

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 $P_{70\text{ }^{\circ}\text{C}}$ 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 |

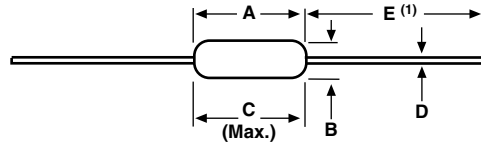
Note
⁽¹⁾ Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less.

| 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 | | | | | | | | | | | | | | | | | |
| 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) |

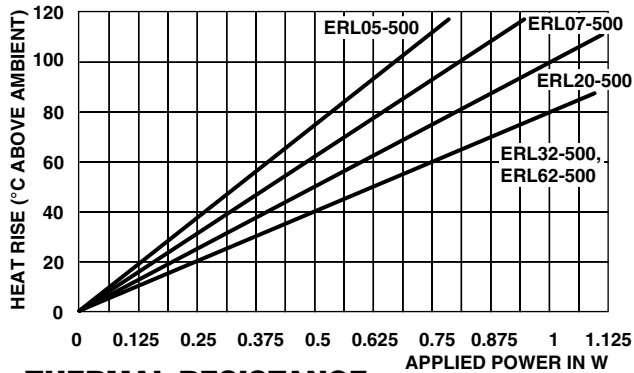
| MATERIAL SPECIFICATIONS | |
|-------------------------|---|
| Element | Vacuum-deposited nickel-chrome alloy |
| Core | Fire-cleaned high purity ceramic |
| Encapsulation | Specially formulated epoxy compound |
| Termination | Standard lead material is solder-coated copper. Solderable and weldable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