



## 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)
- 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  $\pm 1\%$  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 STYLE	POWER RATING $P_{70^\circ\text{C}}$ , W	RESISTANCE RANGE <sup>1)</sup> $\Omega$	RESISTANCE TOLERANCE %	TEMPERATURE COEFFICIENT ppm/ $^\circ\text{C}$	MAXIMUM WORKING VOLTAGE	LIFE FAILURE RATE**
ERL05	RLR05	0.125	4R7 - 1M0	$\pm 1, \pm 2$	100	200	M, P, R, S
ERL07	RLR07	0.25	1R0 - 10M	$\pm 1, \pm 2$	100	250	M, P, R, S
ERL20	RLR20	0.50	4R3 - 3M01	$\pm 1, \pm 2$	100	350	M, P, R
ERL32	RLR32	1.0	1R0 - 2M7	$\pm 1, \pm 2$	100	500	M, P, R

<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	VISHAY DALE MODEL	POWER RATING $P_{70^\circ\text{C}}$ W	RESISTANCE RANGE $\Omega$	RESISTANCE TOLERANCE %	TEMPERATURE COEFFICIENT ppm/ $^\circ\text{C}$	MAXIMUM WORKING VOLTAGE
98020	ERL05..36, ERL05..37*	0.125	1M1 - 22M	$\pm 2, \pm 5, \pm 10$	350	200
99011	ERL07..100, ERL07..101*	0.25	11M - 22M	$\pm 2, \pm 5, \pm 10$	350	250
98021	ERL20..36, ERL20..37*	0.50	3M3 - 22M	$\pm 2, \pm 5, \pm 10$	350	350
98022	ERL32..36, ERL32..37*	1.0	3M0 - 22M	$\pm 2, \pm 5, \pm 10$	350	350
97004	ERL62..1, ERL62..2*	2.0	10R - 2M7 3M0 - 22M	$\pm 1, \pm 2, \pm 5, \pm 10$	100 350	500

These drawings can be viewed at: [www.dscclia.mil/Programs/MilSpec/ListDwgs.asp?DocType=DSCCdwg](http://www.dscclia.mil/Programs/MilSpec/ListDwgs.asp?DocType=DSCCdwg)

\* Hot solder dipped leads

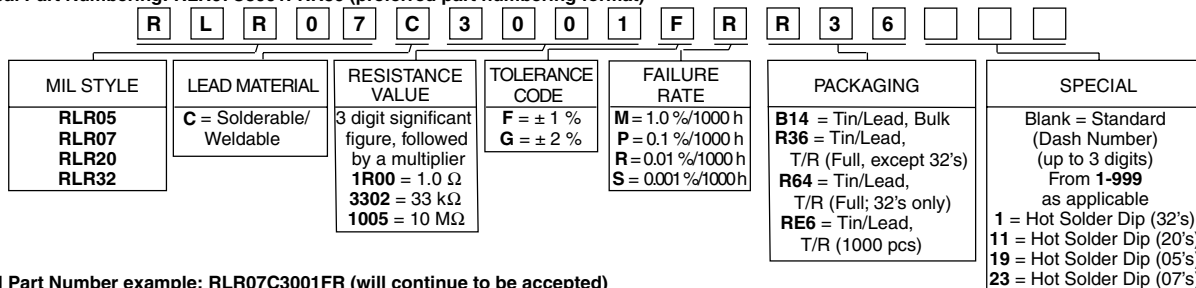
\*\* Consult Factory for current QPL failure rates

### TECHNICAL SPECIFICATIONS

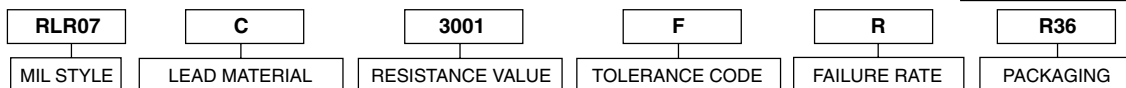
PARAMETER	UNIT	CONDITION
Voltage Coefficient, max.	ppm/ $^\circ\text{C}$	5/Volt when measured between 10 % and full rated voltage
Dielectric Strength	$V_{AC}$	RLR05 = 300; RLR07 and RLR20 = 500; RLR32 = 1000
Insulations Resistance	$\Omega$	$\geq 10^9$ minimum dry; $\geq 10^{11}$ minimum after moisture 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
Weight	g	RLR05 = 0.11; RLR07 = 0.35; RLR20 = 0.75; RLR32 = 1.50

### GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: RLR07C3001FRR36 (preferred part numbering format)

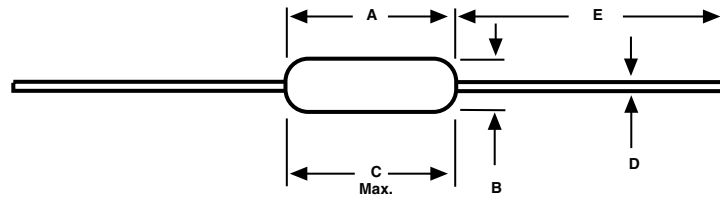


Historical Part Number example: RLR07C3001FR (will continue to be accepted)





**DIMENSIONS** in inches [millimeters]



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

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

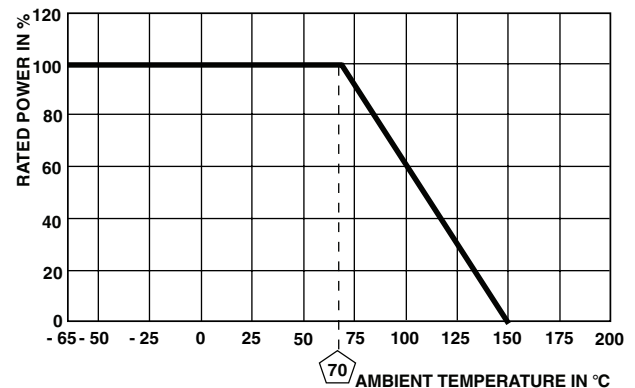
**Documentation:**

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:

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



**DERATING**

**CAGE CODE: 91637**

**MARKING**

- Per MIL-PRF-39017



## Notice

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