APPROVAL SHEET

Product Name	**: High Ohmic Chip Resistor**
Part No.	**: TMR**
Description	**: Size 0603~1206**

High Ohmic Chip Resistor — TMR Series

■ Applications

— Automotive industry

— Power supply in small size

— Medical equipment

■ Features

— Extended resistance range(11MΩ ~ 100MΩ)

— RoHS compliant & Halogen Free

■ Part Number Explanation

TMR	1206	F	1006	T	S
Product	Size (Inch)	Tolerance	Resistance	Packaging	Functional
High Ohmic Chip Resistor	0603 0805 1206	F：±1% J：±5%	11MΩ=1105 100MΩ=1006	T=Tape & Reel	S= STANDARD TYPE

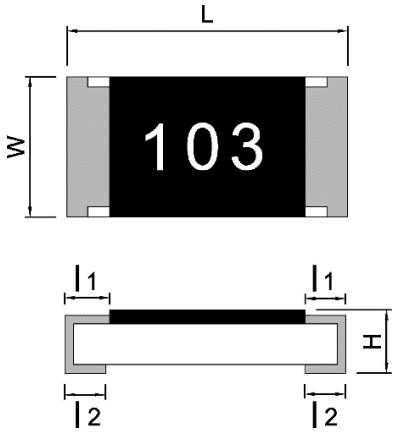
■ Standard Electrical Specifications

Item / Type	Rated Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range	
					F(±1%)	J(±5%)
TMR 0603	0.1 W	50V	100V	±200	11MΩ≦R≦22MΩ	11MΩ≦R≦100MΩ
TMR 0805	0.125 W	150V	300V	±200	11MΩ≦R≦22MΩ	11MΩ≦R≦100MΩ
TMR 1206	0.25 W	200V	400V	±200	11MΩ≦R≦22MΩ	11MΩ≦R≦100MΩ

Notes:

- Operating Temperature Range:-55℃~+155℃
- Beyond the above specification also can meet the special requirements. For detail questions, please contact us freely.

■ Dimension



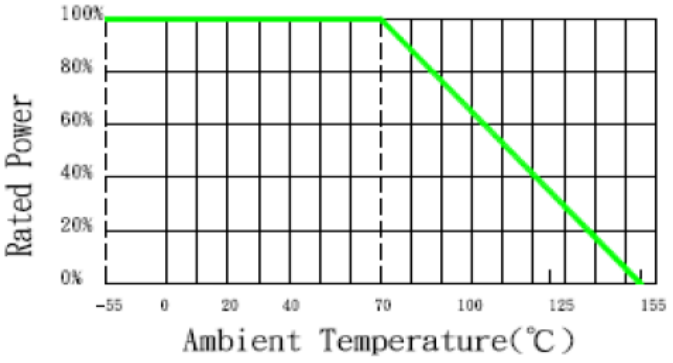
Unit：mm

TYPE	L	W	H	I_1	I_2
0603	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20
0805	2.00 ± 0.10	1.25 ± 0.10	0.50 ± 0.10	0.40 ± 0.20	0.40 ± 0.20
1206	3.10 ± 0.10	1.60 ± 0.10	0.55 ± 0.10	0.50 ± 0.20	0.50 ± 0.25

■ Performance Characteristics

■ Power Derating Curve

Operating Temperature Range: -55 to +155℃



Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70℃. For operation at ambient temperature in excess of 70℃, the load should be derated in accordance with figure of derating Curve.

■ Voltage Rating or Current Rating

Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

E=Rated voltage(V)

E(RCWV)=√P×R

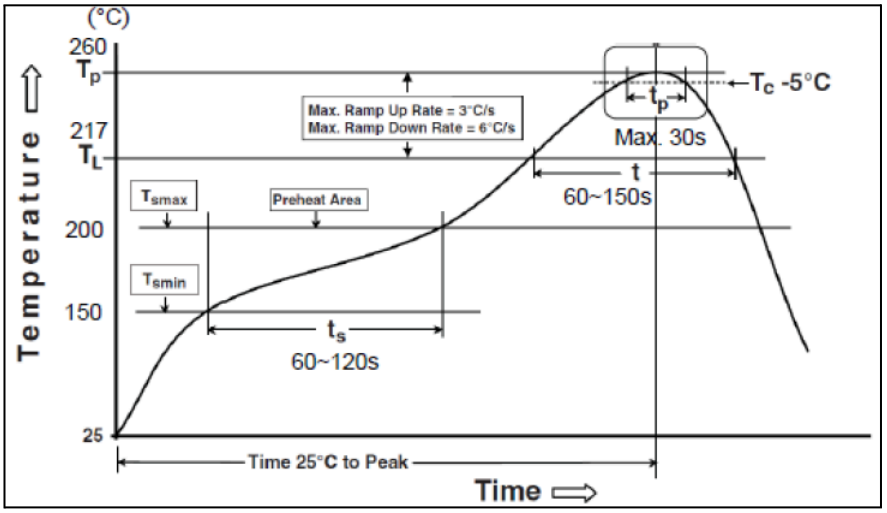
P=Power rating(W)
R=Nominal resistance(Ω)

■ Reliability Test and Requirement

Test Item	Test Method	Procedure	Requirements
			TYPE
Temperature Coefficient of Resistance (T.C.R)	IEC 60115-1 4.8	At 25 / -55℃ and 25℃ /+155℃, 25℃ is the reference temperature	1%，5%: ± 200 ppm/℃
Short Time Overload	IEC-60115-1 4.13	2.5 × Rated power for 5 seconds	1%，5%: ΔR≦±2%
Leaching	IEC-60068-2-58 8.2.1	260±5℃ for 30 seconds	Individual leaching area≦5% Total leaching area ≤ 10%
Resistance to Soldering Heat	IEC 60115-1 4.18	With 260±5℃ for 10±1 sec.	1%，5%: ΔR≦±2%
Rapid Change of Temperature	IEC-60115-1 4.19	-55℃ to +125℃, 5 cycles	1%，5%: ΔR≦±5%
Damp Heat With Load	IEC 60115-1 4.24	40±2℃ with relative humidity 90% ~ 95% D.C. rated voltage for 1.5 hours ON 30 minutes OFF. Cycle repeated 1000 hours. After 1～4 hour, measure the resistance value	1%，5%: ΔR≦±5%
Load Life	IEC-60115-1 4.25	Rated voltage for 1.5 hours for followed by a pause 0.5 hour at 70±2℃.	1%，5%: ΔR≦±5%
Insulation Resistance	IEC-60115-1 4.6	Test voltage：100±15V	Between termination and coating must over 1000MΩ
Bending Strength	IEC 60115-1 4.33	Resistance change after bended on the 90mm PCB. Bending 3mm for 0603, 0805 Bending 2mm for 1206	1%，5%: ΔR≦±2%
Voltage Coefficient of Resistance (VCR)	JIS C 5201 4.11	Measuring Voltage 10V/100V	≦ ± 300ppm/V

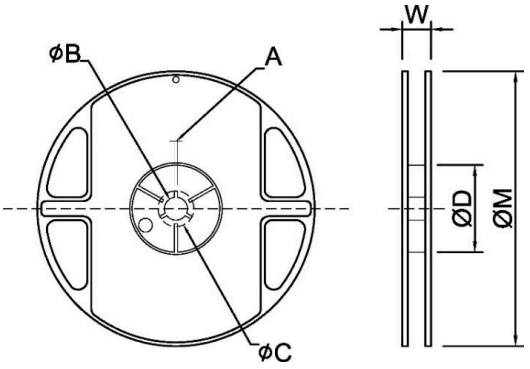
■ Soldering Conditions

■ Solder reflow Temperature condition



■ Appendix For SMD Chip Resistor

■ Packaging Information

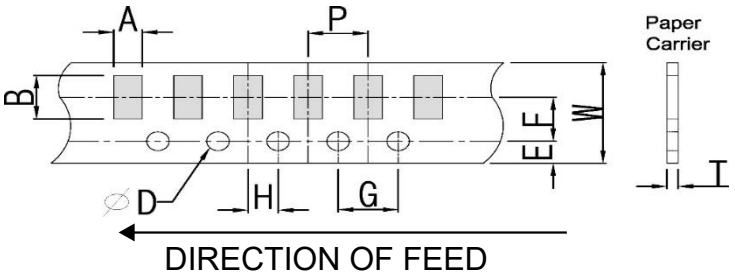


■ Dimension

Unit:mm

TYPE	SIZE		A	ψB	ψC	ψD	W	ψM
0603 0805 1206	7”	5K/Reel	2.0±0.5	13.0±0.5	20(Min.)	60.0±0.5	10.0±1.5	178±2.0

■ Tapping Specification



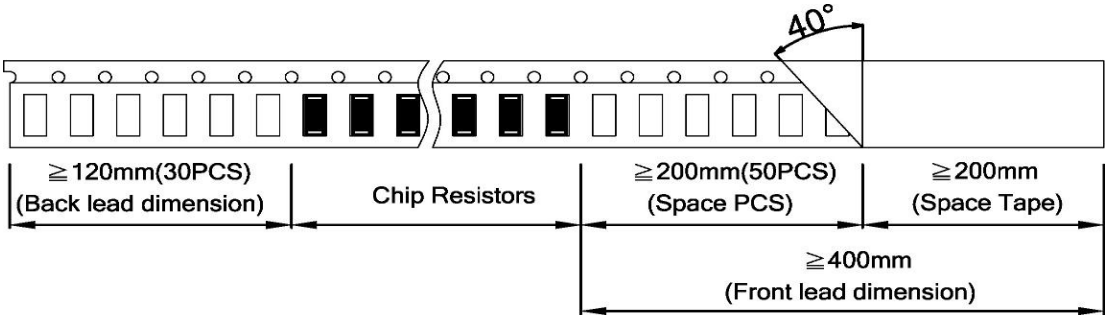
■ Dimension

Unit:mm

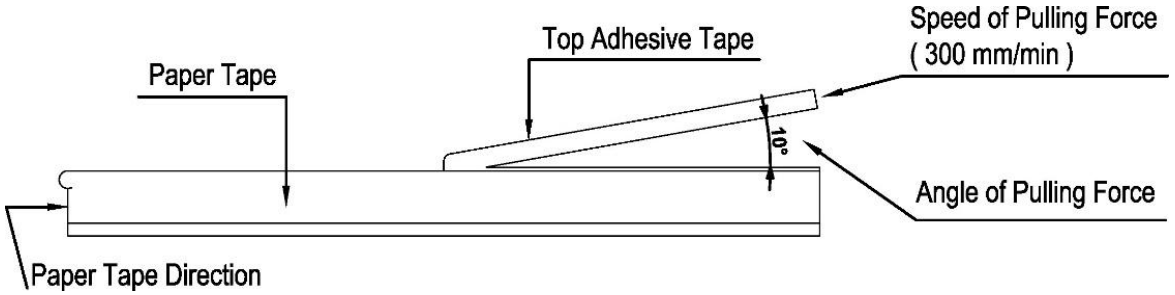
Packaging	Type	A	B	W	E	F	G	H	T	ψD	P
Paper Type	0603	1.10±0.2	1.90±0.2	8.00±0.3	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.60±0.1	$1.50^{+0.10}_{-0}$	4.0±0.1
	0805	1.65±0.2	2.40±0.2	8.00±0.3	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.75±0.1		
	1206	2.00±0.2	3.60±0.2	8.00±0.3	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.75±0.1		

■ Packing Material Data/Storage Data

■ Front & Back Lead Dimension



■ Top Adhesive Peel Off Strength：10~70g



■ Storage Data：

Storage time at the environment temp: 25±5℃& humidity: 60±20% is valid for one year from the date of delivery.

■ Product Testing Method:

Our products are tested with our company's tapping & testing equipment by using four-feet probe to touch at the back of both electrodes. Supposed different testing points or methods are requested, please advise beforehand and customized-made production is available.

■ Marking

■ E12 ±1%, ±5%: 3 digits marking

0603/0805/1206

Resistance	47MΩ
3 digits code	476