APPROVAL SHEET

Product Name : General Chip Array Resistor

Part No. : TCA

Description : Size 0402X2 0402X4 0603X2 0603X4

General Chip Array Resistor—TCA Series

■ Applications

—Communication equipment

—Home Appliance

—Computer & relative products

—Power equipment

—Measuring instrument

■ Features

—Small size and lightweight

—High quality reliability

—Reduction of assembly costs and matching with placement machines.

■ Part Number Explanation

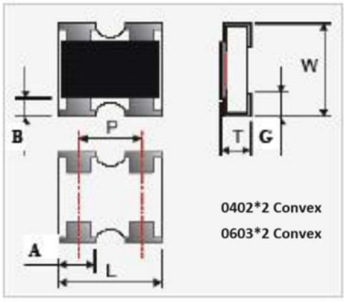
TCA	022RA	J	10R0	T	S
Product	**Size (Inch)**	**Tolerance**	**Resistance**	**Packaging**	**Functional**
General Chip Array Resistor	022RA: 0402*2R, Convex 024RA: 0402*4R, Convex 024RC: 0402*4R, Concave 032RA: 0603*2R, Convex 034RA: 0603*4R, Convex 034RC: 0603*4R, Concave	F : ± 1.0% J : ± 5.0%	1Ω=1R00 10Ω=10R0 100Ω=100R 1KΩ=1001 1MΩ=1004	T=Tape & Reel	S=Standard

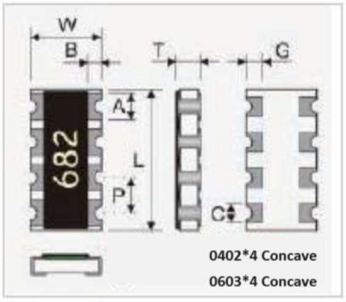
■ Standard Electrical Specifications

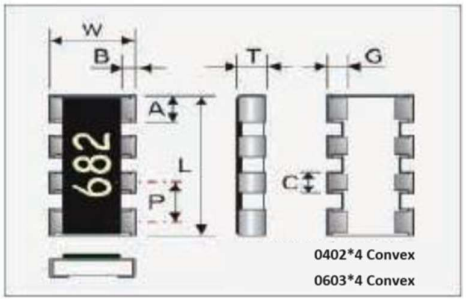
Type	Termination Construction	Power Rating at 70℃	Max. RCWV	Max Overload Voltage	Temperature Coefficient (TCR; ppm/℃)	Resistance Range	
						F (±1%)	J (±5%)
TCA022RA	Convex	0.063 W	25V	50V	±300 ±400	-	0Ω, 10Ω≦R≦1MΩ 3Ω≦R≦9.1MΩ
TCA024RA	Convex	0.063 W	50V	100V	±200 -300~+500	-	0Ω, 10Ω≦R≦1MΩ 3Ω≦R≦9.1MΩ
					±200	0Ω, 10Ω≦R≦1MΩ	-
TCA032RA	Convex	0.1 W	50V	100V	±200 -300~+500	0Ω, 10Ω≦R≦1MΩ 1Ω≦R≦9.1MΩ	0Ω, 10Ω≦R≦1MΩ 1Ω≦R≦9.1MΩ
TCA034RA	Convex	0.1 W	50V	100V	±200 -300~+500	-	0Ω, 10Ω≦R≦1MΩ 1Ω≦R≦9.1MΩ
					±200	0Ω, 10Ω≦R≦1MΩ	-
TCA024RC	Concave	0.063 W	25V	50V	±300	0Ω, 3Ω≦R≦1MΩ	0Ω, 3Ω≦R≦1MΩ
TCA034RC	Concave	0.1W	50V	100V	±200	0Ω, 10Ω≦R≦1MΩ	0Ω, 10Ω≦R≦1MΩ

- Functional code: S
- Beyond the above specification also can meet the special requirements. For detailed questions, please contact us freely.

Dimension



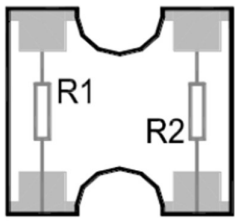




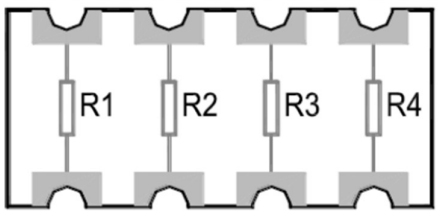
Unit: mm

Size	L	W	T	B	G	P	C	A
TCA022RA	1.00±0.10	1.00±0.10	0.35±0.10	0.20±0.15	0.25±0.17	0.65±0.10	-	0.34±0.10
TCA024RA	2.00±0.10	1.00±0.10	0.45±0.10	0.20±0.10	0.25±0.10	0.50±0.05	0.30±0.05	0.40±0.10
TCA024RC	2.00±0.10	1.00±0.10	0.45±0.10	0.20±0.15	0.25±0.10	0.50±0.05	0.25±0.05	0.25±0.05
TCA032RA	1.60±0.20	1.50±0.10	0.50±0.10	0.30±0.15	0.30±0.15	1.00±0.10	-	0.60±0.10
TCA034RA	3.20±0.20	1.60±0.10	0.50±0.10	0.30±0.20	0.30±0.20	0.80±0.10	0.45±0.10	0.60±0.15
TCA034RC	3.20 +0.20/-0.10	1.60 +0.20/-0.10	0.60±0.10	0.35±0.15	0.50±0.15	0.80±0.10	0.50±0.15	0.60±0.15

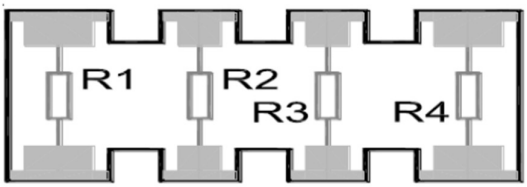
Circuit



TCA022RA



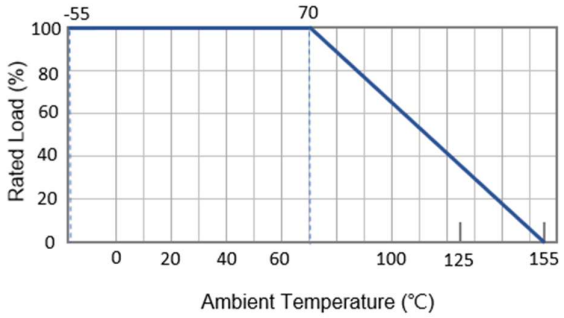
TCA024RC / TCA034RC



TCA024RA / TCA034RA

Derating Curve

Operating Temperature Range: -55 to +155℃



Voltage Rating or Current Rating

The direct or alternating voltage for the rated power can be calculated from the following formula but must not exceed the maximum voltage.

$V=\sqrt{P \times R}$

E=Rated voltage(V)
P=Power rating(W)
R=Nominal resistance(Ω)

Recommended Customer Soldering Parameters

Recommended IR Reflow Soldering Conditions

Preliminary heating: 150℃~180℃, 120s max
Soldering: 220℃, 60s max
Peak temperature: 245℃, 15s max

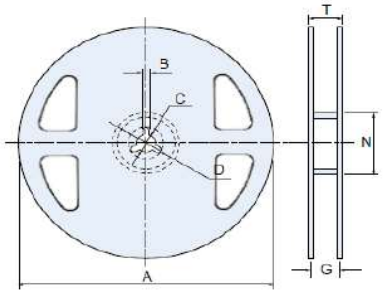
Recommended WAVE Soldering Conditions

Reservoir Temperature: 260℃, 10s max
Number of times: two times max

■ Reliability Test and Requirement

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	IEC-60115-1 4.8	At 25 / -55℃ and 25℃ /+155℃, 25℃ is the reference temperature	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds. measure resistance after 30 minutes	J: △R ≦ ± (2% + 0.1Ω) F: △R ≦ ± (1% + 0.05Ω)
DC Resistance	IEC 60115-1 4.5 JIS C 5201-1 4.5	Measure the resistance value..	J : ±5% , F: ±1%Zero ohm Jumper ＜ 50mΩ
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5℃ for 10 seconds.	J: △R ≦ ± (1% + 0.1Ω) F: △R ≦ ± (0.5% + 0.05Ω) No mechanical damage
Temperature Cycling	JIS-C-5201-1 4.19 IEC-60115-1 4.19	Repeat 5 cycles as follow -55℃(30 min.) + 25℃(2～3 min.)+155℃(30 min.) + 25℃(2～3 min.) for TCA022RA,TCA024RA,TCA024RC,TCA034RA,TCA034RC	J: △R ≦ ± (1% + 0.1Ω) F: △R ≦ ± (0.5% + 0.05Ω)
Damp Heat	JIS-C-5201-1 4.24 IEC-60115-1 4.24	Maintain the temperature of the resistor at 40±2℃ and 90～95% R.H. with the rated voltage applied. Cycle ON for 1.5 hours and OFF for 0.5 hour for 1000+48/-0 hours. After 1～4 hour, measure the resistance value.	J: △R ≦ ± (3% + 0.1Ω) F: △R ≦ ± (1% + 0.05Ω)
Load Life	JIS-C-5201-1 4.25 IEC-60115-1 4.25.	Permanent resistance change after 1000+48/-0 hours (1.5 hours ON , 0.5 hour OFF) at RCWV or Max. Keep the resistor at 70±2℃ ambient"	J: △R ≦ ± (3% + 0.1Ω) F: △R ≦ ± (1% + 0.05Ω)
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Test voltage: 100±15V	≥10GΩ
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Resistance change after bended on the 90mm PCB. Bend:2mm for TCA022RA,TCA024RA,TCA024RC, TCA032RA, TCA034RA,TCA034RC	J: △R ≦ ± (1% + 0.1Ω) F: △R ≦ ± (0.5% + 0.05Ω)
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	After immersing flux, dip in the 235±2℃ molten solder bath for 2±0.5 sec	Over 95% of termination must be covered with solder

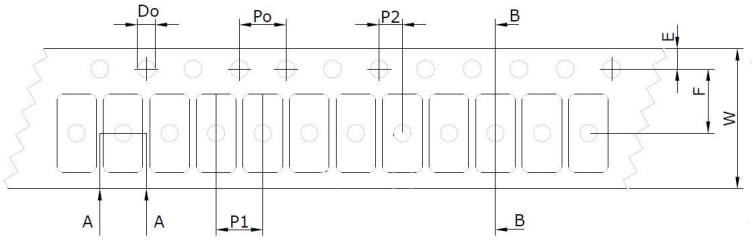
Packaging Information



Unit:mm

Size	Packaging Q'ty	A	N	C	D	B	G	T
0402*2 0402*4 (Convex, Concave) 0603*2 (Convex) 0603*4 (Convex, Concave)	5Kpcs / Reel	178.0±2.0	60.0±0.5	13.0±0.5	20min	2.0±0.5	10.0±1.5	14.9 max.

Tapping Specification



Unit:mm

Size	A	B	W	F	E	P1	P2	Po	Do
0402*2 (Convex)	1.15±0.10	1.15±0.10	8.00±0.30	3.50±0.20	1.75±0.10	2.00±0.05	2.00±0.05	4.00±0.10	1.50+0.10/-0
0402*4 (Convex Concave)	1.20±0.20	2.20±0.20	8.00±0.30	3.50±0.20	1.75±0.10	2.00±0.05	2.00±0.05	4.00±0.10	1.50+0.10/-0
0603*2 (Convex)	1.80±0.10	1.80±0.10	8.00±0.30	3.50±0.10	1.75±0.10	4.00±0.10	4.00±0.10	4.00±0.10	1.50+0.10/-0
0603*4 (Convex Concave)	2.00±0.20	3.60±0.20	8.00±0.30	3.50±0.20	1.75±0.10	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0

Marking

3 digits marking for 1% & 5%

Resistance	6.8KΩ
3 digits code	682

No marking code for TCA022RA