

## 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

CSR	0204	F	T	E	U	R100
①	②	③	④	⑤	⑥	⑦

#### 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

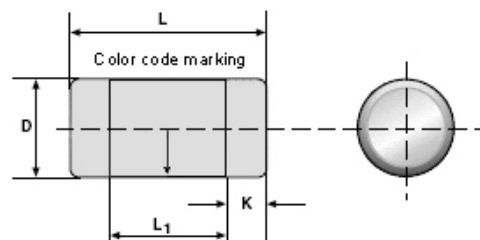
Codes	Type
T	1W
U	1/2W
V	1/4W

#### 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

\*Viking is capable of manufacturing the optional spec based on customer's requirement.

## Environmental Characteristics

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

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