



## Thick Film Chip Resistors, Military/Established Reliability MIL-PRF-55342 Qualified, Type RM


**HALOGEN  
FREE**

### FEATURES

- Fully conforms to the requirements of MIL-PRF-55342
- Established reliability - verified failure rate; M, P, R, U, S, V, and T levels
- Construction is sulfur impervious against a high sulfur environment (ASTM B 809-95 test method)
- 100 % group A screening per MIL-PRF-55342
- Termination style B - tin/lead wraparound over nickel barrier
- Operating temperature range is - 55 °C to + 150 °C
- For MIL-PRF-32159 zero ohm jumpers, see Vishay Dale's RCWPM Jumper (Military M32159) datasheet ([www.vishay.com/doc?31028](http://www.vishay.com/doc?31028))
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### MECHANICAL SPECIFICATIONS

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

### STANDARD ELECTRICAL SPECIFICATIONS

| VISHAY DALE MODEL | MIL-PRF-55342 STYLE | MIL SPEC. SHEET | TERM. | CASE SIZE           | POWER RATING<br>$P_{70^{\circ}\text{C}}$<br>W | MAX. WORKING VOLTAGE <sup>(1)</sup><br>V | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm \%$   | TEMPERATURE COEFFICIENT <sup>(2)</sup><br>$\pm \text{ppm}/^{\circ}\text{C}$ |
|-------------------|---------------------|-----------------|-------|---------------------|-----------------------------------------------|------------------------------------------|------------------------------|-------------------------|-----------------------------------------------------------------------------|
| RCWPM-0502        | RM0502              | 01              | B     | 0502                | 0.05                                          | 40                                       | 1 to 9.1<br>10 to 22M        | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-550         | RM0505              | 02              | B     | 0505                | 0.125                                         | 40                                       | 1 to 9.1<br>10 to 22M        | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-5100        | RM1005              | 03              | B     | 1005                | 0.20                                          | 75                                       | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-5150        | RM1505              | 04              | B     | 1505                | 0.15                                          | 125                                      | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-7225        | RM2208              | 05              | B     | 2208                | 0.225                                         | 175                                      | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-575         | RM0705              | 06              | B     | 0705 <sup>(3)</sup> | 0.15                                          | 50                                       | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-1206        | RM1206              | 07              | B     | 1206                | 0.25                                          | 100                                      | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-2010        | RM2010              | 08              | B     | 2010                | 0.80                                          | 150                                      | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-2512        | RM2512              | 09              | B     | 2512                | 1.0                                           | 200                                      | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-1100        | RM1010              | 10              | B     | 1010                | 0.50                                          | 75                                       | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-0402        | RM0402              | 11              | B     | 0402                | 0.05                                          | 30                                       | 1 to 9.1<br>10 to 22M        | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-0603        | RM0603              | 12              | B     | 0603                | 0.10                                          | 50                                       | 1 to 5.6<br>5.62 to 22M      | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |
| RCWPM-0302        | RM0302              | 13              | B     | 0302                | 0.04                                          | 15                                       | 1 to 9.1<br>10 to 22M        | 2, 5, 10<br>1, 2, 5, 10 | 300<br>100, 200, 300                                                        |

### Notes

- DSCC has created a series of drawings to support the need for 0201-sized product. Vishay Dale is listed as a resource on this drawing as follows:

| DSCC DRAWING NUMBER | VISHAY DALE MODEL | TERM. | POWER RATING<br>$P_{70^{\circ}\text{C}}$<br>W | RES. RANGE<br>$\Omega$ | RES. TOL.<br>$\pm \%$ | TEMP. COEF.<br>$\pm \text{ppm}/^{\circ}\text{C}$ | MAX. WORKING VOLTAGE <sup>(1)</sup><br>V |
|---------------------|-------------------|-------|-----------------------------------------------|------------------------|-----------------------|--------------------------------------------------|------------------------------------------|
| 07009               | RCWP-0201         | B     | 0.05                                          | 10 to 46.4<br>47 to 1M | 1, 5                  | 200<br>100                                       | 30                                       |

This drawing 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> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less.

<sup>(2)</sup> Characteristics: K =  $\pm 100 \text{ ppm}/^{\circ}\text{C}$ ; L =  $\pm 200 \text{ ppm}/^{\circ}\text{C}$ ; M =  $\pm 300 \text{ ppm}/^{\circ}\text{C}$ .

<sup>(3)</sup> MIL case size 0705 and EIA case size 0805 are dimensionally the same.



## GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: M55342M02B10E0RWB (preferred part number format)

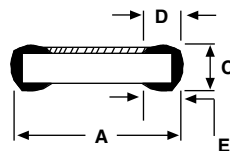
| M                                                                                | 5                                                              | 5 | 3 | 4 | 2                                                       | M                                                      | 0                    | 2                                           | B                      | 1                                                                                                                                                                                                                                                 | 0 | E               | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | R | W                 | B                                                                                                                                                                                                                                                                                                                      |  |
|----------------------------------------------------------------------------------|----------------------------------------------------------------|---|---|---|---------------------------------------------------------|--------------------------------------------------------|----------------------|---------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| MIL<br>STYLE                                                                     | CHARACTERISTICS                                                |   |   |   | SPEC.<br>SHEET                                          | TERMINATION<br>STYLE                                   |                      | VALUE AND<br>TOLERANCE                      |                        | FAILURE<br>RATE                                                                                                                                                                                                                                   |   |                 | PACKAGING <sup>(1)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |                   | SPECIAL                                                                                                                                                                                                                                                                                                                |  |
| <b>D55342</b><br>applies to<br>Style 07<br>(RM1206)<br>only.                     | <b>K</b> = 100 ppm<br><b>L</b> = 200 ppm<br><b>M</b> = 300 ppm |   |   |   | (see Standard<br>Electrical<br>Specifications<br>table) | <b>B</b> = Pre-tinned<br>nickel barrier,<br>wraparound |                      | (see Tolerance<br>and Multipliers<br>table) |                        | <b>C</b> = Non-ER<br><b>M</b> = 1.0 %/1000 h<br><b>P</b> = 0.1 %/1000 h<br><b>R</b> = 0.01 %/1000 h<br><b>U</b> = 0.01 %/1000 h <sup>(2)</sup><br><b>S</b> = 0.001 %/1000 h<br><b>V</b> = 0.001 %/1000 h <sup>(2)</sup><br><b>T</b> = Space level |   |                 | <b>TP</b> = Tin/lead,<br>T/R (full)<br><b>TN</b> = Tin/lead,<br>T/R (full), w/ESD<br><b>UL</b> = Tin/lead, T/R<br>single lot date code<br><b>S3</b> = Tin/lead,<br>T/R (1000 pieces)<br><b>SV</b> = Tin/lead, T/R<br>(1000 pieces), w/ESD<br><b>WB</b> = Tin/lead,<br>waffle tray<br><b>WA</b> = Tin/lead,<br>waffle tray,<br>w/ESD<br><b>WL</b> = Tin/lead,<br>waffle tray,<br>single lot date code<br><b>S2</b> = Tin/lead,<br>T/R (500 pieces)<br><b>SU</b> = Tin/lead, T/R<br>(500 pieces), w/ESD<br><b>S6</b> = Tin/lead,<br>T/R (300 pieces)<br><b>ST</b> = Tin/lead, T/R<br>(300 pieces), w/ESD |   |                   | Blank =<br>Standard<br>(Dash number)<br>(Up to 1 digits)<br><b>S</b> =<br>Space level<br>w/option 1 part<br>marking (-97) <sup>(3)</sup><br><b>T</b> =<br>Space level (-98)<br><b>2</b> =<br>Option 1<br>part marking<br>(-20) <sup>(3)</sup><br><b>3</b> =<br>Options 2 and 3<br>part marking<br>(-30) <sup>(3)</sup> |  |
| <b>Historical Part Numbering: M55342M02B10E0R (will continue to be accepted)</b> |                                                                |   |   |   |                                                         |                                                        |                      |                                             |                        |                                                                                                                                                                                                                                                   |   |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |                   |                                                                                                                                                                                                                                                                                                                        |  |
| M55342                                                                           | M                                                              |   |   |   | 02                                                      |                                                        | B                    |                                             | 10E0                   |                                                                                                                                                                                                                                                   |   | R               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   | WB                |                                                                                                                                                                                                                                                                                                                        |  |
| MIL<br>STYLE                                                                     | CHARACTERISTICS                                                |   |   |   | SPEC. SHEET                                             |                                                        | TERMINATION<br>STYLE |                                             | VALUE AND<br>TOLERANCE |                                                                                                                                                                                                                                                   |   | FAILURE<br>RATE |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   | PACKAGING<br>CODE |                                                                                                                                                                                                                                                                                                                        |  |

## Notes

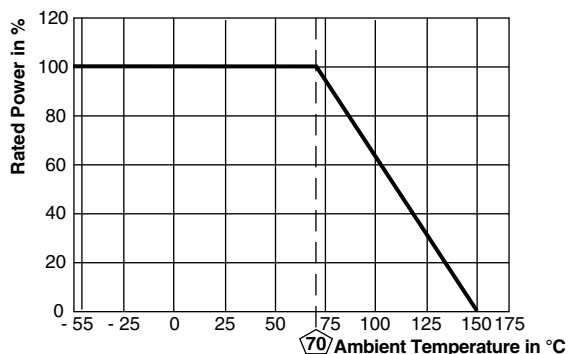
- For additional information on packaging, refer to the Surface Mount Resistor Packaging document ([www.vishay.com/doc?31543](http://www.vishay.com/doc?31543)).
- (1) Products with space level failure rates are only offered in packaging codes with ESD overpack and labeling. For all other failure rates, the ESD pack codes are an optional type of packaging.
- (2) Failure rates U and V require group A and B inspection ran on each production lot.
- (3) MIL spec option 1, 2, and 3 part marking is not offered for the slash sheet 01, 02, 11, and 13 sizes.

## RESISTANCE TOLERANCE AND MULTIPLIERS

| TOLERANCE |           |                                |            | MULTIPLIER                     | VALUE RANGE ( $\Omega$ ) |
|-----------|-----------|--------------------------------|------------|--------------------------------|--------------------------|
| $\pm 1\%$ | $\pm 2\%$ | $\pm 5\%$                      | $\pm 10\%$ |                                |                          |
| D         | G         | J                              | M          | 1                              | 1 to 9xx                 |
| E         | H         | K                              | N          | 1000                           | 1K to 9xxK               |
| F         | T         | L                              | P          | 1 000 000                      | 1M to 22M                |
| Examples: |           |                                |            |                                |                          |
|           |           | 11D3 = 11.3 $\Omega \pm 1\%$   |            | 15J0 = 15 $\Omega \pm 5\%$     |                          |
|           |           | 10E0 = 10 k $\Omega \pm 1\%$   |            | 10K0 = 10 k $\Omega \pm 5\%$   |                          |
|           |           | 332D = 332 $\Omega \pm 1\%$    |            | 560K = 560 k $\Omega \pm 5\%$  |                          |
|           |           | 2F21 = 2.21 M $\Omega \pm 1\%$ |            | 8L20 = 8.2 M $\Omega \pm 5\%$  |                          |
|           |           | 51G0 = 51 $\Omega \pm 2\%$     |            | 10M0 = 10 $\Omega \pm 10\%$    |                          |
|           |           | 10H0 = 10 k $\Omega \pm 2\%$   |            | 10N0 = 10 k $\Omega \pm 10\%$  |                          |
|           |           | 33H0 = 33 k $\Omega \pm 2\%$   |            | 2P70 = 2.7 M $\Omega \pm 10\%$ |                          |
|           |           | 22T0 = 22 M $\Omega \pm 2\%$   |            | 8P20 = 8.2 M $\Omega \pm 10\%$ |                          |

**DIMENSIONS** in inches (millimeters)

| VISHAY DALE MODEL | MIL-PRF-55342 STYLE | MIL SPEC. SHEET | A (LENGTH)                     | B (WIDTH)                      | C (HEIGHT)                     | D (TOP TERM)                   | E (BOTTOM TERM)                               |
|-------------------|---------------------|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------------------------------|
| RCWPM-0502        | RM0502              | 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         | RM0505              | 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        | RM1005              | 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        | RM1505              | 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        | RM2208              | 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         | RM0705              | 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        | RM1206              | 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        | RM2010              | 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        | RM2512              | 09              | 0.250 ± 0.005<br>(6.35 ± 0.13) | 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        | RM1010              | 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        | RM0402              | 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        | RM0603              | 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        | RM0302              | 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)                |
| RCWP-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 SH903**



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