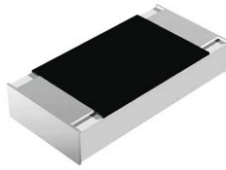




**THE DATASHEET OF  
CRCW010024K0FREL**



## 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](http://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 <sub>RMS</sub> /DC V	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE $\Omega$	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.

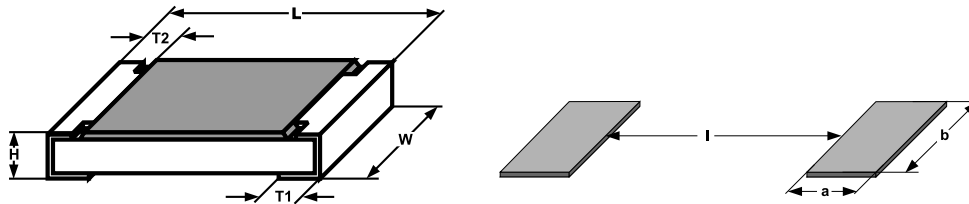
TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	CRCW01005
Rated Dissipation $P_{70}$ <sup>(1)</sup>	W	0.031
Operating Voltage $U_{max.}$ AC <sub>RMS</sub> /DC	V	15
Insulation Voltage $U_{ins}$ (1 min)	V	30
Insulation Resistance	$\Omega$	> 10 <sup>9</sup>
Operating Temperature Range	°C	-55 to +125
Mass	mg	0.07

### Note

- <sup>(1)</sup> 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.

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 = ± 1.0 % G = ± 2.0 % J = ± 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	250	1K0	1 %	ET3	e3										
TYPE CRCW01005	TCR ± 250 ppm/K -200/+600 ppm/K	RESISTANCE VALUE 1R0 = 1 Ω 10R = 10 Ω 1K0 = 1 kΩ 10K = 10 kΩ 1M0 = 1 MΩ 0R0 = Jumper	TOLERANCE VALUE ± 1 % ± 2 % ± 5 %	PACKAGING ET3	LEAD (Pb)-FREE e3 = Pure tin termination finish										

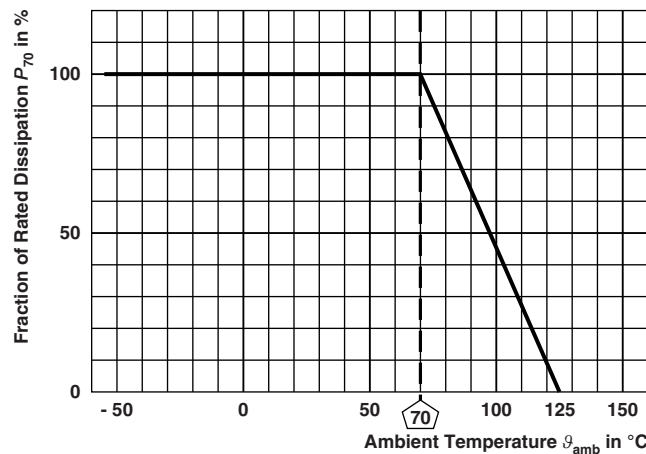
PACKAGING						
TYPE	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
CRCW01005	EL = ET3	20 000	Paper tape acc. to IEC 60286-3, Type 1a	8 mm	2 mm	180 mm/7"

**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**


<b>TEST PROCEDURES AND REQUIREMENTS</b>				
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE ( $\Delta R$ )
			STABILITY CLASS 1 OR BETTER	
			Stability for product types:	1 $\Omega$ to 1 M $\Omega$
			<b>CRCW01005 e3</b>	
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) $^{\circ}$ 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) $^{\circ}$ C (2 $\pm$ 0.5) s	Good tinning ( $\geq 95\%$ covered) no visible damage
4.8.4.2	-	Temperature coefficient	(20/-55/20) $^{\circ}$ C and (20/125/20) $^{\circ}$ C	- 200 ppm/K/+600 ppm/K, $\pm 250$ ppm/K
4.33	21 (Uu <sub>1</sub> )	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 $^{\circ}$ C; 15 min. at 125 $^{\circ}$ C; 300 cycles	$\pm (2\% R + 0.1 \Omega)$
4.25.1	-	Endurance at 70 $^{\circ}$ C	$U = \sqrt{P_{70} \times R} \leq U_{max.}$ ; 1.5 h on; 0.5 h off; 70 $^{\circ}$ C; 1000 h	$\pm (5\% R + 0.1 \Omega)$
4.18.2	58 (Td)	Resistance to soldering heat	Solder bath method (260 $\pm$ 5) $^{\circ}$ C; (10 $\pm$ 1) s	$\pm (2\% R + 0.1 \Omega)$
4.24	78 (Cab)	Damp heat, steady state	(40 $\pm$ 2) $^{\circ}$ C; (90 to 95) % RH; 1000 h	$\pm (5\% R + 0.1 \Omega)$
4.25.3	-	Endurance at upper category temperature	125 $^{\circ}$ C, 1000 h	$\pm (2\% R + 0.1 \Omega)$
4.29	45 (XA)	Component solvent resistance	Isopropyl alcohol; (20 to 25) $^{\circ}$ 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.



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