

## **Excellent Integrated System Limited**

Stocking Distributor

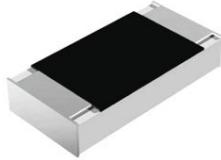
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[CRCW0100000Z0EL](#)

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## 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)



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 $\Omega$	SERIES
CRCW01005	01005	RR0402M	0.031	15	$\pm 250$	$\pm 1$	10.0 to 1M	E24; E96
						$\pm 2, \pm 5$		E24
					-200/+600	$\pm 1$	1.0 to 9.76	E24; E96
						$\pm 2, \pm 5$	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 $U_{max. AC_{RMS}/DC}$	V	15
Insulation Voltage $U_{ins}$ (1 min)	V	30
Insulation Resistance	$\Omega$	$> 10^9$
Operating Temperature Range	$^{\circ}C$	-55 to +125
Mass	mg	0.07

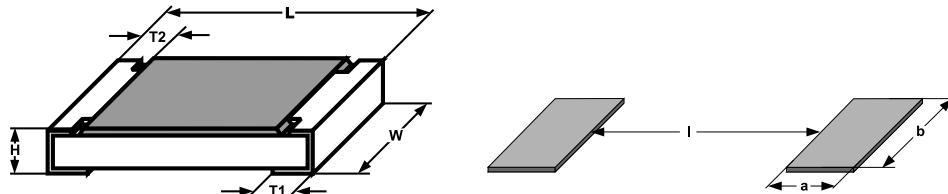
### Note

<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.

<b>PART NUMBER AND PRODUCT DESCRIPTION</b>															
<b>PART NUMBER: CRCW01001K00FREL</b>															
<b>C</b>	<b>R</b>	<b>C</b>	<b>W</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>K</b>	<b>0</b>	<b>0</b>	<b>F</b>	<b>R</b>	<b>E</b>	<b>L</b>
<b>TYPE</b>				<b>VALUE</b>				<b>TOLERANCE</b>				<b>TCR</b>			
<b>CRCW0100</b>				<b>R = Decimal</b>				<b>F = <math>\pm 1.0\%</math></b>				<b>R = <math>\pm 250</math> ppm/K</b>			
<b>K = Thousand</b>				<b>G = <math>\pm 2.0\%</math></b>				<b>Y = -200 ppm/K+600 ppm/K</b>				<b>Z = Jumper</b>			
<b>M = Million</b>				<b>J = <math>\pm 5.0\%</math></b>				<b>0 = Jumper</b>				<b>EL</b>			
<b>PRODUCT DESCRIPTION: CRCW01005 250 1K0 1 % ET3 e3</b>															
<b>CRCW01005</b>	<b>250</b>	<b>1K0</b>	<b>1 %</b>	<b>ET3</b>	<b>e3</b>										
<b>TYPE</b>		<b>TCR</b>		<b>RESISTANCE VALUE</b>		<b>TOLERANCE VALUE</b>		<b>PACKAGING</b>		<b>LEAD (Pb)-FREE</b>		<b>e3 = Pure tin termination finish</b>			
<b>CRCW01005</b>		<b><math>\pm 250</math> ppm/K</b>		<b><math>\pm 1\%</math></b>		<b><math>\pm 2\%</math></b>		<b>ET3</b>		<b><math>\pm 5\%</math></b>					
<b><math>\pm 250</math> ppm/K</b>		<b><math>-200/+600</math> ppm/K</b>		<b><math>1\Omega</math></b>		<b><math>\pm 1\%</math></b>		<b><math>10\Omega</math></b>		<b><math>\pm 2\%</math></b>					
<b><math>10\Omega</math></b>		<b><math>100\Omega</math></b>		<b><math>1\text{ k}\Omega</math></b>		<b><math>\pm 5\%</math></b>		<b><math>10\text{ k}\Omega</math></b>		<b><math>1\text{ M}\Omega</math></b>					
<b><math>1\text{ M}\Omega</math></b>		<b>OR0 = Jumper</b>													

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

#### **DIMENSIONS** in millimeters

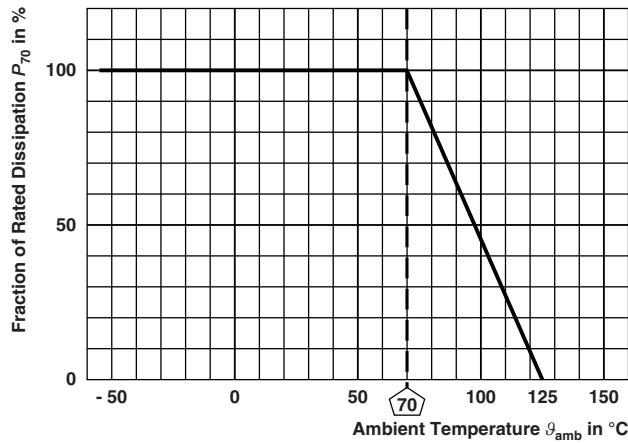


<b>SIZE</b>		<b>DIMENSIONS</b>					<b>RECOMMENDED SOLDER PAD DIMENSIONS</b>		
<b>IMPERIAL</b>	<b>METRIC</b>	<b>L</b>	<b>W</b>	<b>H</b>	<b>T1</b>	<b>T2</b>	<b>a</b>	<b>b</b>	<b>I</b>
01005	RR0402M	$0.4 \pm 0.02$	$0.2 \pm 0.02$	$0.13 \pm 0.02$	$0.10 \pm 0.03$	$0.10 \pm 0.03$	0.15	0.2	0.2

#### **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: <b>CRCW01005 e3</b>	1 $\Omega$ to 1 M $\Omega$
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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