

Metal Film Precision Resistor – CSR Series



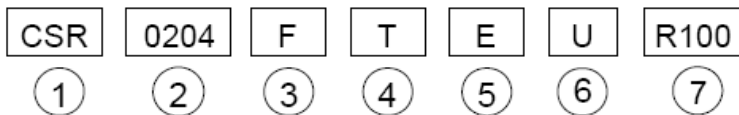
Features

- Advanced thin film technology.
- Excellent overall stability: Class 0.25.
- Force fitted steel caps, tin plated on nickel barrier.
- Pure Sn termination on Ni barrier layer.
- Compatible with lead (Pb)-free and lead containing soldering processes.
- Lead (Pb)-free and RoHS compliant .

Applications

- Military
- Automotive
- Telecommunication
- Medical equipment.
- Avionics
- Space

Part Numbering



① Product Type

Product Type	
CSR	Metal Film Resistor

② Dimensions (L×W)

Codes	Dimensions (L×W)
0204	3.45×1.35mm
0207	5.90×2.20mm

③ Resistance Tolerance

Codes	Resistance Tolerance
Q	±0.02%
A	±0.05%
B	±0.10%
C	±0.25%
D	±0.50%
F	±1.00%
J	±5.00%

④ Packaging

Codes	Type
T	Taping Reel
B	Bulk

⑤ TCR

Codes	Type
B	±10 PPM/°C
N	±15 PPM/°C
C	±25 PPM/°C
D	±50 PPM/°C
E	±100 PPM/°C

⑥ Power Rating

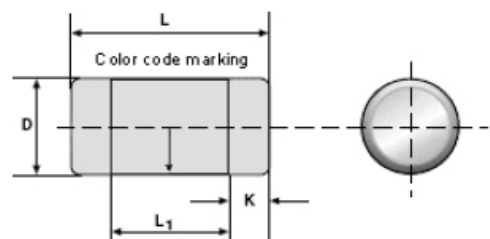
Codes	Type
T	1W
U	1/2W
V	1/4W

⑦ Resistance

Codes	Type
R100	0.10Ω
0100	10.0Ω
2201	2200Ω
1002	10000Ω
4992	49900Ω
1003	100000Ω
1004	1000000Ω

Dimensions

Codes	L	φD	K	L1 min	Packaging (180mm/7")
0204	3.45±0.3	1.35±0.2	0.6±0.1	2.00	3000EA
0207	5.90±0.3	2.20±0.2	1.0±0.1	3.40	2000EA



Standard Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Resistance Tolerance (± %)	Resistance Range	TCR (±PPM/°C)
0204	0.25W	-55 ~ +155°C	200V	1% , 5%	0.1Ω~10MΩ	50 , 100
				0.5% , 1% , 5%	1.0Ω~1MΩ	50
				0.1% , 0.25% , 0.5% , 1%	50Ω~200KΩ	10 , 15 , 25 , 50
0207	0.50W	-55 ~ +155°C	300V	1% , 5%	0.1Ω~10MΩ	50 , 100
				0.5% , 1% , 5%	1.0Ω~1MΩ	50
				0.1% , 0.25% , 0.5% , 1%	50Ω~200KΩ	10 , 15 , 25 , 50
				0.1% , 0.25% , 0.5% , 1%	50Ω~300KΩ	15 , 25 , 50

High Power Rating Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Resistance Tolerance (± %)	Resistance Range	TCR (±PPM/°C)
0204	0.50W	-55 ~ +155°C	300V	1% , 5%	0.1Ω~10MΩ	50 , 100
				0.5% , 1% , 5%	1.0Ω~1MΩ	50
				0.1% , 0.25% , 0.5% , 1%	50Ω~200KΩ	10 , 15 , 25 , 50
0207	1.00W	-55 ~ +155°C	500V	1% , 5%	0.1Ω~10MΩ	50 , 100
				0.5% , 1% , 5%	1.0Ω~1MΩ	50
				0.1% , 0.25% , 0.5% , 1%	50Ω~200KΩ	10 , 15 , 25 , 50
				0.1% , 0.25% , 0.5% , 1%	50Ω~300KΩ	15 , 25 , 50

Environmental Characteristics

Test Item		Requirements Permissible Change (ΔR)			Test Method
		0.25%	0.50%	0.50%	
Stability for product types	CSR0204	50 Ω ~220K Ω	10 Ω ~<50 Ω	>220K Ω	
	CSR0207	50 Ω ~1M Ω	10 Ω ~<50 Ω	>1M Ω	
Temperature Coefficient of Resistance		As Spec			MIL-STD-202F Method 304 +25/-55/+25/+125/+25 $^{\circ}$ C
Short Time Overload		$\Delta R \pm 0.1\%$			JIS-C-5202-5.5 RCWV*2.5 or Max Overloading Voltage , 5 seconds
		no visible damage			
Thermal Shock		$\Delta R \pm 0.1\%$	$\Delta R \pm 0.25\%$	$\Delta R \pm 0.1\%$	MIL-STD-202F Method 107G -55 $^{\circ}$ C~150 $^{\circ}$ C, 100 cycles
		no visible damage			
Load Life		$\Delta R \pm 0.25\%$	$\Delta R \pm 0.25\%$	$\Delta R \pm 0.50\%$	MIL-STD-202F Method 108A RCWV , 70 $^{\circ}$ C , 1.5 hours ON , 0.5 hours OFF, total 1000~1048 hours
Humidity (Steady State)		$\Delta R \pm 0.25\%$	$\Delta R \pm 0.50\%$	$\Delta R \pm 0.50\%$	MIL-STD-202F Method 103B 40 $^{\circ}$ C , 90~95%RH,RCWV 1.5 hours ON,0.5 hours OFF, total 1000~1048 hours
		no visible damage			
Resistance to Dry Heat		$\Delta R \pm 0.50\%$	$\Delta R \pm 1.00\%$	$\Delta R \pm 1.00\%$	JIS-C-5202-7.2 96 hours @ +155 $^{\circ}$ C without load
Low Temperature Operation		$\Delta R \pm 0.25\%$	$\Delta R \pm 0.50\%$	$\Delta R \pm 0.50\%$	JIS-C-5202-7.1 1 hours, -65 $^{\circ}$ C, followed by 45minutes of RCWV
		no visible damage			
Solderability		95%min coverage			MIL-STD-202F Method 208H 245 $^{\circ}$ C $\pm 5^{\circ}$ C, 2 ± 0.5 (sec)
Resistance to Soldering Heat		$\Delta R \pm 0.10\%$	$\Delta R \pm 0.25\%$	$\Delta R \pm 0.10\%$	MIL-STD-202F Method 210E 260 $\pm 5^{\circ}$ C, 10 ± 1 seconds
		no visible damage			

* Storage Temperature :25 $\pm 3^{\circ}$ C; Humidity <80%RH