

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
- Non-inductive styles manufactured with Ayrton-Perry winding for lowest reactive components
- Mounts on chassis to utilize heat-sink effect

STANDARD ELECTRICAL SPECIFICATIONS

MILITARY MODEL	VISHAY REFERENCE MODEL	POWER RATING $P_{25^{\circ}\text{C}}$ W	RESISTANCE RANGE Ω	TOLERANCE $\pm \%$	WEIGHT (typical) g
RER40	ENH05	5	1 to 1.65K	1	3.3
RER45	ENH10	10	1 to 2.8K	1	8.8
RER50	ENH25	20	1 to 6.04K	1	16.5
RER55	ENH50	30	1 to 4.99K	1	35
RER60	ERH05	5	0.10 to 3.32K	1	3
RER65	ERH10	10	0.10 to 5.62K	1	6
RER70	ERH25	20	0.10 to 12.1K	1	13
RER75	ERH50	30	0.10 to 39.2K	1	28

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	RER40/RER60	RER45/RER65	RER50/RER70	RER55/RER75
Free Air Power Rating at 25 °C	W	3	6	8	10
Temperature Coefficient	ppm/°C	± 20 for 20 Ω and above; ± 50 for 1 Ω to 19.9 Ω ; ± 100 for 0.1 Ω to 0.99 Ω			
Maximum Working Voltage	V	$(P \times R)^{1/2}$			
Insulation Resistance	Ω	10 000 M Ω minimum dry, 1000 M Ω minimum after moisture test			
Solderability	-	Meets requirements of ANSI J-STD-002			
Operating Temperature Range	°C	-55 to +250			

MILITARY PART NUMBER INFORMATION

Military Part Numbering example: RER65F1001RC02

R E R 6 5 F 1 0 0 1 R C 0 2

MIL TYPE

RER40
RER45
RER50
RER55
RER60
RER65
RER70
RER75

TOLERANCE CODE

F = $\pm 1.0 \%$

RESISTANCE VALUE

3 digit significant figure, followed by a multiplier

49R9 = 49.9 Ω
1000 = 100 Ω
1001 = 1000 Ω

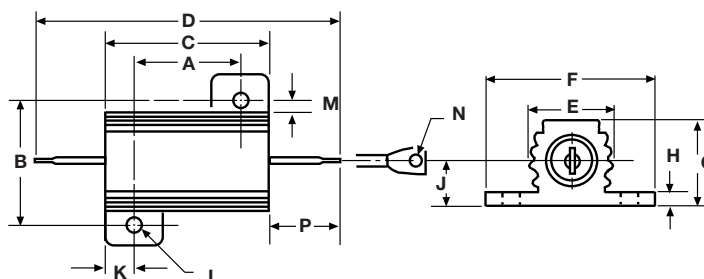
FAILURE RATE

M = 1.0 %/1000 h
P = 0.1 %/1000 h
R = 0.01 %/1000 h

PACKAGING CODE

C02 = tin/lead, card pack
CSL = tin/lead, card pack, single lot date code

DIMENSIONS



MILITARY MODEL	DIMENSIONS in inches [millimeters]													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
RER40 RER60	0.444	0.490	0.600	1.125	0.334	0.646	0.320	0.065	0.133	0.078	0.093	0.078	0.050	0.266
	± 0.005	± 0.005	± 0.031	± 0.062	± 0.015	± 0.015	± 0.015	± 0.010	± 0.010	± 0.010	± 0.005	± 0.015	± 0.005	± 0.062
	[11.280 ± 0.127]	[12.450 ± 0.127]	[15.240 ± 0.787]	[28.580 ± 1.570]	[8.480 ± 0.381]	[16.410 ± 0.381]	[8.130 ± 0.381]	[1.650 ± 0.254]	[3.380 ± 0.254]	[1.980 ± 0.254]	[2.360 ± 0.127]	[1.980 ± 0.381]	[1.270 ± 0.127]	[6.760 ± 1.570]
RER45 RER65	0.562	0.625	0.750	1.375	0.420	0.800	0.390	0.075	0.165	0.093	0.094	0.102	0.085	0.312
	± 0.005	± 0.005	± 0.031	± 0.062	± 0.015	± 0.015	± 0.015	± 0.010	± 0.010	± 0.010	± 0.005	± 0.015	± 0.005	± 0.062
	[14.270 ± 0.127]	[15.880 ± 0.127]	[19.050 ± 0.787]	[34.930 ± 1.570]	[10.670 ± 0.381]	[20.320 ± 0.381]	[9.910 ± 0.381]	[1.900 ± 0.254]	[4.190 ± 0.254]	[2.360 ± 0.254]	[2.390 ± 0.127]	[2.590 ± 0.381]	[2.160 ± 0.127]	[7.920 ± 1.570]
RER50 RER70	0.719	0.781	1.062	1.938	0.550	1.080	0.546	0.075	0.231	0.172	0.125	0.115	0.085	0.438
	± 0.005	± 0.005	± 0.031	± 0.062	± 0.015	± 0.015	± 0.015	± 0.010	± 0.010	± 0.010	± 0.005	± 0.015	± 0.005	± 0.062
	[18.260 ± 0.127]	[19.840 ± 0.127]	[26.970 ± 0.787]	[49.230 ± 1.570]	[13.970 ± 0.381]	[27.430 ± 0.381]	[13.870 ± 0.381]	[1.900 ± 0.254]	[5.870 ± 0.254]	[4.370 ± 0.254]	[3.180 ± 0.127]	[2.920 ± 0.381]	[2.160 ± 0.127]	[11.130 ± 1.570]
RER55 RER75	1.562	0.844	1.968	2.781	0.630	1.140	0.610	0.088	0.260	0.196	0.125	0.107	0.085	0.438
	± 0.005	± 0.005	± 0.031	± 0.062	± 0.015	± 0.015	± 0.015	± 0.010	± 0.010	± 0.010	± 0.005	± 0.015	± 0.005	± 0.062
	[39.670 ± 0.127]	[21.440 ± 0.127]	[49.990 ± 0.787]	[70.640 ± 1.570]	[16.000 ± 0.381]	[28.960 ± 0.381]	[15.490 ± 0.381]	[2.240 ± 0.254]	[6.600 ± 0.254]	[4.980 ± 0.254]	[3.180 ± 0.127]	[2.720 ± 0.381]	[2.160 ± 0.127]	[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

POWER RATING

Vishay RER resistor wattage ratings are based on mounting to the proper heat sink.

RER40, RER45, RER60, RER65: 4" x 6" x 2" x 0.040" thick aluminum chassis

RER50, RER55, RER70, RER75: 5" x 7" x 2" x 0.040" thick aluminum chassis

DERATING



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 min to 30 min	± (0.5 % + 0.01 Ω) ΔR
Short Time Overload	5 x rated power for 5 s	± (0.3 % + 0.01 Ω) ΔR
Dielectric Withstanding Voltage	1000 V _{RMS} (RER40, RER45, RER50, RER60, RER65, RER70), 2000 V _{RMS} (RER55 and RER75), 1 min duration	± (0.2 % + 0.01 Ω) ΔR
Low Temperature Storage	-55 °C for 24 h	± (0.3 % + 0.01 Ω) ΔR
High Temperature Exposure	250 °C for 2000 h	± (1.0 % + 0.01 Ω) ΔR
Moisture Resistance	MIL-STD-202, method 106	± (0.5 % + 0.01 Ω) ΔR
Shock, Specified Pulse	MIL-STD-202, method 213, condition I	± (0.2 % + 0.01 Ω) ΔR
Vibration, High Frequency	MIL-STD-202, method 204, condition D	± (0.2 % + 0.01 Ω) ΔR
Load Life	2000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF"	± (1.0 % + 0.01 Ω) ΔR
Extended Life	10 000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF"	± (2.0 % + 0.01 Ω) ΔR
Terminal Strength	MIL-STD-202, method 211, condition A 5 pound (RER40, RER45, RER60, RER65), 10 pound (RER50, RER55, RER70, RER75)	± (0.2 % + 0.01 Ω) ΔR



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