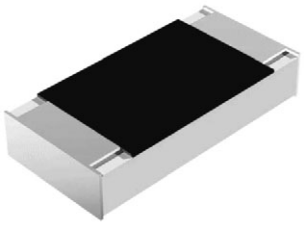
Lead (Pb)-Free Commodity Thick Film Chip Resistors



FEATURES

- High volume product suitable for commercial applications
- Pure tin solder contacts on Ni barrier layer provides compatibility with lead (Pb)-free and lead containing soldering processes
- Metal glaze on high quality ceramic
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT HALOGEN FREE

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	CASE SIZE INCH	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
CRCW0201	0201	RR 0603M	0.05	30	± 100	± 1	47.0 to 1M	E24; E96
					± 200		10.0 to 10M	
					-200 / +400		1.0 to 9.76	
					± 200	± 5	10.0 to 10M	E24
					-200 / +400		1.0 to 9.1	
			Zero-ohm-resistor: $R_{max.}$ = 50 mΩ, $I_{max.}$ at 70 °C = 1.0 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	CRCW0201
Rated Dissipation at 70 °C (1)	W	0.05
Operating Voltage $U_{max.}$ AC_{RMS}/DC	V	30
Insulation Voltage U_{ins} (1 min)	V	50
Insulation Resistance	Ω	> 10^9
Operating Temperature Range	°C	-55 to +155
Weight	mg	0.17

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 155 °C is not exceeded

For technical questions, contact: thickfilmchip@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

PART NUMBER AND PRODUCT DESCRIPTION

Part Number: CRCW02011K00FNED

C	R	C	W	0	2	0	1	1	K	0	0	F	K	E	D

MODEL	VALUE	TOLERANCE	TCR	PACKAGING
CRCW0201	**R** = decimal **K** = thousand **M** = million **0000** = jumper	**F** = ± 1.0 % **J** = ± 5.0 % **Z** = jumper	**K** = ± 100 ppm/K **N** = ± 200 ppm/K **X** = -200 ppm/K / +400 ppm/K **0** = jumper	**ED** **EE** **EI**

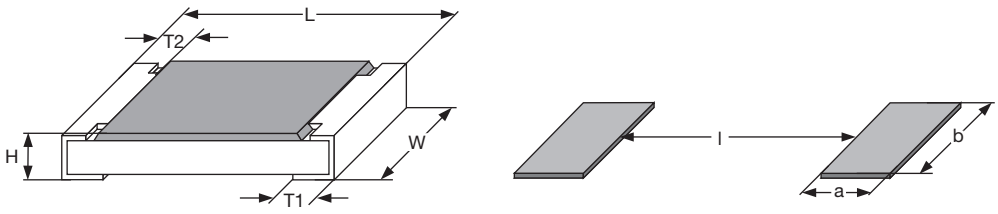
Product Description: CRCW0201 100 1K0 1 % ET7 e3

CRCW0201	100	562R	1 %	ET7	e3
MODEL	TCR	RESISTANCE VALUE	TOLERANCE VALUE	PACKAGING	LEAD (Pb)-FREE
CRCW0201	**± 200** ppm/K **± 100** ppm/K **- 200 / + 400** ppm/K	**1R0** = 1 Ω **10R** = 10 Ω **10K** = 10 kΩ **1M** = 1 MΩ **0R0** = jumper	**± 1 %** **± 5 %**	**ET2** **ET7** **EF4**	**e3** = pure tin termination finish

PACKAGING

MODEL	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
CRCW0201	ED = ET7	10 000	Paper tape according to IEC 60068-3 type I	8 mm	2 mm	180 mm / 7"
	EI = ET2	20 000				254 mm / 10"
	EE = EF4	50 000				330 mm / 13"

DIMENSIONS in millimeters



SIZE		DIMENSIONS					SOLDER PAD DIMENSIONS		
INCH	METRIC	L	W	H	T1	T2	a	b	l
0201	0603	0.6 ± 0.03	0.3 ± 0.03	0.23 ± 0.03	0.15 ± 0.05	0.10 ± 0.05	0.28	0.43	0.23

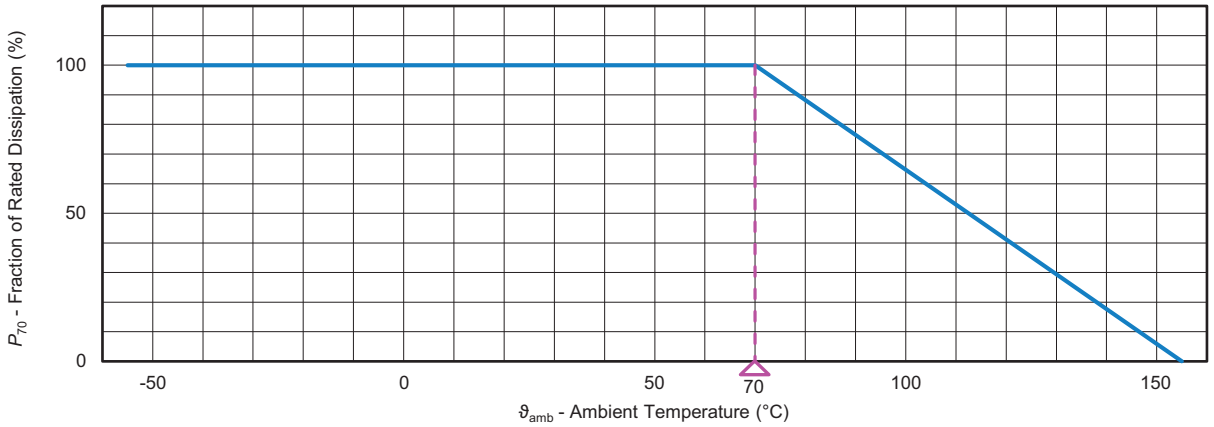
Note

- No marking for 0201 size

For technical questions, contact: thickfilmchip@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

DERATING



TEST PROCEDURES AND REQUIREMENTS

EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE (ΔR)
			Stability for product types:	
			CRCW0201 e3	1 Ω to 10 MΩ
4.5	-	Resistance	-	± 1 %; ± 5 %
4.7	-	Voltage proof	U = 1.4 x U_{ins}; 60 s	No flashover or breakdown
4.13	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; (245 ± 5) °C (3 ± 0.3) s	Good tinning (≥ 95 % covered) no visible damage
4.8.4.2	-	Temperature coefficient	(20 / -55 / 20) °C and (20 / 125 / 20) °C	± 100 ppm/K, ± 200 ppm/K, -200 ppm/K / +400 ppm/K
4.32	21 (Uu_3)	Shear (adhesion)	9 N	No visible damage
4.33	21 (Uu_1)	Substrate bending	Depth 2 mm; 3 times	No visible damage, no open circuit in bent position ± (0.5 % R + 0.05 Ω)
4.19	14 (Na)	Rapid change of temperature	30 min. at -55 °C; 30 min. at 125 °C	
			5 cycles	± (0.5 % R + 0.05 Ω)
			1000 cycles	± (1 % R + 0.05 Ω)
4.23	-	Climatic sequence:	-	± (2 % R + 0.1 Ω)
4.23.2	2 (Ba)	Dry heat	125 °C; 16 h	
4.23.3	30 (Db)	Damp heat, cyclic	55 °C; ≥ 90 % RH; 24 h; 1 cycle	
4.23.4	1 (Aa)	Cold	-55 °C; 2 h	
4.23.5	13 (M)	Low air pressure	1 kPa; (25 ± 10) °C; 1 h	
4.23.6	30 (Db)	Damp heat, cyclic	55 °C; ≥ 90 % RH; 24 h; 5 cycles	
4.23.7	-	DC load	$U = \sqrt{P_{70} \times R} \leq U_{max.}$	
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	± (2 % R + 0.1 Ω)
			70 °C; 8000 h	± (4 % R + 0.1 Ω)

For technical questions, contact: thickfilmchip@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	**IEC 60068-2 TEST METHOD**	**TEST**	**PROCEDURE**	**REQUIREMENTS PERMISSIBLE CHANGE (ΔR)**
			Stability for product types:	
			CRCW0201 e3	1 Ω to 10 MΩ
4.18.2	58 (Td)	Resistance to soldering heat	Solder bath method (260 ± 5) °C; (10 ± 1) s	± (1 % R + 0.05 Ω)
4.35	-	Flammability, needle flame test	IEC 60695-11-5; 10 s	No burning after 30 s
4.24	78 (Cab)	Damp heat, steady state	(40 ± 2) °C; (93 ± 3) % RH; 56 days	± (2 % R + 0.1 Ω)
4.25.3	-	Endurance at upper category temperature	155 °C, 1000 h	± (2 % R + 0.1 Ω)
4.29	45 (XA)	Component solvent resistance	Isopropyl alcohol; 50 °C; method 2	No visible damage
4.22	6 (Fc)	Vibration, endurance by sweeping	f = 10 Hz to 2000 Hz; x, y, z ≤ 1.5 mm; A ≤ 200 m/s^2; 10 sweeps per axis	± (0.5 % R + 0.05 Ω)

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.

For technical questions, contact: thickfilmchip@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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.

© 2025 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000