Metal Film Precision Resistor
(CSR Series)

Features

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

Applications

- Automotive
- Telecommunication
- Medical Equipment

Construction

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

Dimensions

Unit: mm

Type	L	ΦD	K min.	Weight (g) (1000pcs)	Packaging 180mm (7")
CSR0204	3.50±0.2	1.40±0.15	0.5	18.7	3000EA
CSR0207	5.90±0.2	2.20±0.20	0.5	80.9	2000EA

Part Numbering

CSR	0204	D	T	D	V	1000
Product Type	Dimensions (L×ΦD)	Resistance Tolerance	Packaging Code	TCR (PPM/℃)	Power Rating	Resistance
	0204: 3.5x1.4 0207: 5.9x2.2	B: ±0.1% C: ±0.25% D: ±0.5% F: ±1% J: ±5%	T: Taping Reel B: Bulk	B: ±10 N: ±15 C: ±25 D: ±50 E: ±100	T: 1W U: 1/2W V: 1/4W	0100: 10Ω 1000: 100Ω 2201: 2200Ω 1001: 1KΩ 1004: 1MΩ

Derating Curve

Standard Electrical Specifications

Type \ Item	Power Rating at 70˚C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range ±0.1%	±0.25%	±0.5%	±1%	±5%	TCR (PPM/˚C)
0204	1/4W	-55 ~ +155°C	200V	400V	100Ω-20KΩ	10Ω-20KΩ				±10
					100Ω-100KΩ	10Ω-100KΩ				±15
					100Ω-270KΩ	10Ω-330KΩ	4.7Ω-560KΩ	4.7Ω-1MΩ		±25
					100Ω-270KΩ	1Ω-330KΩ	1Ω-1MΩ	1Ω-10MΩ		±50
					-			5.11MΩ-10MΩ	-	±100
								0.1Ω-0.91Ω		
0207	1/2W	-55 ~ +155°C	300V	500V	100Ω-20KΩ	10Ω-20KΩ				±10
					100Ω-100KΩ	10Ω-100KΩ				±15
					100Ω-400KΩ	10Ω-400KΩ	10Ω-560KΩ	10Ω-560KΩ		±25
					100Ω-400KΩ	1Ω-330KΩ	1Ω-1MΩ	1Ω-5.1MΩ		±50
					-				0.1Ω-0.91Ω	±100

High Power Rating Electrical Specifications

Type \ Item	Power Rating at 70˚C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range ±0.1%	±0.25%	±0.5%	±1%	±5%	TCR (PPM/˚C)
0207	1W	-55 ~ +155°C	350V	700V	100Ω-100KΩ	10Ω-100KΩ				±15
					100Ω-100KΩ	4.7Ω - 1MΩ	4.7Ω - 1MΩ	4.7Ω-560KΩ		±25
					100Ω-100KΩ	10Ω - 1MΩ	1Ω - 1MΩ	1Ω - 2.2MΩ		±50
					-			0.1Ω – 0.91Ω		±100

Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec	**JIS-C-5201-1 5.2** +20/-15/+20/+100/+20°C
Short Time Overload	△R±0.5%	**JIS-C-5201-1 5.5** RCWV*2.5 or Max. overload voltage for 5 seconds
Endurance	△R±2%	**JIS-C-5201-1 7.10** 70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs “ON” and 0.5 hrs “OFF”
Damp Heat with Load	△R±2%	**JIS-C-5201-1 7.9** 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	△R±2%	**JIS-C-5201-1 7.2** at +155°C for 1000 hrs
Solderability	95%min. coverage	**JIS-C-5201-1 6.5** 245±5°C for 3 seconds
Resistance to Soldering Heat	△R±0.5%	**JIS-C-5201-1 6.4** 260±5°C for 10 seconds

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

Marking & Resistance Tolerance

±5%	E-24	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.7	3.0	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1

±1%	E-96	1.00	1.02	1.05	1.07	1.10	1.13	1.15	1.18	1.21	1.24	1.27	1.30	1.33	1.37	1.40	1.43	1.47	1.50	1.54	1.58	1.62	1.65	1.69	1.74
		1.78	1.82	1.87	1.91	1.96	2.00	2.05	2.10	2.15	2.21	2.26	2.32	2.37	2.43	2.49	2.55	2.61	2.67	2.74	2.80	2.87	2.94	3.01	3.09
		3.16	3.24	3.32	3.40	3.48	3.57	3.65	3.74	3.83	3.92	4.02	4.12	4.22	4.32	4.42	4.53	4.64	4.75	4.87	4.99	5.11	5.23	5.36	5.49
		5.62	5.76	5.90	6.04	6.19	6.34	6.49	6.65	6.81	6.98	7.15	7.32	7.50	7.68	7.87	8.06	8.25	8.45	8.66	8.87	9.09	9.31	9.53	9.76
±0.50% ±0.25% ±0.10%	E-192	10.0	10.1	10.2	10.4	10.5	10.6	10.7	10.9	11.0	11.1	11.3	11.4	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	13.0	13.2
		13.3	13.5	13.7	13.8	14.0	14.2	14.3	14.5	14.7	14.9	15.0	15.2	15.4	15.6	15.8	16.0	16.2	16.4	16.5	16.7	16.9	17.2	17.4	17.6
		17.8	18.0	18.2	18.4	18.7	18.9	19.1	19.3	19.6	19.8	20.0	20.3	20.5	20.8	21.0	21.3	21.5	21.8	22.1	22.3	22.6	22.9	23.2	23.4
		23.7	24.0	24.3	24.6	24.9	25.2	25.5	25.8	26.1	26.4	26.7	27.1	27.4	27.7	28.0	28.4	28.7	29.1	29.4	29.8	30.1	30.5	30.9	31.2
		31.6	32.0	32.4	32.8	33.2	33.6	34.0	34.4	34.8	35.2	35.7	36.1	36.5	37.0	37.4	37.9	38.3	38.8	39.2	39.7	40.2	40.7	41.2	41.7
		42.2	42.7	43.2	43.7	44.2	44.8	45.3	45.9	46.4	47.0	47.5	48.1	48.7	49.3	49.9	50.5	51.1	51.7	52.3	53.0	53.6	54.2	54.9	55.6
		56.2	56.9	57.6	58.3	59.0	59.7	60.4	61.2	61.9	62.6	63.4	64.2	64.9	65.7	66.5	67.3	68.1	69.0	69.8	70.6	71.5	72.3	73.2	74.1
		75.0	75.9	76.8	77.7	78.7	79.6	80.6	81.6	82.5	83.5	84.5	85.6	86.6	87.6	88.7	89.8	90.9	92.0	93.1	94.2	95.3	96.5	97.6	98.8

Cold	Digit	Multiplier
Silver	-	10^{-2}
Gold	-	10^{-1}
Black	0	10^{0}
Brown	1	10^{1}
Red	2	10^{2}
Orange	3	10^{3}
Yellow	4	10^{4}
Green	5	10^{5}
Blue	6	10^{6}
Violet	7	10^{7}
Grey	8	10^{8}
White	9	10^{9}