

CSR0204 / CSR0207 / CSR0309

Metal Film Precision Resistor

- Excellent overall stability
- Tight tolerance down to $\pm 0.1\%$
- Extremely low TCR down to ± 10 PPM/ $^{\circ}\text{C}$
- High power rating up to 1 Watts
- Automotive, telecommunication, medical equipment
- Measurement / testing equipment



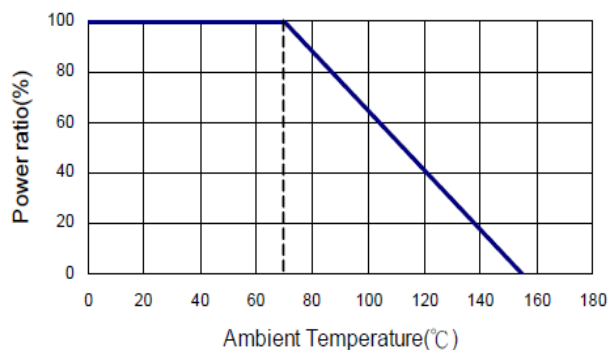
■ GENERAL SPECIFICATIONS

Item Model	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range					TCR (PPM/ $^{\circ}\text{C}$)
					$\pm 0.1\%$	$\pm 0.25\%$	$\pm 0.5\%$	$\pm 1\%$	$\pm 5\%$	
0204	1/4W[V]	-55~ +155 $^{\circ}\text{C}$	200V	400V	10 Ω -20K Ω					± 10
					10 Ω -300K Ω					± 15
					10 Ω -1M Ω			10 Ω -4.7M Ω		± 25
					10 Ω -1M Ω	1 Ω -1M Ω	0.2 Ω -10M Ω		± 50	
					-			0.1 Ω -10M Ω		± 100
	Jumper: 2A	0 Ω (<15m Ω)					-			
0207	1/2W[U]	-55~ +155 $^{\circ}\text{C}$	300V	500V	10 Ω -20K Ω					± 10
					10 Ω -300K Ω					± 15
					10 Ω -1M Ω			10 Ω -4.7M Ω		± 25
					10 Ω -1M Ω	1 Ω -1M Ω	0.2 Ω -10M Ω		± 50	
					-			0.1 Ω -10M Ω		± 100
	Jumper: 4A	0 Ω (<15m Ω)					-			
0309	1W	-55~ +155 $^{\circ}\text{C}$	350V	700V	100 Ω - 100k Ω	100 Ω -330k Ω		None	± 15	
					100-560k Ω				± 25	
					100 Ω - 100k Ω	10 Ω -1M Ω			± 50	

■ HIGH POWER RATING ELECTRICAL SPECIFICATION

Item Model	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range					TCR (PPM/ $^{\circ}\text{C}$)
					$\pm 0.1\%$	$\pm 0.25\%$	$\pm 0.5\%$	$\pm 1\%$	$\pm 5\%$	
0204	2/5W[G]	-55~ +155 $^{\circ}\text{C}$	200V	400V	10 Ω -100K Ω					± 15
					10 Ω -1M Ω					± 25
					10 Ω -1M Ω	1 Ω -1M Ω		0.2 Ω -1M Ω		± 50
					-			0.1 Ω -1M Ω		± 100
0207	1W[T]	-55~ +155 $^{\circ}\text{C}$	350V	700V	10 Ω -100K Ω					± 15
					10 Ω -10M Ω					± 25
					10 Ω -1M Ω	1 Ω -1M Ω		0.2 Ω -10M Ω		± 50
					-			0.1 Ω -10M Ω		± 100
0309	2W	-55~ +155 $^{\circ}\text{C}$	350V	700V	100 Ω - 100k Ω	100 Ω -330k Ω		None	± 15	
					100-560k Ω				± 25	
					100 Ω - 100k Ω	10 Ω -1M Ω			± 50	

DERATING CURVE



CHARACTERISTICS

Item	Requirement	Test Method
Temperature Coefficient of Resistance(T.C.R)	As Spec.	-55℃~+125℃, 25℃ is the reference temperature
Short Time Overload	Model : 0204 / 0207 $\pm(0.15\%+0.05\Omega)$	RCWV*2.5 or Max. Overload voltage for 5 seconds
	Model : 0309 $\pm(0.25+0.05\Omega)$	
Insulation Resistance	$\geq 10G\Omega$	Max. overload voltage for 1 minute
Endurance	$\pm(0.5\%+0.05\Omega)$	70±2℃, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	$\pm(1.0\%+0.05\Omega)$	40±2℃, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Dry Heat	$\pm(1.0\%+0.05\Omega)$	at +155℃ for 1000 hrs
Bending Strength	$\pm(0.5\%+0.05\Omega)$	Bending once for 5 seconds with 2mm
Solder ability	95% min. coverage	245±5℃ for 3 seconds
Resistance to Soldering Heat	$\pm(0.5\%+0.05\Omega)$	260±5℃ 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±5℃ for 30 seconds
Rapid Change of Temperature	$\pm(0.5\%+0.05\Omega)$	-55℃ to +125℃, 5 cycles

* Reference Standards : IEC 60115-1, 60068-2-58; JIS-C 5201-1

* Storage Temperature : 25±3℃; Humidity < 80%RH

DIMENSIONS

Unit : mm

Model	L	ΦD	K min.	Weight(g) (1000pcs)	Packaging
					180mm (7")
CSR0204	3.50±0.20	1.40±0.15	0.5	18.7	3,000EA
CSR0207	5.90±0.20	2.20±0.20	0.5	80.9	2,000EA
CSR0309	8.50±0.20	3.4±0.20	0.5		2,500EA

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

■ Packaging

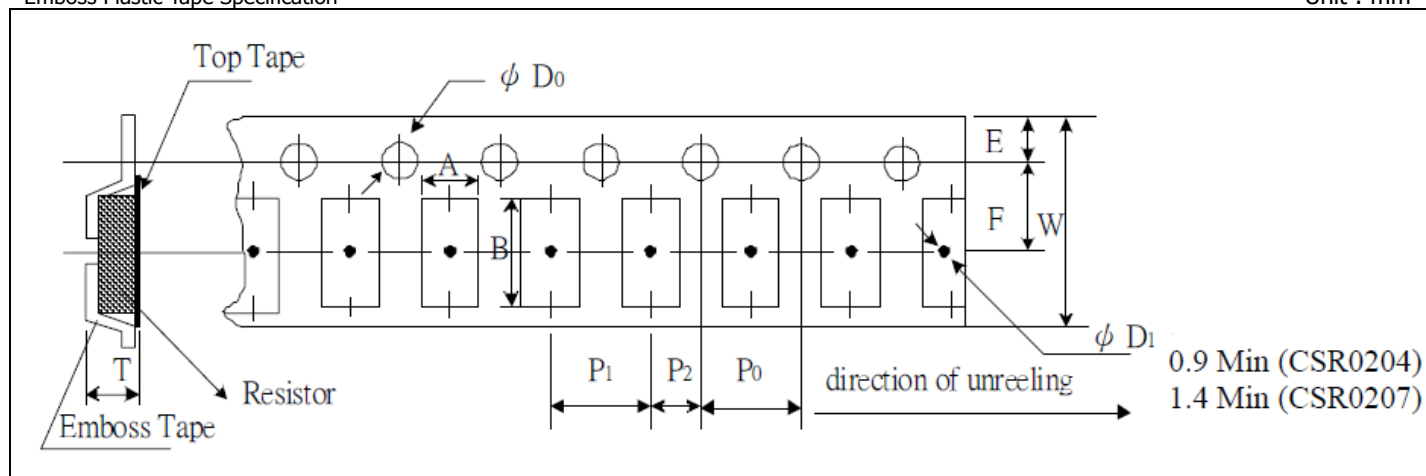
Packaging Quantity & Reel Specifications

Unit : mm

Model	ΦA	ΦB	ΦC	W	T	Emboss Plastic Tape(EA)
CSR0204	178.5±1.5	60.0±1.0	13.0±0.2	9.0±0.5	12.5±0.5	3,000
CSR0207	178.5±1.5	60.0±1.0	13.0±0.5	13.0±0.5	15.5±0.5	2,000
CSR0309	330±1.0	100±1.0	13.0±0.5	17.0±0.5	21.5±0.2	2,500

Emboss Plastic Tape Specification

Unit : mm



Model	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD ₀	T
CSR0204	1.6±0.1	3.7±0.1	8.0±0.1	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	1.87±0.1
CSR0207	2.4±0.1	6.05±0.1	12.0±0.1	1.75±0.1	5.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	2.8±0.1
CSR0309	3.5±0.1	8.85±0.1	16.0±0.1	1.75±0.1	7.50±0.1	4.00±0.1	8.00±0.1	2.00±0.1	1.50±0.1	3.50±0.1

■ ORDERING PROCEDURE EXAMPLE

Model	Dimensions	Resistance Tolerance	Packaging code	T.C.R (ppm/°C)	Power rating	Resistance
CSR	0204	D	T	D	V	1000
	0204 : 3.5X1.4 0207 : 5.9X2.2 0309 : 8.5X3.4	B : ±0.1% C : ±0.25% D : ±0.5% F : ±1.0% J : ±5.0%	T : Taping Reel B : bulk	B : ±10 N : ±15 C : ±25 D : ±50 E : ±100 : No Specified	T : 1W U : 1/2W V : 1/4W W : 1/8W P : 1/5W G : 2/5W	0010 : 1Ω 0100 : 10Ω 1000 : 100Ω 2201 : 2200Ω 1001 : 1KΩ 1004 : 1MΩ R0R0 : 0Ω R050 : 0.05Ω R100 : 0.1Ω 22R1 : 22.1Ω