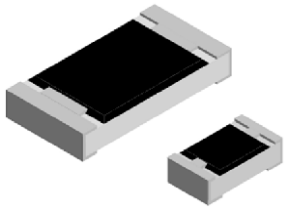
Thick Film Surface Mount Chip Resistors, Wraparound, Extremely Low Value (0.01 Ω to 0.976 Ω)



FEATURES

- Extremely low resistance values (0.01 Ω to 0.976 Ω)
- Suitable for current sensing and shunts
- Metal glaze on high quality ceramic
- Protective overglaze
- Lead (Pb)-free solder contacts on Ni barrier layer
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb e3 RoHS COMPLIANT HALOGEN FREE

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	CASE SIZE	POWER RATING $P_{70\,°C}$ W	TEMPERATURE COEFFICIENT ± ppm/°C	RESISTANCE RANGE Ω	TOLERANCE ± %	E-SERIES
RCWE0402	0402	0.125	400	0.033 to 0.05	5.0	24
			200	0.051 to 0.18	1.0, 5.0	
			100	0.2 to 0.976	0.5, 1.0, 5.0 (1)	
RCWE0603	0603	0.2	700	0.010 to 0.018	5.0	24
			400	0.02 to 0.03	1.0, 5.0	
			200	0.033 to 0.1	1.0, 5.0	
			100	0.11 to 0.976	0.5, 1.0, 5.0 (1)	
RCWE0805	0805	0.25	400	0.010 to 0.018	5.0	24
			300	0.02 to 0.03	1.0, 5.0	
			200	0.033 to 0.05	1.0, 5.0	
			100	0.051 to 0.976	0.5, 1.0, 5.0 (1)	
RCWE1206	1206	0.5	600	0.010 to 0.018	5.0	24
			300	0.02 to 0.03	1.0, 5.0	
			200	0.033 to 0.05	1.0, 5.0	
			100	0.051 to 0.976	0.5, 1.0, 5.0 (1)	
RCWE1210	1210	1.0	500	0.010 to 0.018	5.0	24
			300	0.02 to 0.03	1.0, 5.0	
			200	0.033 to 0.05	1.0, 5.0	
			100	0.051 to 0.976	0.5, 1.0, 5.0 (1)	
RCWE2010	2010	1.0	600	0.010 to 0.018	5.0	24
			300	0.02 to 0.03	1.0, 5.0	
			200	0.033 to 0.05	1.0, 5.0	
			100	0.051 to 0.976	0.5, 1.0, 5.0 (1)	
RCWE2512	2512	2.0	600	0.010 to 0.018	5.0	24
			300	0.02 to 0.03	1.0, 5.0	
			200	0.033 to 0.05	1.0, 5.0	
			100	0.051 to 0.976	0.5, 1.0, 5.0 (1)	

Notes

- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material.
- Part marking: Reference "Surface Mount Resistor Marking" (document number 20020).

(1) Tight tolerance of 0.5 % is available for resistance values above 0.200 Ω.

GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: RCWE060351L0FNEA (visit www.vishay.net Vishay Dale parts numbering manual for all options)

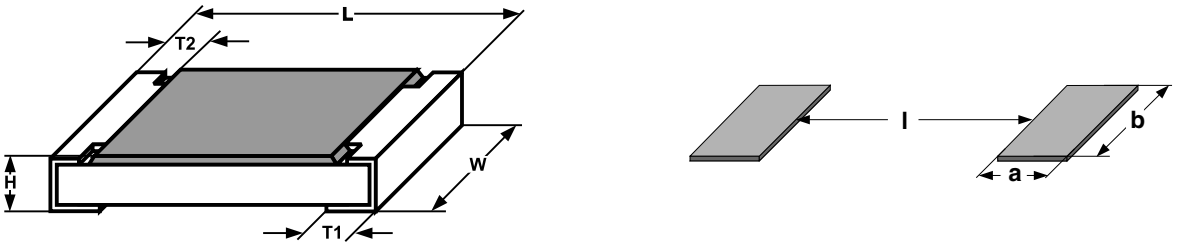
R	C	W	E	0	6	0	3	5	1	L	0	F	N	E	A

GLOBAL MODEL (8 digits)	VALUE (4 digits)	TOLERANCE (1 digit)	TCR (1 digit)	PACKAGING (2 digits)
RCWE0402 **RCWE0603** **RCWE0805** **RCWE1206** **RCWE1210** **RCWE2010** **RCWE2512**	**L** = mΩ * **R** = Decimal **10L0** = 0.01 Ω **R470** = 0.47 Ω **Note**: * Use "**L**" for resistance values < 0.1 Ω	**D** = ± 0.5 % **F** = ± 1.0 % **J** = ± 5.0 %	**K** = ± 100 ppm/°C **N** = ± 200 ppm/°C **M** = ± 300 ppm/°C **Q** = ± 400 ppm/°C **P** = ± 500 ppm/°C **T** = ± 600 ppm/°C **G** = ± 700 ppm/°C	**EA** = Lead (Pb)-free, tape/reel

TECHNICAL SPECIFICATIONS

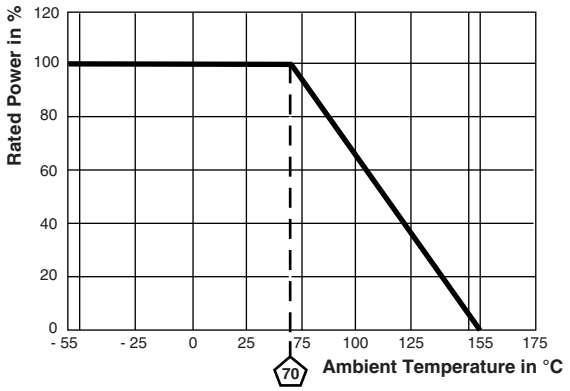
PARAMETER	UNIT	RCWE0402	RCWE0603	RCWE0805	RCWE1206	RCWE1210	RCWE2010	RCWE2512
Operating temperature range	°C	- 55 to + 155						
Maximum operating voltage	V	$(P \times R)^{1/2}$						
Insulation voltage U_{ins} (1 min)	V	> 75	> 100	> 200	> 300	> 300	> 300	> 300
Insulation resistance	Ω	> 10^9						
Weight/1000 pieces (typical)	g	0.7	3	5.5	10.5	17.5	26	40.5

DIMENSIONS



MODEL	DIMENSIONS in millimeters						SOLDER PAD DIMENSIONS in millimeters		
	RESISTANCE RANGE Ω	L	W	H	T1	T2	a	b	l
RCWE0402	0.033 to 0.976	1.05 ± 0.05	0.55 ± 0.05	0.35 ± 0.1	0.3 ± 0.15	0.25 ± 0.1	0.7	0.7	0.3
RCWE0603	0.01 to 0.03	1.6 ± 0.1	0.85 ± 0.1	0.5 ± 0.1	0.5 ± 0.2	0.3 ± 0.2	0.9	1.0	0.4
	0.033 to 0.976				0.3 ± 0.2		0.7	1.0	0.8
RCWE0805	0.01 to 0.03	2.0 ± 0.15	1.3 ± 0.1	0.55 ± 0.1	0.6 ± 0.2	0.35 ± 0.2	1.0	1.4	0.6
	0.033 to 0.976				0.4 ± 0.2		0.8	1.4	1.0
RCWE1206	0.01 to 0.03	3.1 ± 0.15	1.6 ± 0.15	0.6 ± 0.1	0.9 ± 0.2	0.45 ± 0.2	1.3	1.8	1.0
	0.033 to 0.05				0.8 ± 0.2		1.2	1.8	1.2
	0.051 to 0.976				0.45 ± 0.2		1.0	1.8	1.6
RCWE1210	0.01 to 0.03	3.1 ± 0.2	2.5 ± 0.2	0.6 ± 0.1	0.8 ± 0.2	0.4 ± 0.2	1.3	2.6	1.1
	0.033 to 0.976				0.4 ± 0.2		0.9	2.6	2.0
RCWE2010	0.01 to 0.03	5.0 ± 0.2	2.5 ± 0.15	0.6 ± 0.1	1.6 ± 0.3	0.6 ± 0.2	2.3	3.0	1.4
	0.033 to 0.05				0.7 ± 0.3		1.4	3.0	3.2
	0.051 to 0.976				0.7 ± 0.3		1.4	3.0	3.2
RCWE2512	0.01 to 0.03	6.3 ± 0.2	3.15 ± 0.15	0.6 ± 0.1	2.0 ± 0.3	0.6 ± 0.2	2.8	3.6	1.4
	0.033 to 0.05				0.8 ± 0.3		1.6	3.6	3.8
	0.051 to 0.976				0.8 ± 0.3		1.6	3.6	3.8

DERATING



PERFORMANCE		
TEST	**CONDITIONS OF TEST**	**TEST LIMITS**
Thermal shock	MIL-STD-202, method 107, - 55 °C to + 125 °C, 300 cycles at each extreme	± (1.0 % + 0.0005 Ω) Δ*R*
Short time overload	2 x rated power; duration according the model	± (0.5 % + 0.0005 Ω) Δ*R*
High temperature exposure	MIL-STD-202, method 108, 1000 h at T = 125 °C, 0 % power	± (2.0 % + 0.0005 Ω) Δ*R*
Temperature cycling	JESD 22, method JA-104, 1000 cycles (- 55 °C to + 125 °C)	± (2.0 % + 0.0005 Ω) Δ*R*
Biased humidity	MIL-STD-202, method 103, 1000 h 85 °C/85 % RH, 10 % x $(P \times R)^{1/2}$	± (2.0 % + 0.0005 Ω) Δ*R*
Mechanical shock	MIL-STD-202, method 213, condition C, 10 *g*'s, 6 ms (half sine), 3 directions	± (1.0 % + 0.0005 Ω) Δ*R*
Vibration	MIL-STD-202, method 204, 5 *g*'s, 20 min, 12 cycles, 3 directions, 10 Hz to 2000 Hz	± (1.0 % + 0.0005 Ω) Δ*R*
Operational life	MIL-STD-202, method 108, 1000 h at T = 125 °C at rated power	± (2.0 % + 0.0005 Ω) Δ*R*
Resistance to solder heat	MIL-STD-202, method 210, + 260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± (1.0 % + 0.0005 Ω) Δ*R*
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7a and 7b not required	± (2.0 % + 0.0005 Ω) Δ*R*

PACKAGING					
MODEL	**REEL**				
	TAPE WIDTH	**DIAMETER**	**PITCH**	**PIECES/REEL**	**CODE**
RCWE0402	8 mm/punched paper	180 mm/7"	2 mm	10 000	EA
RCWE0603	8 mm/punched paper	180 mm/7"	4 mm	5000	EA
RCWE0805	8 mm/punched paper	180 mm/7"	4 mm	5000	EA
RCWE1206	8 mm/punched paper	180 mm/7"	4 mm	5000	EA
RCWE1210	8 mm/punched paper	180 mm/7"	4 mm	5000	EA
RCWE2010	12 mm/embossed plastic	180 mm/7"	4 mm	4000	EA
RCWE2512	12 mm/embossed plastic	180 mm/7"	8 mm	2000	EA

Note

- Embossed carrier tape per EIA-481-1A.

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Vishay:

RCWE0805R750FKEA RCWE0805R390FKEA RCWE0402R110FNEA RCWE0402R120FNEA
RCWE0402R130FNEA RCWE0402R160FNEA RCWE0402R180FNEA RCWE0402R220FKEA
RCWE0402R240FKEA RCWE0402R270FKEA RCWE0402R300FKEA RCWE0402R360FKEA
RCWE0402R390FKEA RCWE0402R560FKEA RCWE0402R680FKEA RCWE0402R820FKEA
RCWE0402R910FKEA RCWE0603R110FKEA RCWE0603R120FKEA RCWE0603R130FKEA
RCWE0603R160FKEA RCWE0603R180FKEA RCWE0603R200FKEA RCWE0603R240FKEA
RCWE0603R270FKEA RCWE0603R300FKEA RCWE0603R330FKEA RCWE0603R360FKEA
RCWE0603R390FKEA RCWE0603R430FKEA RCWE0603R560FKEA RCWE0603R680FKEA
RCWE0603R910FKEA RCWE0805R240FKEA RCWE0805R270FKEA RCWE0805R300FKEA
RCWE0805R470FKEA RCWE0805R510FKEA RCWE0805R560FKEA RCWE0805R620FKEA
RCWE0805R680FKEA RCWE0805R910FKEA RCWE1206R240FKEA RCWE1206R360FKEA
RCWE1206R470FKEA RCWE1206R510FKEA RCWE1206R560FKEA RCWE1206R620FKEA
RCWE1206R680FKEA RCWE1206R750FKEA RCWE1206R910FKEA RCWE1210R220FKEA
RCWE1210R240FKEA RCWE1210R270FKEA RCWE1210R300FKEA RCWE1210R330FKEA
RCWE1210R360FKEA RCWE1210R390FKEA RCWE1210R430FKEA RCWE1210R470FKEA
RCWE1210R510FKEA RCWE1210R560FKEA RCWE1210R620FKEA RCWE1210R680FKEA
RCWE1210R750FKEA RCWE1210R820FKEA RCWE1210R910FKEA RCWE2010R510FKEA
RCWE2010R560FKEA RCWE2010R620FKEA RCWE2010R680FKEA RCWE2010R750FKEA
RCWE2010R820FKEA RCWE2010R910FKEA RCWE2512R510FKEA RCWE2512R560FKEA
RCWE2512R620FKEA RCWE2512R680FKEA RCWE2512R750FKEA RCWE2512R820FKEA
RCWE2512R910FKEA