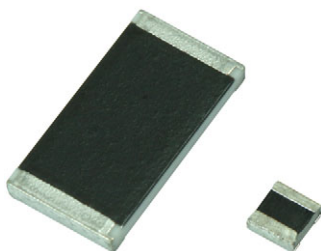




Thick Film Chip Resistors, Zero Ohm Jumper, Military / High Reliability MIL-PRF-32159 Qualified, Type RCZ

**FEATURES**

- Fully conforms to the requirements of MIL-PRF-32159
- High reliability - product levels M (military grade) and T (space level)
- 100 % group A screening per MIL-PRF-32159
- Termination style B - tin / lead wraparound over nickel barrier
- Operating temperature range is -65 °C to +150 °C
- For MIL-PRF-55342 chip resistors, see Vishay Dale's RCWPM (Military M/D55342) datasheet (www.vishay.com/doc?31010)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

HALOGEN
FREE**STANDARD ELECTRICAL SPECIFICATIONS**

| VISHAY DALE MODEL | MIL-PRF-32159 STYLE | MIL SPEC. SHEET | TERM. | CASE SIZE | POWER RATING $P_{70^{\circ}\text{C}}$ W | CURRENT RATING A | MAXIMUM RESISTANCE Ω |
|--------------------------------|---------------------|-----------------|-------|---------------------|---|---------------------|--------------------------------|
| RCWPM-0502-99, RCWPM-0502-5 | RCZ0502 | 01 | B | 0502 | 0.05 | 1.3 | 30m |
| RCWPM-550-99, RCWPM-550-5 | RCZ0505 | 02 | B | 0505 | 0.100 | 2.2 | 20m |
| RCWPM-5100-99, RCWPM-5100-5 | RCZ1005 | 03 | B | 1005 | 0.20 | 2.8 | 25m |
| RCWPM-5150-99, RCWPM-5150-5 | RCZ1505 | 04 | B | 1505 | 0.15 | 2.1 | 35m |
| RCWPM-7225-99, RCWPM-7225-5 | RCZ2208 | 05 | B | 2208 | 0.225 | 2.5 | 35m |
| RCWPM-575-99, RCWPM-575-5 | RCZ0705 | 06 | B | 0705 ⁽¹⁾ | 0.15 | 2.7 | 20m |
| RCWPM-1206-99, RCWPM-1206-5 | RCZ1206 | 07 | B | 1206 | 0.25 | 3.2 | 25m |
| RCWPM-2010-99, RCWPM-2010-5 | RCZ2010 | 08 | B | 2010 | 0.80 | 5.7 | 25m |
| RCWPM-2512-99, RCWPM-2512-5 | RCZ2512 | 09 | B | 2512 | 1.0 | 6.3 | 25m |
| RCWPM-1100-99, RCWPM-1100-5 | RCZ1010 | 10 | B | 1010 | 0.50 | 5.0 | 20m |
| RCWPM-0402-99, RCWPM-0402-5 | RCZ0402 | 11 | B | 0402 | 0.04 | 1.2 | 30m |
| RCWPM-0603-99, RCWPM-0603-5 | RCZ0603 | 12 | B | 0603 | 0.07 | 1.5 | 30m |
| RCWPM-0302-99, RCWPM-0302-5 | RCZ0302 | 13 | B | 0302 | 0.035 | 1.1 | 30m |

Notes

- DSCC has created a series of drawings to support the need for zero ohm jumper product. Vishay Dale is listed as a resource on these drawings as follows:

| DSCC DRAWING NUMBER | VISHAY DALE MODEL | TERM. | MAXIMUM RESISTANCE $m\Omega$ | MAX. CURRENT RATING A | MAXIMUM WORKING VOLTAGE V |
|---------------------|-------------------|-------|---------------------------------|--------------------------|------------------------------|
| 03011 | RCWPM0201..99 | B | 50 | 0.25 | 15 |
| 03012 | RCWPM0302..99 | B | 20 | 1.1 | 15 |
| 03014 | RCWPM0402..99 | B | 25 | 1.2 | 30 |
| 88032 | RCWPM0502..99 | B | 20 | 1.3 | 40 |
| 03013 | RCWPM0603..99 | B | 25 | 1.5 | 50 |
| 03002 | RCWPM0550..99 | B | 25 | 2.2 | 40 |
| 90048 | RCWPM0575..99 | B | 20 | 2.7 | 50 |
| 90049 | RCWPM5100..99 | B | 30 | 2.8 | 75 |
| 94011 | RCWPM1206..99 | B | 20 | 3.2 | 100 |
| 90092 | RCWPM5150..99 | B | 40 | 2.1 | 125 |
| 87011 | RCWPM1100..99 | B | 20 | 5.0 | 75 |
| 90047 | RCWPM7225..99 | B | 40 | 2.5 | 175 |
| 03015 | RCWPM2010..99 | B | 40 | 5.7 | 150 |
| 03016 | RCWPM2512..99 | B | 40 | 6.3 | 200 |

These drawings can be viewed at: www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocType=DSCCdwg

⁽¹⁾ MIL case size 0705 and EIA case size 0805 are dimensionally the same



GLOBAL PART NUMBER INFORMATION

Part Number (MIL-PRF-32159): M32159B02MWB (preferred part number format)

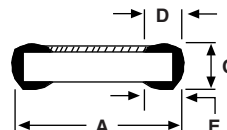
| | | | | | | | | | | | | | | |
|-----------|---|--|---|---|---|---|---|---|--|---|---|--|--|--|
| M | 3 | 2 | 1 | 5 | 9 | B | 0 | 2 | M | W | B | | | |
| MIL STYLE | TERMINATION STYLE | SPEC SHEET | PRODUCT GRADE | PACKAGING ⁽¹⁾ | | | | | SPECIAL | | | | | |
| M32159 | B = pre-tinned nickel barrier, wraparound | (see Standard Electrical Specifications table) | C = industry grade M = military grade T = space level | TP = tin / lead, T/R (full), plastic tape TN = tin / lead, T/R (full), w/ESD S3 = tin / lead, T/R (1000 pieces) SV = tin / lead, T/R (1000 pieces), w/ESD UL = tin / lead, T/R, single lot date code WB = tin / lead, waffle tray WA = tin / lead, waffle tray, w/ESD WL = tin / lead, waffle tray, single lot date code S2 = tin / lead, T/R (500 pieces) SU = tin / lead, T/R (500 pieces), w/ESD S6 = tin / lead, T/R (300 pieces) ST = tin / lead, T/R (300 pieces), w/ESD | | | | | Blank = standard (dash number) (up to 3 digits) 5 = space level 96 = part marked ⁽²⁾ 7 = space level w/part marking ⁽²⁾ | | | | | |

Part Number (DSCC Drawings): RCWPM5100WB99

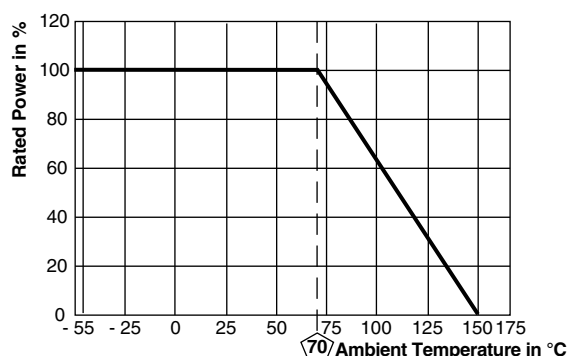
| | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|------------------------|---|---|
| R | C | W | P | M | 5 | 1 | 0 | 0 | W | B | 9 | 9 |
| GLOBAL MODEL | | | | PACKAGING ⁽³⁾ | | | | | | SPECIAL | | |
| RCWPM0201 RCWPM0302 RCWPM0402 RCWPM0502 RCWPM0550 RCWPM0575 RCWPM0603 RCWPM1100 RCWPM1206 RCWPM2010 RCWPM2512 RCWPM5100 RCWPM5150 RCWPM7225 | | | | TP = tin / lead, T/R (full), plastic tape S3 = tin / lead, T/R (1000 pieces), plastic tape UL = tin / lead, T/R, single lot date code WB = tin / lead, waffle tray WL = tin / lead, waffle tray, single lot date code S2 = tin / lead, T/R (500 pieces), plastic tape S6 = tin / lead, T/R (300 pieces), plastic tape UA = tin / lead, T/R (full), paper tape UD = tin / lead T/R (1000 pieces), paper tape UC = tin / lead, T/R (500 pieces), paper tape UB = tin / lead, T/R (300 pieces), paper tape | | | | | | 99 = 0 Ω jumper | | |

Notes

- For additional information on packaging, refer to the Surface Mount Resistor Packaging document (www.vishay.com/doc?31543)
- ⁽¹⁾ Products with space level failure rates are only offered in packaging codes with ESD overpack and labeling. For all other failure rates, the ESD pack codes are an optional type of packaging
- ⁽²⁾ Optional MIL spec part marking is not offered for the slash sheet 01, 02, 11, and 13 sizes
- ⁽³⁾ Tape and reel packaging with plastic tape standard for all case sizes except 0201. For the 0201 case size, the product is only offered in tape and reel packaging with paper tape

**DIMENSIONS** in inches (millimeters)

| VISHAY DALE MODEL | MIL-PRF-32159 STYLE | MIL. SPEC. SHEET | A (LENGTH) | B (WIDTH) | C (HEIGHT) | D (TOP TERM) | E (BOTTOM TERM) |
|-------------------|---------------------|------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---|
| RCWPM-0502 | RCZ0502 | 01 | 0.055 ± 0.005 (1.40 ± 0.13) | 0.023 ± 0.003 (0.58 ± 0.08) | 0.015 ± 0.003 (0.38 ± 0.08) | 0.010 ± 0.005 (0.25 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-550 | RCZ0505 | 02 | 0.055 ± 0.005 (1.40 ± 0.13) | 0.050 ± 0.005 (1.27 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.010 ± 0.005 (0.25 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-5100 | RCZ1005 | 03 | 0.105 ± 0.005 (2.67 ± 0.13) | 0.050 ± 0.005 (1.27 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-5150 | RCZ1505 | 04 | 0.155 ± 0.005 (3.94 ± 0.13) | 0.050 ± 0.005 (1.27 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-7225 | RCZ2208 | 05 | 0.230 ± 0.005 (5.84 ± 0.13) | 0.075 ± 0.005 (1.91 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) |
| RCWPM-575 | RCZ0705 | 06 | 0.080 ± 0.005 (2.03 ± 0.13) | 0.050 ± 0.005 (1.27 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.016 ± 0.008 (0.41 ± 0.20) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-1206 | RCZ1206 | 07 | 0.125 ± 0.005 (3.18 ± 0.13) | 0.063 ± 0.005 (1.60 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-2010 | RCZ2010 | 08 | 0.197 ± 0.006 (5.00 ± 0.15) | 0.098 ± 0.005 (2.49 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) |
| RCWPM-2512 | RCZ2512 | 09 | 0.250 ± 0.006 (6.35 ± 0.15) | 0.124 ± 0.005 (3.15 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) |
| RCWPM-1100 | RCZ1010 | 10 | 0.105 ± 0.005 (2.67 ± 0.13) | 0.100 ± 0.005 (2.54 ± 0.13) | 0.020 ± 0.005 (0.51 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-0402 | RCZ0402 | 11 | 0.039 ± 0.003 (0.99 ± 0.08) | 0.020 ± 0.003 (0.51 ± 0.08) | 0.013 ± 0.003 (0.33 ± 0.08) | 0.010 ± 0.005 (0.25 ± 0.13) | 0.010 ± 0.005 (0.25 ± 0.13) |
| RCWPM-0603 | RCZ0603 | 12 | 0.063 ± 0.005 (1.60 ± 0.13) | 0.032 ± 0.005 (0.81 ± 0.13) | 0.018 ± 0.005 (0.46 ± 0.13) | 0.012 ± 0.005 (0.30 ± 0.13) | 0.015 ± 0.005 (0.38 ± 0.13) |
| RCWPM-0302 | RCZ0302 | 13 | 0.034 ± 0.004 (0.86 ± 0.10) | 0.021 ± 0.003 (0.53 ± 0.08) | 0.013 ± 0.003 (0.33 ± 0.08) | 0.007 ± 0.005 (0.18 ± 0.13) | 0.008 ± 0.005 (0.20 ± 0.13) |
| RCWPM-0201 | | | 0.024 ± 0.002 (0.61 ± 0.05) | 0.012 ± 0.002 (0.30 ± 0.05) | 0.009 ± 0.002 (0.23 ± 0.05) | 0.006 ± 0.003 (0.15 ± 0.08) | 0.006 ± 0.002 - 0.004 (0.15 ± 0.05 - 0.10) |

DERATING CURVE

CAGE CODE: 91637
and 2799A (formerly SH903)

MATERIAL SPECIFICATIONS

| | |
|-------------------|------------------------------|
| Resistive element | Conductive metal |
| Encapsulation | Epoxy |
| Substrate | 96 % alumina |
| Termination | Solder-coated nickel barrier |
| Solder finish | Tin / lead solder alloy |



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