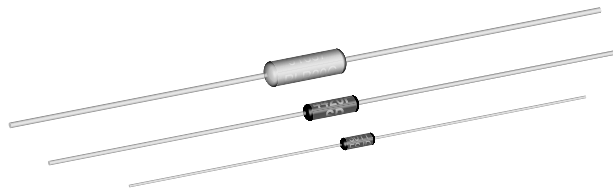




## Metal Film Resistors, Military/Established Reliability, MIL-PRF-39017 Qualified, Type RLR



### 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 $\Omega$ <sup>(1)</sup>	RESISTANCE TOLERANCE %	TEMPERATURE COEFFICIENT ppm/ $^\circ\text{C}$	MAXIMUM WORKING VOLTAGE	LIFE FAILURE RATE <sup>(2)</sup>
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

### Notes

<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 <sup>(3)</sup>	0.125	1M1 - 22M	$\pm 2, \pm 5, \pm 10$	350	200
99011	ERL07..100, ERL07..101 <sup>(3)</sup>	0.25	11M - 22M	$\pm 2, \pm 5, \pm 10$	350	250
98021	ERL20..36, ERL20..37 <sup>(3)</sup>	0.50	3M3 - 22M	$\pm 2, \pm 5, \pm 10$	350	350
98022	ERL32..36, ERL32..37 <sup>(3)</sup>	1.0	3M0 - 22M	$\pm 2, \pm 5, \pm 10$	350	350
97004	ERL62..1, ERL62..2 <sup>(3)</sup>	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)

<sup>(2)</sup> Consult factory for current QPL failure rates

<sup>(3)</sup> Hot solder dipped leads

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	CONDITION
Voltage Coefficient, max.	ppm/ $^\circ\text{C}$	5/V when measured between 10% and full rated voltage
Dielectric Strength	$V_{AC}$	RLR05 = 300; RLR07 and RLR20 = 500; RLR32 = 1000
Insulations Resistance	$\Omega$	$\geq 10^9$ min. dry; $\geq 10^{11}$ min. after moisture test
Operating Temperature Range	$^\circ\text{C}$	-65 to +150
Terminal Strength	lb	2 lb pull test on RLR05; 5 lb 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)

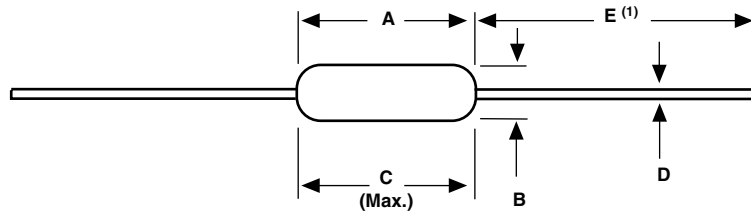
<b>R</b>	<b>L</b>	<b>R</b>	<b>0</b>	<b>7</b>	<b>C</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>F</b>	<b>R</b>	<b>R</b>	<b>3</b>	<b>6</b>			
<b>MIL STYLE</b>	<b>LEAD MATERIAL</b>	<b>RESISTANCE VALUE</b>	<b>TOLERANCE CODE</b>	<b>FAILURE RATE</b>	<b>PACKAGING</b>			<b>SPECIAL</b>									
RLR05 RLR07 RLR20 RLR32	C = Solderable/ Weldable	3 digit significant figure, followed by a multiplier 1R00 = 1.0 $\Omega$ 3302 = 33 k $\Omega$ 1005 = 10 M $\Omega$	F = $\pm 1\%$ G = $\pm 2\%$	M = 1.0%/1000 h P = 0.1%/1000 h R = 0.01%/1000 h S = 0.001%/1000 h	B14 = Tin/Lead, Bulk BSL = Tin/Lead, Bulk, Single Lot Date Code R36 = Tin/Lead, T/R (Full, except 32's) R64 = Tin/Lead, T/R (Full; 32's only) RE6 = Tin/Lead, T/R (1000 pieces) RSL = Tin/Lead, T/R, Single Lot Date Code			Blank = Standard (Dash Number) (up to 3 digits) From 1 - 999 as applicable 1 = Hot Solder Dip (32's) 11 = Hot Solder Dip (20's) 19 = Hot Solder Dip (05's) 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



**DIMENSIONS** in inches [millimeters]



**Note**

(1)  $1.08 \pm 0.125$  [27.43 ± 3.18] if tape and reel

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

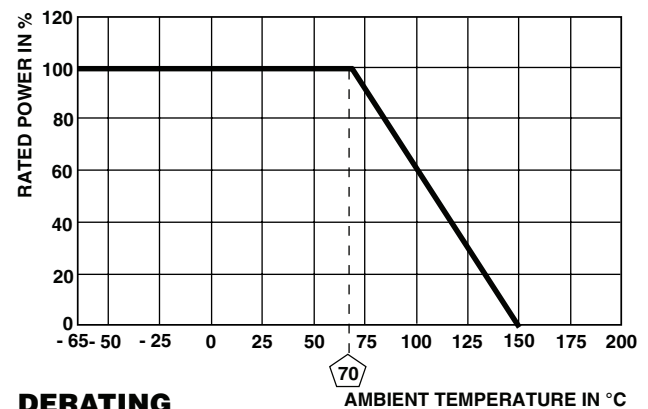
Qualification and failure rate verification test data is maintained by Vishay Dale and is available upon request. Lot traceability and identification data is maintained by Vishay Dale for five years.

**CAGE CODE: 91637**

**POWER RATING**

Power ratings are based on the following two conditions:

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



**DERATING**

MARKING
- Per MIL-PRF-39017



## Disclaimer

All product specifications and data are subject to change without notice.

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