



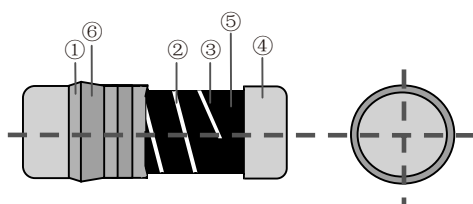
Features

- I Excellent overall stability
- II Tight tolerance down to $\pm 0.1\%$
- III Extremely low TCR down to $\pm 10 \text{ PPM}/^\circ\text{C}$
- IV High power rating up to 1 Watts

Applications

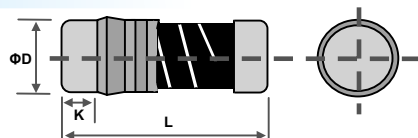
- I Telecommunication
- II Medical Equipment
- III Measurement/Testing Equipment

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= $\pm 0.1\%$, C= $\pm 0.25\%$, D= $\pm 0.5\%$, F= $\pm 1\%$, J= $\pm 5\%$

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

(5)TCR:B= $\pm 10 \text{ PPM}/^\circ\text{C}$, N= $\pm 15 \text{ PPM}/^\circ\text{C}$, C= $\pm 25 \text{ PPM}/^\circ\text{C}$, D= $\pm 50 \text{ PPM}/^\circ\text{C}$, E= $\pm 100 \text{ PPM}/^\circ\text{C}$

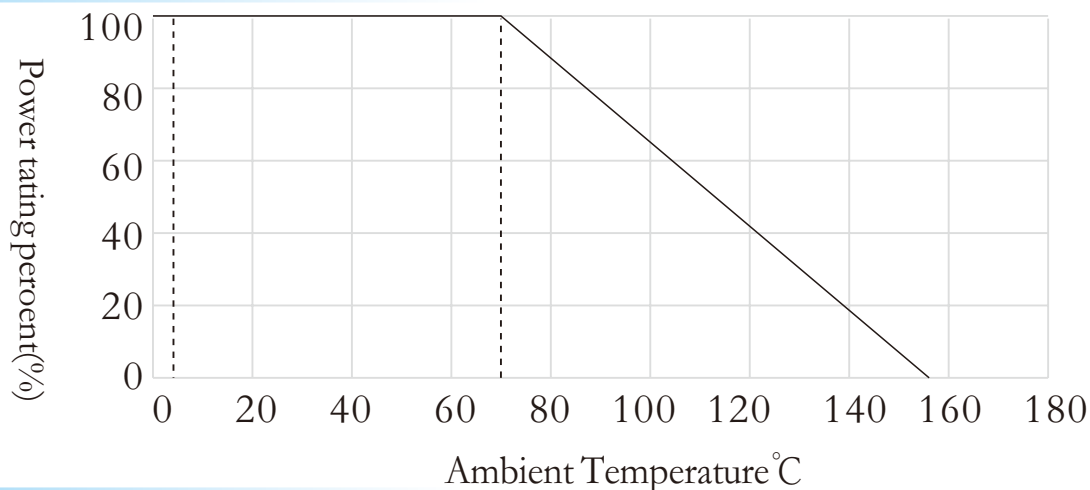
(6)Power Rating:1/4W=1/4W, 1/8W=1/8W, 1W=1W, 1/2W=1/2W

(7)Resistance:10R0=10Ω, 220R0=2.2KΩ, R050=0.05Ω, R100=0.1Ω

Reference Standards

IEC 60115-1

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~+155℃	150V	300V	100Ω~56KΩ					± 15
					100Ω~100KΩ					± 25
					—		1Ω~1MΩ			± 50
					—			0.22Ω~2MΩ		± 100
0204	1/4W	-55~+155℃	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
					0Ω(<15mΩ)					-
	Jumper:2A									
0207	1/2W	-55~+155℃	300V	500V	10Ω~20KΩ					± 10
					10Ω~300KΩ					± 15
					10Ω~1MΩ			10Ω~4.7MΩ		± 25
					10Ω~1MΩ	10Ω~1MΩ		0.2Ω~10MΩ		± 50
					—			0.1Ω~10MΩ		± 100
					0Ω(<15mΩ)					-
	Jumper:4A									
0309	1W	-55~+155℃	350V	700V	10Ω~20KΩ					± 10
					10Ω~300KΩ					± 15
					10Ω~1MΩ			10Ω~4.7MΩ		± 25
					10Ω~1MΩ	10Ω~1MΩ		0.2Ω~10MΩ		± 50
					—			0.1Ω~10MΩ		± 100
					0Ω(<15mΩ)					-
	Jumper:5A									

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	
0309	2W	-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°C ~ +125°C, 25°C is the reference temperature
Short Time Overload	0204/0207: $\pm (0.15\%R + 0.05\Omega)$ 0102: $\pm (0.5\%R + 0.05\Omega)$	RCWV*2.5 or Max. overload voltage for 5 seconds
Insulation Resistance	$\geq 10G$	Max. overload voltage for 1 minute
Endurance	0204/0207: $\pm (0.5\%R + 0.05\Omega)$ 0102: $\pm (1.5\%R + 0.05\Omega)$	70 $\pm$ 2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	0204/0207: $\pm (1.0\%R + 0.05\Omega)$ 0102: $\pm (1.5\%R + 0.05\Omega)$	40 $\pm$ 2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Dry Heat	0204/0207: $\pm (1.0\%R + 0.05\Omega)$ 0102: $\pm (1.5\%R + 0.05\Omega)$	at +155°C for 1000 hrs
Bending Strength	$\pm (0.5\%R + 0.05\Omega)$	Bending once for 5 seconds with 2mm
Solderability	95% min. coverage	245 $\pm$ 5°C for 3 seconds
Resistance to Soldering Heat	$\pm (0.5\%R + 0.05\Omega)$	260 $\pm$ 5°C for 10 seconds
Voltage Proof	No breakdown or flashover	1.42 times RCWV (RMS) for 1 minute
Leaching	Individual leaching area $\leq 5\%$ Total leaching area $\leq 10\%$	260 $\pm$ 5°C for 30 seconds
Rapid Change of Temperature	$\pm (0.5\%R + 0.05\Omega)$	-55°C to +125°C, 5 cycles

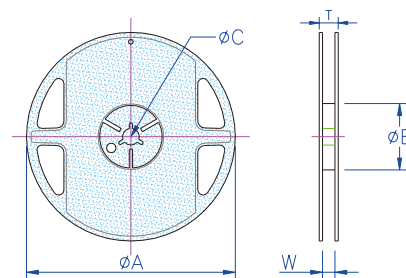
- Reference Standards: IEC 60115-1; JIS-C 5201-1

- Storage Temperature: 25 $\pm$ 3°C; Humidity < 80%RH

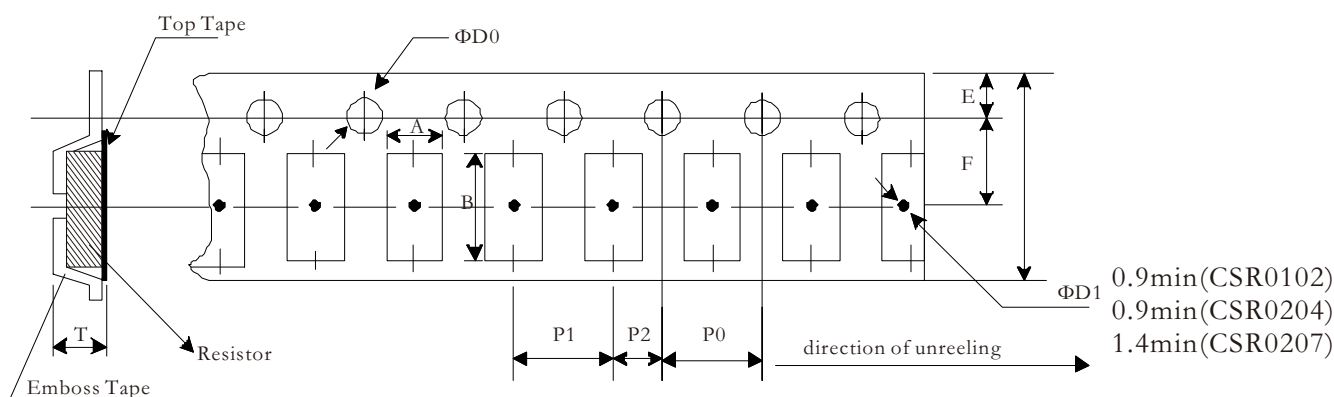
Packaging

Packaging Quantity & Reel Specifications

Type	ΦA	ΦB	ΦC	W	T	Emboss Plastic Tape (EA)
CSR0102	178.5 $\pm$ 1.5	60.0 $\pm$ 1.0	13.0 $\pm$ 0.2	9.0 $\pm$ 0.5	12.5 $\pm$ 0.5	3000
CSR0204	178.5 $\pm$ 1.5	60.0 $\pm$ 1.0	13.0 $\pm$ 0.2	9.0 $\pm$ 0.5	12.5 $\pm$ 0.5	3000
CSR0207	178.5 $\pm$ 1.5	60.0 $\pm$ 1.0	13.0 $\pm$ 0.2	13.0 $\pm$ 0.5	15.5 $\pm$ 0.5	2000
CSR0309	178.5 $\pm$ 1.5	60.0 $\pm$ 1.0	13.0 $\pm$ 0.2	13.0 $\pm$ 0.5	15.5 $\pm$ 0.5	2500



Emboss Plastic Tape Specifications



Unit: mm

Type	A	B	W	E	F	P0	P1	P2	$\Phi D0$	T
CSR0102	1.45 $\pm$ 0.10	2.25 $\pm$ 0.10	8.0 $\pm$ 0.10	1.75 $\pm$ 0.10	3.50 $\pm$ 0.05	4.00 $\pm$ 0.10	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	1.70 $\pm$ 0.10
CSR0204	1.60 $\pm$ 0.10	3.70 $\pm$ 0.10	8.0 $\pm$ 0.10	1.75 $\pm$ 0.10	3.50 $\pm$ 0.05	4.00 $\pm$ 0.10	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	1.87 $\pm$ 0.10
CSR0207	2.40 $\pm$ 0.10	6.05 $\pm$ 0.10	12.0 $\pm$ 0.10	1.75 $\pm$ 0.10	5.50 $\pm$ 0.05	4.00 $\pm$ 0.10	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	2.80 $\pm$ 0.10
CSR0309	3.60 $\pm$ 0.10	9.05 $\pm$ 0.10	15.0 $\pm$ 0.10	1.75 $\pm$ 0.10	7.50 $\pm$ 0.05	4.00 $\pm$ 0.10	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	3.90 $\pm$ 0.10