

# Approval Specification

Customer :

Product: Thick Film Array Chip Resistor

CN-43  $\pm 5\%$

Sizes : Convex Array

0603x4

Customer Approval :

(please sign & return)



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### 1. Features

- Less board space than individual chip resistors
- Cost reduction efficiency by eliminating mounter operations
- Lead free products are available

### 2. Applications

- All general purpose applications

### 3. Description

The resistors are constructed on the alumina substrate. Top electrodes are added to each end and connected with resistive paste that is applied to top surface of the alumina substrate. The resistive layer is made by resistive paste that is prepared to approach the nominal value. Laser trimming process makes the resistance value to meet the nominal value and within the tolerance.

The resistive layer is protected by primary overcoat and secondary overcoat. Marking on secondary overcoat let user to know the resistance value directly. The barrier layer is added to edge electrodes for plating with external electrode that is the main role makes the resistor mounted on PCB.

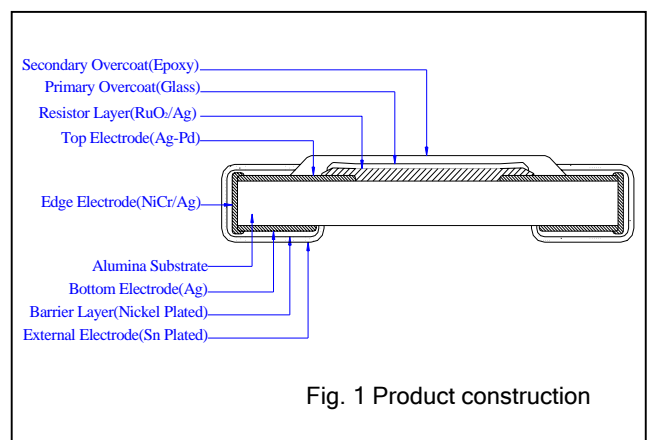


Fig. 1 Product construction

### 4. Quick Reference Data

Type name	CN-43
Size code	Convex Array 0603x4
Resistance tolerance	±5%, E24 series
Resistance range	10Ω ~ 1MΩ, Jumper (<50mΩ)
Temperature Coefficient of Resistance (ppm/°C)	
10Ω ≤ R ≤ 560KΩ	±200
620KΩ ≤ R ≤ 1MΩ	±200
Power rating (at 70°C)	1/16W
Max. operation voltage (DC or RMS)	50V
Max. overload voltage	100V
Jumper Rated current	1A
Climatic category (IEC 60068)	55/155/42



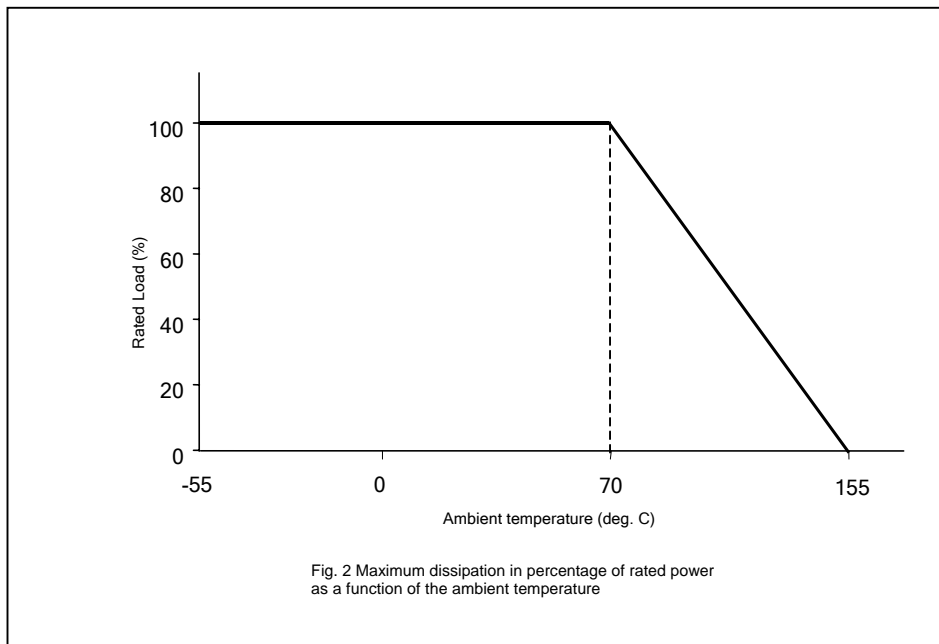
5. Order information

Digits	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Order Code	C	N	-	4	3	J	L	7	-	-	-	1	8	K
	<b>Type Name</b> CN-43: Convex Array 0603x4					<b>Tolerance</b> J : ±5%	<b>Function code</b> - : Normal L : Lead Free	<b>Packaging</b> 7 : 7" reel, paper tape, 5000 pcs/reel A : 10" reel, paper tape, 10000 pcs/reel D : 13" reel, paper tape, 20000 pcs/reel F : Bulk package	<b>Resistance Value</b> ---- 0R: Jumper --- 10R: 10Ω --- 3K9: 3.9KΩ --- 18K: 18KΩ -- 100K: 100KΩ ---- 1M: 1MΩ					

6. Functional description

Derating curve

For resistors operate in the ambient temperature over 70°C, loading power ratio will derate in accordance with following curve.



**Soldering condition**

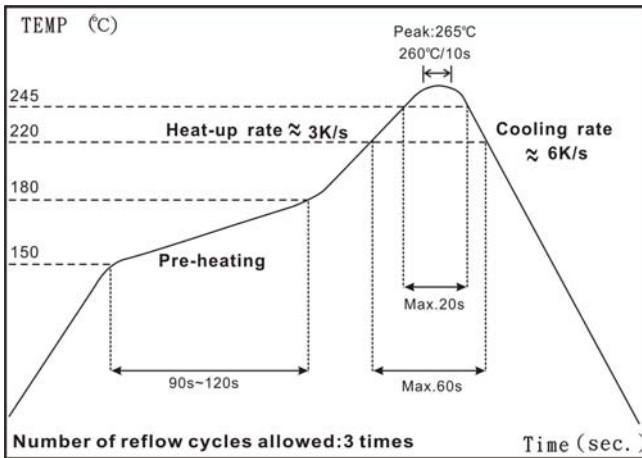


Fig.3 IR Reflow Soldering

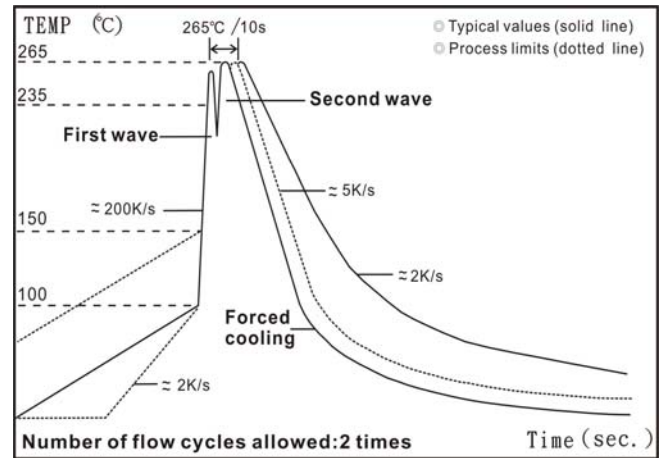


Fig.4 Wave Soldering (Flow Soldering)

**7. Mechanical Data**

**Dimension**

Type	CN-43
L (mm)	3.20±0.15
W (mm)	1.60±0.15
H (mm)	0.55±0.10
A (mm)	0.50±0.15
B (mm)	0.80±0.05
C (mm)	0.30±0.15
Y (mm)	0.30±0.15

**Mass per 1000 pcs**

TYPE NAME	MASS (g)
CN-43	8.47

**Outline**

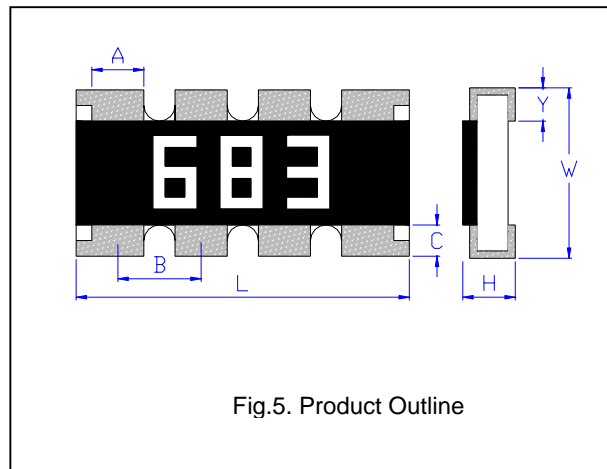
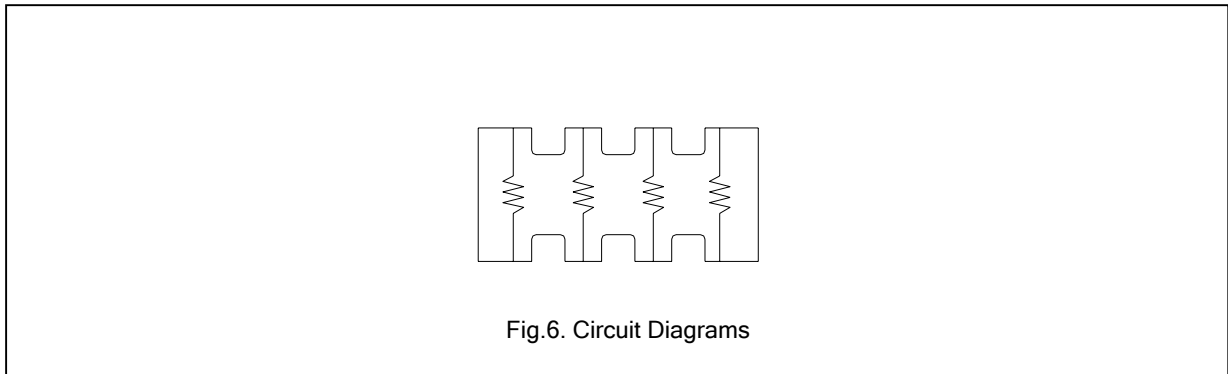


Fig.5. Product Outline



### Circuit Diagrams



### Marking

Type A: product with 3 digits marking, the first two digits are significant figures; third digit is number of zeros to follow. Letter “R” is as decimal point. Letter “0” for jumper

The marking example is as table 1.

Type	Product	Value	Example
A	CN-43	68K $\Omega$	
		Jumper	



### 8. Test And Requirements

In table 3 the tests and requirements are listed with reference relevant clause of IEC 60115-1. A short description of the test procedure is given. Essentially all tests are carried out refer to the schedule of IEC 60115-8-1. The testing also covers the requirements specified by EIA.

**Table 3 Test procedure and requirements**

Test Item	Test Method	Test Condition	Requirement	
			±5%	Jumper
Temperature Coefficient of Resistance(T.C.R)	JIS C 5202 5.2 IEC 60115-1 4.8	-55°C~+155 °C , 20°C is the reference temperature	Within the specification	
Short Time Overload	JIS C 5202 5.5 IEC 60115-1 4.13	2.5 times RCWV or Max. overload voltage, for 5 seconds	±(2.0%+0.05Ω)	<50mΩ
Insulation Resistance	JIS C 5202 5.6 IEC 60115-1 4.6	Max. overload voltage for 1 minute	≥10G	
Voltage Proof	JIS C 5202 5.7 IEC 60115-1 4.7	1.42 times RCWV (RMS) for 1 minute	no breakdown or flashover	
Substrate Bending Test	JIS C 5202 6.1 IEC 60115-1 4.33	Bending once for 5 seconds for 3 mm	±(1.0%+0.05Ω)	<50mΩ
Resistance to soldering heat	JIS C 5202 6.4 IEC 60115 4.18	260±5°C for 10 seconds	±(1.0%+0.05Ω)	<50mΩ
Leaching	JIS C 5202 6.4 IEC 60115 4.18	260±5°C for 60 seconds	no leaching	
Solderability	JIS C 5202 6.5 IEC 60115-1 4.17	235±5°C for 2 seconds. lead free application: 245±3°C for 2 seconds.	>95% coverage	
Endurance at upper category temperature	JIS C 5202 7.2 IEC 60115-1 2.23.2	at +155 °C for 1000 hrs	±(1.5%+0.10Ω)	<50mΩ
Rapid change of temperature	JIS C 5202 7.4 IEC 60115-1 4.19	-55°C to +155 °C, 5 cycles	±(1.0%+0.05Ω)	<50mΩ
Damp heat with load	JIS 5202 7.9	40±2°C, 90~95% R.H. or Max. working voltage for 1000 hrs with 1.5hrs "ON" and 0.5 hrs "OFF"	±(3.0%+0.10Ω)	<100mΩ
Endurance	JIS C 5202 7.10 IEC 60115-1 4.25.1	70±2°C, or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	±(3.0%+0.10Ω)	<100mΩ

**Note:**

RCWV : Rated continuous working voltage .

$$RCWV = \sqrt{\text{Rated power} * \text{Resistance value}}$$



