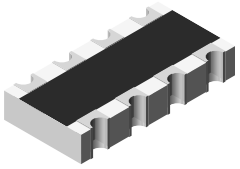
Thick Film, Resistor Array



The CRA04P thick film resistor array is constructed on a high grade ceramic body with concave terminations. A small package enables the design of high density circuits. The single component reduces board space, component counts and assembly costs.

FEATURES

- Concave terminal array with square corners
- Wide ohmic range: 1R0 to 1M0
- 8 terminal package with isolated resistors
- Lead (Pb)-free solder contacts on NI barrier layer
- Pure tin plating provides compatibility with lead (Pb)-free and lead containing soldering processes
- Compatible with "Restriction of the use of Hazardous Substances" (RoHS) directive 2002/95/EC (issue 2004)

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	CIRCUIT	POWER RATING $P_{70\,°C}$ W	LIMITING ELEMENT VOLTAGE MAX V≅	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
CRA04P	03	0.063	50	± 100	± 2	10R - 1M0	24
				± 200	± 5	1R0 - 1M0	24
		Zero-Ohm-Resistor: R_{max} = 50 mΩ, I_{max} = 1 A					

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CRA04P
Rated Dissipation at 70 °C[2]	W per element	0.063
Limiting Element Voltage[1]	V≅	50
Insulation Voltage (1 min)	$V_{dc/ac\ peak}$	100
Category Temperature Range	°C	- 55/+ 125 (+ 155)
Insulation Resistance	Ω	> 10^9

Notes
1. Rated voltage: $\sqrt{P \times R}$
2. 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.

PART NUMBER AND PRODUCT DESPRIPTION

PART NUMBER: CRA04P08347K0JTD[1]

C	R	A	0	4	P	0	8	3	4	7	K	0	J	T	D		

MODEL	TERMINAL STYLE	PIN	CIRCUIT	VALUE	TOLERANCE	PACKAGING[2]	SPECIAL
CRA04	**P**	**08**	**3** = 03	**R** = Decimal **K** = Thousand **M** = Million **0000** = 0 Ω Jumper	**G** = ± 2 % **J** = ± 5 % **Z** = 0 Ω Jumper	**TD** **TC** **PZ**	up to 2 digits

PRODUCT DESCRIPTION: CRA04P 08 03 473 J RT7 e3

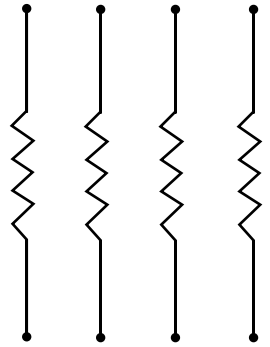
CRA04P	08	03	473	J	RT7	e3
MODEL	TERMINAL COUNT	CIRCUIT TYPE	RESISTANCE VALUE	TOLERANCE	PACKAGING[2]	LEAD (Pb)-FREE
CRA04P	08	03	473 = 47 kΩ 4R7 = 4.7 Ω 100 = 10 Ω 000 = 0 Ω Jumper First two digits (3 for 1 %) are significant. Last digit is the multiplier.	G = ± 2 % J = ± 5 % Z = 0 Ω Jumper	RT7 RT6 PZ	e3 = Pure Tin Termination Finish

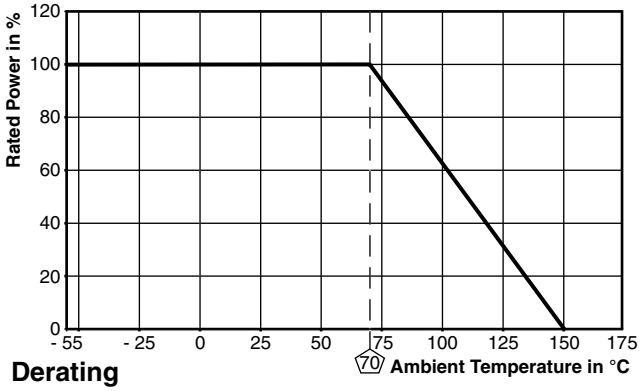
Notes
1. Preferred way for ordering products is by use of the PART NUMBER.
2. Please refer to the table PACKAGING, see next page.

PACKAGING						
MODEL	TAPE WIDTH	DIAMETER	PITCH	PIECES/REEL	PACKING CODE	
					PAPER TAPE	
					PART NUMBER	PRODUCT DESCRIPTION
CRA04P	8 mm	180 mm/7"	2 mm	10 000	TD	RT7
		330 mm/13"	2 mm	20 000	TC	RT6
		330 mm/13"	2 mm	50 000	PZ	PZ

CIRCUIT

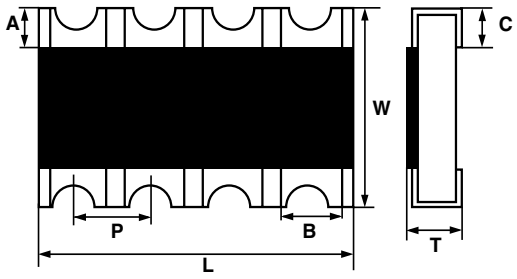
03 Circuit

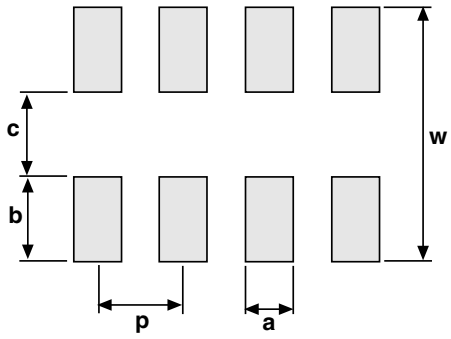




Derating

DIMENSIONS





PIN NO#	DIMENSIONS [in millimeters]						
	L	A	B	C	P_{NOM}	T	W
8	2.00	0.20	0.32	0.25	0.50	0.35	1.00
TOL	± 0.10	± 0.10	± 0.10	± 0.10	-	± 0.10	± 0.10

SOLDER PAD DIMENSIONS [in millimeters]					
	c	w	p	a	b
WAVE	0.5	1.5	0.5	0.32	0.5

TEST PROCEDURES AND REQUIREMENTS

EN 60115-1			
TEST (clause)	**CONDITIONS OF TEST**	**REQUIREMENTS PERMISSIBLE CHANGE ($\Delta R/R$)[1)]**	
		STABILITY CLASS 2 OR BETTER	
	stability for product types: **CRA04P**	10 Ω to 1 MΩ	1 Ω to 1 MΩ
Resistance (4.5)	-	± 2 %	± 5 %
Temperature coefficient (4.8.4.2)	20/- 55/20 °C and 20/125/20 °C	± 100 ppm/K	± 200 ppm/K
Overload (4.13)	$U = 2.5 \times (P_{70} \times R)^{1/2}$ $\leq 2 \times U_{max}$; 0.5 s	± (0.5 % R + 0.05 Ω)	
Solderability (4.17.5)[2)]	Aging 4 h at 155 °C, dryheat Solder bath method; 235 °C; 2 s Visual examination	Good tinning (≥ 95 % covered) no visible damage	
Resistance to soldering heat (4.18.2)	Solder bath method; (260 ± 5) °C; (10 ± 1) s	± (0.5 % R + 0.05 Ω)	
Rapid change of temperature (4.19)	30 min. at LCT = - 55 °C; 30 min. at UCT = 125 °C; 5 cycles	± (0.5 % R + 0.05 Ω)	
Damp heat, steady state (4.24)	(40 ± 2) °C; 56 days; (93 ± 3) % RH	± (2 % R + 0.1 Ω)	
Climatic sequence (4.23)	16 h at UCT = 125 °C; 1 cycle at 55 °C; 2 h at LCT = - 55 °C; 1 h/1 kPa at 15 °C to 35 °C; 5 cycles at 55 °C $U = (P_{70} \times R)^{1/2}$ $U = U_{max}$; whichever is less severe	± (2 % R + 0.1 Ω)	
Endurance at 70 °C (4.25.1)	$U = (P_{70} \times R)^{1/2}$ $U = U_{max}$; whichever is less severe 1.5 h on; 0.5 h off; 70 °C; 1000 h	± (2 % R + 0.1 Ω)	
Extended endurance (4.25.1.8)	Duration extended to 8000 hours	± (4 % R + 0.1 Ω)	
Endurance at upper category temperature (4.25.3)	UCT = 125 °C; 1000 h	± (2 % R + 0.1 Ω)	

Notes

1. Figures are given for a single element.
2. Solderability is specified for 2 years after production or requalification. Permitted storage time is 20 years.

APPLICABLE SPECIFICATIONS

• EN 60115-1	Generic Specification
• EN 140400	Sectional Specification
• EN 140401-802	Detail Specification
• IEC 60068-2-X	Variety of environmental test procedures
• EIA 481	Packaging of SMD components

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