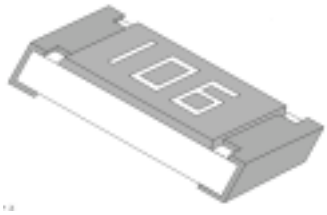
THICK FILM HIGH-VOLTAGE CHIP RESISTORS

■Features



- ●Miniature and light weight.
- ●Suit for reflow and wave soldering.
- ●Stable electrical capability,high reliability.
- ●Low assembly cost,suit for automatic SMT equipment.
- ●High voltage.

■ Application

Cemera Flash Circuit,Computer,Printer,Battery Charger,Automotive, Power supply,CD-ROM,etc

■Type Designation

Example

R V S 0 5 L 1 0 4 J T

Type Code	
Code	Type
03	0603
05	0805
06	1206
1210	1210
1812	1812
10	2010
12	2512

Resistance Temperature Coefficient Code		
Type	Code	T.C.R
0603 0805 1206 1210 1812 2010 2512	L	±250ppm/℃
	M	±500ppm/℃

Packing Style Code	
Code	Packing Style
T	Tape & Reel
B	Bulk Case
C	Case

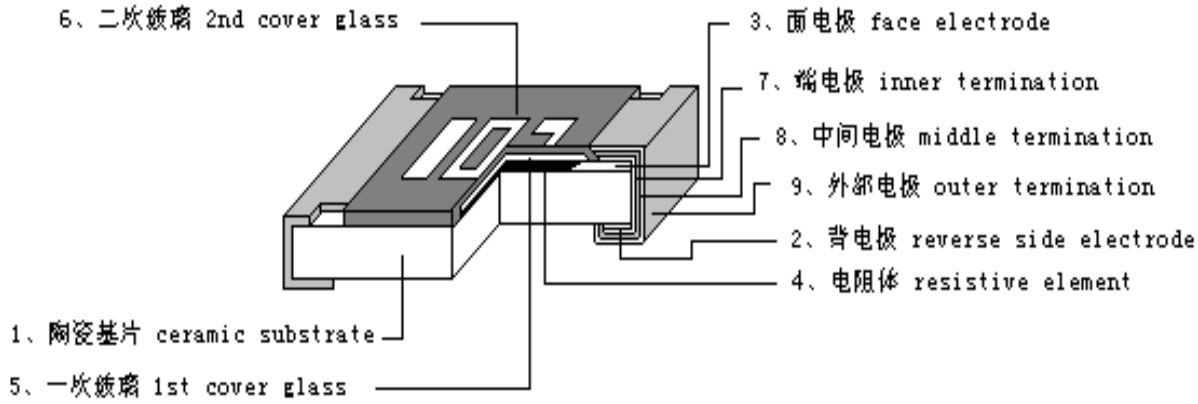
Product Code
Thick film high-voltage chip resistors

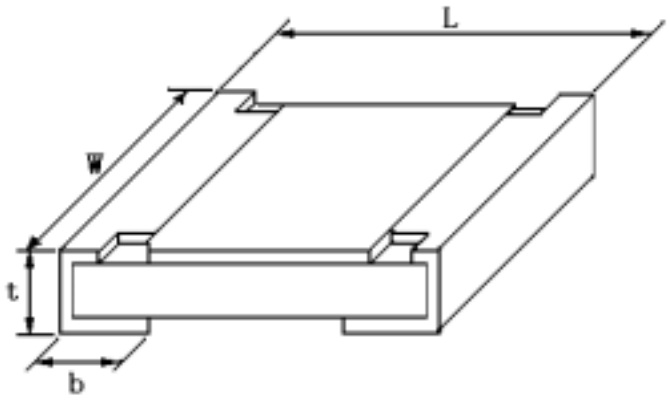
Power Rating Series Code	
Code	Power rating series
C	Normal Power Series
S	Upgraded Power Series

Resistance Value Code
Three digits (E-24 series): The first two digits are significant figures and the third one denotes number of zeros. Example： 104=100KΩ (E-24)

Resistance Tolerance Code	
Code	Tolerance
J	±5%
K	±10%

■ Construction and dimension





Unit: mm

Type	L	W	t	b
0603	1.60±0.15	0.80±0.15	0.40±0.10	0.30±0.20
0805	2.00±0.20	1.25±0.15	0.50±0.10	0.40±0.20
1206	3.20±0.20	1.60±0.15	0.55±0.10	0.50±0.20
1210	3.20±0.20	2.50±0.20	0.55±0.10	0.50±0.20
1812	3.15±0.15	4.60±0.20	0.55±0.10	0.65±0.20
2010	4.50±0.20	3.20±0.20	0.55±0.10	0.50±0.20
2512	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20

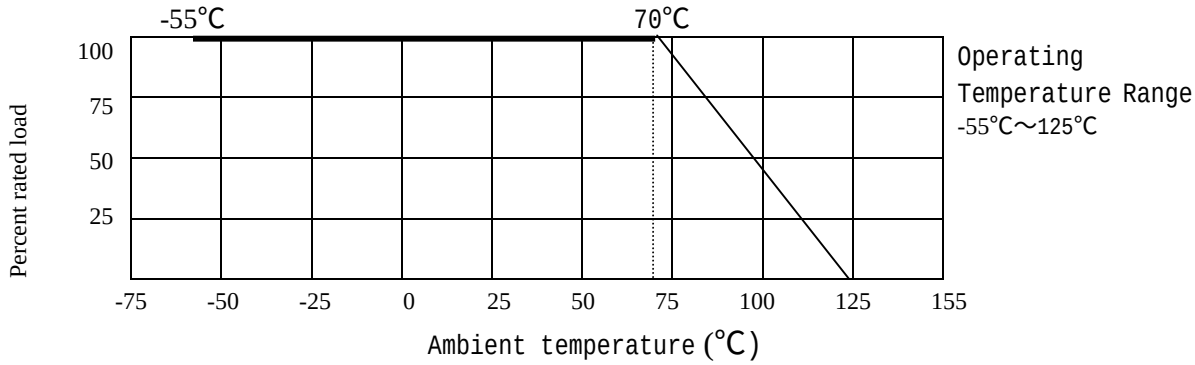
■Appearance

Basic requirement
1. The surface of resistor is covered with Protective Coating which hard to fade, and the surface of coating should avoid unevenness. 2. The terminal part is covered equable , the plating is hard to fade, and should avoid unevenness, flaw, pinhole and discoloration. 3. With a clear mark , the resistor body is crack-free.

■ Reference Standard

GB/T 5729-2003
GB/T 9546-1995
JIS C 5223-1995
JIS C 5201-1998
JIS C 5202-1990

■Derating Curve



For resistors operated in ambient over 70℃, rated load(power rating or current rating) shall be derated in accordance with the above figure.

■ Ratings

Item	0603	0805	1206	1210	1812	2010	2512
Power Rating	1/10W	1/8W	1/4W	1/3W	1/2W	3/4W	1W
Max.Working Voltage	300	400	500	600	700	800	1000
Max.Overload Voltage	600	800	1000	1200	1400	1600	2000
Resistance Temperature Coefficient	20KΩ<R≤10MΩ：±250ppm/℃ 10MΩ<R≤100MΩ：±500ppm/℃						
Resistance Range	20KΩ~100MΩ E-24 series						
Resistance Tolerance	±5% ±10%						
Operating Temperature Range	-55℃~+125℃						
Rated Temperature	+70℃						

Note： Rated Voltage=$\sqrt{\text{Power Rating}\times\text{Resistance Value}}$ or Max. Working Voltage , whichever is lower.

■ Characteristics

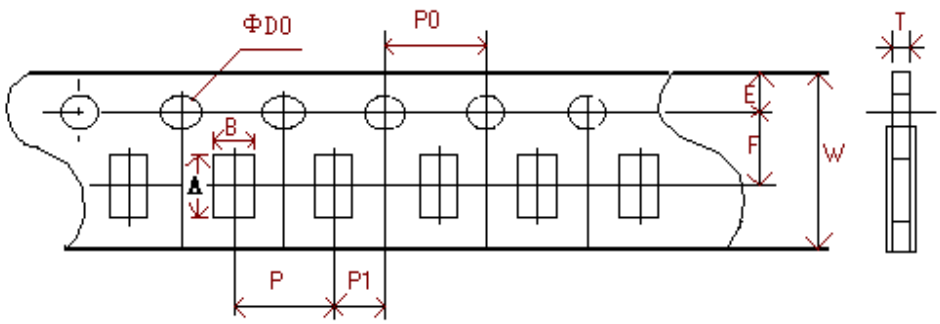
Item	Specifications	Test Methods (JIS C 5202)
Bending Strength	No mechanical damage △R≤± (1.0%R+0.05Ω)	Speed:1mm/s Bending Distance:3mm(0603、0805、1206), 2mm (1210、1812、2010、2512)
T.C.R	within specified T.C.R	-55℃~+125℃
Temperature Cycling	No mechanical damage △R≤± (1.0%R+0.05Ω)	-55℃ (30min) ~normal temperature (5min) ~125℃ (30min) 5 cycles
Short Time Overload	No mechanical damage △R≤± (5.0%R+0.1Ω)	2.5×Rated voltage or Max.Overload Voltage, hichever is lower,for 5 seconds
Resistance to Soldering Heat	No mechanical damage △R≤± (1.0%R+0.05Ω)	260℃±5℃ 10s±1s
Steady state humidity	No mechanical damage △R≤± (3.0%R+0.1Ω)	40℃±2℃ 90%~95%RH 1000h
Load Life	No mechanical damage △R≤± (3.0%R+0.1Ω)	70℃±2℃ 1000h Rated voltage 1.5h on/0.5h off
Endurance at upper temperature	No mechanical damage △R≤± (3.0%R+0.1Ω)	125℃±2℃ 1000h
Resistance to Solvent	No mechanical damage △R≤± (1.0%R+0.05Ω)	Dip in chloroethylene for 10h±1h.
Insulation Resistance	1000MΩ Min	Apply DC 100V between substrate and termination for 1 minute, then check insulation resistance .
Solderability	95% Cover Min	235℃±5℃ 2s±0.5s
Adhesion	No mechanical damage	Applying 5N 10s±1s

■ Packaging

● Tape and reel

* Paper taping

0603、0805、1206、1210：



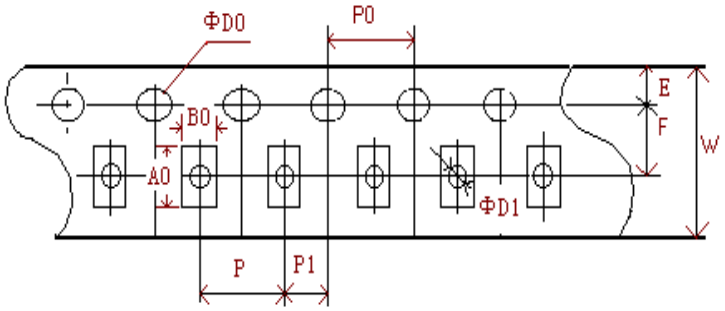
unit: mm

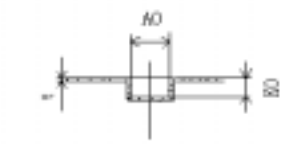
Type	A	B	W	F	E
0603	1.85±0.1	1.10±0.1	8.00±0.2	3.5±0.05	1.75±0.1
0805	2.35±0.1	1.65±0.1	8.0±0.20	3.5±0.05	1.75±0.1
1206	3.50±0.2	1.90±0.2	8.0±0.20	3.5±0.05	1.75±0.1
1210	3.50±0.2	2.80±0.2	8.0±0.20	3.5±0.05	1.75±0.1

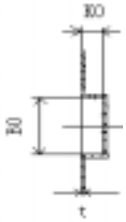
Type	P	P0	P1	ΦD0	T
0603	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	0.60±0.1
0805	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	0.75±0.1
1206	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	0.75±0.1
1210	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	0.75±0.1

* Embossed taping

1812、2010、2512：







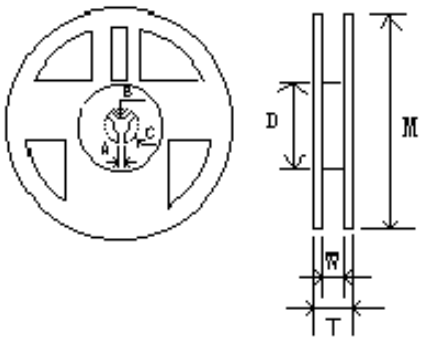
unit: mm

Type	A0	B0	W	F	E	t
1812	4.80±0.10	3.40±0.10	12.00±0.10	5.50±0.10	1.75±0.10	0.25±0.05
2010	5.45±0.10	2.77±0.10	12.00±0.10	5.50±0.10	1.75±0.10	0.24±0.05
2512	6.73±0.10	3.40±0.10	12.00±0.10	5.50±0.10	1.75±0.10	0.24±0.05

unit: mm

Type	P	P0	P1	ΦD0	ΦD1	K0
1812	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.10	1.50±0.10	1.00±0.10
2010	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	0.84±0.10
2512	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	0.81±0.10

* Reel

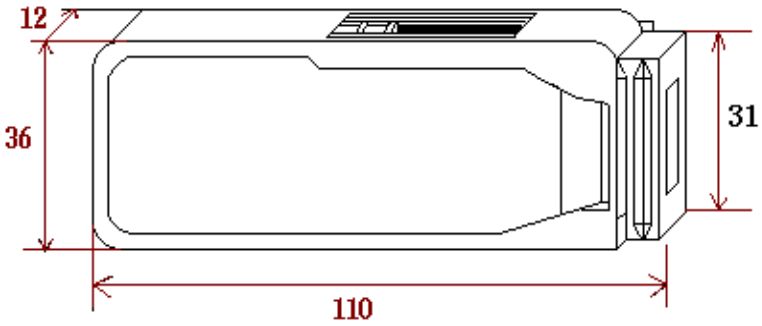


unit: mm

Type	M	W	T	A	B	C	D
0603 0805 1206 1210	178 ±2.0	9.5 ±1.0	12.5 ±1.5	2.0 ±0.5	13.0 ±0.5	21.0 ±0.5	80.0 ±2.0
1812 2010 2512	178 ±2.0	13.0 ±0.5	15.5 ±1.5	2.0 ±0.5	13.0 ±0.5	21.0 ±0.5	57.0 ±2.0

●Bulk case

unit:mm



●Packaging quantity

Packaging style	Tape and reel		Bulk case					Bulk	
Type	0603 0805 1206 1210	1812 2010 2512	0603	0805	1206	1210 2010	1812 2512	0603 0805 1206	1210 1812 2010 2512
Quantity（PCS）	5000	4000	25000	10000	5000	1500	1000	≤10000	≤4000