



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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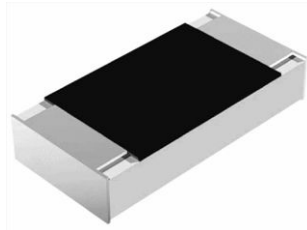
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Lead (Pb)-free Commodity Thick Film Chip Resistors



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	± 200	± 0.5	10.0 to 10M	E96
					- 200/+ 400		1.0 to 9.76	
					± 100	± 1	47.0 to 10M	E24; E96
					± 200		10.0 to 10M	
					- 200/+ 400	± 5	1.0 to 9.76	E24
					± 200		10.0 to 10M	
- 200/+ 400	1.0 to 9.76							
Zero-Ohm-Resistor: $R_{max.} = 50 \text{ m}\Omega$, $I_{max.}$ at $70 \text{ }^\circ\text{C} = 1.0 \text{ A}$								

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	CRCW0201
Rated Dissipation at $70 \text{ }^\circ\text{C}$ ⁽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	$^\circ\text{C}$	- 55 to + 155
Weight/1000 Pieces	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 $155 \text{ }^\circ\text{C}$ is not exceeded.

PART NUMBER AND PRODUCT DESCRIPTION															
PART NUMBER: CRCW02011K00FNE D															
C	R	C	W	0	2	0	1	1	K	0	0	F	K	E	D
MODEL CRCW0201		VALUE R = Decimal K = Thousand M = Million 0000 = Jumper			TOLERANCE D = ± 0.5 % F = ± 1.0 % J = ± 5.0 % Z = Jumper			TCR K = ± 100 ppm/K N = ± 200 ppm/K X = - 200 ppm/K/+ 400 ppm/K 0 = Jumper			PACKAGING ED EE EI				
PRODUCT DESCRIPTION: CRCW0201 100 1K0 1 % ET7 e3															
CRCW0201	100	562R	1 %	ET7	e3										
MODEL CRCW0201	TCR ± 200 ppm/K ± 100 ppm/K - 200/+ 400 ppm/K	RESISTANCE VALUE 1R0 = 1 Ω 10R = 10 Ω 1K0 = 1 kΩ 10K = 10 kΩ 1M0 = 1 MΩ 0R0 = Jumper	TOLERANCE VALUE ± 0.5 % ± 1 % ± 5 %	PACKAGING ET7 EF4 ET2	LEAD (Pb)-FREE e3 = Pure tin termination finish										

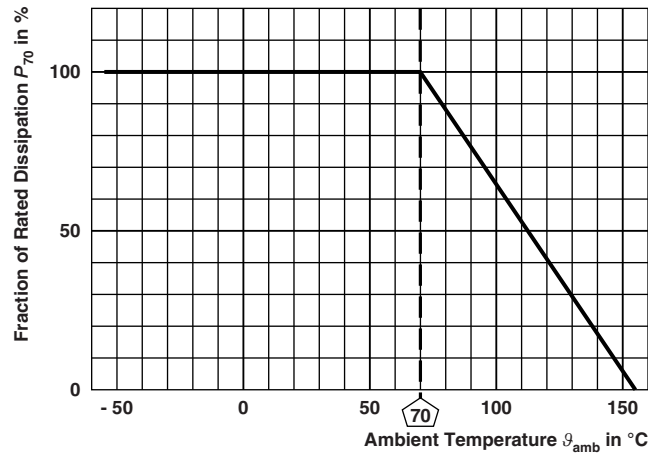
PACKAGING						
MODEL	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
CRCW0201	ED = ET7	10 000	Paper tape acc. to IEC 60068-3 Type I	8 mm	2 mm	180 mm/7"
	EI = ET2	20 000				254 mm/10"
	EE = EF4	50 000				330 mm/13"

DIMENSIONS in millimeters


SIZE		DIMENSIONS					SOLDER PAD DIMENSIONS		
INCH	METRIC	L	W	H	T1	T2	a	b	l
0201	0603	0.6 ± 0.05	0.3 ± 0.05	0.23 ± 0.05	0.15 ± 0.05	0.2 ^{+0.05} _{-0.10}	0.28	0.43	0.23

Note

- No marking for 0201 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:	1 Ω to 10 M Ω
			CRCW0201 e3	
4.5	-	Resistance	-	$\pm 0.5\%$; $\pm 1\%$; $\pm 5\%$
4.7	-	Voltage proof	$U = 1.4 \times U_{ins}$; 60 s	No flashover or breakdown
4.13	58 (Td)	Solderability	Solder bath method; Sn60Pb40 non activated flux; (235 \pm 5) °C (2 \pm 0.2) s	Good tinning ($\geq 95\%$ covered) no visible damage
			Solder bath method; Sn96.5Ag3Cu0.5 non-activated flux; (245 \pm 5) °C (3 \pm 0.3) s	Good tinning ($\geq 95\%$ 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 $\pm (0.5\% R + 0.05 \Omega)$
4.19	14 (Na)	Rapid change of temperature	30 min. at - 55 °C; 30 min. at 125 °C	$\pm (0.5\% R + 0.05 \Omega)$ $\pm (1\% R + 0.05 \Omega)$
			5 cycles 1000 cycles	



TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE (ΔR)
			Stability for product types:	1 Ω to 10 M Ω
			CRCW0201 e3	
4.23	-	Climatic sequence:	-	$\pm (2 \% R + 0.1 \Omega)$
4.23.2	2 (Ba)	Dry heat	125 °C; 16 h	
4.23.3	30 (Db)	Damp heat, cyclic	55 °C; $\geq 90 \% RH$; 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 \pm 10) °C; 1 h	
4.23.6	30 (Db)	Damp heat, cyclic	55 °C; $\geq 90 \% RH$; 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 70 °C; 8000 h	$\pm (2 \% R + 0.1 \Omega)$ $\pm (4 \% R + 0.1 \Omega)$
4.18.2	58 (Td)	Resistance to soldering heat	Solder bath method (260 \pm 5) °C; (10 \pm 1) s	$\pm (1 \% R + 0.05 \Omega)$
4.35	-	Flamability, needle flame test	IEC 60695-11-5; 10 s	No burning after 30 s
4.24	78 (Cab)	Damp heat, steady state	(40 \pm 2) °C; (93 \pm 3) % RH; 56 days	$\pm (2 \% R + 0.1 \Omega)$
4.25.3	-	Endurance at upper category temperature	155 °C, 1000 h	$\pm (2 \% R + 0.1 \Omega)$
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 \leq 1.5 mm; A \leq 200 m/s ² ; 10 sweeps per axis	$\pm (0.5 \% R + 0.05 \Omega)$

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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