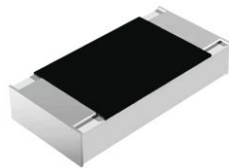


Standard Thick Film Chip Resistors



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: $R_{max.} = 50\text{ m}\Omega$, $I_{max.} = 0.5\text{ A}$								

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	$^{\circ}\text{C}$	-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 $^{\circ}\text{C}$ is not exceeded.

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
CRCW0100

VALUE
R = Decimal K = Thousand M = Million 0000 = Jumper

TOLERANCE
F = $\pm 1.0\%$ G = $\pm 2.0\%$ J = $\pm 5.0\%$ Z = Jumper

TCR
R = ± 250 ppm/K Y = -200 ppm/K/ $+600$ ppm/K 0 = Jumper

PACKAGING
EL

PRODUCT DESCRIPTION: CRCW01005 250 1K0 1 % ET3 e3

CRCW01005
TYPE
CRCW01005

250
TCR
± 250 ppm/K $-200/+600$ ppm/K

1K0
RESISTANCE VALUE
1R0 = $1\ \Omega$ 10R = $10\ \Omega$ 1K0 = $1\ k\Omega$ 10K = $10\ k\Omega$ 1M0 = $1\ M\Omega$ 0R0 = Jumper

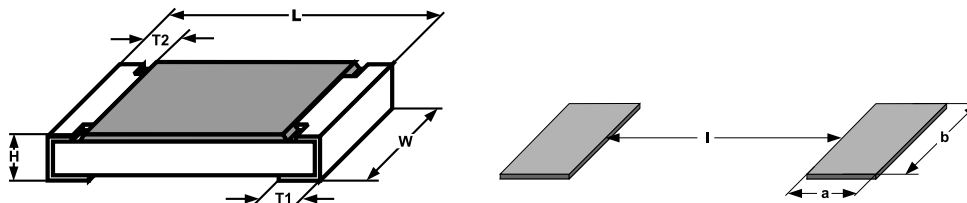
1 %
TOLERANCE VALUE
$\pm 1\%$ $\pm 2\%$ $\pm 5\%$

ET3
PACKAGING
ET3

e3
LEAD (Pb)-FREE
e3 = Pure tin termination finish

PACKAGING

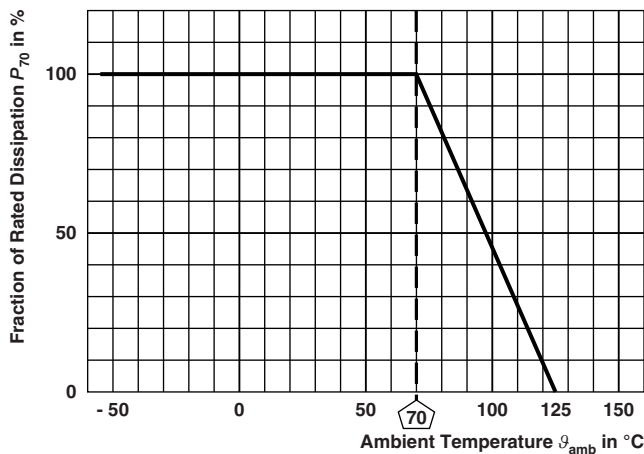
TYPE	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
CRCW01005	EL = ET3	20 000	Paper tape acc. to IEC 60286-3, Type 1a	8 mm	2 mm	180 mm/7"

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


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



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.

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.