

Thick Film Flat Array Chip Resistor

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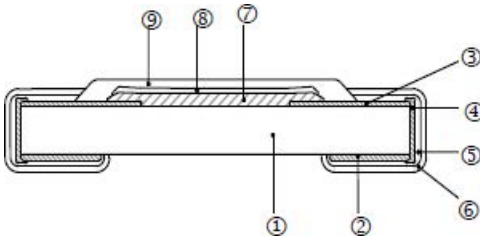
**RoHS
Compliant**



Features

- Small size and light weight
- Reduction of assembly costs and matching with placement machines
- Reliability, high quality
- Suitable for IR reflow soldering

Construction

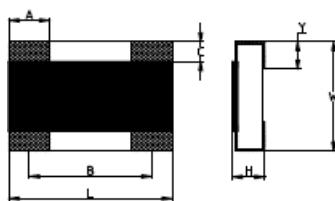


Applications

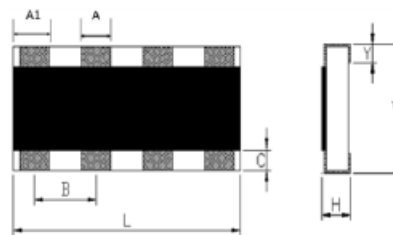
- Entertainment
- Computer & Related Products
- Communication Equipment
- Power Equipment
- Measuring Instrument

1	Alumina Substrate	4	Edge Electrode	7	Resistor Layer
2	Bottom Electrode	5	Barrier Layer	8	Primary Overcoat
3	Top Electrode	6	External Electrode	9	Secondary Overcoat

Dimensions



MCPNF22



MCPNF42 / MCPNF43

Type	Number of Resistors	L (mm)	W (mm)	H (mm)	A (mm)	A1 (mm)	B (mm)	C (mm)	Y (mm)	Weight (g) (1000pcs)
MCPNF22	2	1.2±0.1	1 ±0.1	0.35 ±0.1	0.43 ±0.1	-	0.82 ±0.05	0.22 ±0.1	0.3 ±0.15	1.6
MCPNF42	4	2 ±0.1	1 ±0.1	0.45 ±0.1	0.35 ±0.1	0.45 ±0.1	0.5 ±0.1	0.2 ±0.1	0.35±0.15	3.2
MCPNF43	4	3.2±0.1	1.55 ±0.1	0.55 ±0.1	0.45 ±0.15	0.6 ±0.1	0.8 ±0.05	0.2 ±0.1	0.47±0.15	10.2

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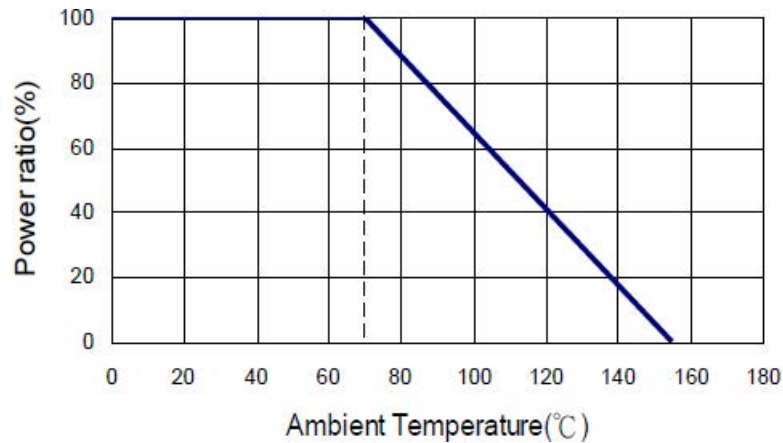
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Part Numbering

MCPNF	22	F	T	F	Y	1002
Product Type	Dimensions	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance
	22: 0402x2 42: 0402x4 43: 0603x4	F: ±1% J: ±5% or Jumper	T: Taping Reel	F: ±200 G: ±300 -: No specified (For Jumper)	Y: 1/16W X: 1/10W W: 1/8W	0030: 3Ω 1000: 100Ω 1002: 10KΩ 2201: 2.2KΩ 1003: 100KΩ 1004: 1MΩ R0R0: 0Ω

Derating Curve



Electrical Specifications

Item Type	Power Rating at 70°C Jumper Rated Current	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Number of Resistors	Resistance Range		TCR (PPM/°C)
						± 1% (E24, E96)	±5% (E24)	
MCPNF22	1/16 W	-55°C to +155°C	25V	50V	2	1Ω to 9.76Ω	1Ω to 9.1Ω	±500
	Jumper:1A					10Ω to 1MΩ	10Ω to 1MΩ	±200
						-	0Ω(<50mΩ)	-
MCPNF42	1/16 W		50V	100V	4	1Ω to 10MΩ	1Ω to 10MΩ	±200
	Jumper:1A					-	0Ω(<50mΩ)	-
MCPNF43	1/10W 1/8W		50V	100V	4	1Ω to 10MΩ	1Ω to 10MΩ	±200
	Jumper:1A	-				0Ω(<50mΩ)	-	

Operating Voltage= $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.

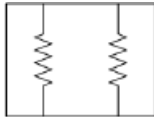
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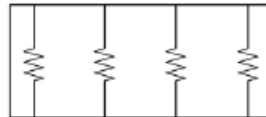
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Equivalent Circuit Diagram

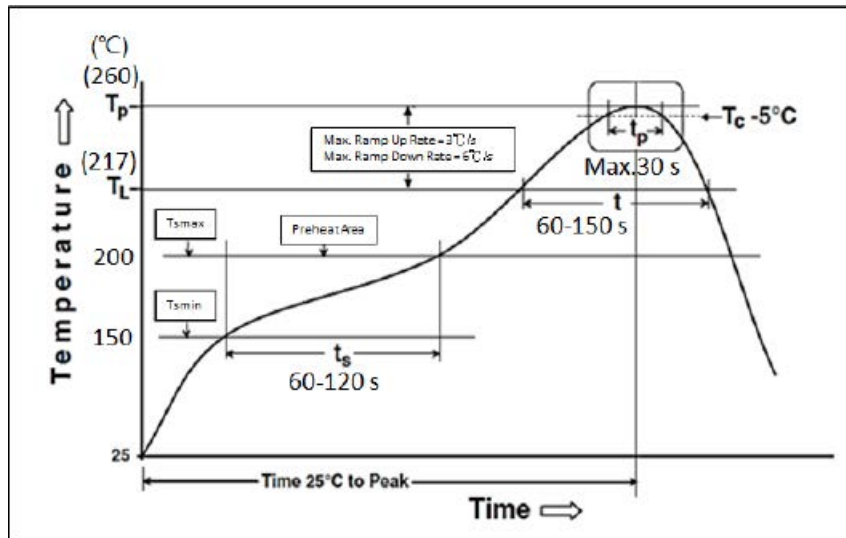


MCPNF22



MCPNF42 / MCPNF43

Soldering Condition (IPC/JEDEC J-STD-020)



Environmental Characteristics

Item	Requirement			Test Method
	±1%	±5%	Jumper	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.			JIS-C-5201-1 4.8 IEC-60115-1 4.8 At 25°C/-55°C and 25°C/+125°C, 25°C is the reference temperature
Short Time Overload	± (1%+0.05Ω)	± (2%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds
Insulation Resistance	≥10G			JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. Overload Voltage for 1 minute
Endurance	± (2%+0.1Ω)	± (3%+0.1Ω)	<50mΩ	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"

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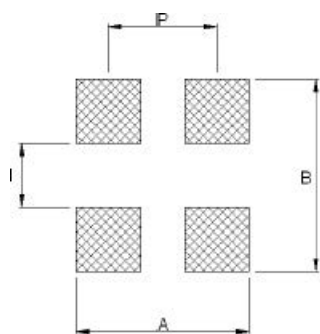
Item	Requirement			Test Method
	±1%	±5%	Jumper	
Damp Heat with Load	± (2%+0.1Ω)	± (3%+0.1Ω)	<50mΩ	JIS-C-5201-1 4.24 IEC-60115-1 4.24 40±2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Dry Heat	± (1%+0.05Ω)	± (1.5%+0.1Ω)	<50mΩ	JIS-C-5201-1 4.23 IEC-60115-1 4.23.2 at +155°C for 1000 hrs
Bending Strength	± (1%+0.05 Ω)	± (1%+0.05 Ω)	<50mΩ	JISC 5201 1 4.33 IEC60115 1 4.33 Bending once for 60 seconds with 3mm
Solderability	95% min. coverage			JISC 5201 1 4.17 IEC60115 1 4.17 245± 5°C for 3 seconds
Resistance to Soldering Heat	± (0.5%+0.05 Ω)	± (1%+0.05 Ω)	<50mΩ	JISC 5201 1 4.18 IEC60115 1 4.18 260± 5°C for 10 seconds
Voltage Proof	No breakdown or flashover			JISC 5201 1 4.7 IEC60115 1 4.7 1.42 times Max. Operating Voltage for 1 minute
Leaching	Individual leaching area ≤ 5% Total leaching area ≤ 10%			JISC 5201 1 4.18 IEC 60068 2 58 8.2.1 260± 5°C for 30 seconds
Rapid Change of Temperature	± (0.5%+0.05 Ω)	± (1%+0.05 Ω)	<50mΩ	JIS C 5201 1 4.19 IEC 60115 1 4.19 -55°C to +155°C, 5 cycles

RCWV(Rated continuous working voltage)= $\sqrt{P \cdot R}$ or Max. Operating voltage whichever is lower

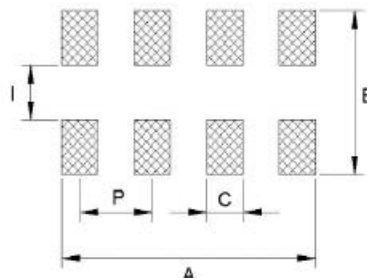
Storage Temperature: 15°C to 28°C; Humidity < 80%RH

Shelf Life: 2 years from production date.

Recommend Land Pattern



MCPNF22



MCPNF42 / MCPNF43

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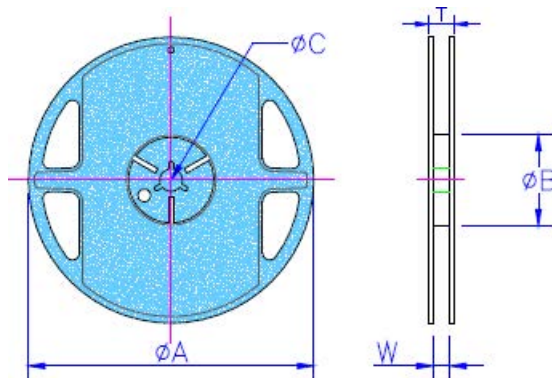
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Type	A (mm)	B (mm)	C (mm)	l (mm)	P (mm)
MCPNF22	1.5	1.25	-	0.35	0.8
MCPNF42	2.1	1.8	0.3	0.5	0.5
MCPNF43	3.1	2.85	0.45	0.8	0.8

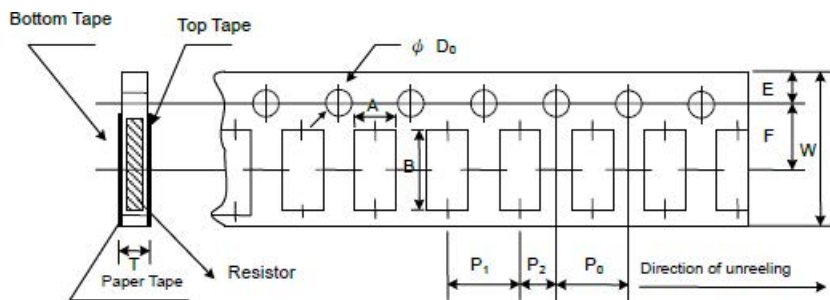
Packaging

Reel Specifications & Packaging Quantity



Type	Packaging Quantity		Tape Width	Reel Diameter	øA (mm)	øB (mm)	øC (mm)	W (mm)	T (mm)
MCPNF22	Paper	10k	8mm	7 inch	178.5 ±1.5	60 ^{+1/-0}	13 ±0.2	9 ±0.5	12.5±0.5
MCPNF42		5k							
MCPNF43									

Paper Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P ₀ (mm)	P ₁ (mm)	P ₂ (mm)	øD ₀ (mm)	T (mm)
MCPNF22	1.2 ±0.1	1.45 ±0.1	8 ±0.2	1.75 ±0.1	3.5 ±0.05	4 ±0.1	2 ±0.05	2 ±0.05	1.5 +0.1,-0	0.43 ±0.1
MCPNF42	1.2 ±0.1	2.2 ±0.1								0.7 ±0.1
MCPNF43	1.95 ±0.1	3.5 ±0.1								0.85 ±0.1

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Marking

No Marking for MCPNF22

Jumper for MCPNF42/MCPNF43: Letter "0"

1% for MCPNF42/MCPNF43: 4 digits marking (non-including E24 series)

Example

Resistance	102Ω	2.49KΩ	30K1Ω	49.9KΩ	121KΩ
marking	1020	2491	3012	4992	1213

1% & 5% for MCPNF42/MCPNF43: 3 digits marking in E24

Example: 101=100Ω 102=1KΩ (1st and 2nd are E24 code and 3rd code is multiplier)

E24 code	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47	51	56	62	68	75	82	91
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