# 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 <sub>70°C</sub> W	RESISTANCE TOLERANCE %	MAXIMUM WEIGHT (Grams)	MAXIMUM WORKING VOLTAGE	RESISTANCE <sup>1)</sup> 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

<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 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		

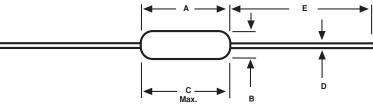




# Metal Film Resistors, Military/Established Reliability

# 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:

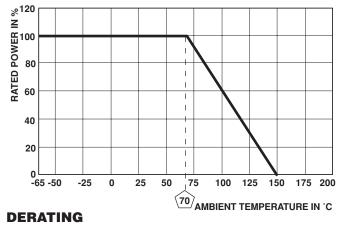
MIL-PRF-39017 supercedes MIL-PRF-22684 on new designs. The ERC series meet or exceed MIL-PRF-22684 requirements.

**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  $\Delta R$  in 2000 hours load life.
- 2. + 150°C maximum operating temperature.



#### MARKING

- Per MIL-PRF-39017