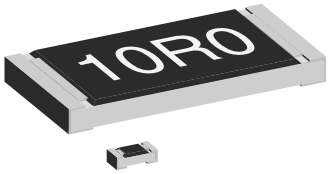
Lead (Pb)-Bearing Thick Film, Rectangular Chip Resistors



FEATURES

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

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	CASE SIZE INCH	CASE SIZE METRIC	POWER RATING $P_{70\,°C}$ 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	°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 °C is not exceeded.

For technical questions, contact: thickfilmchip@vishay.com

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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

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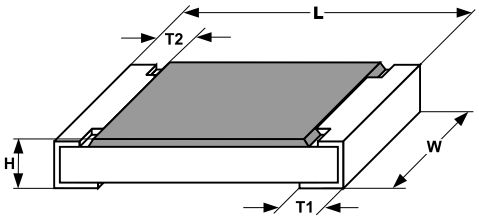
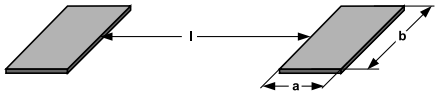
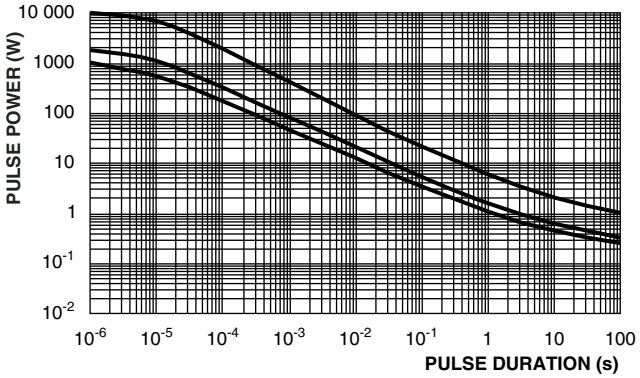
DIMENSIONS



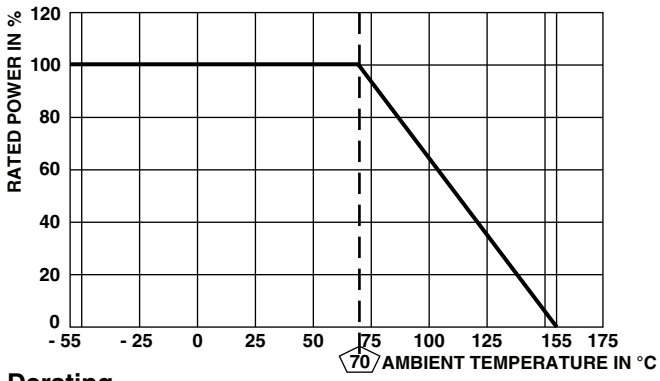


SIZE		DIMENSIONS in millimeters					SOLDER PAD DIMENSIONS in millimeters					
							REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	L	W	H	T1	T2	a	b	l	a	b	l
1206	3216	3.2 $^{+0.10}_{-0.20}$	1.6 ± 0.15	0.55 ± 0.05	0.45 ± 0.2	0.4 ± 0.2	0.9	1.7	2.0	1.1	1.7	2.3
1210	3225	3.2 ± 0.2	2.5 ± 0.2	0.55 ± 0.05	0.45 ± 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

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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 MΩ
Resistance (4.5)	-	± 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	± (0.25 % R + 0.05 Ω)
Solderability (4.17.5)	Aging 4 h at 155 °C, dryheat solder bath method; 235 °C; 2 s visual examination	Good tinning (≥ 95 % covered) no visible damage
Resistance to soldering heat (4.18.2)	Solder bath method; (260 ± 5) °C; (10 ± 1) s	± (0.25 % R + 0.05 Ω)
Rapid change of temperature (4.19)	30 min at LCT = - 55 °C; 30 min at UCT = 125 °C; 5 cycles	± (0.25 % R + 0.05 Ω)
Damp heat, steady state (4.24)	(40 ± 2) °C; 56 days; (93 ± 3) % RH	± (1 % R + 0.05 Ω)
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	± (1 % R + 0.05 Ω)
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	± (1 % R + 0.05 Ω)
Extended endurance (4.25.1.8)	Duration extended to 8000 h	± (2 % R + 0.1 Ω)
Endurance at upper category temperature (4.25.3)	UCT = 125 °C; 1000 h	± (1 % R + 0.05 Ω)

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

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