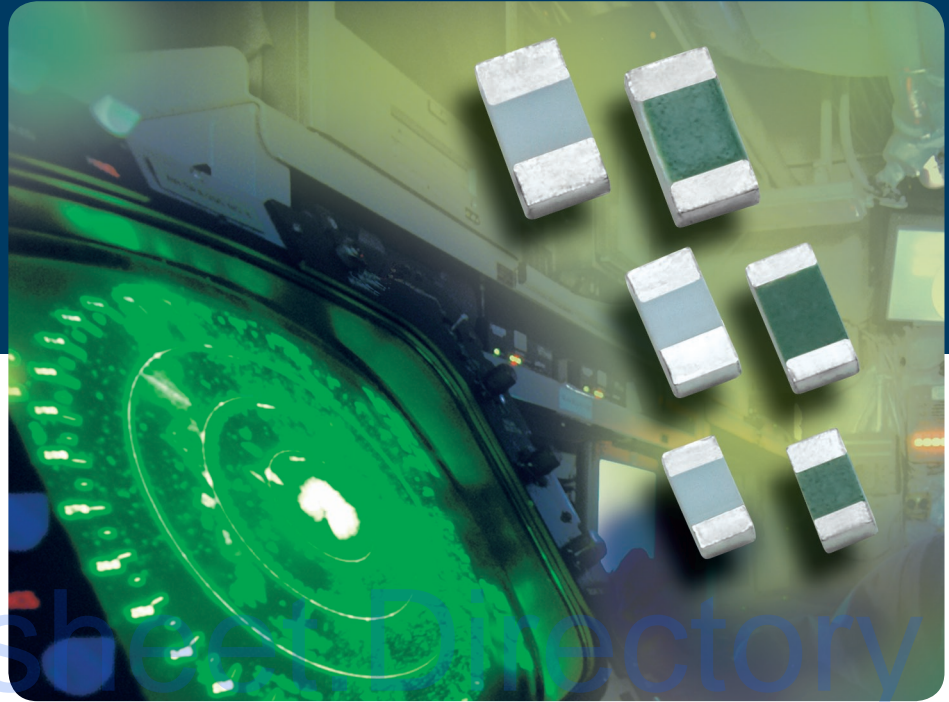




THIN FILM RESISTOR

E/H



Datasheet Directory

QPL MIL-PRF-55342 Chip Resistor

Thin Film Resistor — QPL Established Reliability Military Chip Resistor

KEY BENEFITS

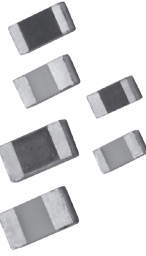
- Twelve qualified case sizes from 0402 to 2512
- Characteristics E, H, K, M
- Precision tolerances to 0.1 %
- “R” failure rate level

APPLICATIONS

- Missile/Air flight control
- Communication systems
- Ground support radar
- Guidance and navigation control

Datasheet is available on our web site at www.vishay.com
for QPL Chip Resistors - <http://www.vishay.com/doc?60018>

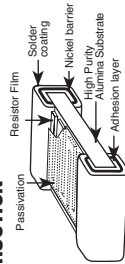
QPL MIL-PRF-55342-Qualified Thin Film Resistor Chips



Thin Film Mill 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. Water is sawed producing exact dimensions and clean, straight edges.

NOTE: Specification changed by DSCC from MIL-R-55342 to MIL-PRF-55342.

CONSTRUCTION



TYPICAL PERFORMANCE

| | |
|-----|---------|
| TCR | ± 0.1 % |
| TOL | ± 0.1 |

FEATURES

- Established reliability, "R" failure rate level
- High purity alumina substrate for high power (± 25 ppm/ $^{\circ}$ C, 0.1 ppm/ $^{\circ}$ C)
- Wraparound termination featuring a tenacious adhesion layer covered with an electroplated nickel barrier layer for +150 $^{\circ}$ C operating conditions
- Very low noise and voltage coefficient (± 25 ppm/ $^{\circ}$ C, 0.1 ppm/ $^{\circ}$ C)
- Non-inductive
- Laser-trimmed tolerances ± 0.1 %
- Wraparound resistances less than 0.010 ohms typical
- In-lot tracking less than 5 ppm/ $^{\circ}$ C
- Complete MIL-testing available in-house
- Antistatic waflie pack or tape and reel packaging available

ENVIRONMENTAL TESTS

| | | |
|---------------------------------------|---|---------------------------------------|
| TEST | MIL-PRF-55342 LIMITS ($\Delta/R \pm$) | VISHAY PERFORMANCE ($\Delta/R \pm$) |
| 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 | ± 25 ppm/ $^{\circ}$ C | < 15 ppm/ $^{\circ}$ C |
| Life (2000 hrs at +70 $^{\circ}$ C) | 0.5 % | 0.184 % |
| Life (10 000 hrs at +70 $^{\circ}$ C) | 2.0 % | 0.04 % |

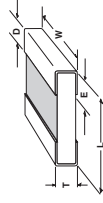
STANDARD ELECTRICAL SPECIFICATIONS

| | | |
|--------------------------------|---|---------------------------------------|
| TEST | SPECIFICATIONS | CONDITIONS |
| MATERIAL | TAMELOX | |
| Absolute TCR | ± 25 ppm/ $^{\circ}$ C to ± 100 ppm/ $^{\circ}$ C | -55 $^{\circ}$ C to +125 $^{\circ}$ C |
| Absolute Tolerance | ± 0.1 % | +25 $^{\circ}$ C |
| Stability: ΔR Absolute | ± 0.1 % | 2000 hrs. at +70 $^{\circ}$ C |
| Voltage Coefficient | ± 0.5 ppm/Volt | |
| Operating Temperature Range | -55 $^{\circ}$ C to +125 $^{\circ}$ C | |
| Storage Temperature Range | -55 $^{\circ}$ C to +150 $^{\circ}$ C | |
| Noise | -25 dB | |
| Shelf Life Stability | 100 ppm | 1 year at +25 $^{\circ}$ C |

DIMENSIONS

| CASE SIZE | TERML. | L | W | T | D | E |
|-----------|--------|-------------------|-------------------|----------------|---------------------------|---------------------------|
| M55342/01 | B | 0.050 \pm 0.005 | 0.025 \pm 0.005 | 0.010 to 0.030 | 0.010 \pm 0.005 | 0.015 \pm 0.005 |
| M55342/02 | B | 0.055 \pm 0.006 | 0.050 \pm 0.005 | 0.012 to 0.033 | 0.010 \pm 0.005 | 0.015 \pm 0.005 |
| M55342/03 | B | 0.105 \pm 0.007 | 0.050 \pm 0.005 | 0.015 to 0.033 | 0.015 \pm 0.005 | 0.015 \pm 0.005 |
| M55342/04 | B | 0.155 \pm 0.007 | 0.050 \pm 0.005 | 0.015 to 0.033 | 0.015 \pm 0.005 | 0.015 \pm 0.005 |
| M55342/05 | B | 0.230 \pm 0.007 | 0.075 \pm 0.005 | 0.015 to 0.033 | 0.020 \pm 0.005 | 0.020 \pm 0.005 |
| M55342/06 | B | 0.060 \pm 0.006 | 0.050 \pm 0.005 | 0.015 to 0.033 | 0.016 \pm 0.008 | 0.015 \pm 0.005 |
| M55342/07 | B | 0.126 \pm 0.008 | 0.063 \pm 0.005 | 0.015 to 0.033 | 0.020 \pm 0.005, -0.010 | 0.020 \pm 0.005, -0.010 |
| M55342/08 | B | 0.209 \pm 0.009 | 0.098 \pm 0.005 | 0.015 to 0.033 | 0.020 \pm 0.005 | 0.020 \pm 0.005 |
| M55342/09 | B | 0.259 \pm 0.009 | 0.124 \pm 0.005 | 0.015 to 0.033 | 0.020 \pm 0.005 | 0.020 \pm 0.005 |
| M55342/10 | B | 0.105 \pm 0.007 | 0.100 \pm 0.005 | 0.015 to 0.033 | 0.015 \pm 0.005 | 0.015 \pm 0.005 |
| M55342/11 | B | 0.040 \pm 0.005 | 0.025 \pm 0.005 | 0.010 to 0.030 | 0.010 \pm 0.005 | 0.015 \pm 0.005 |
| M55342/12 | B | 0.064 \pm 0.006 | 0.032 \pm 0.005 | 0.010 to 0.033 | 0.012 \pm 0.005 | 0.015 \pm 0.005 |

DIMENSIONS (continued)



| CASE SIZE | MAX. WORKING VOLTAGE | POWER RATING (mW) | CHARACTERISTIC | | RES. RANGE (Ω) BY CHARACTERISTIC | | CHARACTERISTIC TOLERANCE | |
|-----------|----------------------|-------------------|----------------|-------------|---|-------------------------|----------------------------|------------|
| | | | E & H | K | E, H, K (0.1 %) | E (1 %, 2 %, 5 %, 10 %) | H, K (1 %, 2 %, 5 %, 10 %) | |
| M55342/01 | 40 | 10 | 20 | 100 - 130K | 59 - 130K | 59 - 130K | 59 - 130K | 59 - 130K |
| M55342/02 | 40 | 25 | 50 | 100 - 301K | 49.9 - 301K | 20 - 301K | 20 - 301K | 20 - 301K |
| M55342/03 | 40 | 50 | 100 | 100 - 649K | 49.9 - 649K | 10 - 649K | 10 - 649K | 10 - 649K |
| M55342/04 | 40 | 100 | 150 | 100 - 1M | 49.9 - 1M | 10 - 1M | 10 - 1M | 10 - 1M |
| M55342/05 | 40 | 200 | 225 | 100 - 1.75M | 49.9 - 1.75M | 10 - 1.75M | 10 - 1.75M | 10 - 1.75M |
| M55342/06 | 50 | 100 | 100 | 100 - 475K | 49.9 - 475K | 10 - 475K | 10 - 475K | 10 - 475K |
| M55342/07 | 100 | 125 | 250 | 100 - 1M | 49.9 - 1M | 10 - 1M | 10 - 1M | 10 - 1M |
| M55342/08 | 150 | 400 | 800 | 100 - 2M | 49.9 - 2M | 10 - 2M | 10 - 2M | 10 - 2M |
| M55342/09 | 200 | 500 | 1000 | 100 - 3M | 49.9 - 3M | 10 - 3M | 10 - 3M | 10 - 3M |
| M55342/10 | 75 | 250 | 500 | 100 - 1M | 49.9 - 1M | 10 - 1M | 10 - 1M | 10 - 1M |
| M55342/11 | 25 | 40 | 40 | 100 - 71.5K | 59 - 71.5K | 20 - 160K | 20 - 160K | 20 - 160K |
| M55342/12 | 50 | 70 | 70 | 100 - 160K | 49.9 - 160K | 20 - 160K | 20 - 160K | 20 - 160K |

ENVIRONMENTAL TESTS

| | | |
|---------------------------------------|---|---------------------------------------|
| TEST | MIL-PRF-55342 LIMITS ($\Delta/R \pm$) | VISHAY PERFORMANCE ($\Delta/R \pm$) |
| 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 | ± 25 ppm/ $^{\circ}$ C | < 15 ppm/ $^{\circ}$ C |
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MECHANICAL SPECIFICATIONS

| | |
|--------------------|------------------|
| Resistive Element | TameloX |
| Substrate Material | Alumina |
| Chip Terminations | Gold over Nickel |
| Plating | SN 80/40 |

FSCM CAGE # - 57489

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: M5534206B1C00RTS (preferred part number format)

| | | | | | | | | | | | | | | | | |
|---|--------|--------------------|--|-----------|---|-------------|----------------|---------------------|---|--------------|--|-----------|---|---|---|---|
| M | 5 | 5 | 3 | 4 | 2 | E | 0 | 6 | B | 1 | C | 0 | 0 | R | T | S |
| GLOBAL MODEL | M55342 | TCR CHARACTERISTIC | E = 25 ppm/ $^{\circ}$ C > 100 Ω | CASE SIZE | 01 = 0502 02 = 0505 03 = 0506 04 = 1505 05 = 2208 06 = 2705 07 = 07 size only | TERMINATION | B = solderable | CHMIC VALUE | Three digits and a letter. Letter identifies tolerance, acts as multiplier and decimal locator. Tolerance 1.0 1.0% +1Mk 0.1 A B C F 1% D E G H K L 2% J K N P 5% M 10% .M | FAILURE RATE | M = 1.0 % per 1000 hrs. R = 0.001 % per 1000 hrs. C = non ER version | PACKAGING | BS = BULK 100 Min 1 Mult WS = 100 Min 1 Mult TAPE AND REEL TO = 100 Min 100 Mult TR = 1000 Min 300 Mult TS = 500 Min 500 Mult TF = Full Reel 2500 TM = 100 Min 1 Mult | | | |
| Historical Part Number example: M5534206B5E60R (will continue to be accepted) | | | | | | | | | | | | | | | | |
| SERIES | M55342 | CHARACTERISTIC | K | CASE SIZE | 06 | TERMINATION | B | VALUE AND TOLERANCE | 5E60 | FAILURE RATE | R | | | | | |

Revision 10-May-06

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