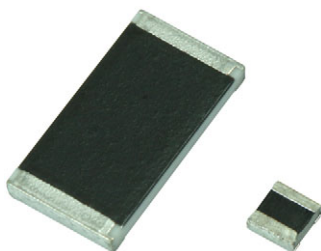




## Thick Film Chip Resistors, Zero Ohm Jumper, Military / High Reliability MIL-PRF-32159 Qualified, Type RCZ

**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](http://www.vishay.com/doc?31010))
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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<br>$P_{70^{\circ}\text{C}}$<br>W | CURRENT RATING<br>A | MAXIMUM RESISTANCE<br>$\Omega$ |
|--------------------------------|---------------------|-----------------|-------|---------------------|-----------------------------------------------|---------------------|--------------------------------|
| RCWPM-0502-99,<br>RCWPM-0502-5 | RCZ0502             | 01              | B     | 0502                | 0.05                                          | 1.3                 | 30m                            |
| RCWPM-550-99,<br>RCWPM-550-5   | RCZ0505             | 02              | B     | 0505                | 0.100                                         | 2.2                 | 20m                            |
| RCWPM-5100-99,<br>RCWPM-5100-5 | RCZ1005             | 03              | B     | 1005                | 0.20                                          | 2.8                 | 25m                            |
| RCWPM-5150-99,<br>RCWPM-5150-5 | RCZ1505             | 04              | B     | 1505                | 0.15                                          | 2.1                 | 35m                            |
| RCWPM-7225-99,<br>RCWPM-7225-5 | RCZ2208             | 05              | B     | 2208                | 0.225                                         | 2.5                 | 35m                            |
| RCWPM-575-99,<br>RCWPM-575-5   | RCZ0705             | 06              | B     | 0705 <sup>(1)</sup> | 0.15                                          | 2.7                 | 20m                            |
| RCWPM-1206-99,<br>RCWPM-1206-5 | RCZ1206             | 07              | B     | 1206                | 0.25                                          | 3.2                 | 25m                            |
| RCWPM-2010-99,<br>RCWPM-2010-5 | RCZ2010             | 08              | B     | 2010                | 0.80                                          | 5.7                 | 25m                            |
| RCWPM-2512-99,<br>RCWPM-2512-5 | RCZ2512             | 09              | B     | 2512                | 1.0                                           | 6.3                 | 25m                            |
| RCWPM-1100-99,<br>RCWPM-1100-5 | RCZ1010             | 10              | B     | 1010                | 0.50                                          | 5.0                 | 20m                            |
| RCWPM-0402-99,<br>RCWPM-0402-5 | RCZ0402             | 11              | B     | 0402                | 0.04                                          | 1.2                 | 30m                            |
| RCWPM-0603-99,<br>RCWPM-0603-5 | RCZ0603             | 12              | B     | 0603                | 0.07                                          | 1.5                 | 30m                            |
| RCWPM-0302-99,<br>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<br>$m\Omega$ | MAX. CURRENT RATING<br>A | MAXIMUM WORKING VOLTAGE<br>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](http://www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocTYPE=DSCCdwg)

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

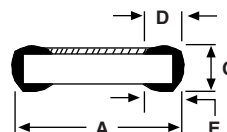
Part Number (DSCC Drawings): RCWPM5100WB99

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

## Notes

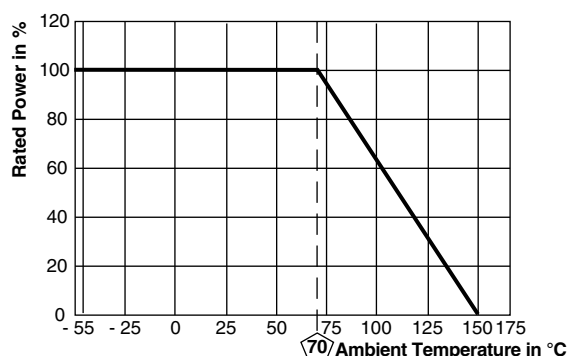
- For additional information on packaging, refer to the Surface Mount Resistor Packaging document ([www.vishay.com/doc?31543](http://www.vishay.com/doc?31543))
- <sup>(1)</sup> Products with space level failure rates are only offered in packaging codes with ESD overpack and labeling. For all other failure rates, the ESD pack codes are an optional type of packaging
- <sup>(2)</sup> Optional MIL spec part marking is not offered for the slash sheet 01, 02, 11, and 13 sizes
- <sup>(3)</sup> 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<br>(1.40 ± 0.13) | 0.023 ± 0.003<br>(0.58 ± 0.08) | 0.015 ± 0.003<br>(0.38 ± 0.08) | 0.010 ± 0.005<br>(0.25 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-550         | RCZ0505             | 02               | 0.055 ± 0.005<br>(1.40 ± 0.13) | 0.050 ± 0.005<br>(1.27 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.010 ± 0.005<br>(0.25 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-5100        | RCZ1005             | 03               | 0.105 ± 0.005<br>(2.67 ± 0.13) | 0.050 ± 0.005<br>(1.27 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-5150        | RCZ1505             | 04               | 0.155 ± 0.005<br>(3.94 ± 0.13) | 0.050 ± 0.005<br>(1.27 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-7225        | RCZ2208             | 05               | 0.230 ± 0.005<br>(5.84 ± 0.13) | 0.075 ± 0.005<br>(1.91 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13)                |
| RCWPM-575         | RCZ0705             | 06               | 0.080 ± 0.005<br>(2.03 ± 0.13) | 0.050 ± 0.005<br>(1.27 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.016 ± 0.008<br>(0.41 ± 0.20) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-1206        | RCZ1206             | 07               | 0.125 ± 0.005<br>(3.18 ± 0.13) | 0.063 ± 0.005<br>(1.60 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-2010        | RCZ2010             | 08               | 0.197 ± 0.006<br>(5.00 ± 0.15) | 0.098 ± 0.005<br>(2.49 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13)                |
| RCWPM-2512        | RCZ2512             | 09               | 0.250 ± 0.006<br>(6.35 ± 0.15) | 0.124 ± 0.005<br>(3.15 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13)                |
| RCWPM-1100        | RCZ1010             | 10               | 0.105 ± 0.005<br>(2.67 ± 0.13) | 0.100 ± 0.005<br>(2.54 ± 0.13) | 0.020 ± 0.005<br>(0.51 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-0402        | RCZ0402             | 11               | 0.039 ± 0.003<br>(0.99 ± 0.08) | 0.020 ± 0.003<br>(0.51 ± 0.08) | 0.013 ± 0.003<br>(0.33 ± 0.08) | 0.010 ± 0.005<br>(0.25 ± 0.13) | 0.010 ± 0.005<br>(0.25 ± 0.13)                |
| RCWPM-0603        | RCZ0603             | 12               | 0.063 ± 0.005<br>(1.60 ± 0.13) | 0.032 ± 0.005<br>(0.81 ± 0.13) | 0.018 ± 0.005<br>(0.46 ± 0.13) | 0.012 ± 0.005<br>(0.30 ± 0.13) | 0.015 ± 0.005<br>(0.38 ± 0.13)                |
| RCWPM-0302        | RCZ0302             | 13               | 0.034 ± 0.004<br>(0.86 ± 0.10) | 0.021 ± 0.003<br>(0.53 ± 0.08) | 0.013 ± 0.003<br>(0.33 ± 0.08) | 0.007 ± 0.005<br>(0.18 ± 0.13) | 0.008 ± 0.005<br>(0.20 ± 0.13)                |
| RCWPM-0201        |                     |                  | 0.024 ± 0.002<br>(0.61 ± 0.05) | 0.012 ± 0.002<br>(0.30 ± 0.05) | 0.009 ± 0.002<br>(0.23 ± 0.05) | 0.006 ± 0.003<br>(0.15 ± 0.08) | 0.006 ± 0.002 - 0.004<br>(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      |



## Disclaimer

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