CSR Metal Film Precision Resistor

Features

Ⅰ Excellent overall stability
Ⅱ Tight tolerance down to ±0.1%
Ⅲ Extremely low TCR down to ±10 PPM/℃
Ⅳ High power rating up to 1 Watts

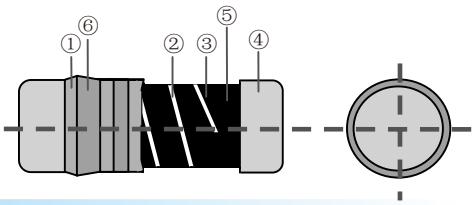
Applications

Ⅰ Telecommunication
Ⅱ Medical Equipment
Ⅲ Measurement/Testing Equipment

Reference Standards

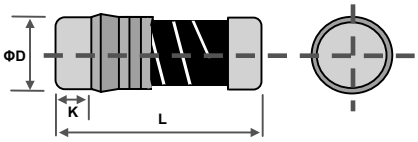
IEC 60115-1

Construction



①	Insulation Coating	④	Electrode Cap
②	Trimming Line	⑤	Resistor Layer
③	Ceramic Rod	⑥	Marking

Dimensions



Type	L	ΦD mm	K mm	Weight(g) (1000pcs)	Packaging	
					180mm(7")	330mm(13")
CSR0102	2.00±0.10	1.30±0.05	1.5	7.2	3000EA	———
CSR0204	3.50±0.20	1.40±0.15	1.5	18.7	3000EA	———
CSR0207	5.90±0.20	2.20±0.20	1.5	80.9	3000EA	———
CSR0309	8.50±0.20	3.20±0.20	1.5	98	2500EA	———

Ordering Information

Example:

CSR	0204	B	T	D	1/4	1000
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Series Name	Dimensions	Resistance Tolerance	Packaging code	TCR	Power Rating	Resistance

(1)Type:CSR Series

(2)Dimensions(ΦDxL): 0102:Φ1.3x2.0mm; 0204:Φ1.4x3.5mm; 0207:Φ2.2x5.9mm;

(3)Resistance Tolerance: B=±0.1%、C=±0.25%、D=±0.5%、F=±1%、J=±5%

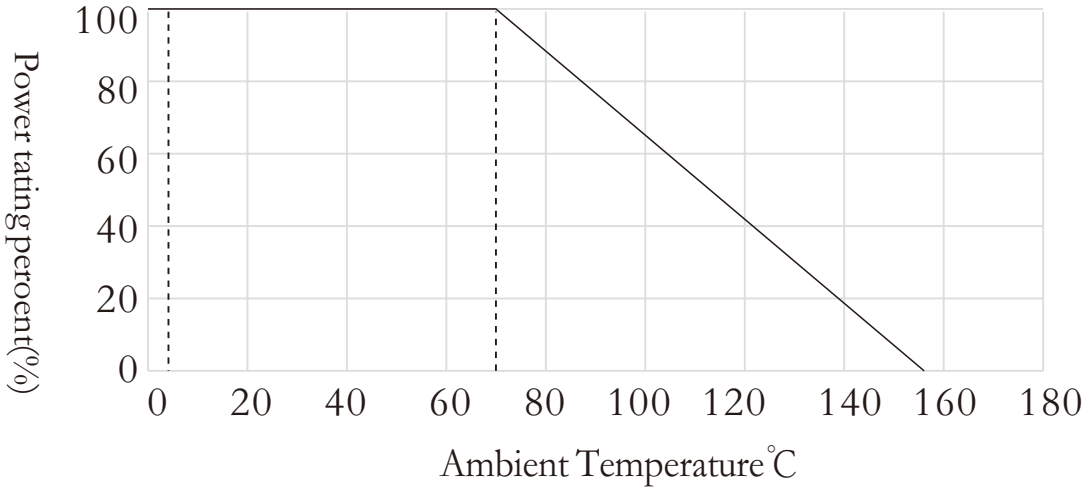
(4)Packaging code: T=Taping Reel、B=Bulk

(5)TCR:B=±10PPM/℃、N=±15PPM/℃、C=±25PPM/℃、D=±50PPM/℃、E=±100PPM/℃

(6)Power Rating:1/4W=1/4W、1/8W=1/8W、1W=1W、1/2W=1/2W

(7)Resistance:10R0=10Ω、2200R0=2.2KΩ、R050=0.05Ω、R100=0.1Ω

Derating Curve



Standard Electrical Specifications

Item / Type	Power Rating at 70℃	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range					TCR (PPM/℃)
					±0.1%	±0.25%	±0.5%	±1%	±5%	
0102	1/8W	-55~+55℃	150V	300V	100Ω~56KΩ					±15
					100Ω~100KΩ					±25
					–		1Ω~1MΩ			±50
					–			0.22Ω~2MΩ		±100
0204	1/4W	-55~+55℃	200V	400V	10Ω~20KΩ					±10
					10Ω~300KΩ					±15
					10Ω~1MΩ			10Ω~4.7MΩ		±25
					10Ω~1MΩ	10Ω~1MΩ		0.2Ω~10MΩ		±50
					–			0.1Ω~10MΩ		±100
	Jumper:2A				0Ω(<15mΩ)					-
0207	1/2W	-55~+55℃	300V	500V	10Ω~20KΩ)					±10
					10Ω~300KΩ)					±15
					10Ω~1MΩ)			10Ω~4.7MΩ)		±25
					10Ω~1MΩ	1Ω~1MΩ)		0.2Ω~10MΩ		±50
					–			0.1Ω~10MΩ		±100
	Jumper:4A				0Ω(<15mΩ)					-

High Power Rating Electrical Specifications

Item / Type	Power Rating at 70℃	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range					TCR (PPM/℃)
					±0.1%	±0.25%	±0.5%	±1%	±5%	
0102	1/5W	-55~+55℃	200V	400V	100Ω~56KΩ					±15
					100Ω~100KΩ					±25
					–		1Ω~1MΩ			±50
					–				0.5Ω~2MΩ	±100
0204	2/5W	-55~+55℃	200V	400V	10Ω~100KΩ					±15
					10Ω~1MΩ					±25
					10Ω~1MΩ	10Ω~1MΩ		0.2Ω~10MΩ		±50
					–			0.1Ω~10MΩ		±100
0207	1W	-55~+55℃	350V	700V	10Ω~100KΩ					±15
					10Ω~1MΩ					±25
					10Ω~1MΩ	1Ω~1MΩ)		0.2Ω~10MΩ		±50
					–			0.1Ω~10MΩ		±100

Environmental Characteristics

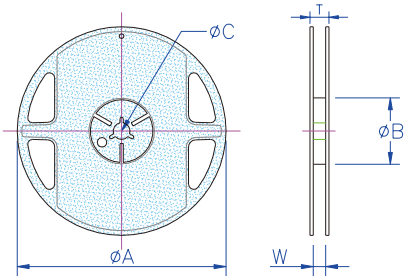
Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	-55℃~+125℃, 25℃ is the reference temperature
Short Time Overload	0204/0207: ±(0.15%R+0.05Ω) 0102: ±(0.5%R+0.05Ω)	RCWV*2.5 or Max. overload voltage for 5 seconds
Insulation Resistance	≥10G	Max. overload voltage for 1 minute
Endurance	0204/0207: ±(0.5%R+0.05Ω) 0102: ±(1.5%R+0.05Ω)	70±2℃,Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	0204/0207: ±(1.0%R+0.05Ω) 0102: ±(1.5%R+0.05Ω)	40±2℃, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Dry Heat	0204/0207: ±(1.0%R+0.05Ω) 0102: ±(1.5%R+0.05Ω)	at +155℃ for 1000 hrs
Bending Strength	±(0.5%R+0.05Ω)	Bending once for 5 seconds with 2mm
Solderability	95% min. coverage	245±5℃ for 3 seconds
Resistance to Soldering Heat	±(0.5%R+0.05Ω)	260±5℃ for 10 seconds
Voltage Proof	No breakdown or flashover	1.42 times RCWV (RMS) for 1 minute
Leaching	Individual leaching area ≦5% Total leaching area ≦ 10%	260±5℃ for 30 seconds
Rapid Change of Temperature	±(0.5%R+0.05Ω)	-55℃ to +125℃, 5 cycles

- Reference Standards: IEC 60115-1;JIS-C 5201-1
- Storage Temperature: 25±3℃; Humidity < 80%RH

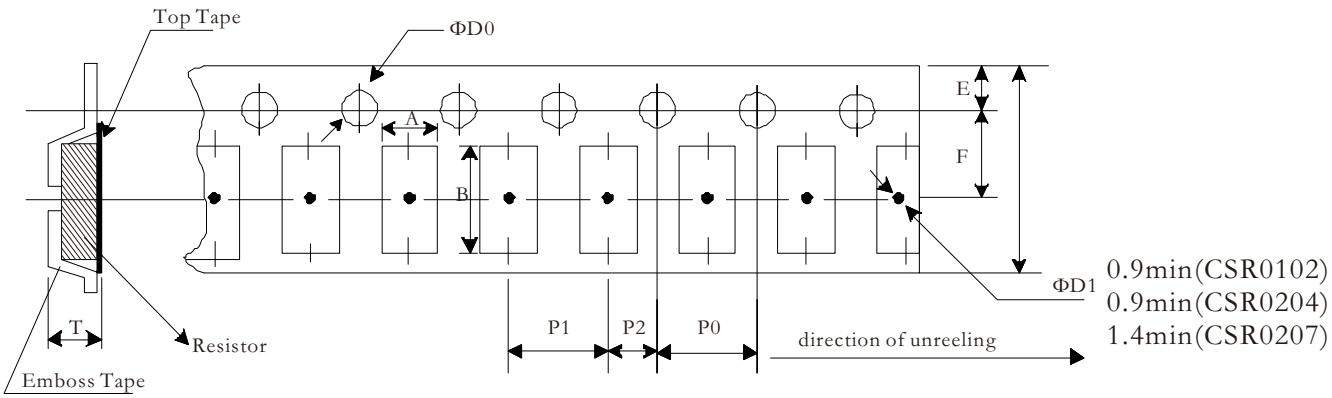
Packaging

Packaging Quantity & Reel Specifications

Type	ΦA	ΦB	ΦC	W	T	Emboss Plastic Tape(EA)
CSR0102	178.5±1.5	60.0±1.0	13.0±0.2	9.0±0.5	12.5±0.5	3000
CSR0204	178.5±1.5	60.0±1.0	13.0±0.2	9.0±0.5	12.5±0.5	3000
CSR0207	178.5±1.5	60.0±1.0	13.0±0.2	13.0±0.5	15.5±0.5	2000



Emboss Plastic Tape Specifications



Unit: mm

Type	A	B	W	E	F	P0	P1	P2	ΦD0	T
CSR0102	1.45±0.10	2.25±0.10	8.0±0.10	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	1.70±0.10
CSR0204	1.60±0.10	3.70±0.10	8.0±0.10	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	1.87±0.10
CSR0207	2.40±0.10	6.05±0.10	12.0±0.10	1.75±0.10	5.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	2.80±0.10