



Metal Film Resistors, Axial, Military / Established Reliability, MIL-PRF-39017 Qualified, Type RLR



FEATURES

- Meets requirements of MIL-PRF-39017
Failure rate: Verified failure rate (contact factory for current level)
Epoxy coated construction provides superior moisture protection
Traceability of materials and processing
Monthly lot acceptance testing
Very low noise (-40 dB)
Extensive stocking program at distributors and factory in +/- 1% and +/- 2% tolerances
Vishay Dale has complete capability to develop specific reliability programs designed to customer requirements

Table with 9 columns: VISHAY DALE MODEL, MIL-PRF-39017 STYLE, MIL SPEC. SHEET, POWER RATING 70 °C W, RESISTANCE RANGE (1) Ω, TOLERANCE ± %, TEMPERATURE COEFFICIENT ± ppm/°C, MAXIMUM WORKING VOLTAGE (4) V, LIFE FAILURE RATE (2)

Notes

(1) Extended resistance range: DSCC has created a series of drawings intended to support extended resistance ranges left otherwise void by the discontinuation of MIL-R-39008 RCR carbon composition resistors. Vishay Dale is listed as a resource on these drawings as follows:

Table with 7 columns: DSCC DRAWING NUMBER, VISHAY DALE MODEL, POWER RATING P70 °C W, RESISTANCE RANGE Ω, TOLERANCE ± %, TEMPERATURE COEFFICIENT ± ppm/°C, MAXIMUM WORKING VOLTAGE V (4)

• Low inductance: DSCC has created a drawing intended to support a resistor which exhibits low inductance over a frequency range of 1 MHz to 30 MHz. Vishay Dale is listed as a resource on these drawings as follows:

Table with 8 columns: DSCC DRAWING NUMBER, VISHAY DALE MODEL, POWER RATING P70 °C W, RESISTANCE RANGE Ω, MAXIMUM INDUCTANCE nH, TOLERANCE ± %, TEMPERATURE COEFFICIENT ± ppm/°C, MAXIMUM WORKING VOLTAGE V (4)

These drawings can be viewed at: https://landandmaritimeapps.dla.mil/Downloads/MilSpec/DscC/Dwg/96002.pdf

(2) Consult factory for current QPL failure rates

(3) Hot solder dipped leads

(4) Continuous working voltage shall be sqrt(P x R) or maximum working voltage, whichever is less

Table with 3 columns: PARAMETER, UNIT, CONDITION

| GLOBAL PART NUMBER INFORMATION   |                           |  |   |   |                        |   |   |  |           |   |   |   |   |   |  |  |  |
|--|---------------------------|--|---|---|------------------------|---|---|--|-----------|---|---|---|---|---|--|--|--|
| New Global Part Numbering: RLR07C3001FRR36 (preferred part numbering format) |                           |  |   |   |                        |   |   |  |           |   |   |   |   |   |  |  |  |
| R  | L                         | R  | 0 | 7 | C                      | 3   | 0 | 0  | 1         | F | R   | R | 3 | 6 |  |  |  |
| MIL STYLE  | LEAD MATERIAL             | RESISTANCE VALUE   |   |   | TOLERANCE CODE         | FAILURE RATE  |   | PACKAGING  |           |   | SPECIAL   |   |   |   |  |  |  |
| RLR05<br>RLR07<br>RLR20<br>RLR32   | C = solderable / weldable | 3 digit significant figure, followed by a multiplier. Use "R" for values < 100 Ω<br>1R00 = 1 Ω<br>3302 = 33 kΩ<br>1005 = 10 MΩ |   |   | F = ± 1 %<br>G = ± 2 % | M = 1.0 %/1000 h<br>P = 0.1 %/1000 h<br>R = 0.01 %/1000 h<br>S = 0.001 %/1000 h |   | B14 = tin / lead, bulk<br>BSL = tin / lead, bulk, single lot date code<br>R36 = tin/lead, T/R (full, except 32's)<br>R64 = tin / lead, T/R (full; 32's only)<br>RE6 = tin / lead, T/R (1000 pieces)<br>RSL = tin / lead, T/R, single lot date code |           |   | Blank = standard (dash number) (up to 3 digits)<br>From 1 to 999 as applicable<br>1 = hot solder dip (32's)<br>11 = hot solder dip (20's)<br>19 = hot solder dip (05's)<br>23 = hot solder dip (07's) |   |   |   |  |  |  |
| Historical Part Number Example: RLR07C3001FR (will continue to be accepted)  |                           |  |   |   |                        |   |   |  |           |   |   |   |   |   |  |  |  |
| RLR07  | C                         | 3001   |   |   | F                      | R   |   | R36  |           |   |   |   |   |   |  |  |  |
| MIL STYLE  | LEAD MATERIAL             | RESISTANCE VALUE   |   |   | TOLERANCE CODE         | FAILURE RATE  |   |  | PACKAGING |   |   |   |   |   |  |  |  |

**Note**

- For additional information on packaging, refer to the Through Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544))

**DIMENSIONS** in inches (millimeters)



**Note**

- (1) Lead length for product in bulk pack. For product supplied in tape and reel, the actual lead length would be based on the body size, tape spacing and lead trim

| VISHAY DALE MODEL | A  | B                              | C (Max.)         | D   | E                              |
|-------------------|--|--------------------------------|------------------|---|--------------------------------|
| ERL05             | 0.150 ± 0.020<br>(3.81 ± 0.51)                 | 0.066 ± 0.008<br>(1.68 ± 0.21) | 0.187<br>(4.75)  | 0.016 ± 0.002<br>(0.41 ± 0.05)                | 1.25 ± 0.266<br>(31.75 ± 6.76) |
| ERL07             | 0.250 + 0.031 - 0.046<br>(6.35 + 0.79 - 1.17)  | 0.090 ± 0.008<br>(2.29 ± 0.21) | 0.300<br>(7.62)  | 0.025 ± 0.002<br>(0.64 ± 0.05)                | 1.50 ± 0.125<br>(38.10 ± 3.18) |
| ERL20             | 0.375 ± 0.041<br>(9.53 ± 1.04)                 | 0.138 ± 0.023<br>(3.51 ± 0.58) | 0.450<br>(11.43) | 0.032 ± 0.002<br>(0.81 ± 0.05)                | 1.50 ± 0.125<br>(38.10 ± 3.18) |
| ERL32             | 0.562 ± 0.031<br>(14.27 ± 0.79)                | 0.190 ± 0.015<br>(4.83 ± 0.38) | 0.625<br>(15.87) | 0.032 + 0.002 - 0.001<br>(0.81 + 0.05 - 0.03) | 1.50 ± 0.125<br>(38.10 ± 3.18) |
| ERL62             | 0.562 + 0.031 - 0.042<br>(14.27 + 0.79 - 1.07) | 0.230 ± 0.015<br>(5.84 ± 0.38) | 0.650<br>(16.51) | 0.032 + 0.002 - 0.001<br>(0.81 + 0.05 - 0.03) | 1.50 ± 0.125<br>(38.10 ± 3.18) |

| MATERIAL SPECIFICATIONS |   |
|-------------------------|---|
| Element                 | Vacuum-deposited nickel-chrome alloy  |
| Core                    | Fire-cleaned high purity ceramic  |
| Encapsulation           | Specially formulated epoxy compound   |
| Termination             | Standard lead material is solder-coated copper. Solderable and weldable per MIL-STD-1276, Type C. |

**POWER RATING**

Power ratings are based on the following two conditions:

- ± 2.0 % maximum ΔR in 2000 h load life
- +150 °C maximum operating temperature

**APPLICABLE MIL-SPECIFICATIONS**

**MIL-PRF-39017:**

The ERL series meets the electrical, environmental and dimensional requirements of MIL-PRF-39017.

**MIL-PRF-22684:**

MIL-PRF-39017 supersedes MIL-PRF-22684 on new designs. The ERL series meet or exceed MIL-PRF-22684 requirements.

**Documentation:**

Qualification and failure rate verification test data is maintained by Vishay Dale and is available upon request. Lot traceability and identification data is maintained by Vishay Dale for five years.

**CAGE CODE: 91637**



**THERMAL RESISTANCE**



**DERATING**

**MARKING** (per MIL-PRF-39017)

Tolerance: F = 1 %, G = 2 %

Value = three significant figures and multiplier

J = JAN (Joint Army - Navy) brand

**RLR05: (3 lines)**

- 210A 3-digit date code and lot code
- 1002 Value
- FSJD Tolerance, failure rate, JAN and manufacturer's code

**RLR07: (4 lines)**

- 214AJ 3-digit date code, lot code and JAN
- RLR7C Style ("0" omitted) and lead material
- 1300G Value and tolerance
- RD Failure rate and manufacturer's code

**RLR20, RLR32: (4 lines)**

- 91637 CAGE code
- RLR20C Style and lead material
- 4993FR Value, tolerance and failure rate
- 1225AJ 4-digit date code, lot code and JAN



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