

Metal Film Resistors, Industrial / High Reliability



FEATURES

- Same materials and construction as the MIL-PRF-39017 resistors
- 100 % stabilization and screening tests. Undergoes group A testing to MIL-PRF-39017 (power conditioning, short time overload, DC resistance) prior to shipping.
- Epoxy coated construction provides superior moisture protection
- Traceability of materials and processing
- Very low noise (-40 dB)
- Vishay Dale has complete capability to develop specific reliability programs designed to customer requirements
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS					
GLOBAL MODEL	POWER RATING $P_{70^{\circ}\text{C}}$ W	MAXIMUM WORKING VOLTAGE ⁽¹⁾ V	RESISTANCE RANGE Ω	TOLERANCE \pm %	TEMPERATURE COEFFICIENT \pm ppm/ $^{\circ}\text{C}$
ERL05..500	0.125	200	4.7 to 1M	1, 2	100
			1.1M to 22M	2, 5, 10	200
ERL07..500	0.25	250	1 to 10M	1, 2	100
			11M to 22M	2, 5, 10	200
ERL20..500	0.5	350	4.3 to 3.01M	1, 2	100
			3.3M to 22M	2, 5, 10	200
ERL32..500	1.0	500	1 to 2.7M	1, 2	100
			3M to 22M	2, 5, 10	200
ERL62..500	2.0	500	10 to 2.7M	1, 2, 5, 10	100
			3M to 22M	1, 2, 5, 10	200

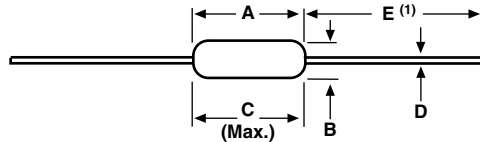
Note
⁽¹⁾ Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less.

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	CONDITION
Voltage Coefficient, max.	ppm/V	5/V when measured between 10 % and full rated voltage
Dielectric Strength	V_{AC}	ERL05-500 = 300; ERL07-500 and ERL20-500 = 500; ERL32-500 = 1000; ERL62-500 = 900
Insulations Resistance	Ω	$\geq 10^9$ 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 ERL05-500; 5 lb pull test on all other sizes
Solderability		Continuous satisfactory coverage when tested in accordance with MIL-STD-202, method 208
Weight	g	ERL05-500 = 0.11; ERL07-500 = 0.35; ERL20-500 = 0.75; ERL32-500 = 1.05; ERL62-500 = 1.30

GLOBAL PART NUMBER INFORMATION																	
New Global Part Numbering: ERL0721K500FKA500 (preferred part numbering format)																	
E	R	L	0	7	2	1	K	5	0	0	F	K	E	A	5	0	0
GLOBAL MODEL	RESISTANCE VALUE		TOLERANCE CODE		TEMPERATURE COEFFICIENT		PACKAGING		SPECIAL								
ERL05 ERL07 ERL20 ERL32 ERL62	R = Ω K = kΩ M = MΩ 1R0000 = 1 Ω 33K000 = 33 kΩ 10M000 = 10 MΩ		F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 %		K = ± 100 ppm N = ± 200 ppm		EK = lead (Pb)-free, bulk EA = lead (Pb)-free, T/R (full) EB = lead (Pb)-free, T/R (1000 pieces)		(dash number) 500 = industrial								

Note

- For additional information on packaging, refer to the Through Hole Resistor Packaging document (www.vishay.com/doc?31544).

DIMENSIONS in inches (millimeters)

Note

- (1) Lead length for product in bulk pack. For product supplied in tape and reel, the actual lead length would be based on the body size, tape spacing and lead trim.

VISHAY DALE MODEL	A	B	C (Max.)	D	E
ERL05-500	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)
ERL07-500	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)
ERL20-500	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)
ERL32-500	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)
ERL62-500	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)

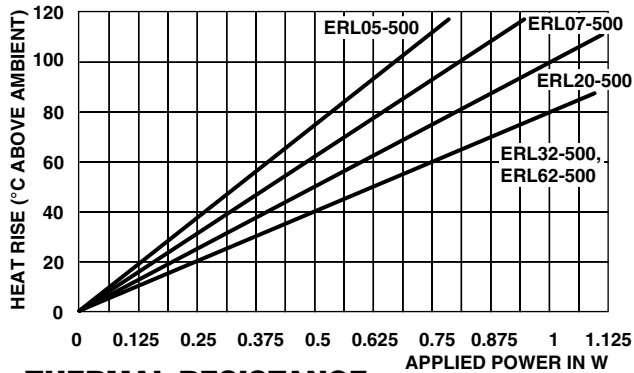
MATERIAL SPECIFICATIONS	
Element	Vacuum-deposited nickel-chrome alloy
Core	Fire-cleaned high purity ceramic
Encapsulation	Specially formulated epoxy compound
Termination	Standard lead material is solder-coated copper. Solderable and weldable per MIL-STD-1276, Type C.

POWER RATING

- Power ratings are based on the following two conditions:
- ± 2.0 % maximum ΔR in 2000 h load life
 - +150 °C maximum operating temperature

APPLICABLE MIL-SPECIFICATIONS
MIL-PRF-39017:

With the exception of the MIL spec's 3 % lead (Pb) requirement, the industrial ERL series would meet the electrical, environmental and dimensional requirements of MIL-PRF-39017.



THERMAL RESISTANCE



DERATING

MARKING

Partial model (for 05 size): L = ERL
 Tolerance (for 05 size): F = 1 %, G = 2 %, J = 5 %, K = 10 %
 Temperature coefficient: T00 = 200 ppm, T1 = 100 ppm

ERL05-500: (4 lines)

L500 Partial model and dash number
 49R9 Value
 FT1 Tolerance and TC
 1540 4-digit date code

ERL07-500: (4 lines)

07-500 Size and dash number
 51.0 Ω Value
 2 % T1 Tolerance and TC
 1534 4-digit date code

ERL20-500, ERL32-500, ERL62-500: (5 lines)

ERL20 Full model and size
 -500 Dash number
 3.01K Value
 1 % T1 Tolerance and TC
 1521 4-digit date code



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