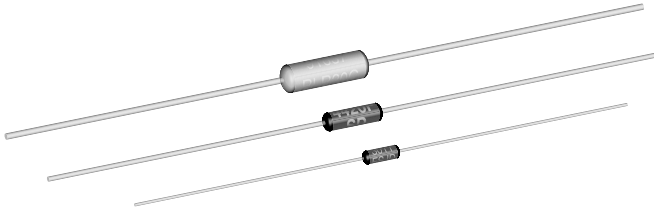


## Metal Film Resistors, Military/Established Reliability, MIL-PRF-39017 Qualified, Type RLR

**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 $P_{70^{\circ}\text{C}}$ W	RESISTANCE TOLERANCE %	MAXIMUM WEIGHT (Grams)	MAXIMUM WORKING VOLTAGE	RESISTANCE <sup>1)</sup> RANGE (Ohms) T - 1 ( $\pm 100\text{ppm}/^{\circ}\text{C}$ )
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

<sup>1)</sup> 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 NUMBER**

**RESISTANCE 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.dsccl.dla.mil/Programs/MilSpec/ListDwgs.asp?DocType=DSCCdwg](http://www.dsccl.dla.mil/Programs/MilSpec/ListDwgs.asp?DocType=DSCCdwg)

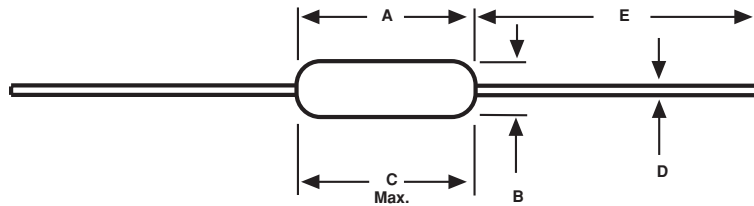
**TECHNICAL SPECIFICATIONS**

PARAMETER	UNIT	CONDITION
Voltage Coefficient, max.	ppm/ $^{\circ}\text{C}$	5/Volt when measured between 10% and full rated voltage
Dielectric Strength	VAC	RLR05 = 300; RLR07/RLR20 = 500; RLR32 = 1000
Insulation Resistance	$\Omega$	$\geq 10^9$ minimum dry; $\geq 10^{11}$ minimum after moisture test
Operating Temperature Range	$^{\circ}\text{C}$	- 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 MILITARY TYPE Per MIL-PRF-39017	07 SIZE	C LEAD MATERIAL	3001 VALUE	F TOLERANCE	R 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 number of zeros to follow. (3000 ohm illustrated.)	F = $\pm 1\%$ G = $\pm 2\%$	M = 1% P = 0.1% R = 0.01% S = 0.001%

**DIMENSIONS** in inches [millimeters]



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

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

MATERIAL SPECIFICATIONS			
<b>Element:</b>	Vacuum-deposited nickel-chrome alloy	<b>Encapsulation:</b>	Specially formulated epoxy compound
<b>Core:</b>	Fire-cleaned high purity ceramic	<b>Termination:</b>	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:**

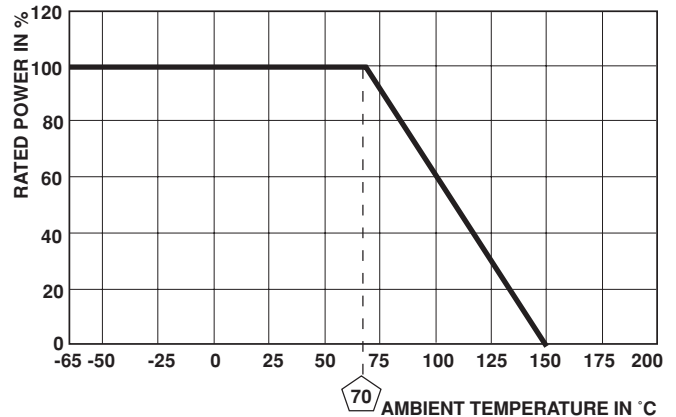
MIL-PRF-39017 supercedes MIL-PRF-22684 on new designs. The ERC series meet or exceed MIL-PRF-22684 requirements.

**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. ± 2.0% maximum ΔR in 2000 hours load life.
2. + 150°C maximum operating temperature.



**DERATING**

MARKING
— Per MIL-PRF-39017

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