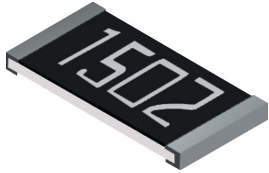


Thin Film Precision Chip Resistor 0805 Series

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**RoHS
Compliant**



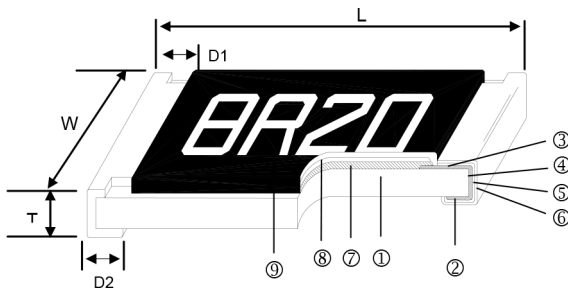
Features

- Advanced thin film technology
- Very tight tolerance down to $\pm 0.1\%$
- Extremely low TCR down to $\pm 5\text{PPM}/^\circ\text{C}$
- Wide resistance range 1Ω to $1\text{M}\Omega$

Applications

- Medical Equipment
- Testing / Measurement Equipment
- Printer Equipment
- Automatic Equipment Controller
- Converters
- Communication Device, Cell Phone, GPS, PDA

Construction



1	Alumina Substrate
2	Bottom Electrode (Ag)
3	Top Electrode (Ag-Pd)
4	Edge Electrode (NiCr)
5	Barrier Layer (Ni)
6	External Electrode (Sn)
7	Resistor Layer (NiCr)
8	Overcoat (Epoxy)
9	Marking

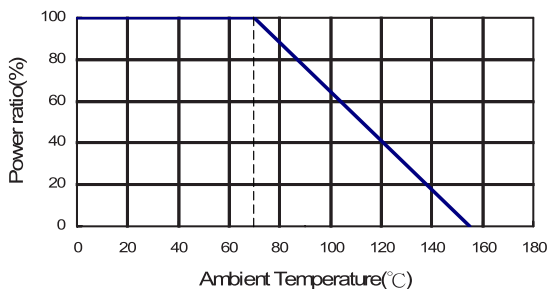
Dimensions

Type	Size (Inch)	L	W	T	D1	D2
MCTF	0805	2 ± 0.15	1.25 ± 0.15	0.55 ± 0.1	0.3 ± 0.2	0.4 ± 0.2

Dimensions : Millimetres

Derating Curve

Thin Film Precision Chip Resistor



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Thin Film Precision Chip Resistor 0805 Series



Standard Electrical Specifications

Type \ Item	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage
MCTF0805	1/10W	-55°C to +155°C	100V	200V

Type \ Item	Resistance Range					TCR (PPM/°C)
	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
MCTF0805	4.7Ω - 1MΩ	4.7Ω - 2MΩ	1Ω - 2MΩ			±25 ±50

Special Electrical Specifications

Type \ Item	Resistance Range						TCR (PPM/°C)
	±0.01%	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
MCTF0805	24.9Ω to 30kΩ						±2 ±3 ±5
	24.9Ω to 200kΩ	4.7Ω to 1MΩ					±25 ±50

High Power Rating Electrical Specifications

Type \ Item	Resistance Range						TCR (PPM/°C)
	±0.01%	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
MCTF0805	24.9Ω to 30kΩ						±2 ±3 ±5
	24.9Ω to 200kΩ	4.7Ω to 511kΩ	4.7Ω to 511kΩ				±10
			4.7Ω to 1MΩ				±15
			4.7Ω to 1MΩ	1Ω to 1MΩ			±25 ±50
	-	10Ω to 499kΩ					±25 ±50

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

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

Environmental Characteristics

Item	Requirement		Test Method
	Tol. ≤ 0.05%	Tol. > 0.05%	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.		MIL-STD-202 Method 304 +25/-55/+25/+125/+25°C
Short Time Overload	ΔR±0.05%	ΔR±0.2%	JIS-C-5201-1 5.5 RCWV*2.5 or Max. overload voltage whichever is lower for 5 seconds
	ΔR±0.2% for high power rating		

Thin Film Precision Chip Resistor 0805 Series

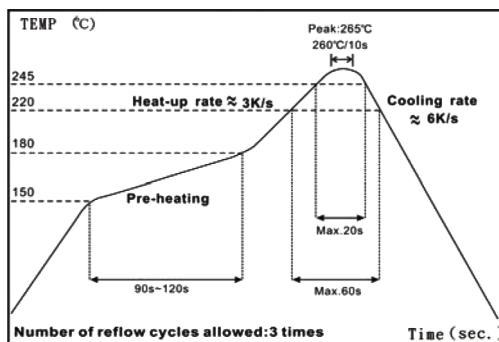


Item	Requirement		Test Method
	Tol. $\leq 0.05\%$	Tol. $> 0.05\%$	
Insulation Resistance	$>1,000M\Omega$		MIL-STD-202 Method 302 Apply 100VDC for 1 minute
Endurance	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	MIL-STD-202 Method 108A 70 $\pm 2^\circ\text{C}$, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
	$>7k\Omega \Delta R \pm 0.5\%$		
	$\Delta R \pm 0.5\%$ for high power rating		
Damp Heat with Load	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.3\%$	MIL-STD-202 Method 103B 40 $\pm 2^\circ\text{C}$, 90~95% R.H. RCWV for 1000 hrs with 1.5 $\Delta R \pm 0.5\%$ for high power rating hrs "ON" and 0.5 hrs "OFF"
	$\Delta R \pm 0.5\%$ for high power rating		
Bending Strength	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	JIS-C-5201-1 6.1.4 Bending amplitude 3 mm for 10 seconds
Solderability	95% min. coverage		MIL-STD-202 Method 208H 245 $\pm 5^\circ\text{C}$ for 3 seconds
Resistance to Soldering Heat	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	MIL-STD-202 Method 210E 260 $\pm 5^\circ\text{C}$ for 10 seconds
Dielectric Withstand Voltage	By Type		MIL-STD-202 Method 301 Max. overload voltage for 1 minute
Thermal Shock	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.25\%$	MIL-STD-202 Method 107G -55 $^\circ\text{C}$ ~150 $^\circ\text{C}$, 100 cycles
Low Temperature Operation	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	JIS-C-5201-1 7.1 1 hour, -65 $^\circ\text{C}$, followed by 45 minutes of RCWV
	$\Delta R \pm 0.5\%$ for high power rating		

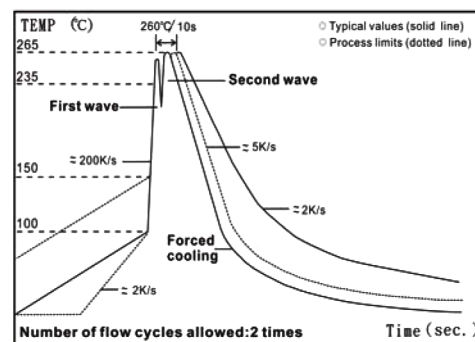
RCWV(Rated continuous working voltage) = $\sqrt{(P \cdot R)}$ or Max. Operating voltage whichever is lower

Storage Temperature: 25 $\pm 3^\circ\text{C}$; Humidity < 80%RH

Soldering Condition



IR Reflow Soldering



Wave Soldering (Flow Soldering)

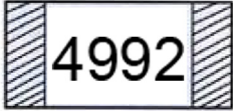
(1) Time of IR reflow and wave soldering at maximum temperature point 260 $^\circ\text{C}$: 10s

(2) Time of soldering iron at maximum temperature point 410 $^\circ\text{C}$: 5s

Thin Film Precision Chip Resistor 0805 Series



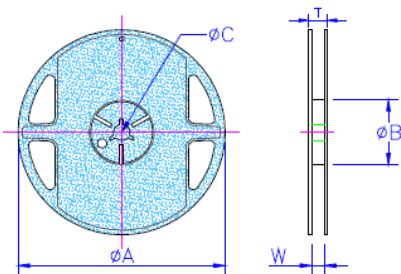
Marking



Example

Resistance	100Ω	2.2kΩ	10kΩ	49.9kΩ	100kΩ
Marking	1000	2201	1002	4992	1003

Packaging

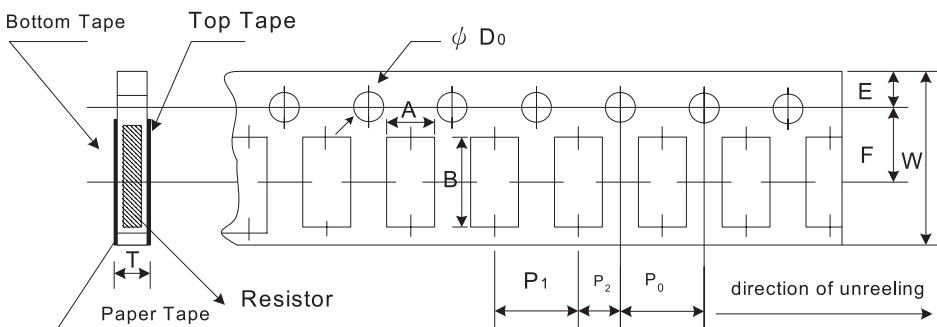


Packing Quantity & Real Specifications

Type	ØA	ØB	ØC	W	T	Paper Tape (EA)
MCTF0805	178 ±1	60 +1	13.5 ±0.7	9.5 ±1	11.5 ±1	5,000

Dimensions : Millimetres

Paper Tape Specifications



Type	A	B	w	E	F	P ₀	p ₁	p ₂	ΦD ₀	T
MCTF0805	1.6 ±0.05	2.37 ±0.05	8 ±0.1	1.75 ±0.05	3.5 ±0.05	4 ±0.1	4 ±0.1	2 ±0.05	1.55 ±0.05	0.75 ±0.05

Dimensions : Millimetres

Peel force of top cover tape

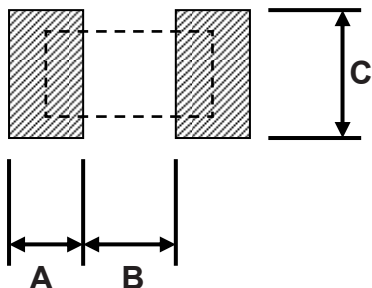
The peel speed shall be about 300mm/min ±5%

The peel force of top cover tape shall be between 8gf to 60gf

Thin Film Precision Chip Resistor 0805 Series

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Recommend Land Pattern



Type	A	B	C
MCTF0805	1mm	1mm	1.35mm ±0.2mm

Part Number Table

Description	Resistance	Resistance Tolerance	Voltage Range	Part Number
Thin Film Precision Chip Resistor 0805 Series	100Ω	±0.1%	100V	MCTF0805BTC1000
	1kΩ	±0.1%		MCTF0805BTC1001
	10kΩ	±0.1%		MCTF0805BTC1002
	100kΩ	±0.1%		MCTF0805BTC1003
	1MΩ	±0.1%		MCTF0805BTC1004
	12kΩ	±0.1%		MCTF0805BTC1202
	1.5kΩ	±0.1%		MCTF0805BTC1501
	15kΩ	±0.1%		MCTF0805BTC1502
	15kΩ	±0.1%		MCTF0805BTC1503
	2kΩ	±0.1%		MCTF0805BTC2001
	20kΩ	±0.1%		MCTF0805BTC2002
	200kΩ	±0.1%		MCTF0805BTC2003
	3kΩ	±0.1%		MCTF0805BTC3001
	4.99kΩ	±0.1%		MCTF0805BTC4991
	49.9kΩ	±0.1%		MCTF0805BTC4992
	100Ω	±0.5%		MCTF0805DTC1000
	1kΩ	±0.5%		MCTF0805DTC1001
	10kΩ	±0.5%		MCTF0805DTC1002
	100kΩ	±0.5%		MCTF0805DTC1003
	2kΩ	±0.5%		MCTF0805DTC2001
	49.9Ω	±0.5%		MCTF0805DTC49R9
	12kΩ	±0.05%		MCTF0805ATX1202
	1.5kΩ	±0.05%		MCTF0805ATX1501
	15kΩ	±0.05%		MCTF0805ATX1502
	150kΩ	±0.05%		MCTF0805ATX1503

Thin Film Precision Chip Resistor 0805 Series



Description	Resistance	Resistance Tolerance	Voltage Range	Part Number
Thin Film Precision Chip Resistor 0805 Series	20kΩ	±0.05%	100V	MCTF0805ATX2002
	200kΩ	±0.05%		MCTF0805ATX2003
	3kΩ	±0.05%		MCTF0805ATX3001
	499Ω	±0.05%		MCTF0805ATX499
	75Ω	±0.05%		MCTF0805ATX750
	12kΩ	±0.05%		MCTF0805ATY1202
	150kΩ	±0.05%		MCTF0805ATY1503
	2kΩ	±0.05%		MCTF0805ATY2001
	20kΩ	±0.05%		MCTF0805ATY2002
	200kΩ	±0.05%		MCTF0805ATY2003
	49.9Ω	±0.05%		MCTF0805ATY499
	4.99kΩ	±0.05%		MCTF0805ATY4991
	49.9kΩ	±0.05%		MCTF0805ATY4992
	12kΩ	±0.05%		MCTF0805ATZ1202
	15kΩ	±0.05%		MCTF0805ATZ1502
	2kΩ	±0.05%		MCTF0805ATZ2001
	20kΩ	±0.05%		MCTF0805ATZ2002
	49.9Ω	±0.05%		MCTF0805ATZ499
	100Ω	±0.01%		MCTF0805TTX1000
	1kΩ	±0.01%		MCTF0805TTX1001
	10kΩ	±0.01%		MCTF0805TTX1002
	100kΩ	±0.01%		MCTF0805TTX1003
	100Ω	±0.01%		MCTF0805TTY1000
	1kΩ	±0.01%		MCTF0805TTY1001
	10kΩ	±0.01%		MCTF0805TTY1002
	100kΩ	±0.01%		MCTF0805TTY1003
	100Ω	±0.01%		MCTF0805TTZ1000
	1kΩ	±0.01%		MCTF0805TTZ1001

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