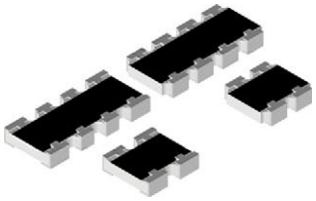
Thick Film Chip Resistor Array



CRA06E and CRA06S Thick Film resistor arrays are constructed on a high grade ceramic body with convex terminations. A small package enables the design of high density circuits. The single component reduces board space, component counts and assembly costs.

FEATURES

- Convex terminal array available with either scalloped corners (E version) or square corners (S version)
- Wide ohmic range: 10 Ω to 1 MΩ
- 4 or 8 terminal package with isolated resistors
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	CIRCUIT	POWER RATING P_{70} W	LIMITING ELEMENT VOLTAGE MAX. V≅	TEMPERATURE COEFFICIENT ± ppm/K	TOLERANCE ± %	RESISTANCE RANGE Ω	SERIES
CRA06E CRA06S	03	0.063	50	100 200	1 2; 5	10R to 1M	E24; E96 E24
	Zero-Ohm-Resistor: $R_{max.}$ = 50 mΩ, $I_{max.}$ = 1 A						

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CRA06E AND CRA06S
Rated dissipation at 70 °C (1)	W per element	0.063
Limiting element voltage (2)	V≅	50
Insulation voltage (1 min)	$V_{DC/AC\ PEAK}$	100
Category temperature range	°C	-55 to +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 rates dissipation applies only if the permitted film temperature of 155 °C is not exceed

PART NUMBER AND PRODUCT DESCRIPTION

Part Number: CRA06S08347K0JTA (1)

C	R	A	0	6	S	0	8	3	4	7	K	0	J	T	A		

MODEL	TERMINAL STYLE	PIN	CIRCUIT	VALUE	TOLERANCE	PACKAGING (2)	SPECIAL
CRA06	**S** **E**	**04** **08**	**3** = 03	**R** = decimal **K** = thousand **M** = million **0000** = 0 Ω jumper	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 % **Z** = 0 Ω jumper	**TA** **TC**	Up to 2 digits

Product Description: CRA06S 08 03 -05 473 J RT1 e3

CRA06S	08	03	473	J	RT1	e3
MODEL	TERMINAL COUNT	CIRCUIT TYPE	RESISTANCE VALUE	TOLERANCE	PACKAGING	LEAD (Pb)-FREE
CRA06E **CRA06S**	**04** **08**	**03**	**1R0** = 1 Ω **10R** = 10 Ω **47K** = 47 kΩ **1M0** = 1 MΩ **0R0** = jumper First two digits (3 for 1 %) are significant. Last digit is the multiplier	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 % **Z** = 0 Ω jumper	**RT1** **RT6**	**e3** = pure tin termination finish

Notes

(1) Preferred way for ordering products is by use of the PART NUMBER

(2) Please refer to table PACKAGING, see next page

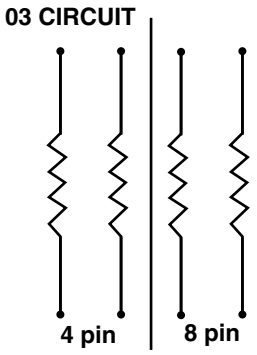
AVAILABLE TYPES AND RANGES

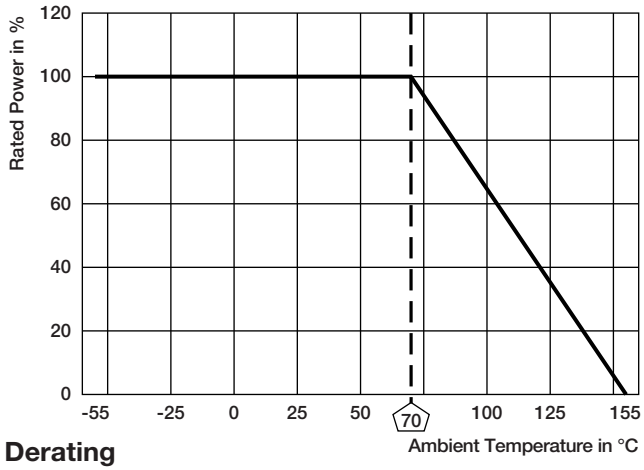
MODEL	TERMINAL COUNT	CIRCUIT	TEMPERATURE COEFFICIENT	TOLERANCE
CRA06S	04	03	± 100 ppm/K	± 1 %
			± 200 ppm/K	± 2 %; ± 5 %
	08	03	± 100 ppm/K	± 1 %
			± 200 ppm/K	± 2 %; ± 5 %
CRA06E	08	03	± 100 ppm/K	± 1 %
			± 200 ppm/K	± 2 %; ± 5 %

PACKAGING

MODEL	TAPE WIDTH	PITCH	PIECES / REEL	PACKAGING CODE	
				PAPER TAPE	
				PART NUMBER	PRODUCT DESCRIPTION
CRA06	180 mm/7"	4 mm	5000	TA	RT1
	330 mm/13"	4 mm	20 000	TC	RT6

CIRCUIT

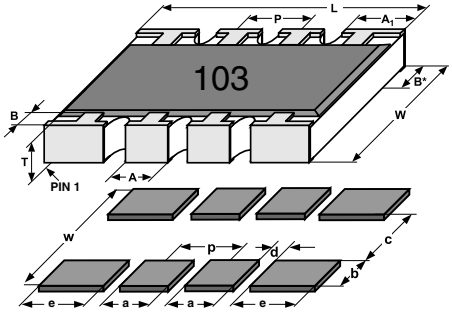




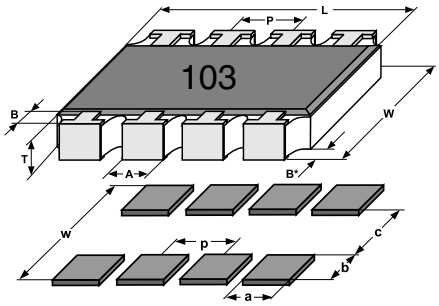
Derating

DIMENSIONS

S-Version



E-Version



MODEL	PIN NO#	DIMENSIONS in millimeters							
		L	A	A_1	B	B*	P	T	W
CRA06S	4	1.6	0.38	0.61	0.3	0.3	0.8	0.5	1.5
CRA06E	8	3.2	0.38	-	0.3	0.3	0.8	0.5	1.5
CRA06S	8	3.2	0.38	0.61	0.3	0.3	0.8	0.5	1.5
	TOL.	± 0.15	± 0.15	± 0.15	± 0.15	± 0.15	± 0.1	± 0.1	± 0.15

REFLOW SOLDER PAD DIMENSIONS in millimeters								
MODEL	PINS	c	w	d	p	a	b	e
CRA06S	4	0.8	3.1	0.36		0.44	1.15	
CRA06E CRA06S	8	0.8	3.1	0.36	0.8	0.44	1.15	0.63

TEST PROCEDURES AND REQUIREMENTS

EN 60115-1

TEST (clause)	CONDITIONS OF TEST	REQUIREMENTS PERMISSIBLE CHANGE ($\Delta R/R$) (1)	
		STABILITY CLASS 1 OR BETTER	STABILITY CLASS 2 OR BETTER
	Stability for product types: CRA06E / CRA06S	10 Ω to 1 MΩ	10 Ω to 1 MΩ
Resistance (4.5)	-	± 1 %	± 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)	$U = 2.5 \times (P_{70} \times R)^{1/2}$ ≤ 2 x $U_{max.}$; 0.5 s	± (0.25 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
Solderability (4.17.5) (2)	Aging 4 h at 155 °C, dry heat 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	± (0.25 % R + 0.05 Ω)	± (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	± (0.25 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
Damp heat, steady state (4.24)	(40 ± 2) °C; 56 days; (93 ± 3) % RH	± (1 % R + 0.05 Ω)	± (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	± (1 % R + 0.05 Ω)	± (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	± (1 % R + 0.05 Ω)	± (2 % R + 0.1 Ω)
Extended endurance (4.25.1.8)	Duration extended to 8000 h	± (2 % R + 0.1 Ω)	± (4 % R + 0.1 Ω)
Endurance at upper category temperature (4.25.3)	UCT = 125 °C; 1000 h	± (1 % R + 0.05 Ω)	± (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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