

SMD - Resistors

Product: High Ohmic Chip Resistor - SMDH Series

Size: 0805/1206



official distributor of



SMD - Resistors

High Ohmic Chip Resistor (SMDH Series)

► 1. Scope

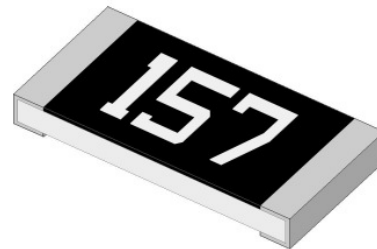
– This specification applies to all sizes of rectangular-type fixed chip resistors with Ruthenium-base as material.

► 2. Features

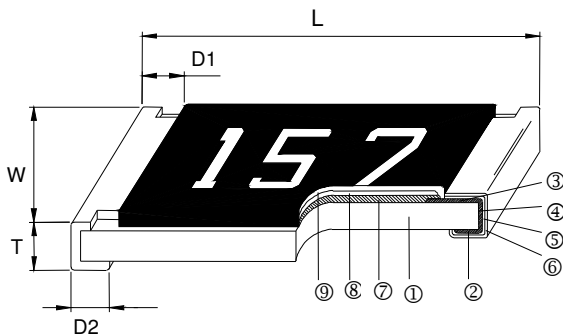
- Extended resistance range(110MΩ~ 1GΩ)
- Surface mount package
- Highly reliable multilayer electrode construction

► 3. Applications

- Voltage dividers and hybrids
- X-Ray equipment
- Low signal detection or amplification circuits
- High input impedance quartz amplifiers
- Testing devices



► 4. Construction



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

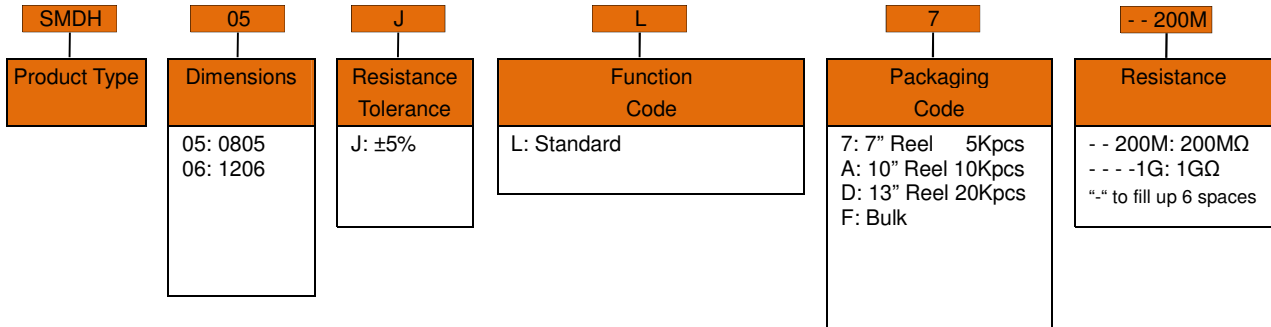
► 5. Dimensions

Unit: mm

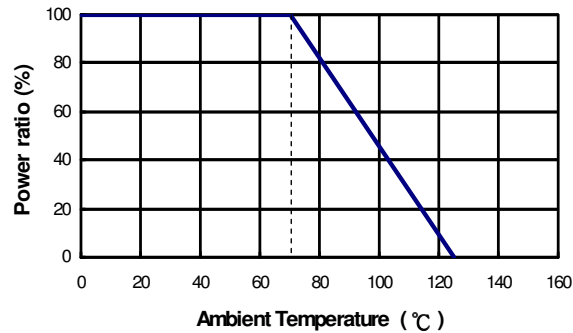
Type	Size (Inch)	L	W	T	D1	D2	Weight (g) (1000pcs)
SMDH0805	0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20	4.368
SMDH1206	1206	3.10±0.10	1.55±0.10	0.55±0.10	0.50±0.25	0.50±0.20	8.947

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6. Part Numbering



7. Derating Curve



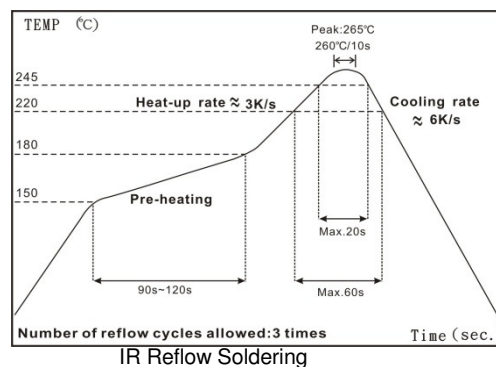
8. Standard Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range	TCR (PPM/°C)
					±5%	
SMDH0805	1/8W	-55 ~ +125°C	150V	300V	110MΩ ~ 500MΩ	±500
					510MΩ ~ 1GΩ	±1000
SMDH1206	1/4W	-55 ~ +125°C	200V	400V	110MΩ ~ 500MΩ	±500
					510MΩ ~ 1GΩ	±1000

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.

9. Soldering Condition



(1) Time of IR reflow soldering at maximum temperature point 260°C : 10s

(2) Time of soldering iron at maximum temperature point 410°C : 5s

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► 10. Environmental Characteristics

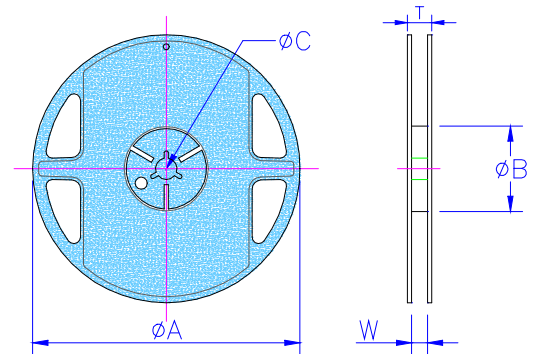
Item	Requirement	Test Method
	±5%	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~+125, 25°C is the reference temperature
Short Time Overload	±(2.0%+0.05Ω)	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. overload voltage for 5 seconds
Insulation Resistance	≥10G	JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. overload voltage for 1 minute
Endurance	±(3.0%+0.10Ω)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	±(3.0%+0.10Ω)	JIS-C-5201-1 4.24 40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Dry Heat	±(1.5%+0.10Ω)	JIS-C-5201-1 4.23 IEC-60115-1 2.23.2 at +125 °C for 1000 hrs
Bending Strength	±(1.0%+0.05Ω)	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 seconds 0805, 1206 sizes: 3mm
Solderability	95% min. coverage	JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds
Resistance to Soldering Heat	±(1.0%+0.05Ω)	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Voltage Proof	No breakdown or flashover	JIS-C-5201-1 4.7 IEC-60115-1 4.7 1.42 times RCWV (RMS) for 1 minute
Leaching	Individual leaching area ≤ 5% Total leaching area ≤ 10%	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds
Rapid Change of Temperature	±(1.0%+0.05Ω)	JIS-C-5201-1 4.18 IEC-60115-1 4.18 -55°C to +125°C, 5 cycles

■ Storage Temperature: 25±3°C; Humidity < 80%RH

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► 11. Packaging

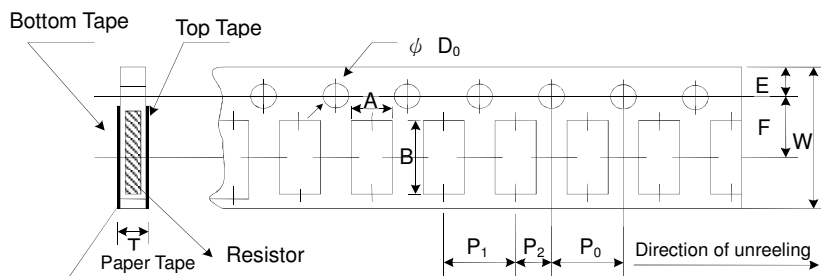
Reel Specifications & Packaging Quantity



Type	Packaging Quantity	Tape Width	Reel Diameter	ϕA	ϕB	ϕC	W	T
SMDH0805 SMDH1206	Paper	8mm	7 inch	178.5±1.5	60 ^{+1/-0}	13.0±0.2	9.0±0.5	12.5±0.5
			10 inch	254±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
			13 inch	330±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5

Unit: mm

Paper Tape Specifications



Unit: mm

Type	A	B	W	E	F	P ₀	P ₁	P ₂	ϕD_0	T
SMDH05	1.60±0.1	2.40±0.2	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.1	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1
SMDH06	1.90±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.1	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1

► 12. Marking

5% for 0805/1206: 3 digits marking in E24

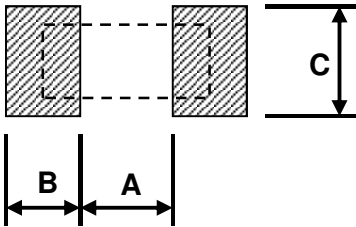
Example: 127=120M Ω 108=1G Ω (1st and 2nd are E24 code and 3rd code is multiplier)

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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▶ 13. Recommend Land Pattern

Unit: mm



Type	A	B	C
SMDH0805	1.20	0.70	1.30
SMDH1206	2.00	0.90	1.60