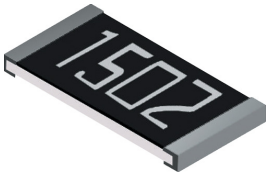
Thin Film Precision Chip Resistor
0805 Series

RoHS Compliant



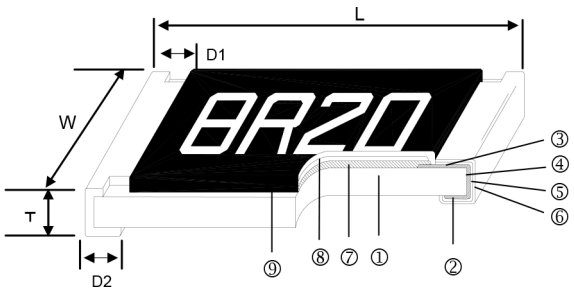
Features

- Advanced thin film technology
- Very tight tolerance down to ±0.1%
- Extremely low TCR down to ±5PPM/°C
- Wide resistance range 1Ω to 1MΩ

Applications

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

Construction



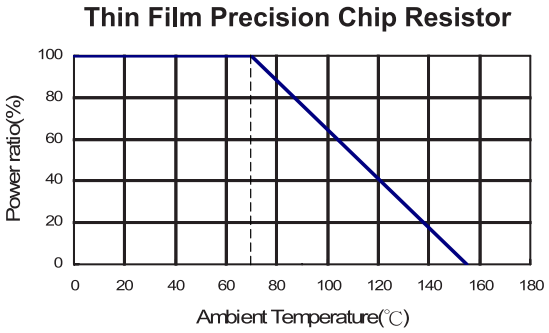
1	Alumina Substrate
2	Bottom Electrode (Ag)
3	Top Electrode (Ag-Pd)
4	Edge Electrode (NiCr)
5	Barrier Layer (Ni)
6	External Electrode (Sn)
7	Resistor Layer (NiCr)
8	Overcoat (Epoxy)
9	Marking

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
0805 Series

Standard Electrical Specifications

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

Item / Type	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

Item / Type	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

Item / Type	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 = √(P×R) or Max. operating voltage listed above, whichever is lower.
Overload Voltage = 2.5×√(P×R) or Max. overload voltage listed above, whichever is lower.

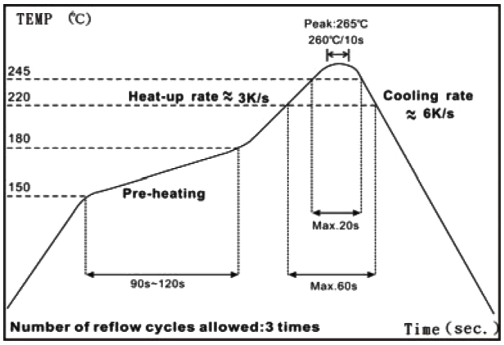
Environmental Characteristics

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		

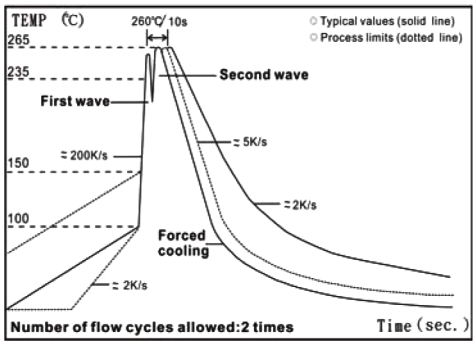
Item	Requirement		Test Method
	Tol. ≦ 0.05%	Tol. > 0.05%	
Insulation Resistance	>1,000MΩ		**MIL-STD-202 Method 302** Apply 100VDC for 1 minute
Endurance	ΔR±0.05%	ΔR±0.2%	**MIL-STD-202 Method 108A** 70±2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
	>7kΩ ΔR±0.5%		
	ΔR±0.5% for high power rating		
Damp Heat with Load	ΔR±0.05%	ΔR±0.3%	**MIL-STD-202 Method 103B** 40±2°C, 90~95% R.H. RCWV for 1000 hrs with 1.5 ΔR±0.5% for high power rating hrs "ON" and 0.5 hrs "OFF
	ΔR±0.5% for high power rating		
Bending Strength	ΔR±0.05%	ΔR±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±5°C for 3 seconds
Resistance to Soldering Heat	ΔR±0.05%	ΔR±0.2%	**MIL-STD-202 Method 210E** 260±5°C for 10 seconds
Dielectric Withstand Voltage	By Type		**MIL-STD-202 Method 301** Max. overload voltage for 1 minute
Thermal Shock	ΔR±0.05%	ΔR±0.25%	**MIL-STD-202 Method 107G** -55°C ~150°C, 100 cycles
Low Temperature Operation	ΔR±0.05%	ΔR±0.2%	**JIS-C-5201-1 7.1** 1 hour, -65°C, followed by 45 minutes of RCWV
	ΔR±0.5% for high power rating		

RCWV(Rated continuous working voltage) = √(P*R) or Max. Operating voltage whichever is lower
Storage Temperature: 25±3°C; Humidity < 80%RH

Soldering Condition



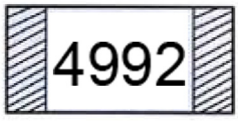
IR Reflow Soldering



Wave Soldering (Flow Soldering)

(1) Time of IR reflow and wave soldering at maximum temperature point 260°C : 10s
(2) Time of soldering iron at maximum temperature point 410°C : 5s

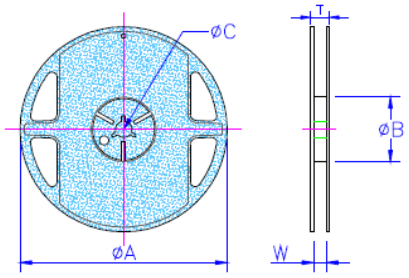
Marking



Example

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

Packaging

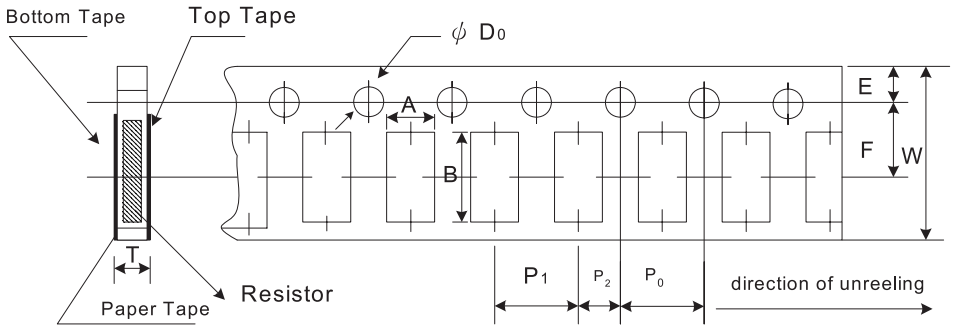


Packing Quantity & Real Specifications

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

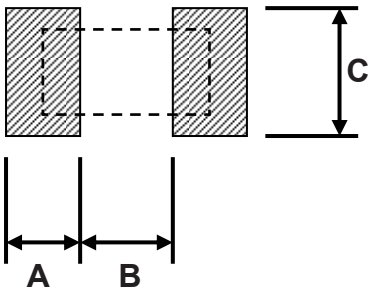


Type	A	B	w	E	F	P_0	p_1	p_2	ΦD_0	T
MCTF0805	1.6 ±0.05	2.37 ±0.05	8 ±0.1	1.75 ±0.05	3.5 ±0.05	4 ±0.1	4 ±0.1	2 ±0.05	1.55 ±0.05	0.75 ±0.05

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

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

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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