



The DNA of tech.™

CAPABILITIES

POWER METAL PLATE™ RESISTORS WFM2512 AND WFM2010 UP TO 4 W

High Power Density vs. Standard Power Ratings

Features

- High power density as compared to standard power rating; to 4 W power for 2512
- Resistance values range from 10 mΩ to 500 mΩ
- Very low inductance of < 5 μH
- Vishay Automotive Grade ([exceeds AEC-Q200 qualified](#))
- WFM datasheet (www.vishay.com/ppg?30387)

Applications

- Automotive
- Industrial
- Computer
- Telecommunications
- Consumer

The WFM offers multiple features that make it an ideal choice for automotive and industrial designs that require long term robust and reliable performance.

- The WFM's thermally efficient design enables a high power rating when compared to standard rated products of the same size, which enables circuit designers to down-size while maintaining the same capability
- Second, a wide resistance range supports design flexibility and reduces design risk by using the same series in other applications and providing a known qualified history
- Third, low inductance minimizes signal distortion
- Also, the WFM is Vishay Automotive Grade, which is a Vishay specific quality program that exceeds basic AEC-Q200 qualification testing

High Power Rating and Wider Range

Power Metal Strip® WSL

| Size | Power (W) |
|------|-----------|
| 2010 | 0.5 |
| 2512 | 1 |

vs.

Power Metal PlateStrip™ WFM

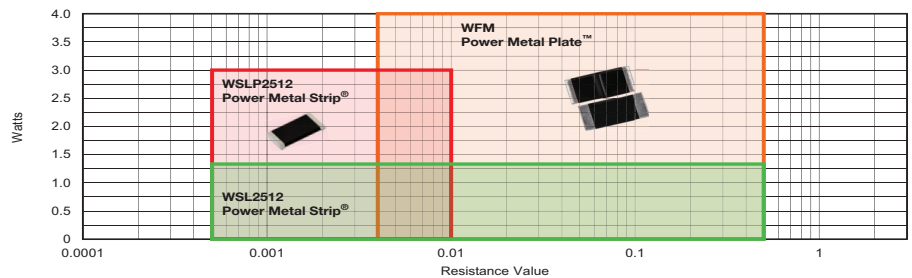
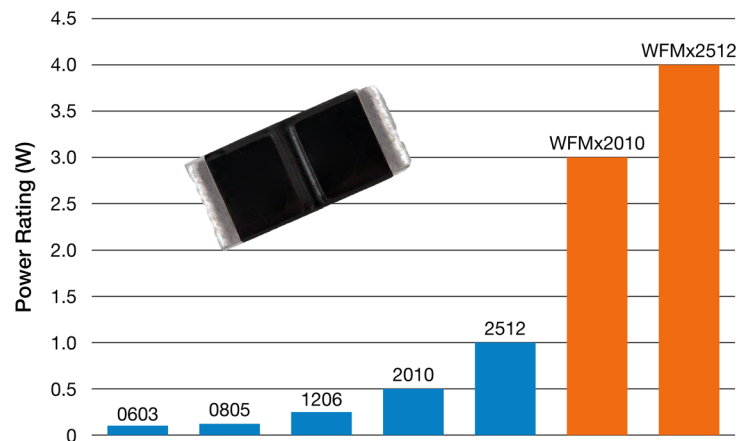
| Size | Power (W) |
|------|-----------|
| 2010 | 3 |
| 2512 | 4 |

When the [WSL2512](#) Power Metal Strip series was introduced it covered a wide resistance range of 0.5 mΩ up to 500 mΩ, with low TCR and pulse capability, but was limited to a power rating of 1 W.

Then came the [WSP2512](#) series, which extended the power rating up to 3 W but was limited in resistance range to 10 mΩ.

The new [WFM](#) series extends the 3 W performance range of the WSLP series to the full resistance range of the WSL, offering both a high power rating and wide resistance range with Vishay Automotive Grade level reliability.

Power Rating vs. Standard Power Rated Sizes



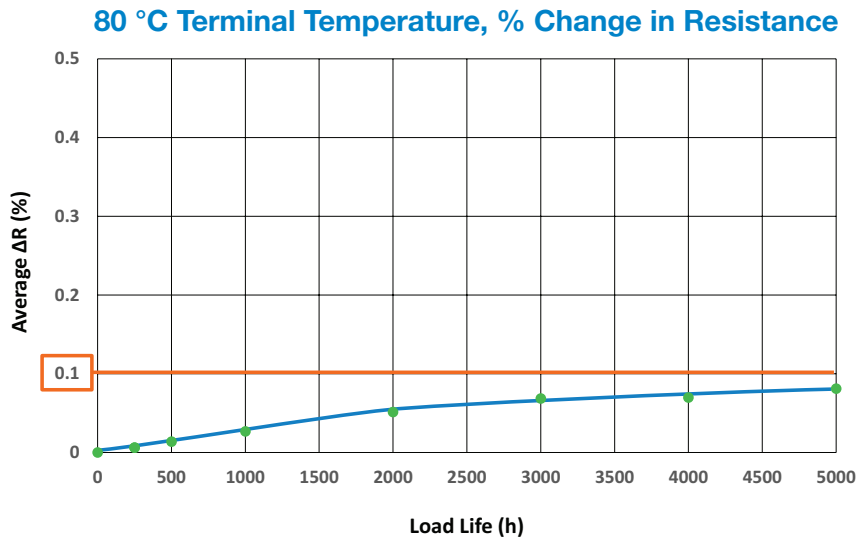


The DNA of tech.™

CAPABILITIES

POWER METAL PLATE™ RESISTORS WFM2512 AND WFM2010 UP TO 4 W

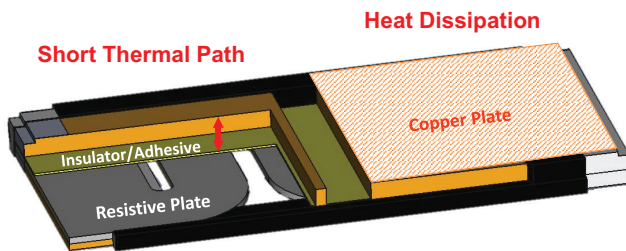
WFMB2010R2000FEA (2 W) Life Stability



This is a chart of the long term resistance stability of the WFMB2010 series at 2 W for 5000 h.

Note that the maximum resistance change does not even exceed 0.1 % after 5000 h of 2 W full rated power.

High Power Density vs. Standard Power Ratings



Benefit

1. Heat dissipation reduces hotspots
2. Maximized heat transfer
3. Improved pulse capability and high temperature stability

Construction Features

1. Large copper heat-spreading plate
2. Thin adhesive layer
3. NiCr resistance alloy of WFMB

The high power density and stability are a result of a superior construction that maximizes heat transfer from the resistance element to the PCB. The key features are:

1. A thin layer of thermal film that electrically isolates the resistance element from the copper heat-spreader plates, providing a short and efficient thermal path
2. Large copper plates that distribute heat from the resistance element into the PCB, which reduces hotspot temperature extremes and improves long term resistance element stability
3. Nickel chromium resistance alloy for the B version provides a thicker, more robust resistive plate compared to other competitors construction's

Together, these three construction features of the WFM provide increased power density and long term performance benefits.



The DNA of tech.™

CAPABILITIES

POWER METAL PLATE™ RESISTORS

WFM2512 AND WFM2010 UP TO 4 W

Product Support

For Further Technical Assistance Weblink on Datasheet

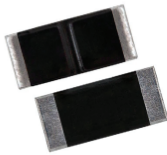


www.vishay.com

WFM

Vishay Dale

Power Metal Plate™ Current Sense Resistors, Low Value (5 mΩ to 500 mΩ), Surface-Mount, High Power



FEATURES

- 2010 and 2512 size package
- Ideal for all types of current sensing and pulse applications including switching and linear power supplies, instruments, power amplifiers, shunts, power inverters and battery management
- Proprietary processing technique produces low resistance values (5 mΩ to 500 mΩ)
- Solid metal manganese-copper and nickel-chromium-aluminum alloy resistive element with low TCR (< 20 ppm/°C)
- Very low inductance 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified (1)
- PATENT(S): www.vishay.com/patents
- Material categorization: for definitions of compliance please see www.vishay.com/doc/799912



Note

(1) Flame retardance test may not be applicable to some resistor technologies

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | |
|------------------------------------|------|-----------------------|----------------|-----------------------------|--------------------------------------|
| GLOBAL MODEL | SIZE | POWER RATING (1) W | TOLERANCE % | RESISTANCE VALUE RANGE Ω | WEIGHT (typical) g/1000 pieces |
| WFM2010 | 2010 | 2.0 at 110 °C | ± 1.0 | 0.005 to 0.0329 | 32 |
| WFM2010 | 2010 | 2.0 at 110 °C | ± 1.0 | 0.033 to 0.500 | |
| WFM2512 | 2512 | 3.0 at 95 °C | ± 1.0 | 0.010 to 0.0329 | |
| WFM2512 | 2512 | 3.0 at 95 °C | ± 1.0 | 0.033 to 0.500 | |

Note

(1) Terminal temperature

For technical questions, contact: ww2bresistors@vishay.com

| GLOBAL PART NUMBER INFORMATION | | | | | | |
|--|----------------------------|----------------------|---|----------------------------|---|--------------------------------------|
| Global Part Numbering example: WFM2512R5000FEA | | | | | | |
| GLOBAL MODEL (3 digits) | ELEMENT MATERIAL (1 digit) | CASE SIZE (4 digits) | RESISTANCE VALUE (1) (5 digits) | TOLERANCE CODE (1 digit) | PACKAGING CODE (2) (2 digits) | SPECIAL (2 digits) |
| WFM | A = CuMn B = NiCrAl | 2010 2512 | L = mΩ R = decimal 5L0100 = 0.005 Ω R0100 = 0.01 Ω * Use "L" for resistance values < 0.01 Ω | F = ± 1.0 % J = ± 5.0 % | EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk | Dash numbers 1 thru 99 as applicable |

Notes

(1) Resistance values available according to WSL decade values (www.vishay.com/doc/730117)

(2) Packaging code: EB (lead (Pb)-free) is a non-standard packaging code designating 1000 piece reels. This non-standard packaging code is identical to our standard EA (lead (Pb)-free), except that it has a package quantity of 1000 pieces

PATENT(S): www.vishay.com/patents

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

Revision: 10-Apr-2019

For technical questions, contact: ww2bresistors@vishay.com

Document Number: 30387

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc/931100

If you have product-specific questions, you may contact a local Vishay representative or select the link that is at the bottom of all datasheets. This link is specific to the product and is not the same address for all datasheets, but it will put you in contact with a technical resource to assist you with your questions.