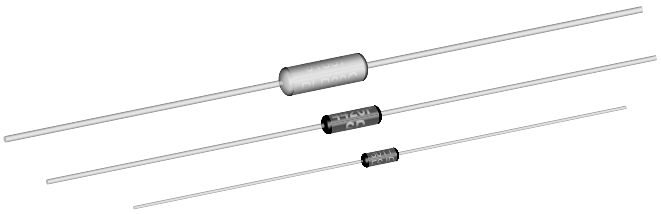
Metal Film Resistors, Military/Established Reliability, MIL-PRF-39017 Qualified, Type RLR



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 ± 1% and ± 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 $P_{70°C}$, W	RESISTANCE RANGE[1] Ω	RESISTANCE TOLERANCE %	TEMPERATURE COEFFICIENT ppm/°C	MAXIMUM WORKING VOLTAGE	MAXIMUM WEIGHT (Grams)
ERL05	RLR05	0.125	4R7 - 1M0	± 1, ± 2	100	200	0.11
ERL07	RLR07	0.25	1R0 - 10M	± 1, ± 2	100	250	0.35
ERL20	RLR20	0.50	4R3 - 3M01	± 1, ± 2	100	350	0.75
ERL32	RLR32	1.0	1R0 - 2M7	± 1, ± 2	100	500	1.50

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

These drawings can be viewed at: www.dscc.dla.mil/Programs/MilSpec/ListDwgs.asp?DocType=DSCCdwg
*Hot solder dipped leads

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 and RLR20 = 500; RLR32 = 1000
Insulation Resistance	Ω	≥ 10^9 minimum dry; ≥ 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

GLOBAL PART NUMBER INFORMATION

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

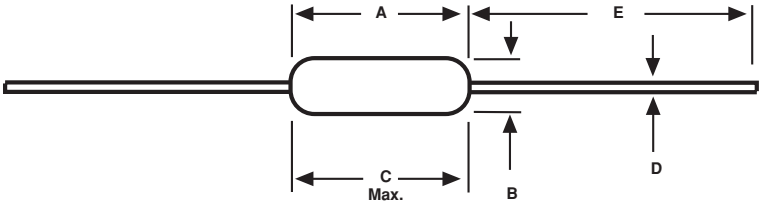
R	L	R	0	7	C	3	0	0	1	F	R	R	3	6			

MIL STYLE	LEAD MATERIAL	RESISTANCE VALUE	TOLERANCE CODE	FAILURE RATE	PACKAGING	SPECIAL
RLR05 **RLR07** **RLR20** **RLR32**	**C** = Solderable/ Weldable	3 digit significant figure, followed by a multiplier **1R00** = 1.0Ω **3302** = 33KΩ **1005** = 10MΩ	**F** = ± 1% **G** = ± 2%	**M** = 1.0%/1000h **P** = 0.1%/1000h **R** = 0.01%/1000h **S** = 0.001%/1000h	**B14** = Tin/Lead, Bulk **R36** = Tin/Lead, T/R (Full; except 32's) **R64** = Tin/Lead, T/R (Full; 32's only) **RE6** = Tin/Lead, T/R (1000 pcs)	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]



* 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]	0.210 ± 0.020 [5.33 ± 0.51]	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

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:

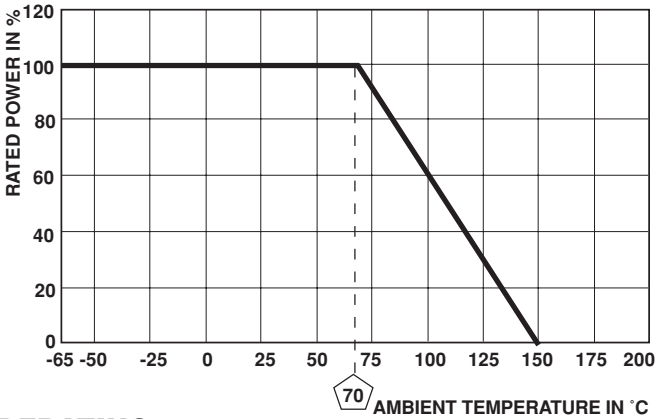
MIL-PRF-39017 supercedes MIL-PRF-22684 on new designs. The ERC series meet or exceed MIL-PRF-22684 requirements.

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



DERATING

MARKING

— Per MIL-PRF-39017