Vishay Dale



Metal Film Resistors, 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).
- · Excellent high frequency performance.
- Epoxy coated construction provides superior moisture protection.
- · Traceability of materials and processing.
- · Monthly lot acceptance testing.
- · Very low noise.
- Extensive stocking program at distributors and factory in \pm 1% and \pm 2% tolerances.
- Vishay Dale has complete capability to develop specific reliability programs designed to customer requirements.

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | |
|------------------------------------|-----------------------|--|------------------------------|------------------------------|-------------------------------|--|
| VISHAY DALE MODEL | MIL-PRF-39017 TYPE | POWER RATING P _{70°C} W | RESISTANCE TOLERANCE % | MAXIMUM WEIGHT (Grams) | MAXIMUM WORKING VOLTAGE | RESISTANCE ¹⁾ RANGE (Ohms) T - 1 (±100ppm/°C) |
| ERL-05 | RLR05 | 0.125 | \pm 1, \pm 2 | .11 | 200 | 4R7 - 1M |
| ERL-07 | RLR07 | 0.25 | \pm 1, \pm 2 | .35 | 250 | 1R - 10M |
| ERL-20 | RLR20 | 0.5 | \pm 1, \pm 2 | .75 | 350 | 4R3 - 3.01M |
| ERL-32 | RLR32 | 1 | \pm 1, \pm 2 | 1.5 | 500 | 1R - 2.7M |

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: DSCC DRAWING RESISTANCE

| DSCC DRAWING | RESISTANCE | 0 |
|----------------------------------|------------------|----------|
| NUMBER | RANGE | SIZE |
| 98020 | 1.1 meg - 22 meg | 1/8 watt |
| 99011 | 11 meg - 22 meg | 1/4 watt |
| 98021 | 3.3 meg - 22 meg | 1/2 watt |
| 98022 | 3 meg - 22 meg | 1 watt |
| 97004 | 1 ohm - 2.7 meg | 2 watt |
| These drawings can be viewed at: | | |

www.dscc.dla.mil/Programs/MilSpec/ListDwgs.asp?DocType=DSCCdwg

| TECHNICAL SPECIFICATIONS | | | | | |
|-----------------------------|--------|--|--|--|--|
| PARAMETER | UNIT | CONDITION | | | |
| Voltage Coefficient, max. | ppm/°C | 5/Volt when measured between 10% and full rated voltage | | | |
| Dielectric Strength | VAC | RLR05 = 300; RLR07/RLR20 = 500; RLR32 = 1000 | | | |
| Insulation Resistance | Ω | $\geq 10^9$ minimum dry; $\geq 10^{11}$ minimum after moisture test | | | |
| Operating Temperature Range | °C | - 65 / + 150 | | | |
| Terminal Strength | lb | 2lb pull test on RLR05; 5lb pull test on all other sizes | | | |
| Solderability | | Continuous satisfactory coverage when tested in accordance with MIL-STD-202, Method 208 | | | |

ORDERING INFORMATION - MILITARY PART NUMBER

| RLR | 07 | С | 3001 | F | R |
|------------------------------------|---|-------------------------|--|-----------|------------------------------|
| MILITARY TYPE Per MIL-PRF-39017 | SIZE | LEAD MATERIAL | VALUE | TOLERANCE | FAILURE RATE %/1000 HOURS |
| | 05 = 0.125 watt 07 = 0.25 watt 20 = 0.5 watt 32 = 1 watt | Solderable/ Weldable | First three digits are significant figures. Last digit specifies the num zeros to follow. (3000 ohm illustrate | | |

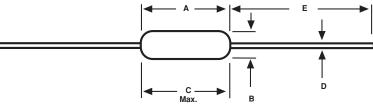




Metal Film Resistors, Military/Established Reliability

ERL Vishay Dale

DIMENSIONS in inches [millimeters]



* 1.08 \pm 0.125 [27.43 \pm 3.18] IF TAPE AND REEL

| MODEL | A | В | C (Max.) | D | E |
|--------|--|---|------------------|-----------------|---|
| ERL-05 | $\begin{array}{c} 0.150 \pm 0.020 \\ [3.81 \pm 0.51] \end{array}$ | $\begin{array}{c} 0.066 \pm 0.008 \\ [1.68 \pm 0.21] \end{array}$ | 0.187 [4.75] | 0.016 [0.41] | $\begin{array}{c} 1.25 \pm 0.266 \\ [31.75 \pm 6.76] \end{array}$ |
| ERL-07 | 0.250 + 0.031 - 0.046 [6.35 + 0.79 - 1.17] | $\begin{array}{c} 0.090 \pm 0.008 \\ [2.29 \pm 0.21] \end{array}$ | 0.300 [7.62] | 0.025 [0.64] | $\begin{array}{c} 1.50 \pm 0.125 \\ [38.10 \pm 3.18] \end{array}$ |
| ERL-20 | $\begin{array}{c} 0.375 \pm 0.041 \\ [9.53 \pm 1.04] \end{array}$ | $\begin{array}{c} 0.138 \pm 0.023 \\ [3.51 \pm 0.58] \end{array}$ | 0.450 [11.43] | 0.032 [0.81] | $\begin{array}{c} 1.50 \pm 0.125 \\ [38.10 \pm 3.18] \end{array}$ |
| ERL-32 | $\begin{array}{c} 0.562 \pm 0.031 \\ [14.27 \pm 0.79] \end{array}$ | $\begin{array}{c} 0.190 \pm 0.015 \\ [4.83 \pm 0.38] \end{array}$ | 0.625 [15.87] | 0.032 [0.81] | 1.50 ± 0.125 [38.10 ± 3.18] |

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

APPLICABLE MIL-SPECIFICATIONS

MIL-PRF-39017:

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

MIL-PRF-22684:

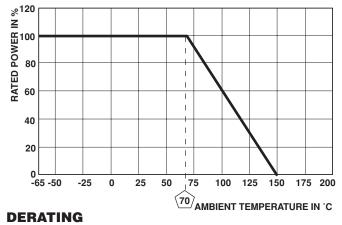
MIL-PRF-39017 supercedes MIL-PRF-22684 on new designs. The ERC series meet or exceed MIL-PRF-22684 requirements.

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.

POWER RATING

Power ratings are based on the following two conditions:

- 1. \pm 2.0% maximum ΔR in 2000 hours load life.
- 2. + 150°C maximum operating temperature.



MARKING

- Per MIL-PRF-39017