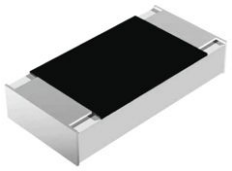
Standard Thick Film Chip Resistors



FEATURES

- Very small standard size (0.4 mm x 0.2 mm)
- Low tolerance (1 %)
- Material categorization:
  For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

STANDARD ELECTRICAL SPECIFICATIONS

TYPE	CASE SIZE IMPERIAL	CASE SIZE METRIC	POWER RATING P_{70} W	LIMITING ELEMENT VOLTAGE $U_{max.}$ AC_{RMS}/DC V	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	SERIES
CRCW01005	01005	RR0402M	0.031	15	± 250	± 1	10.0 to 1M	E24; E96
						± 2, ± 5		E24
					-200/+600	± 1	1.0 to 9.76	E24; E96
						± 2, ± 5	1.0 to 9.1	E24
			Zero-Ohm-Resistor: $R_{max.}$ = 50 mΩ, $I_{max.}$ = 0.5 A					

Notes

- These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime.
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material.

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CRCW01005
Rated Dissipation P_{70} (1)	W	0.031
Operating Voltage $U_{max.}$ AC_{RMS}/DC	V	15
Insulation Voltage U_{ins} (1 min)	V	30
Insulation Resistance	Ω	> 10^9
Operating Temperature Range	°C	-55 to +125
Mass	mg	0.07

Note

(1) 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 125 °C is not exceeded.

For technical questions, contact: thickfilmchip@vishay.com

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PART NUMBER AND PRODUCT DESCRIPTION

PART NUMBER: CRCW01001K00FREL

C	R	C	W	0	1	0	0	1	K	0	0	F	R	E	L

TYPE	VALUE	TOLERANCE	TCR	PACKAGING
CRCW0100	**R** = Decimal **K** = Thousand **M** = Million **0000** = Jumper	**F** = ± 1.0 % **G** = ± 2.0 % **J** = ± 5.0 % **Z** = Jumper	**R** = ± 250 ppm/K **Y** = -200 ppm/K/+600 ppm/K **0** = Jumper	**EL**

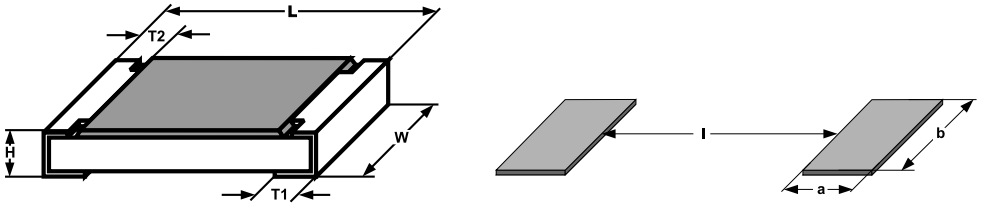
PRODUCT DESCRIPTION: CRCW01005 250 1K0 1 % ET3 e3

CRCW01005	250	1K0	1 %	ET3	e3
TYPE	TCR	RESISTANCE VALUE	TOLERANCE VALUE	PACKAGING	LEAD (Pb)-FREE
CRCW01005	**± 250** ppm/K **-200/+600** ppm/K	**1R0** = 1 Ω **10R** = 10 Ω **1K0** = 1 kΩ **10K** = 10 kΩ **1M0** = 1 MΩ **0R0** = Jumper	**± 1 %** **± 2 %** **± 5 %**	**ET3**	**e3** = Pure tin termination finish

PACKAGING

TYPE	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
CRCW01005	EL = ET3	20 000	Paper tape acc. to IEC 60286-3, Type 1a	8 mm	2 mm	180 mm/7"

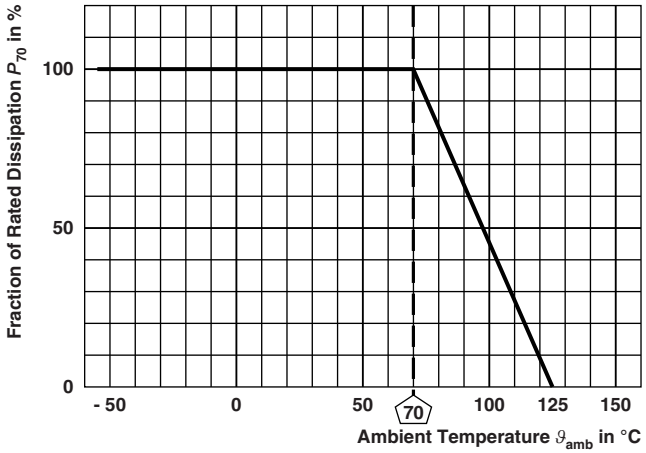
DIMENSIONS in millimeters



SIZE		DIMENSIONS					RECOMMENDED SOLDER PAD DIMENSIONS		
IMPERIAL	METRIC	L	W	H	T1	T2	a	b	l
01005	RR0402M	0.4 ± 0.02	0.2 ± 0.02	0.13 ± 0.02	0.10 ± 0.03	0.10 ± 0.03	0.15	0.2	0.2

Note
- No marking for 01005 size.

DERATING



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TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE (ΔR)
				STABILITY CLASS 1 OR BETTER
			Stability for product types:	
			CRCW01005 e3	1 Ω to 1 MΩ
4.5	-	Resistance	-	± 1 %; ± 2 %; ± 5 %
4.13	-	Short time overload	$U = 2.5 \times \sqrt{P_{70} \times R} \leq 2 \times U_{max.}$; duration according to style	± (2 % R + 0.1 Ω)
4.17.2	58 (Td)	Solderability	Solder bath method; Sn60Pb40 non activated flux; (235 ± 5) °C (2 ± 0.2) s	Good tinning (≥ 95 % covered) no visible damage
			Solder bath method; Sn96.5Ag3Cu0.5 non-activated flux; (235 ± 3) °C (2 ± 0.5) s	Good tinning (≥ 95 % covered) no visible damage
4.8.4.2	-	Temperature coefficient	(20/-55/20) °C and (20/125/20) °C	- 200 ppm/K/+600 ppm/K, ± 250 ppm/K
4.33	21 (Uu_1)	Substrate bending	Depth 3 mm; 1 time	No visible damage, no open circuit in bent position ± (1 % R + 0.05 Ω)
4.19	14 (Na)	Rapid change of temperature	15 min. at -55 °C; 15 min. at 125 °C; 300 cycles	± (2 % R + 0.1 Ω)
4.25.1	-	Endurance at 70 °C	$U = \sqrt{P_{70} \times R} \leq U_{max.}$; 1.5 h on; 0.5 h off; 70 °C; 1000 h	± (5 % R + 0.1 Ω)
4.18.2	58 (Td)	Resistance to soldering heat	Solder bath method (260 ± 5) °C; (10 ± 1) s	± (2 % R + 0.1 Ω)
4.24	78 (Cab)	Damp heat, steady state	(40 ± 2) °C; (90 to 95) % RH; 1000 h	± (5 % R + 0.1 Ω)
4.25.3	-	Endurance at upper category temperature	125 °C, 1000 h	± (2 % R + 0.1 Ω)
4.29	45 (XA)	Component solvent resistance	Isopropyl alcohol; (20 to 25) °C; (5 ± 0.5) min	No visible damage

All tests are carried out in accordance with the following specifications:

- EN 60115-1, generic specification
- EN 140400, sectional specification
- EN 140401-802, detail specification
- IEC 60068-2-x, environmental test procedures

Packaging of components is done in paper tapes according to IEC 60286-3.

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