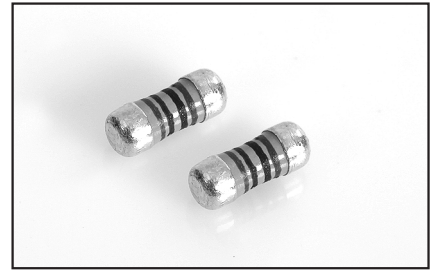


## Metal Film Precision Resistors

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



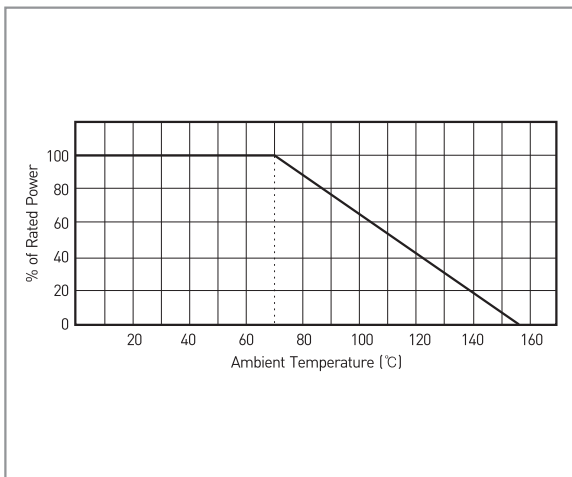
### GENERAL SPECIFICATIONS

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°C ~ +155°C	200V	400V	10 $\Omega$ -20K $\Omega$					$\pm 10$
					10 $\Omega$ -300K $\Omega$					$\pm 15$
					10 $\Omega$ -1M $\Omega$		10 $\Omega$ -4.7M $\Omega$			$\pm 25$
					10 $\Omega$ -1M $\Omega$	1 $\Omega$ -1M $\Omega$	0.2 $\Omega$ -10M $\Omega$		$\pm 50$	
					-		0.1 $\Omega$ -10M $\Omega$		$\pm 100$	
0207	1/2W[U]	-55°C ~ +155°C	300V	500V	10 $\Omega$ -20K $\Omega$					$\pm 10$
					10 $\Omega$ -300K $\Omega$					$\pm 15$
					10 $\Omega$ -1M $\Omega$		10 $\Omega$ -4.7M $\Omega$			$\pm 25$
					10 $\Omega$ -1M $\Omega$	1 $\Omega$ -1M $\Omega$	0.2 $\Omega$ -10M $\Omega$		$\pm 50$	
					-		0.1 $\Omega$ -10M $\Omega$		$\pm 100$	
0 $\Omega$ (<15m $\Omega$ )					-					

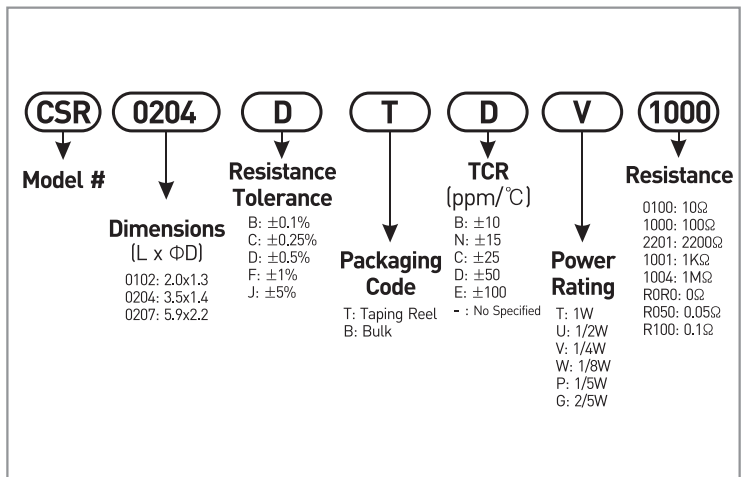
### HIGH POWER RATING SPECIFICATIONS

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°C ~ +155°C	200V	400V	10 $\Omega$ -100K $\Omega$					$\pm 15$
					10 $\Omega$ -1M $\Omega$					$\pm 25$
					10 $\Omega$ -1M $\Omega$	1 $\Omega$ -1M $\Omega$	0.2 $\Omega$ -1M $\Omega$		$\pm 50$	
					-		0.1 $\Omega$ -1M $\Omega$		$\pm 100$	
0207	1W[T]	-55°C ~ +155°C	350V	700V	10 $\Omega$ -100K $\Omega$					$\pm 15$
					10 $\Omega$ -10M $\Omega$					$\pm 25$
					10 $\Omega$ -1M $\Omega$	1 $\Omega$ -1M $\Omega$	0.2 $\Omega$ -10M $\Omega$		$\pm 50$	
					-		0.1 $\Omega$ -10M $\Omega$		$\pm 100$	

### DERATING CURVE



### ORDERING PROCEDURE EXAMPLE



## CHARACTERISTICS

 Values in [ ] mean change in  $\Omega$  after test

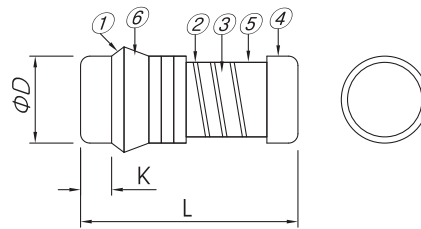
Temperature Coefficient	As Spec.	-55°C~+125°C, 25°C is the reference temperature
Short Time Overload	$\pm(0.15\%+0.05\Omega)$	2.5time *RCW or Maximum Overload voltage for 5 seconds
Insulation Resistance	$\geq 10G\Omega$	Maximum overload voltage for 1 minute
Endurance	$\pm(0.5\%+0.05\Omega)$	70 $\pm$ 2°C, maximum working voltage for 1000 hours with 1.5 hours "ON" and 0.5 hours "OFF"
Damp Heat with Load	$\pm(1.0\%+0.05\Omega)$	40 $\pm$ 2°C, 90~95% RH maximum working voltage for 1000hours with 1.5hours "ON" and 0.5hours "OFF"
Dry Heat	$\pm(1.0\%+0.05\Omega)$	at +155°C for 1000 hours
Bending Strength	$\pm(0.5\%+0.05\Omega)$	Bending once for 5 seconds with 2mm
Solderability	95% Coverage minimum	245 $\pm$ 5°C for 3 seconds
Resistance to Soldering Heat	$\pm(0.5\%+0.05\Omega)$	260 $\pm$ 5°C for 10 seconds
Voltage Proof	No breakdown or flashover	1.42 times RCW(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	$\pm(0.5\%+0.05\Omega)$	-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

## DIMENSIONS [mm]

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



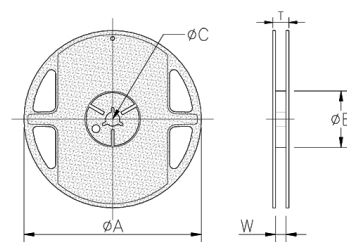
Model	L	φD	K min	Weight(g) (1000pcs)	Packaging 180mm (7")
CSR0204	3.50 $\pm$ 0.20	1.40 $\pm$ 0.15	0.5	18.7	3,000EA
CSR0207	5.90 $\pm$ 0.20	2.20 $\pm$ 0.20	0.5	80.9	2,000EA

## PACKAGING

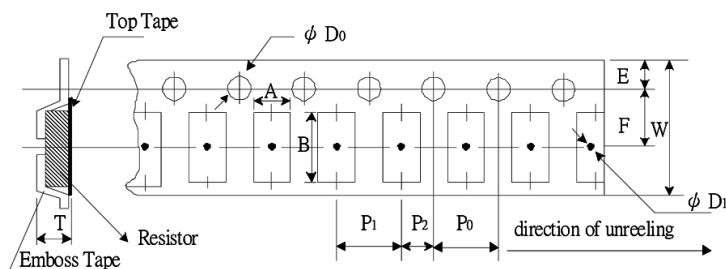
Unit : mm

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	3,000
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	3,000
CSR0207	178.5 $\pm$ 1.5	60.0 $\pm$ 1.0	13.0 $\pm$ 0.5	13.0 $\pm$ 0.5	15.5 $\pm$ 0.5	2,000



Emboss Plastic Tape Specifications


 10.49M Mini.n (CSR0102)  
 0.9 Min (CSR0204)  
 1.4 Min (CSR0207)

Type	A	B	W	E	F	P0	P1	P2	φD0	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