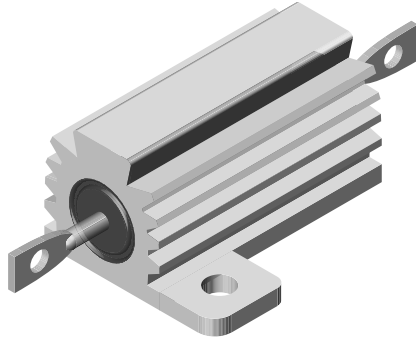


Wirewound Resistors, Military/Established Reliability

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 Ayrton-Perry winding for lowest reactive components
- Mounts on chassis to utilize heat-sink effect

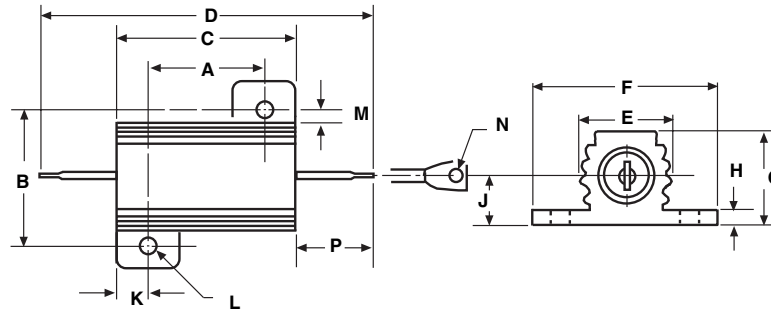
STANDARD ELECTRICAL SPECIFICATIONS					
MODEL	MIL-PRF-39009 TYPE	POWER RATING $P_{25^{\circ}\text{C}}$ W		MILITARY RESISTANCE RANGE $\pm 1\%$ Ω	WEIGHT (Typical) g
		MOUNTED	FREE AIR		
ENH-5	RER40	5	3	1 - 1.65k	3.3
ENH-10	RER45	10	6	1 - 2.8k	8.8
ENH-25	RER50	20	8	1 - 6.04k	16.5
ENH-50	RER55	30	10	1 - 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/ $^{\circ}\text{C}$	± 100 for 0.1 Ω to 0.99 Ω , ± 50 for 1 Ω to 19.9 Ω , ± 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	$(P \times R)^{1/2}$
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	$^{\circ}\text{C}$	- 55/+ 250

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



DIMENSIONS



MODEL	DIMENSIONS in inches [millimeters]													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
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	0.562 ± 0.005 [14.270 ± 0.127]	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]	0.630 ± 0.015 [16.000 ± 0.381]	1.140 ± 0.015 [28.960 ± 0.381]	0.610 ± 0.015 [15.490 ± 0.381]	0.088 ± 0.010 [2.240 ± 0.254]	0.260 ± 0.010 [6.600 ± 0.254]	0.196 ± 0.010 [4.980 ± 0.254]	0.125 ± 0.005 [3.180 ± 0.127]	0.107 ± 0.015 [2.720 ± 0.381]	0.085 ± 0.005 [2.160 ± 0.127]	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

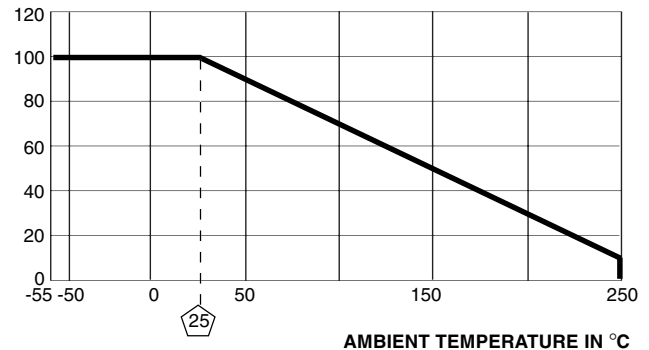
End Caps: Stainless steel

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

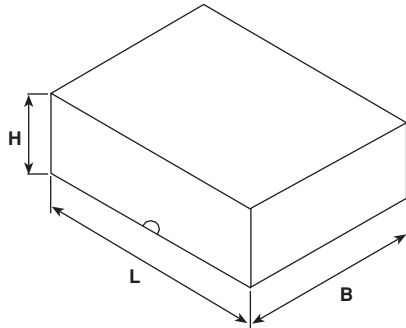
Vishay ERH and ENH resistor wattage ratings are based on mounting to the proper heat sink.

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

ERH-25 and ERH-50: 5" x 7" 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	± (0.3% + 0.01Ω) ΔR
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

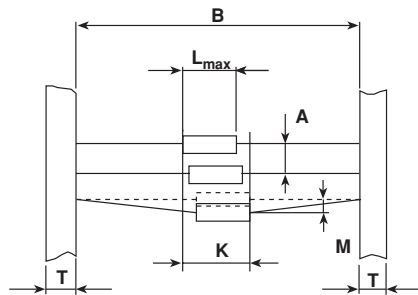
BULK PACK



MODEL	DIMENSIONS in millimeters [inches]			UNITS PER PACK
	L	B	H	
G 206	225 [8.858]	140 [5.512]	70 [2.756]	100
G 207	225 [8.858]	140 [5.512]	70 [2.756]	100
Z 307	225 [8.858]	140 [5.512]	70 [2.756]	200
KKA 4	262 [10.315]	100 [3.937]	35 [1.378]	200
KKA 5	260 [10.236]	115 [4.528]	35 [1.378]	200
KKA 7	235 [9.252]	130 [5.118]	44 [1.732]	200

MODEL	DIMENSIONS in millimeters [inches]			UNITS PER PACK
	L	B	H	
KKA 9	235 [9.252]	130 [5.118]	44 [1.732]	100
KKA 11	235 [9.252]	130 [5.118]	44 [1.732]	100
KKE 4	181 [7.126]	126 [4.961]	33 [1.299]	200
KKE 7	235 [9.252]	130 [5.118]	44 [1.732]	200
KKE 9	235 [9.252]	130 [5.118]	44 [1.732]	200
KKE 11	238 [9.370]	166 [6.535]	43 [1.693]	200
KKE 17	255 [10.039]	105 [4.134]	40 [1.575]	100
KKE 7 Si	235 [9.252]	129 [5.079]	60 [2.362]	200
KKE 9 Si	235 [9.252]	129 [5.079]	60 [2.362]	200

TAPE DIMENSIONS

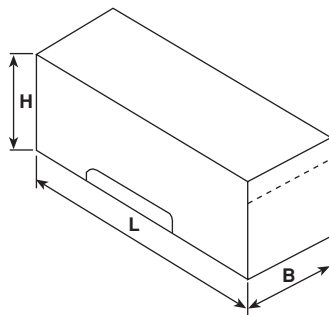


L_{max} see data sheets

Taping corresponds to IEC 60286

TAPE	DIMENSIONS in millimeters [inches]				
	B	A	K	M	T
G 53	53 ± 1 [2.087 ± 0.039]	10 ± 0.5 [0.197 ± 0.020]	$L_{max} + 1.4$ $L_{max} + [0.055]$	1.2 [0.047]	6 ± 0.5 [0.236 ± 0.020]
G 63	63 ± 1 [2.479 ± 0.039]	10 ± 0.5 [0.197 ± 0.020]	$L_{max} + 1.4$ $L_{max} + [0.055]$	1.2 [0.047]	6 ± 0.5 [0.236 ± 0.020]
G 73	73 ± 1 [2.874 ± 0.039]	10 ± 0.5 [0.197 ± 0.020]	$L_{max} + 1.4$ $L_{max} + [0.055]$	1.2 [0.047]	6 ± 0.5 [0.236 ± 0.020]
G 80	80 ± 1 [3.150 ± 0.039]	10 ± 0.5 [0.394 ± 0.020]	$L_{max} + 1.4$ $L_{max} + [0.055]$	1.2 [0.047]	6 ± 0.5 [0.236 ± 0.020]
G 83	83 ± 1 [3.268 ± 0.039]	10 ± 0.5 [0.394 ± 0.020]	$L_{max} + 1.4$ $L_{max} + [0.055]$	1.2 [0.047]	6 ± 0.5 [0.236 ± 0.020]
G 88	88 ± 1 [3.465 ± 0.039]	10 ± 0.5 [0.394 ± 0.020]	$L_{max} + 1.4$ $L_{max} + [0.055]$	1.2 [0.047]	6 ± 0.5 [0.236 ± 0.020]

AMMOPACK

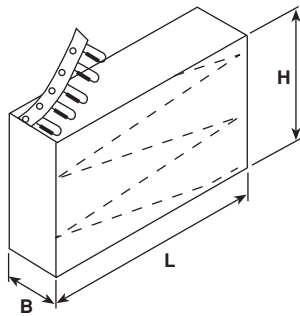


MODEL	TAPE	DIMENSIONS mm ¹⁾			UNITS PER PACK
		L	B	H	
G 202	G 53	324 [12.756]	82 [3.228]	49 [1.929]	500
	G 73	324 [12.756]	101 [3.976]	49 [1.929]	500
G 204	G 88	324 [12.756]	111 [4.37]	75 [2.953]	250
Z 301	G 53	324 [12.756]	79 [3.228]	75 [1.929]	1000
ZDA 0411	G 73	324 [12.756]	101 [3.976]	64 [2.520]	1000
Z 302	G 53	324 [12.756]	82 [3.228]	49 [1.929]	500
	G 83	324 [12.756]	111 [4.37]	75 [2.953]	500

MODEL	TAPE	DIMENSIONS mm ¹⁾			UNITS PER PACK
		L	B	H	
Z 303	G 83	324 [12.756]	111 [4.37]	90 [3.543]	500
Z 305	G 83	324 [12.756]	111 [4.37]	75 [2.953]	250
Z 306	G 83	324 [12.756]	111 [4.37]	75 [2.953]	250
CW-2B-13	G 80	324 [12.756]	111 [4.37]	75 [2.953]	500

1) In millimeters [inches]

AMMOPACK (CONT'D...)

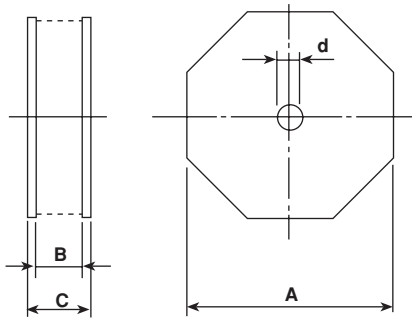


MODEL	DIMENSIONS mm ¹⁾			UNITS PER PACK
	L	B	H	
ZDV 0411	324 [12.756]	53 [2.087]	147 [5.787]	2000

Ordering term of model ZDA0411 changes to ZDV 0411 when radial taped.

1) In millimeters [inches]

REEL PACK



MODEL	TAPE	REEL DIMENSIONS in millimeters [inches]				PACKAGING UNIT (pcs)
		d	A	B	C	
G 202	R 53*	20 [0.787]	250 [9.843]	75 [2.953]	87 [3.425]	1000
	R 73*	20 [0.787]	250 [9.843]	95 [3.74]	107 [4.213]	1000
G 204	R 88	20 [0.787]	250 [9.843]	105 [3.74]	117 [4.213]	500
Z 301	R 53	20 [0.787]	250 [9.843]	75 [2.953]	87 [3.425]	2000
ZDA 0411	R 73	20 [0.787]	250 [9.843]	95 [3.74]	107 [4.213]	2000
Z 302	R 53*	20 [0.787]	250 [9.843]	75 [2.953]	87 [3.425]	2000
	R 83	20 [0.787]	250 [9.843]	105 [3.74]	117 [4.213]	1000
Z 303	R 53*	20 [0.787]	250 [9.843]	105 [2.953]	117 [3.425]	1000
	R 83	20 [0.787]	250 [9.843]	105 [2.953]	117 [3.425]	1000
Z 305	R 83	20 [0.787]	250 [9.843]	105 [2.953]	117 [3.425]	500
Z 306	R 83	20 [0.787]	250 [9.843]	105 [2.953]	117 [3.425]	500
KKA 4	R 80	26.5 [1.043]	330 [12.992]	95 [3.740]	101 [3.976]	1000
KKA 5	R 80	26.5 [1.043]	330 [12.992]	95 [3.740]	101 [3.976]	1000
CW-2B-13	R 53	14 [0.551]	280 [11.024]	73 [2.874]	87 [3.425]	1000
		14 [0.551]	190 [7.480]	73 [2.874]	81 [3.189]	500
	R 63	14 [0.551]	190 [7.480]	85 [3.346]	93 [3.661]	500
	R 80	14 [0.551]	280 [11.024]	101 [3.976]	115 [4.528]	1000
		14 [0.551]	190 [7.480]	101 [3.976]	108 [4.252]	500

*Dimension A in tape dimensions is 10 ± 0.5mm [0.394 ± 0.020]



VISHAY DRALORIC PACKAGING CODE

NOTE: This packaging code is valid only for VISHAY DRALORIC resistors.

1st digit (Package Style)	A	Ammo Pack
	R	Reel
	L	Loose pack
	B	Embossed tape (blister)
	P	Paper tape
	M	Bulk case (Murata)
	X	Sample

EXAMPLE:

A2 Ammopack 2000 pcs
P0 Papertape 10,000 pcs

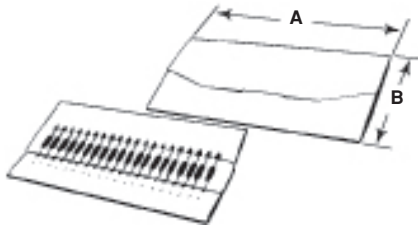
2nd digit (Quantity)	A	100
	B	250
	C	500
	D	50
	E	2500
	F	25
	G	40
	H	60
	I	
	J	200
	K	300
	L	400
	M	1250
	N	20,000
	O	
	P	1500
	Q	
	R	5000 (R26)
	S	7500
	T	30,000
	U	25,000
	V	
	W	
	X	Without quantity
	Y	
	Z	50,000
	1	1000
	2	2000
	3	3000
	4	4000
5	5000	
6		
7		
8		
9		
0	10,000	

Wirewound Leaded Resistor Packaging

Vishay



LACER PACK



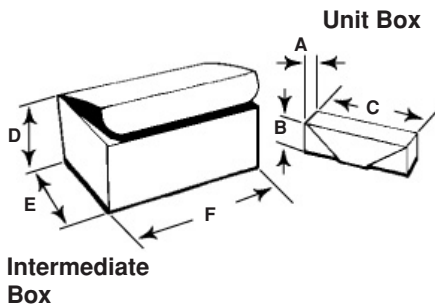
WIREWOUND LACER PACKAGING Dimensions in mm [inches]			
MODEL	A	B	
RS-1/4, RS-1/2, G-1, G-2, CW-1/2, EGS-1, EGS-2, RS-1A, RS-1B, G-3, CW-1, CW-1M, EGS-3, NS-1A, LVR-1	215.90 [8.500]	95.25 [3.750]	Resistor body is placed in slot, held in place with tongue insert. Terminals protected within folder. 20 units per folder.
RS-2B, RS-2M, CW-2B CW-2M, G-5, ESS-2B, LVR-3, RS-2, RS-2C, CW-2C, G-5C	215.9 [8.500]	101.6 [4.000]	
RS-5, RS-7, CW-5, ESS-5, CW-7, G-10, EGS-10, LVR-5	279.40 [11.000]	127.00 [5.000]	
RS-10, CW-10, ESS-10, LVR-10	376.24 [14.813]	153.99 [6.063]	

CARD PACK



WIREWOUND CARD PACKAGING			
MODEL	QTY./PACK	TEAR OFF QTY.	
RH-5, NH-5, ERH-5, ENH-5	40	10	Resistor placed in slot and held in place with foldover protective paper. Each pack perforated to tear off into four smaller sub packs
RH-10, NH-10, ERH-10, ENH-10	40	10	
RH-25, NH-25, ERH-25, ENH-25	20	5	
RH-50, NH-50, ERH-50, ENH-50	20	5	

BULK PACK



WIREWOUND BULK PACKAGING Dimensions in mm [inches]							
MODEL	A	B	C	D	E	F	
RS-1/8, RS-1/4, RS-1/2, RS-1M, CW-1/2, G-1, G-2, EGW-1, EGS-2, EGW-2	25.40 [1.000]	25.40 [1.000]	92.10 [3.625]	57.10 [2.250]	95.20 [3.750]	136.50 [5.375]	
RS-1A, RS-1B, CW-1, EGW-3	38.10 [1.500]	38.10 [1.500]	92.10 [3.625]	127.00 [5.000]	98.40 [3.875]	196.80 [7.750]	
RS-2, RS-2A, CW-2, G-5A, ESS-2A	76.20 [3.000]	57.10 [2.250]	104.70 [4.125]	152.40 [6.000]	184.20 [7.250]	304.80 [12.000]	
RS-2B, RS-2M, CW-2B, G-5, ESS-2B, LVR-3	50.80 [2.000]	50.80 [2.000]	98.40 [3.875]	152.40 [6.000]	184.20 [7.250]	304.80 [12.000]	
RS-2C, CW-2C, G-5C	66.80 [2.625]	63.50 [2.500]	101.60 [4.000]	152.40 [6.000]	184.20 [7.250]	304.80 [12.000]	
RS-5, CW-5, G-10, ESS-5, EGW-10, LVR-5	76.20 [3.000]	88.90 [3.500]	107.90 [4.125]	152.40 [6.000]	184.20 [7.250]	304.80 [12.000]	
RS-7, CW-7	98.40 [3.875]	63.50 [2.500]	117.40 [4.625]	190.50 [7.500]	190.50 [7.500]	393.70 [15.500]	
RS-10, CW-10, ESS-10	101.60 [4.000]	101.60 [4.000]	133.30 [5.250]	247.60 [9.750]	304.80 [12.000]	368.30 [14.500]	

Axial units are uniformly packaged 100 per box with 10 units per immediate container. Standard packaging for quantities of 300 and fewer.

AMMOPACK

Resistors are lead taped, the same as in Reel Pack (see page), then they are placed in a continuous "S" pattern (without paper inner leaf) in an appropriate box.

SKIN PACK

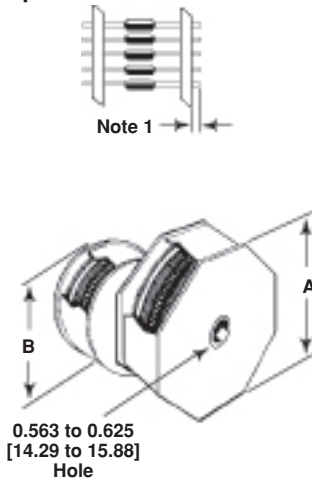
A versatile packaging method. Units are placed on double-faced corrugated board, then skin packed to board with polyfilm. Most resistor types are in multiples of five with insert strips.

MILITARY AND SPECIAL PACKAGING

Military packaging per MIL-P-116, Method 1A8. Blister pack, foam pack and vial pack also available for special requirements.

REEL PACK

Vishay Dale Standard Packaging Technique



WIREWOUND REEL PACKAGING dimensions in mm [inches]				
MODEL	MAXIMUM UNITS PER REEL		PITCH (Note 1)	TAPE SPACING (Note 2)
	SMALL FLANGE "B" 7.500 [190.50]	LARGE FLANGE "A" 11.094 [281.78]		
RS-1/4, RS-1/2, G-1, G-2, CW-1/2, EGS-1, EGS-2	2000	5000	5.08 [0.200]	52.37 [2.063]
RS-1A, RS-1B, G-3, CW-1, CW-1M, EGS-3	1500	4500	5.08 [0.200]	52.37 [2.063]
NS-1A, LVR-1	1000	4000	5.08 [0.200]	52.37 [2.063]
CA-1, CA-2, (Note 3)	1350	2500	5.08 [0.200]	73.02 [2.875]
RS-2B, RS-2M, CW-2B, CW-2M, G-5, ESS-2B	400	1200	10.16 [0.400]	63.50 [2.500]
LVR-3	400	1000	10.16 [0.400]	63.50 [2.500]
RS-2, RS-2C, CW-2C, G-5C	400	1000	10.16 [0.400]	63.50 [2.500]
RS-5, RS-7, CW-5, ESS-5, CW-7, G-10, EGS-10	—	700	10.16 [0.400]	73.02 [2.875]
LVR-5	—	600	10.16 [0.400]	73.02 [2.875]
RS-10, CW-10, ESS-10	—	600	10.16 [0.400]	85.72 [3.375]

- NOTES:**
- 1) Leads will be trimmed to a maximum of 0.063"mm [1.59mm] beyond tape edge.
 - 2) For non standard type and reel requirements, contact our engineering department, see email address at the bottom of this page.
 - 3) CA-1 and CA-2 will be taped at 0.200 pitch, 2.875" mm [73.02mm] tape space without lead trim. CA 4000 and CA-5000 series will be taped at 0.200 pitch, tape space varies by body length.

MILITARY PART ORDERING EXAMPLES

To help in ordering, the following are examples of military part numbers cross-referenced to Vishay Dale part numbers. For complete information on military part numbering, consult the specific military specification.

WIREWOUND RESISTORS:

MIL-PRF-26 (Basic [RW]) (Established Reliability alternate MIL-PRF-39007 [RWR])

RW Type

Vishay Dale Type

RW80 **U** **49R9** **F** ⇒ **G-3** **49.9Ω** **1%**

1 2 3 4 ⇒ 1 3 4

RW67 **V** **101** ⇒ **RS-5-70** **100Ω** **5%**

1 2 3 ⇒ 1 3 4

1. Style
2. Characteristic
3. Resistance Value*
4. Tolerance

MIL-PRF-18546 (Basic [RE]) (Established Reliability alternate MIL-PRF-39009 [RER])

RE Type

Vishay Dale Type

RE65 **G** **1001** ⇒ **RH-10** **1kΩ** **1%**

1 2 3 ⇒ 1 3 4

1. Style
2. Characteristic
3. Resistance Value*
4. Tolerance

MIL-PRF-39007 (Established Reliability [RWR]) (Basic is MIL-PRF-26 [RW])

RWR Type

Vishay Dale Type

RWR74 **S** **10R1** **F** **R** ⇒ **ESS-5** **10.1Ω** **1%** **R**

1 2 3 4 5 ⇒ 1 3 4 5

1. Style
2. Characteristic
3. Resistance Value*
4. Tolerance
5. Failure Rate Level

MIL-PRF-39009 (Established Reliability [RER]) (Basic is MIL-PRF-18549 [RE])

RER Type

Vishay Dale Type

RER65 **F** **1001** **R** ⇒ **ERH-10** **1kΩ** **1%** **R**

1 3 2 4 ⇒ 1 2 3 4

1. Style
2. Resistance Value
3. Tolerance
4. Failure Rate Level

MIL-PRF-49465 (Basic [RLV]) (Established Reliability-None)

RLV Type

Vishay Dale Type

M49465 **06** **I** **R0100** **F** ⇒ **LVR-3-26** **0.01Ω** **1%**

1 2 3 4 5 ⇒ 1 4 5

1. Style
2. Specification Sheet Number
3. Characteristic
4. Resistance Value*
5. Tolerance

*See the following page for Military decade resistance table.

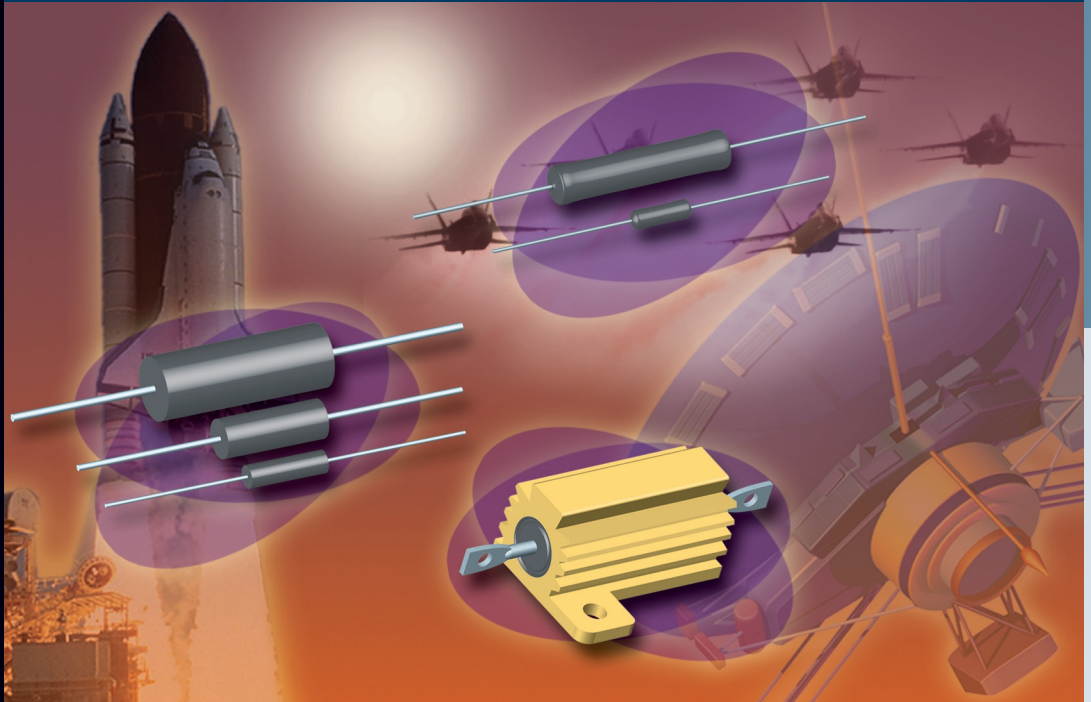


STANDARD RESISTANCE VALUES FOR THE 10 TO 100 DECADE							
* (B) 0.1 (D) 0.5	(F) 1.0	* (B) 0.1 (D) 0.5	(F) 1.0	* (B) 0.1 (D) 0.5	(F) 1.0	* (B) 0.1 (D) 0.5	(F) 1.0
10.0	10.0	17.8	17.8	31.6	31.6	56.2	56.2
10.1		18.0	18.0	32.0		56.9	
10.2	10.2	18.2	18.2	32.4	32.4	57.6	57.6
10.4		18.4		32.8		58.3	
10.5	10.5	18.7	18.7	33.2	33.2	59.0	59.0
10.6		18.9		33.6		59.7	
10.7	10.7	19.1	19.1	34.0	34.0	60.4	60.4
10.9		19.3		34.4		61.2	
11.0	11.0	19.6	19.6	34.8	34.8	61.9	61.9
11.1		19.8		35.2		62.6	
11.3	11.3	20.0	20.0	35.7	35.7	63.4	63.4
11.4		20.3		36.1		64.2	
11.5	11.5	20.5	20.5	36.5	36.5	64.9	64.9
11.7		20.8		37.0		65.7	
11.8	11.8	21.0	21.0	37.4	37.4	66.5	66.5
12.0		21.3		37.9		67.3	
12.1	12.1	21.5	21.5	38.3	38.3	68.1	68.1
12.3		21.8		38.8		69.0	
12.4	12.4	22.1	22.1	39.2	39.2	69.8	69.8
12.6		22.3		39.7		70.6	
12.7	12.7	22.6	22.6	40.2	40.2	71.5	71.5
12.9		22.9		40.7		72.3	
13.0	13.0	23.2	23.2	41.2	41.2	73.2	73.2
13.2		23.4		41.7		74.1	
13.3	13.3	23.7	23.7	42.2	42.2	75.0	75.0
13.5		24.0		42.7		75.9	
13.7	13.7	24.3	24.3	43.2	43.2	76.8	76.8
13.8		24.6		43.7		77.7	
14.0	14.0	24.9	24.9	44.2	44.2	78.7	78.7
14.2		25.2		44.8		79.6	
14.3	14.3	25.5	25.5	45.3	45.3	80.6	80.6
14.5		25.8		45.9		81.6	
14.7	14.7	26.1	26.1	46.4	46.4	82.5	82.5
14.9		26.4		47.0		83.5	
15.0	15.0	26.7	26.7	47.5	47.5	84.5	84.5
15.2		27.1		48.1		85.6	
15.4	15.4	27.4	27.4	48.7	48.7	86.6	86.6
15.6		27.7		49.3		87.6	
15.8	15.8	28.0	28.0	49.9	49.9	88.7	88.7
16.0		28.4		50.5		89.8	
16.2	16.2	28.7	28.7	51.1	51.1	90.9	90.9
16.4		29.1		51.7		92.0	
16.5	16.5	29.4	29.4	52.3	52.3	93.1	93.1
16.7		29.8		53.0		94.2	
16.9	16.9	30.1	30.1	53.6	53.6	95.3	95.3
17.2		30.5		54.2		96.5	
17.4	17.4	30.9	30.9	54.9	54.9	97.6	97.6
17.6		31.2		55.6		98.8	

* Listing of resistance values for the B and D tolerance does not guarantee that all of these resistance values are available for all resistor models.



MILITARY WIREWOUND RESISTORS


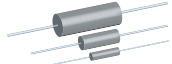
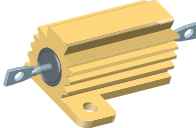
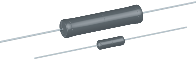
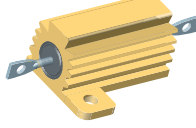


KEY BENEFITS

- Vishay Military Wirewound Resistors deliver:
 - A wide range of power ratings (1 watt to 120 watt)
 - A wide resistance range (0.01 Ω to 71.5 K Ω)
 - Low/high temperature performance (– 65 $^{\circ}\text{C}$ to + 350 $^{\circ}\text{C}$)
 - Tight tolerances (down to $\pm 0.1\%$)
 - Low temperature coefficient (down to ± 20 ppm/ $^{\circ}\text{C}$)
 - Excellent overload capability
 - Non-inductive, chassis mounted and weldable terminal styles available



Military Wirewound Resistors

Military Specification	Model	Part Number Definition	Wattage Rating	Resistance Range	Tolerance				
Non-Established Reliability Products									
	MIL-PRF-26	RW70U RW81U RW80U RW79U RW69V RW74U RW67V RW78U RW68V	RW80 U 49R9 F 1 2 3 4 RW67 V 101 1 2 3 1. Style 2. Characteristic (derating curve) U = 250 °C V = 350 °C 3. Resistance value 4. Tolerance	1 1 2 3 3 5 6.5 10 11	0.1 Ω – 2.74 KΩ 0.1 Ω – 1 KΩ 0.1 Ω – 2.74 KΩ 0.1 Ω – 6.49 KΩ 0.1 Ω – 2.0 KΩ 0.1 Ω – 24.3 KΩ 0.1 Ω – 8.2 KΩ 0.1 Ω – 71.5 KΩ 0.1 Ω – 20 KΩ	± 0.5 %, ± 1 %* ± 0.5 %, ± 1 %* ± 0.5 %, ± 1 %* ± 0.5 %, ± 1 %* ± 5 %, ± 10 % ± 0.5 %, ± 1 %* ± 5 %, ± 10 % ± 0.5 %, ± 1 %* ± 5 %, ± 10 % ± 0.5 %, ± 1 %* ± 5 %, ± 10 %			
		MIL-PRF-49465	RLV10 (sheet 01) RLV30 (sheet 06) RLV31 (sheet 07)	M49465 06 T R0100 F 1 2 3 4 5 1. Style 2. Specification sheet number 3. Characteristic (always T) 4. Resistance value 5. Tolerance	5 3 5	0.01 Ω – 0.5 Ω 0.01 Ω – 0.2 Ω 0.01 Ω – 0.3 Ω	± 1 % ± 1 %, ± 5 % ± 1 %, ± 5 %		
			MIL-PRF-18546	RE60G RE60N RE65G RE65N RE70G RE70N RE75G RE75N RE77G RE77N RE80G RE80N	RE65 G 1001 1 2 3 1. Style 2. Characteristic – winding type G = Standard N = Non-inductive 3. Resistance value Note: tolerance is 1 %	5 5 10 10 20 20 30 30 75 75 120 120	0.1 Ω – 3.32 KΩ 1.0 Ω – 1.65 KΩ 0.1 Ω – 5.62 KΩ 1.0 Ω – 2.8 KΩ 0.1 Ω – 12.1 KΩ 1.0 Ω – 6.04 KΩ 0.1 Ω – 39.2 KΩ 1.0 Ω – 19.6 KΩ 0.05 Ω – 29.4 KΩ 1.0 Ω – 14.7 KΩ 0.10 Ω – 35.7 KΩ 1.0 Ω – 17.4 KΩ	± 1 %	
			Established Reliability Products						
				MIL-PRF-39007	RWR81S / RWR81W RWR81N / RWR81Z RWR82S / RWR82W RWR82N / RWR82Z RWR80S / RWR80W RWR80N / RWR80Z RWR71S / RWR71W RWR71N / RWR71Z RWR89S / RWR89W RWR89N / RWR89Z RWR74S / RWR74W RWR74N / RWR74Z RWR84S / RWR84W RWR84N / RWR84Z RWR78S / RWR78W RWR78N / RWR78Z	RWR74 S 10R1 F R 1 2 3 4 5 1. Style 2. Characteristic – winding type and terminal type S = Standard wind, solderable W = Standard wind, weldable N = Non-inductive wind, solderable Z = Non-inductive wind, weldable 3. Resistance value 4. Tolerance 5. Failure rate level	1 1 1.5 1.5 2 2 2 2 3 3 5 5 7 7 10 10	0.1 Ω – 1 KΩ 0.1 Ω – 499 Ω 0.1 Ω – 1.3 KΩ 0.1 Ω – 649 Ω 0.1 Ω – 3.16 KΩ 0.1 Ω – 1.58 KΩ 0.1 Ω – 12.1 KΩ 0.1 Ω – 6.04 KΩ 0.1 Ω – 4.12 KΩ 0.1 Ω – 2.05 KΩ 0.1 Ω – 12.1 KΩ 0.1 Ω – 6.04 KΩ 0.1 Ω – 12.4 KΩ 0.1 Ω – 6.19 KΩ 0.1 Ω – 39.2 KΩ 0.1 Ω – 19.6 KΩ	± 0.5 %, ± 1 %
					MIL-PRF-39009	RER40 RER45 RER50 RER55 RER60 RER65 RER70 RER75	RER65 F 1001 R 1 2 3 4 1. Style 2. Tolerance 3. Resistance value 4. Failure rate level	5 10 20 30 5 10 20 30	1.0 Ω – 1.65 KΩ 1.0 Ω – 2.8 KΩ 1.0 Ω – 6.04 KΩ 1.0 Ω – 4.99 KΩ 0.10 Ω – 3.32 KΩ 0.10 Ω – 5.62 KΩ 0.10 Ω – 12.1 KΩ 0.10 Ω – 39.2 KΩ

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