ERH, ENH

Vishay Dale

Wirewound Resistors, Military/Established Reliability

MIL-PRF-39009 Qualified, Type RER, R Level

FEATURES

- Aluminum heat sink housing
- · Molded construction for total environmental protection
- Qualified to MIL-PRF-39009
- Complete welded construction
- Available in non-inductive styles (type ENH) with Aryton-Perry winding for lowest reactive components
- Mounts on chassis to utilize heat-sink effect

STANDARD ELECTRICAL SPECIFICATIONS								
MODEL	MIL-PRF-39009	P	POWER RATING P25°C W RESISTANCE RANGE					
	ТҮРЕ	MOUNTED	FREE AIR	±1% Ω	g			
ENH-5	RER40	5	3	1 - 1.65k	3.3			
ENH-10	RER45	10	6	1 - 2.8k	8.8			
ENH-25	RER50	20	8	1 - 6.04k	16.5			
ENH-50	RER55	30	10	1 - 4.99k	35			
ERH-5	RER60	5	3	0.10 - 3.32k	3			
ERH-10	RER65	10	6	0.10 - 5.62k	6			
ERH-25	RER70	20	8	0.10 - 12.1k	13			
ERH-50	RER75	30	10	0.10 - 39.2k	28			

TECHNICAL SPECIFICATIONS							
PARAMETER	UNIT	ERH, ENH RESISTOR CHARACTERISTICS					
Temperature Coefficient	ppm/°C	\pm 100 for 0.1 Ω to 0.99 Ω, \pm 50 for 1 Ω to 19.9 Ω, \pm 20 for 20 Ω and above					
Dielectric Withstanding Voltage	V _{AC}	1000 for ERH-5 ERH-10 and ERH-25, 2000 for ERH-50					
Short Time Overload	-	5 x rated power for 5 seconds					
Maximum Working Voltage	V	(P x R) ^{1/2}					
Insulation Resistance	Ω	10,000 Megohm minimum dry, 1000 Megohm minimum after moisture test					
Terminal Strength	lb	5 pull for ERH-5 and ERH-10, 10 pull for ERH-25 and ERH-50					
Solderability	-	Meets requirements of ANSI J-STD-002					
Operating Temperature Range	°C	- 55/+ 250					

ORDERING INFORMATION								
RER50 MILITARY TYPE	F TOLERANCE	49R9 RESISTANCE	R FAILURE RATE					

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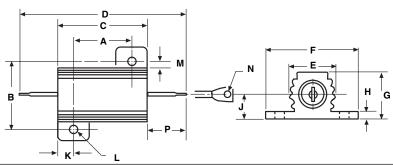


DIMENSIONS

Wirewound Resistors, Military/Established, Reliability

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MODEL		DIMENSIONS in inches [millimeters]												
	Α	В	С	D	Е	F	G	н	J	К	L	М	N	Р
ERH-5 ENH-5	0.444 ± 0.005 [11.280 ± 0.127]	0.490 ± 0.005 [12.450 ± 0.127]	0.600 ± 0.031 [15.240 ± 0.787]	1.125 ± 0.062 [28.580 ± 1.570]	0.334 ± 0.015 [8.480 ± 0.381]	0.646 ± 0.015 [16.410 ± 0.381]	0.320 ± 0.015 [8.130 ± 0.381]	0.065 ± 0.010 [1.650 ± 0.254]	0.133 ± 0.010 [3.380 ± 0.254]	0.078 ± 0.010 [1.980 ± 0.254]	0.093 ± 0.005 [2.360 ± 0.127]	0.078 ± 0.015 [1.980 ± 0.381]	0.050 ± 0.005 [1.270 ± 0.127]	0.266 ± 0.062 [6.760 ± 1.570]
ERH-10 ENH-10		0.625 ± 0.005 [15.880 ± 0.127]	0.750 ± 0.031 [19.050 ± 0.787]	1.375 ± 0.062 [34.930 ± 1.570]	0.420 ± 0.015 [10.670 ± 0.381]	0.800 ± 0.015 [20.320 ± 0.381]	0.390 ± 0.015 [9.910 ± 0.381]	0.075 ± 0.010 [1.900 ± 0.254]	0.165 ± 0.010 [4.190 ± 0.254]	0.093 ± 0.010 [2.360 ± 0.254]	0.094 ± 0.005 [2.390 ± 0.127]	0.102 ± 0.015 [2.590 ± 0.381]	0.085 ± 0.005 [2.160 ± 0.127]	0.312 ± 0.062 [7.920 ± 1.570]
ERH-25 ENH-25	0.719 ± 0.005 [18.260 ± 0.127]	0.781 ± 0.005 [19.840 ± 0.127]	1.062 ± 0.031 [26.970 ± 0.787]	1.938 ± 0.062 [49.230 ± 1.570]	0.550 ± 0.015 [13.970 ± 0.381]	1.080 ± 0.015 [27.430 ± 0.381]	0.546 ± 0.015 [13.870 ± 0.381]	0.075 ± 0.010 [1.900 ± 0.254]	0.231 ± 0.010 [5.870 ± 0.254]	0.172 ± 0.010 [4.370 ± 0.254]	0.125 ± 0.005 [3.180 ± 0.127]	0.115 ± 0.015 [2.920 ± 0.381]	0.085 ± 0.005 [2.160 ± 0.127]	0.438 ± 0.062 [11.130 ± 1.570]
ERH-50 ENH-50	1.562 ± 0.005 [39.670 ± 0.127]	0.844 ± 0.005 [21.440 ± 0.127]	1.968 ± 0.031 [49.990 ± 0.787]	2.781 ± 0.062 [70.640 ± 1.570]	$\begin{array}{c} 0.630 \\ \pm \ 0.015 \\ [16.000 \\ \pm \ 0.381] \end{array}$	1.140 ± 0.015 [28.960 ± 0.381]	$\begin{array}{c} 0.610 \\ \pm \ 0.015 \\ [15.490 \\ \pm \ 0.381] \end{array}$	$\begin{array}{c} 0.088 \\ \pm \ 0.010 \\ [2.240 \\ \pm \ 0.254] \end{array}$	$\begin{array}{c} 0.260 \\ \pm \ 0.010 \\ [6.600 \\ \pm \ 0.254] \end{array}$	$\begin{array}{c} 0.196 \\ \pm \ 0.010 \\ [4.980 \\ \pm \ 0.254] \end{array}$	$\begin{array}{c} 0.125 \\ \pm \ 0.005 \\ [3.180 \\ \pm \ 0.127] \end{array}$	$\begin{array}{c} 0.107 \\ \pm \ 0.015 \\ [2.720 \\ \pm \ 0.381] \end{array}$	$\begin{array}{c} 0.085 \\ \pm \ 0.005 \\ [2.160 \\ \pm \ 0.127] \end{array}$	0.438 ± 0.062 [11.130 ± 1.570]

MATERIAL SPECIFICATIONS

Element: Copper-nickel alloy or nickel-chrome alloy, depending on resistance value

Core: Ceramic, steatite or alumina, depending on physical size

Encapsulant: Silicone molded construction

Housing: Aluminum with hard anodic coating

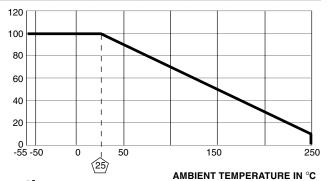
End Caps: Stainless steel

Standard Terminals: Tinned Copperweld®

Part Marking: Source Code, JAN, Military PIN, Date/Lot Code

APPLICABLE MIL SPECIFICATION

MIL-PRF-39009: This is the military specification covering housed chassis mount established reliability power wirewound resistors. Vishay ERH and ENH resistors are listed as qualified on the MIL-PRF-39009 QPL.



Derating POWER RATING

Vishay ERH and ENH resistor wattage ratings are based on mounting to the proper heat sink.

ERH-5 and ERH-10: 4" x 6" x 2" x 0.040" thick aluminum chassis ERH-25 and ERH-50: 5" x7" x 2" x 0.040" thick aluminum chassis

PERFORMANCE

TEST	CONDITIONS OF TEST	TEST LIMITS
Low Temperature Operation	Apply rated power until thermal stability, remove power subject to air temperature of - 55° C for 15 to 30 minutes	± (0.5% + 0.01Ω) ΔR
Short Time Overload	5 x rated power for 5 seconds	\pm (0.3% + 0.01 Ω) Δ R
Dielectric Withstanding Voltage	1000Vrms (RER 40, 45, 50, 60, 65, 70), 2000Vrms (RER55 and 75), one minute duration	± (0.2% + 0.01Ω) ΔR
Low Temperature Storage	- 55°C for 24 hours	± (0.3% + 0.01Ω) ΔR
High Temperature Exposure	250°C for 2000 hours	± (1.0% + 0.01Ω) ΔR
Moisture Resistance	MIL-STD-202 Method 106	± (0.5% + 0.01Ω) ΔR
Shock, Specified Pulse	MIL-STD-202 Method 213, Condition 1	± (0.2% + 0.01Ω) ΔR
Vibration, High Frequency	MIL-STD-202, Method 204, Condition D	± (0.2% + 0.01Ω) ΔR
Load Life	2000 hours at rated power, + 25°C, 1.5 hours "ON", 0.5 hours "OFF"	± (1.0% + 0.01Ω) ΔR
Extended Life	10,000 hours at rated power, + 25°C, 1.5 hours "ON", 0.5 hours "OFF"	± (2.0% + 0.01Ω) ΔR
Terminal Strength	MIL-STD-202, Method 211, Condition A 5 pound (RER40, 45, 60, 65), 10 pound (RER50, 55, 70, 75)	± (0.2% + 0.01Ω) ΔR

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