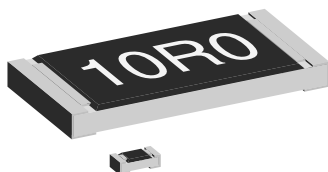




Lead (Pb)-Bearing Thick Film, Rectangular Chip Resistors



FEATURES

- High pulse performance (time/power)
- Metal glaze on high quality ceramic
- Protective overlaze
- Lead (Pb)-bearing solder contacts on Ni barrier layer

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	CASE SIZE INCH	CASE SIZE METRIC	POWER RATING $P_{70\text{ }^{\circ}\text{C}}$ W	RATED VOLTAGE V	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
CRCW1206-37	1206	3216	0.25	200	± 200	± 10	5.1 to 10M	E24
CRCW1210-37	1210	3225	0.33	200	± 200	± 10	5.1 to 10M	E24
CRCW2512-37	2512	6332	1.0	500	± 200	± 10	5.1 to 10M	E24

Notes

- These resistors do not feature a lifetime limitation when operated within the limits of rated dissipation, permissible operating voltage and permissible film temperature. However, the resistance typically increases due to the resistor's film temperature over operating time, generally known as drift. The drift may exceed the stability requirements of an individual application circuit and thereby limits the functional lifetime.
- Marking and packaging: See document "Surface Mount Resistor Marking" (www.vishay.com/doc?20020).
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material.

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CRCW1206-37	CRCW1210-37	CRCW2512-37
Rated dissipation at $P_{70}^{(2)}$	W	0.25	0.33	1.0
Rated voltage U_{max} AC/DC	V	200	200	500
Insulation voltage U_{ins} (1 min)	V	> 300		
Thermal resistance $^{(1)}$	K/W	≤ 220	≤ 140	≤ 65
Category temperature range	$^{\circ}\text{C}$	- 55 to + 155		
Weight	mg	10	16	40.5

Notes

- ⁽¹⁾ For size 1206 the measuring conditions are in acc. to EN 140401-802. For all other sizes the result depends on the solder pad dimensions.
- ⁽²⁾ The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature of 155 $^{\circ}\text{C}$ is not exceeded.



PART NUMBER AND PRODUCT DESCRIPTION

Part Number: CRCW120622K0KNTA37 ⁽¹⁾

C	R	C	W	1	2	0	6	2	2	K	0	K	N	T	A	3	7
MODEL				VALUE				TOLERANCE		TCR		PACKAGING ⁽²⁾			SPECIAL		
CRCW1206 CRCW1210 CRCW2512				R = Decimal K = Thousand M = Million				K = ± 10 %		N = ± 200 ppm/K		TA TB TC TG TH TI TL			37 = Non-trimmed		

Product Description: CRCW1206-37 223 K 200 RT1

CRCW-37	223	K	200	RT1
MODEL	RESISTANCE VALUE	TOLERANCE	TCR	PACKAGING ⁽²⁾
CRCW1206-37 CRCW1210-37 CRCW2512-37	685 = 6.8 MΩ 224 = 220 kΩ	K = ± 10 %	± 200 ppm/K	RT1 RT5 RT6 R67 R82 RG1 R20

Notes

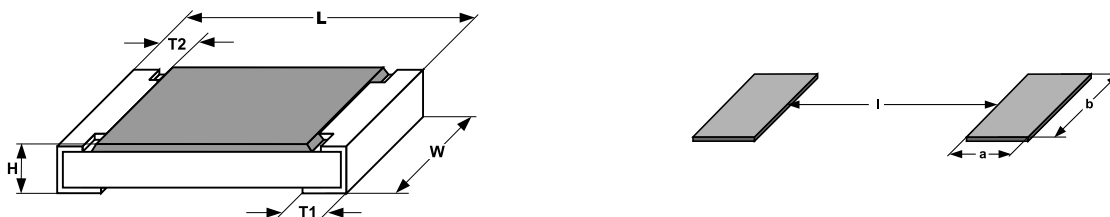
⁽¹⁾ Preferred way for ordering products is by use of the Part Number.⁽²⁾ Please refer to table PACKAGING, see below.

PACKAGING

MODEL	REEL							
	TAPE WIDTH	DIAMETER	PITCH	PIECES/ REEL	PACKAGING CODE			
					PART NUMBER		PRODUCT DESC.	
					PAPER	BLISTER	PAPER	BLISTER
D25/CRCW1206-37	8 mm	180 mm/7"	4 mm	5000	TA	TI	RT1	RG1
		285 mm/11.25"	4 mm	10 000	TB		RT5	
		330 mm/13"	4 mm	20 000	TC	TL	RT6	R20
CRCW1210-37	12 mm	180 mm/7"	4 mm	5000	TA		RT1	
		285 mm/11.25"	4 mm	10 000	TB		RT5	
		330 mm/13"	4 mm	20 000	TC		RT6	
CRCW2512-37	12 mm	180 mm/7"	8 mm	2000		TG		R67
			4 mm	4000		TH		R82

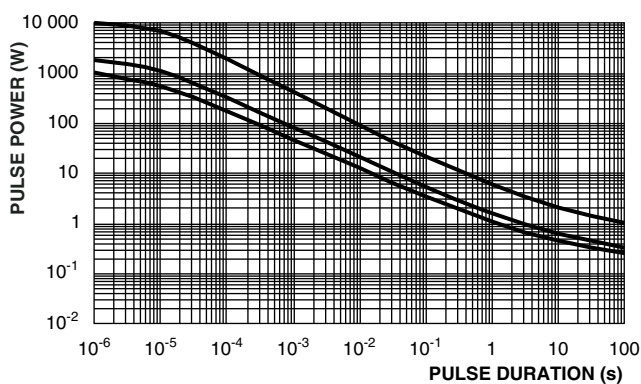


DIMENSIONS

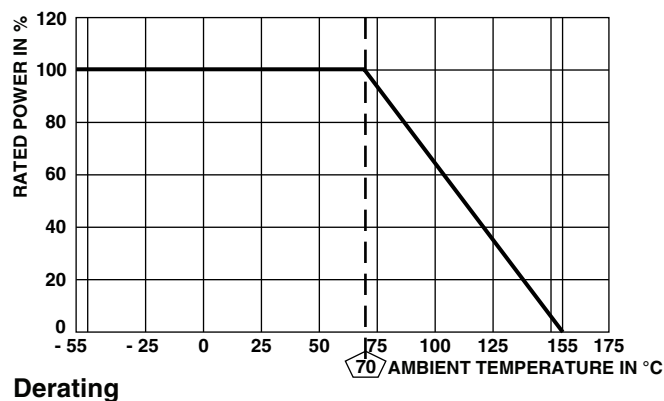


SIZE		DIMENSIONS in millimeters					SOLDER PAD DIMENSIONS in millimeters					
							REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	L	W	H	T1	T2	a	b	l	a	b	l
1206	3216	3.2 $\begin{smallmatrix} +0.10 \\ -0.20 \end{smallmatrix}$	1.6 ± 0.15	0.55 ± 0.05	0.45 ± 0.2	0.4 ± 0.2	0.9	1.7	2.0	1.1	1.7	2.3
1210	3225	3.2 ± 0.2	2.5 ± 0.2	0.55 ± 0.05	0.45 ± 0.2	0.4 ± 0.2	0.9	2.5	2.0	1.1	2.5	2.2
2512	6332	6.3 ± 0.2	3.15 ± 0.15	0.6 ± 0.1	0.6 ± 0.2	0.6 ± 0.2	1.0	3.2	5.2	1.2	3.2	5.2

FUNCTIONAL PERFORMANCE



Maximum pulse dissipation as a function of the pulse duration for one pulse loading of CRCW...-37 resistors



Derating



TEST PROCEDURES AND REQUIREMENTS

EN 60115-1		
TEST (CLAUSE)	CONDITIONS OF TEST	REQUIREMENTS
		STABILITY CLASS 2 OR BETTER
	Stability for product types: CRCW....-37	5.1 Ω to 10 M Ω
Resistance (4.5)	-	$\pm 10 \%$
Temperature coefficient (4.8.4.2)	(20/- 55/20) °C and (20/125/20) °C	± 200 ppm/K
Overload (4.13)	$U = 2.5 \times (P_{70} \times R)^{1/2}$ $\leq 2 \times U_{max.}$; duration: According the style	$\pm (0.25 \% R + 0.05 \Omega)$
Solderability (4.17.5)	Aging 4 h at 155 °C, dryheat solder bath method; 235 °C; 2 s visual examination	Good tinning ($\geq 95 \%$ covered) no visible damage
Resistance to soldering heat (4.18.2)	Solder bath method; (260 \pm 5) °C; (10 \pm 1) s	$\pm (0.25 \% R + 0.05 \Omega)$
Rapid change of temperature (4.19)	30 min at LCT = - 55 °C; 30 min at UCT = 125 °C; 5 cycles	$\pm (0.25 \% R + 0.05 \Omega)$
Damp heat, steady state (4.24)	(40 \pm 2) °C; 56 days; (93 \pm 3) % RH	$\pm (1 \% R + 0.05 \Omega)$
Climatic sequence (4.23)	16 h at UCT = 125 °C; 1 cycle at 55 °C; 2 h at LCT = - 55 °C; 1 h/1 kPa at 15 °C to 35 °C; 5 cycles at 55 °C $U = (P_{70} \times R)^{1/2}$ $U = U_{max.}$; whichever is less severe	$\pm (1 \% R + 0.05 \Omega)$
Endurance at 70 °C (4.25.1)	$U = (P_{70} \times R)^{1/2}$ $U = U_{max.}$; whichever is less severe 1.5 h "on"; 0.5 h "off"; 70 °C; 1000 h	$\pm (1 \% R + 0.05 \Omega)$
Extended endurance (4.25.1.8)	Duration extended to 8000 h	$\pm (2 \% R + 0.1 \Omega)$
Endurance at upper category temperature (4.25.3)	UCT = 125 °C; 1000 h	$\pm (1 \% R + 0.05 \Omega)$

APPLICABLE SPECIFICATIONS

- | | |
|-----------------|--|
| • EN 60115-1 | Generic specification |
| • EN 140400 | Sectional specification |
| • EN 140401-802 | Detail specification |
| • IEC 60068-2-X | Variety of environmental test procedures |
| • IEC 60286-3 | Packaging of SMD components |



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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.