm 0.5 \% \Delta R$ |
| Vibration                 | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h | $\pm 0.5 \% \Delta R$ |
| Load life                 | 1000 h at 70 °C, 1.5 h "ON", 0.5 h "OFF"                       | $\pm 1.0 \% \Delta R$ |
| Resistance to solder heat | +260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence          | $\pm 0.5 \% \Delta R$ |
| Moisture resistance       | MIL-STD-202, method 106, 0 % power, 7b not required            | $\pm 0.5 \% \Delta R$ |

| PACKAGING |                        |            |             |      |
|-----------|------------------------|------------|-------------|------|
| MODEL     | REEL                   |            |             |      |
|           | TAPE WIDTH             | DIAMETER   | PIECES/REEL | CODE |
| WSH2818   | 16 mm/embossed plastic | 330 mm/13" | 3500        | EA   |

**Note**

- Embossed Carrier Tape per EIA-481.



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