

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 ¹⁾ 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

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 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

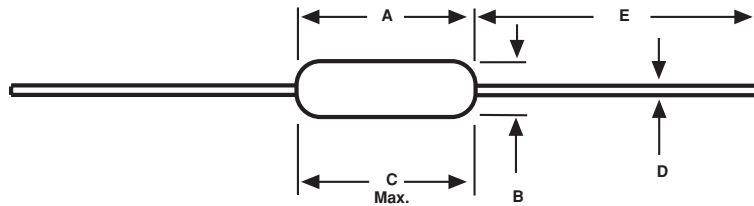
TECHNICAL SPECIFICATIONS

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	Ω	$\geq 10^9$ 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 05 = 0.125 watt 07 = 0.25 watt 20 = 0.5 watt 32 = 1 watt	C LEAD MATERIAL Solderable/ Weldable	3001 VALUE First three digits are significant figures. Last digit specifies the number of zeros to follow. (3000 ohm illustrated.)	F TOLERANCE F = $\pm 1\%$ G = $\pm 2\%$	R FAILURE RATE %/1000 HOURS M = 1% P = 0.1% R = 0.01% S = 0.001%
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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			
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:

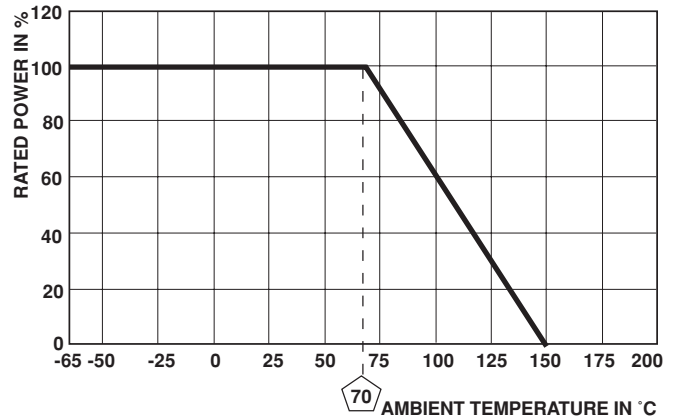
MIL-PRF-39017 supercedes MIL-PRF-22684 on new designs. The ERC series meet or exceed MIL-PRF-22684 requirements.

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:

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



DERATING

MARKING
— Per MIL-PRF-39017