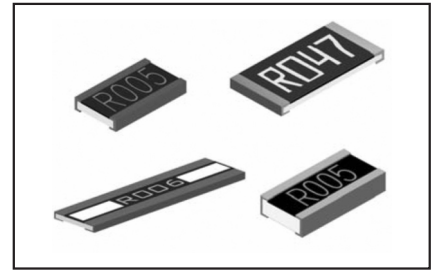


# Current Sensing Chip Resistors

- 3W rating in 1W size, 1225 package
- Low TCR from  $\pm 100 \sim \pm 600$  ppm/ $^{\circ}\text{C}$
- Resistance values from 1m to 1  $\Omega$
- High purity alumina substrate for high power dissipation
- Long side terminations with higher power rating



Wire Wound Resistors

Current Sensing Resistors

Precision Resistors

Power Film Resistors

High Voltage Resistors

Bulk Ceramic Resistors

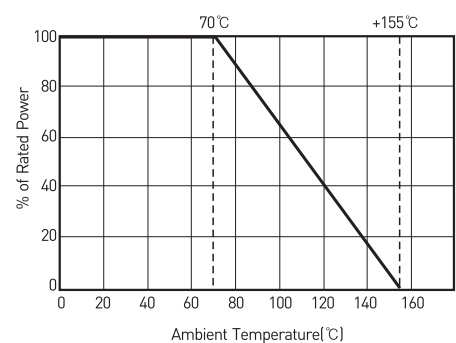
Heaters

## GENERAL SPECIFICATIONS

Model	Power Rating	Operating Temperature Range	Resistance Tolerance (%)	Resistance Range[ $\Omega$ ]	TCR[ppm/ $^{\circ}\text{C}$ ]
CS01 (0201)	1/20W	-55 $^{\circ}\text{C}$ ~ +155 $^{\circ}\text{C}$	F [ $\pm 1$ ] G [ $\pm 2$ ] J [ $\pm 5$ ]	100m ~ 149m	$\pm 1000$
CS02 (0402)	1/16W			150m ~ 500m	$\pm 600$
				501m ~ 1000m	$\pm 300$
				50m ~ 100m	$\pm 400$
CS03 (0603)	1/10W			101m ~ 500m	$\pm 300$
				501m ~ 1000m	$\pm 200$
				20m ~ 50m	$\pm 600$
CS05 (0805)	1/8W			51m ~ 100m	$\pm 400$
				101m ~ 500m	$\pm 300$
				501m ~ 1000m	$\pm 200$
CS06 (1206)	1/4W			20m ~ 50m	$\pm 600$
				51m ~ 100m	$\pm 400$
				101m ~ 500m	$\pm 300$
CS13 (1210)	1/2W			501m ~ 1000m	$\pm 200$
CS10 (2010)	3/4W				10m ~ 20m
CS12 (2512)	1W	21m ~ 50m	$\pm 400$		
CS25 (1225)	3W	51m ~ 99m	$\pm 300$		
		100m ~ 1000m	$\pm 200$		
		3m ~ 5m	$\pm 300$		
CS37 (3720)	1W	6m ~ 20m	$\pm 200$		
		21m ~ 30m	$\pm 150$		
		31m ~ 8000m	$\pm 100$		
CS75 (7520)	2W	10m ~ 19m	$\pm 300$		
		20m ~ 500m	$\pm 150$		
		1m ~ 4m	$\pm 300$		
G [ $\pm 2$ ], J [ $\pm 5$ ]	5m ~ 10m	$\pm 200$			
	11m ~ 350m	$\pm 150$			

## HIGH POWER RATING SPECIFICATIONS AND DERATING CURVE

Model	Power Rating	Resistance Range[ $\Omega$ ] $\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$	TCR[ppm/ $^{\circ}\text{C}$ ]
CS02 (0402)	1/8W	51m ~ 100m	$\pm 400$
CS03 (0603)	1/8W, 1/5W	101m ~ 500m	$\pm 300$
CS05 (0805)	1/4W	501m ~ 1000m	$\pm 200$
CS06 (1206)	1/2W	10m ~ 20m	$\pm 600$
CS13 (1210)	3/4W		
CS10 (2010)	1W		
CS12 (2512)	1.5W	51m ~ 99m	$\pm 300$
CS12 (2512)	2W	100m ~ 1000m	$\pm 200$



**CHARACTERISTICS**

Values in [ ] mean change in Ω after test

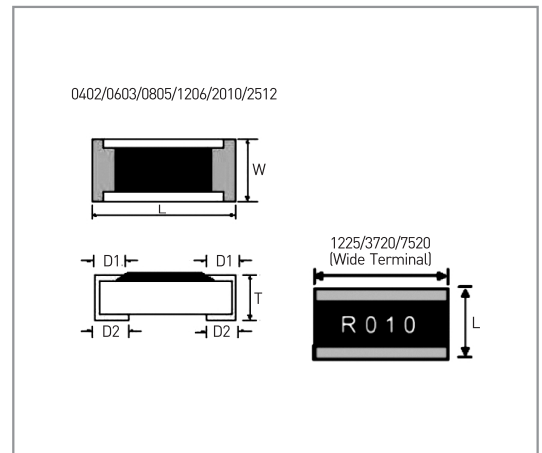
Temp. Coefficient of Resistance	As Spec.	-55°C~125°C, 25°C is the reference temperature
Short Time Overload	±[1.0%+0.05Ω] for high power rating	RCWW*2.5 or maximum Overload Voltage, 5seconds
Dielectric Withstanding Voltage	No breakdown or flashover	1.42 times RCWW(RMS) for 1minute
Insulation Resistance	≥10GΩ	Maximum Overload voltage for 1minute
Thermal Shock	±[0.5%+0.05Ω]	-55°C~155°C, 5cycles
Load Life	±[1.0%+0.05Ω]	RCWW, 70±2°C 1.5hours on, 0.5hours off for 1000~1048hours
Humidity(Steady State)	±[0.5%+0.05Ω]	40±2°C, 90~95%RH, RCWW 1.5hours on, 0.5hours off for 1000~1048hours
Resistance to Dry Heat	±[0.5%+0.05Ω]	at +155°C for 1000hours without load
Bending Strength	As Spec.	Bending once for 5seconds, 2010, 2512 size: 2mm, other size: 3mm
Solerability	95% coverage minimum	245±5°C, 3seconds
Resistance to Soldering Heat	±[0.5%+0.05Ω]	260±5°C, 10±1seconds

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

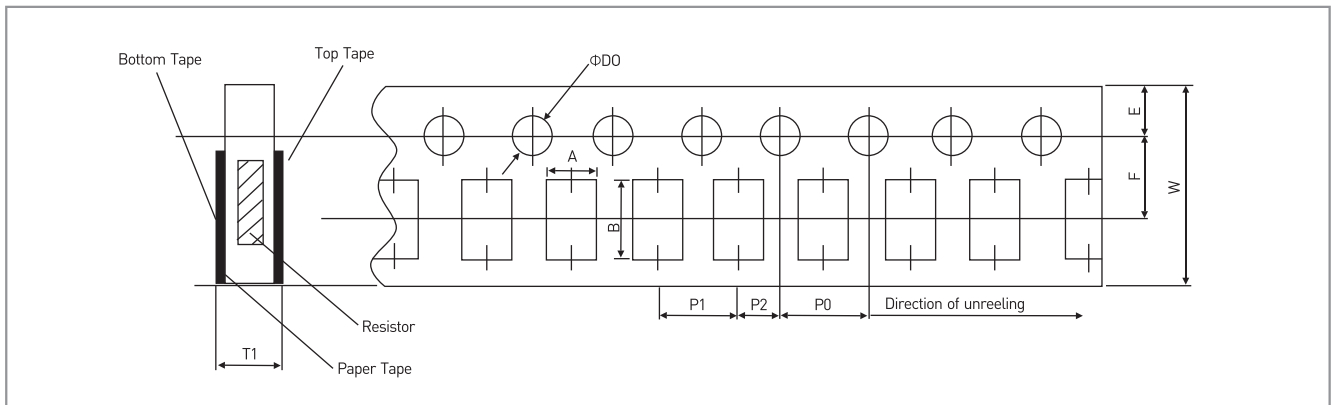
\* Reference Standards: IEC60115-1, 60068-2-58, JIS-C 5201-1

**DIMENSIONS [mm]**

Model	Dimensions [mm]				
	L	W	T	D1	D2
CS01	0.60±0.03	0.30±0.03	0.23±0.05	0.12±0.05	0.15±0.05
CS02	1.00±0.05	0.50±0.05	0.32±0.10	0.25±0.10	0.20±0.10
CS03	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
CS05	2.00±1.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25
CS06	3.10±0.15	1.55±0.15	0.55±0.10	0.50±0.30	0.40±0.25
CS13	3.10±0.10	2.60±0.15	0.55±0.10	0.50±0.30	0.50±0.25
CS10	5.00±0.20	2.50±0.15	0.60±0.15	0.60±0.30	0.50±0.25
CS12	6.35±0.20	3.10±0.15	0.60±0.10	0.60±0.30	0.55±0.25
CS25	3.10±0.15	6.30±0.15	0.90±0.15	0.60±0.30	0.80±0.25
CS37	2.00±0.20	3.75±0.20	0.60±0.10	0.40±0.20	0.40±0.20
CS75	2.00±0.20	7.50±0.30	0.60±0.10	0.40±0.20	0.40±0.20

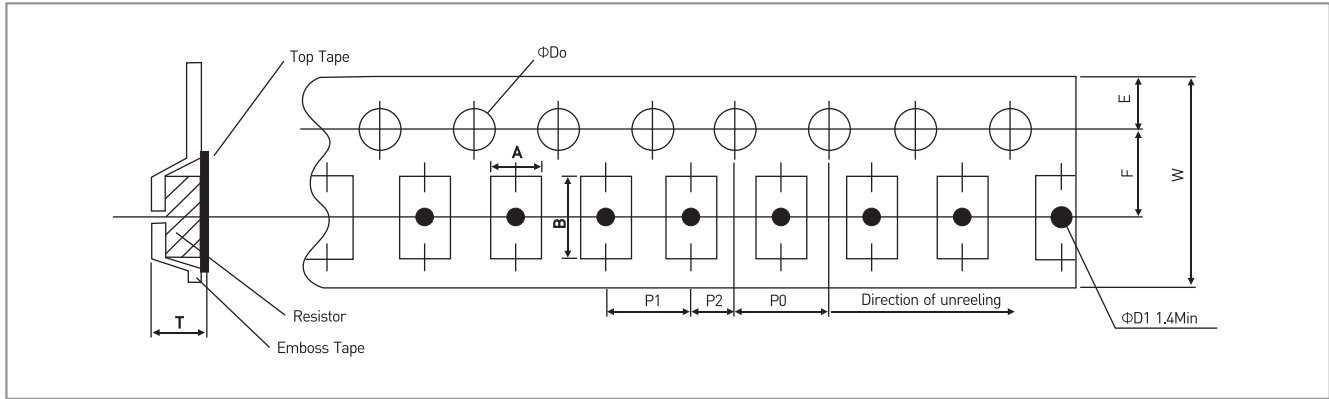


**PAPER TAPE SPECIFICATIONS**



Model	Dimensions [mm]										
	A	B	W	E	F	P0	P1	P2	ΦD0	T	
CS01	0.38±0.05	0.68±0.05								0.42±0.2	
CS02	0.65±0.1	1.15±0.1					2.00±0.05			0.45±0.1	
CS03	1.10±0.1	1.90±0.1	8.00±0.2	1.75±0.1	3.5±0.05	4.00±0.1	4.00±0.1	2.00±0.05	1.50± <sup>0.1</sup> <sub>0.0</sub>		0.70±0.1
CS05	1.60±0.1	2.40±0.2									0.85±0.1
CS06	1.90±0.1	3.50±0.2									
CS13	2.90±0.1	3.50±0.2									

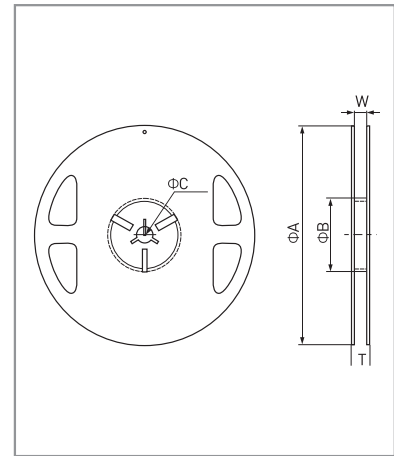
EMBOSS PLASTIC TAPE SPECIFICATIONS



Model	Dimensions [mm]									
	A	B	W	E	F	P0	P1	P2	ΦD0	T
CS10	2.80±0.10	5.50±0.10	12.0±0.10		5.5±0.05	4.0±0.05			1.50±0.10	1.00±0.20
CS12	3.40±0.10	6.70±0.10	12.0±0.10		5.5±0.05	4.0±0.05			1.50±0.10	1.00±0.20
CS25	3.38±0.10	6.68±0.10	12.0±0.30	1.75±0.10	5.5±0.10	4.0±0.10	4.0±0.10	2.0±0.05	1.55±0.05	1.45±0.20
CS37	2.50±0.20	4.45±0.20	12.0±0.30		5.5±0.05	4.0±0.05			1.50±0.10	1.20±0.20
CS75	2.50±0.20	8.30±0.20	16.0±0.30		7.8±0.05	4.0±0.05			1.50±0.10	1.20±0.20

REEL SPECIFICATIONS

Model	Dimensions [mm]					Paper Tape [pcs]	Emboss Plastic Tape [pcs]
	ΦA	ΦB	ΦC	W	T		
CS01	178±1	60.0±1.0	13.5±0.7	9.5±0.50	11.5±1.0	10,000	-
CS02	178±1	60.0±1.0	13.5±0.7	9.5±0.50	11.5±1.0	10,000	-
CS03	178±1	60.0±1.0	13.5±0.7	9.5±0.50	11.5±1.0	5,000	-
CS05	178±1	60.0±1.0	13.5±0.7	9.5±0.50	11.5±1.0	5,000	-
CS06	178±1	60.0±1.0	13.5±0.7	9.5±0.50	11.5±1.0	5,000	-
CS13	178±1	60.0±1.0	13.5±0.7	9.5±0.50	11.5±1.0	5,000	-
CS10	178±1	60.0±1.0	13.5±0.7	13.5±1.50	15.5±1.0	-	4,000
CS12	178±1	60.0±1.0	13.5±0.7	13.5±1.50	15.5±1.0	-	4,000
CS25	178±1	60.0±1.0	13.5±0.7	13.5±1.50	15.5±1.0	-	2,000
CS37	178±1	60.0±1.0	13.5±0.7	13.5±1.50	15.5±1.0	-	2,000
CS75	178±1	60.0±1.0	13.5±0.7	17.5±1.50	19.5±1.0	-	2,000



ORDERING PROCEDURE EXAMPLE

