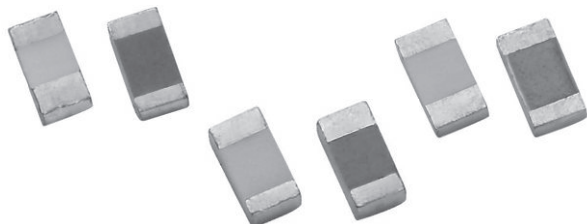


## QPL MIL-PRF-55342 Qualified Thin Film Resistor, Surface-Mount Chip



### LINKS TO ADDITIONAL RESOURCES



3D Models



Product Page



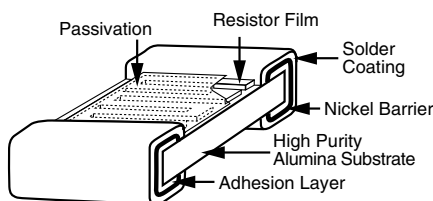
Packages



Footprints

Thin Film Mil chip resistors feature all sputtered wraparound termination for excellent adhesion and dimensional uniformity. They are ideal in applications requiring stringent performance requirements. Established reliability is assured through 100 % screening and extensive environmental lot testing.

### CONSTRUCTION



### FEATURES

- Established reliability, “S” and “V” failure rate level (10 ppm), C = 2
- High purity alumina substrate
- Wraparound termination featuring a tenacious adhesion layer covered with an electroplated nickel barrier layer for +150 °C operating conditions
- Very low noise and voltage coefficient (< -25 dB, 0.1 ppm/V)
- Non-inductive
- Laser-trimmed tolerances  $\pm 0.1$  %
- Wraparound resistance less than 0.010  $\Omega$  typical
- In-lot tracking less than 5 ppm/°C
- Complete MIL-testing available in-house
- Antistatic waffle pack or tape and reel packaging available
- Military / aerospace / QPL

### TYPICAL PERFORMANCE

|      | ABSOLUTE |
|------|----------|
| TCR  | 25       |
| TOL. | 0.1      |

### STANDARD ELECTRICAL SPECIFICATIONS

| TEST                           | SPECIFICATIONS                                                                | CONDITIONS        |
|--------------------------------|-------------------------------------------------------------------------------|-------------------|
| Material                       | Tamelox resistor film (passivated nichrome)                                   | -                 |
| Resistance Range               | 10 $\Omega$ to 6.19 M $\Omega$                                                | -                 |
| TCR: Absolute                  | $\pm 25$ ppm/°C to $\pm 300$ ppm/°C                                           | -55 °C to +125 °C |
| Tolerance: Absolute            | $\pm 0.1$ %, $\pm 0.25$ %, $\pm 0.5$ %, $\pm 1$ %, $\pm 2$ %, 5 %, $\pm 10$ % | +25 °C            |
| Stability: Absolute            | $\Delta R \pm 0.02$ %                                                         | 2000 h at +70 °C  |
| Stability: Ratio               | -                                                                             | -                 |
| Voltage Coefficient            | 0.1 ppm/V                                                                     | -                 |
| Working Voltage                | 30 V to 200 V                                                                 | -                 |
| Operating Temperature Range    | -65 °C to +150 °C                                                             | -                 |
| Storage Temperature Range      | -65 °C to +150 °C                                                             | -                 |
| Noise                          | < - 25 dB                                                                     | -                 |
| Shelf Life Stability: Absolute | $\Delta R \pm 0.01$ %                                                         | 1 year at +25 °C  |

**COMPONENT RATINGS**

| CASE SIZE | POWER RATING (mW) | WORKING VOLTAGE (V) | RESISTANCE RANGE ( $\Omega$ ) BY CHARACTERISTICS TOLERANCE |                            |                                      |                                     |
|-----------|-------------------|---------------------|------------------------------------------------------------|----------------------------|--------------------------------------|-------------------------------------|
|           |                   |                     | E<br>(0.1 %, 0.25 %, 0.5 %)                                | E<br>(1 %, 2 %, 5 %, 10 %) | H, K, L, M<br>(0.1 %, 0.25 %, 0.5 %) | H, K, L, M<br>(1 %, 2 %, 5 %, 10 %) |
| M55342/01 | 50                | 40                  | 49.9 to 150K                                               | 49.9 to 150K               | 20 to 150K                           | 20 to 150K                          |
| M55342/02 | 125               | 40                  | 49.9 to 301K                                               | 49.9 to 301K               | 20 to 301K                           | 20 to 301K                          |
| M55342/03 | 200               | 75                  | 49.9 to 649K                                               | 49.9 to 649K               | 10 to 649K                           | 10 to 649K                          |
| M55342/04 | 150               | 125                 | 49.9 to 1.69M                                              | 49.9 to 1.69M              | 10 to 1.69M                          | 10 to 1.69M                         |
| M55342/05 | 225               | 175                 | 49.9 to 3.16M                                              | 49.9 to 3.16M              | 10 to 3.16M                          | 10 to 3.16M                         |
| M55342/06 | 150               | 50                  | 49.9 to 475K                                               | 49.9 to 475K               | 10 to 475K                           | 10 to 475K                          |
| D55342/07 | 250               | 100                 | 49.9 to 1.5M                                               | 49.9 to 1.5M               | 10 to 1.5M                           | 10 to 1.5M                          |
| M55342/08 | 800               | 150                 | 49.9 to 4.02M                                              | 49.9 to 4.02M              | 10 to 4.02M                          | 10 to 4.02M                         |
| M55342/09 | 1000              | 200                 | 49.9 to 6.19M                                              | 49.9 to 6.19M              | 10 to 6.19M                          | 10 to 6.19M                         |
| M55342/10 | 500               | 75                  | 49.9 to 1M                                                 | 49.9 to 1M                 | 49.9 to 1M                           | 49.9 to 1M                          |
| M55342/11 | 50                | 30                  | 49.9 to 100K                                               | 49.9 to 100K               | 20 to 100K                           | 20 to 100K                          |
| M55342/12 | 100               | 50                  | 49.9 to 258K                                               | 49.9 to 261K               | 10 to 258K                           | 10 to 261K                          |

**Note**

- Values listed are a guide, refer to MIL spec for value / tolerance allowance

**DIMENSIONS** in inches

| CASE SIZE | TERM. | L                       | W             | T              | D                       | E                       | WEIGHT (g) |
|-----------|-------|-------------------------|---------------|----------------|-------------------------|-------------------------|------------|
| M55342/01 | B     | 0.055 ± 0.006           | 0.025 ± 0.005 | 0.010 to 0.033 | 0.010 ± 0.005           | 0.015 ± 0.005           | 0.002      |
| M55342/02 | B     | 0.055 ± 0.006           | 0.050 ± 0.005 | 0.010 to 0.033 | 0.010 ± 0.005           | 0.015 ± 0.005           | 0.004      |
| M55342/03 | B     | 0.105 ± 0.007           | 0.050 ± 0.005 | 0.010 to 0.033 | 0.015 ± 0.005           | 0.015 ± 0.005           | 0.006      |
| M55342/04 | B     | 0.155 ± 0.007           | 0.050 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005           | 0.015 ± 0.005           | 0.011      |
| M55342/05 | B     | 0.230 ± 0.007           | 0.075 ± 0.005 | 0.010 to 0.033 | 0.020 ± 0.005           | 0.020 ± 0.005           | 0.017      |
| M55342/06 | B     | 0.080 ± 0.006           | 0.050 ± 0.005 | 0.010 to 0.033 | 0.016 ± 0.008           | 0.015 ± 0.005           | 0.005      |
| D55342/07 | B     | 0.126 ± 0.008           | 0.063 ± 0.005 | 0.010 to 0.033 | 0.020 ± 0.005 / - 0.010 | 0.020 ± 0.005 / - 0.010 | 0.009      |
| M55342/08 | B     | 0.209 ± 0.009 / - 0.018 | 0.098 ± 0.005 | 0.010 to 0.033 | 0.020 ± 0.005           | 0.020 ± 0.005           | 0.022      |
| M55342/09 | B     | 0.259 ± 0.009 / - 0.015 | 0.124 ± 0.005 | 0.010 to 0.033 | 0.020 ± 0.005           | 0.020 ± 0.005           | 0.033      |
| M55342/10 | B     | 0.105 ± 0.007           | 0.100 ± 0.005 | 0.010 to 0.033 | 0.015 ± 0.005           | 0.015 ± 0.005           | 0.011      |
| M55342/11 | B     | 0.040 ± 0.005           | 0.022 ± 0.005 | 0.010 to 0.033 | 0.010 ± 0.005           | 0.010 ± 0.005           | 0.002      |
| M55342/12 | B     | 0.064 ± 0.006           | 0.032 ± 0.005 | 0.010 to 0.033 | 0.012 ± 0.005           | 0.015 ± 0.005           | 0.003      |



## ENVIRONMENTAL TESTS

| ENVIRONMENTAL TEST         | MIL-PRF-55342 LIMITS<br>( $\Delta R \pm$ ) | VISHAY PERFORMANCE<br>( $\Delta R \pm$ ) |
|----------------------------|--------------------------------------------|------------------------------------------|
| Thermal Shock              | 0.1 %                                      | 0.020 %                                  |
| Low Temperature Operation  | 0.1 %                                      | 0.025 %                                  |
| Short Time Overload        | 0.1 %                                      | 0.050 %                                  |
| High Temperature Exposure  | 0.1 %                                      | 0.009 %                                  |
| Resistance to Bonding      | 0.2 %                                      | 0.006 %                                  |
| Moisture Resistance        | 0.2 %                                      | 0.004 %                                  |
| TCR                        | $\pm 25 \text{ ppm}/^\circ\text{C}$        | $< 15 \text{ ppm}/^\circ\text{C}$        |
| Life (2000 h at + 70 °C)   | 0.5 %                                      | 0.02 %                                   |
| Life (10 000 h at + 70 °C) | 2.0 %                                      | 0.04 %                                   |

## MECHANICAL SPECIFICATIONS

|                    |                         |
|--------------------|-------------------------|
| Resistive Element  | Tamelox                 |
| Substrate Material | Alumina                 |
| Chip Terminations  | Solder over nickel      |
| Fused Solder       | Tin / lead solder alloy |

FSCM CAGE # - 57489

## DERATING





## GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: M55342E06B1C00RTS

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 5 | 5 | 3 | 4 | 2 | E | 0 | 6 | B | 1 | C | 0 | 0 | R | T | S | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL                                            | TCR CHARACTERISTIC                                                                                                      | CASE SIZE                                                                                                                                                                                                                                    | TERMINATION           | OHMIC VALUE                                                                                                                                                                                                                                     | FAILURE RATE                                                                                                                                                                                                                                            | PACKAGING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | THIN FILM CODE <sup>(1)</sup>                                                           |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| <b>M55342</b><br>or<br><b>D55342</b><br>(/07 size only) | <b>E</b> = 25 ppm/°C<br><b>H</b> = 50 ppm/°C<br><b>K</b> = 100 ppm/°C<br><b>L</b> = 200 ppm/°C<br><b>M</b> = 300 ppm/°C | <b>01</b> = 0502<br><b>02</b> = 0505<br><b>03</b> = 1005<br><b>04</b> = 1505<br><b>05</b> = 2208<br><b>06</b> = 0705<br><b>07</b> = 1206<br><b>08</b> = 2010<br><b>09</b> = 2512<br><b>10</b> = 1010<br><b>11</b> = 0402<br><b>12</b> = 0603 | <b>B</b> = solderable | Three digits and a letter. Letter identifies tolerance, acts as multiplier and decimal locator.<br><br>MULTIPLIER<br>Tolerance 1 Ω 1 kΩ 1 MΩ<br>0.1 % A B C<br>0.25 % R U V<br>0.5 % W Y Z<br>1 % D E F<br>2 % G H T<br>5 % J K L<br>10 % M N P | <b>M</b> = 1.0 % per 1000 h<br><b>P</b> = 0.1 % per 1000 h<br><b>R</b> = 0.01 % per 1000 h<br><b>U</b> = 0.01 % per 1000 h <sup>(3)</sup><br><b>S</b> = 0.001 % per 1000 h<br><b>V</b> = 0.001 % per 1000 h <sup>(3)</sup><br><b>C</b> = non ER version | <b>Standard Packaging:</b><br><b>BS</b> = BULK<br>25 min., 1 mult.<br><b>WS</b> = WAFFLE<br>25 min., 1 mult.<br><b>W0</b> = WAFFLE<br>100 min., 100 mult.<br><b>TAPE AND REEL</b><br><b>T0</b> = 100 min., 100 mult.<br><b>T1</b> = 1000 min., 1000 mult.<br><b>T3</b> = 300 min., 300 mult.<br><b>T5</b> = 500 min., 500 mult.<br><b>TF</b> = full reel (2K, 4K, or 5K dependent on case size) per tape and reel document 60034<br><b>TS</b> = 25 min., 1 mult.<br><b>Special Packaging:</b><br><b>WAFFLE</b><br><b>WI</b> = 25 min., 1 mult. (item single lot date code)<br><b>WP</b> = 25 min., 1 mult. (package unit single lot date code)<br><b>TAPE AND REEL</b><br><b>TI</b> = 25 min., 1 mult. (item single lot date code)<br><b>TP</b> = 25 min., 1 mult. (package unit single lot date code) | <b>V</b> for K, L, and M TCR W/tolerance ≥ 1 %<br><b>M</b> = part marked <sup>(2)</sup> |

Historical Part Number Example: M55342K06B5E60R (for reference purposes only)

|               |                    |           |             |                     |              |
|---------------|--------------------|-----------|-------------|---------------------|--------------|
| <b>M55342</b> | <b>K</b>           | <b>06</b> | <b>B</b>    | <b>5E60</b>         | <b>R</b>     |
| SERIES        | TCR CHARACTERISTIC | CASE SIZE | TERMINATION | VALUE AND TOLERANCE | FAILURE RATE |

## Notes

- For M/D55342 T-level failure rate options please see VTF E/H (T-level) datasheet: [www.vishay.com/ppg?60060](http://www.vishay.com/ppg?60060)
- (1) Only add a V at the end of part number to specify Vishay Dale Thin Film for K, L and M TCR and tolerance 1 % and higher
- (2) Option 1 marking only. Case sizes 01, 02, 11, and 12 not available due to size
- (3) Failure rate U and V require group A and B testing on a production lot basis



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