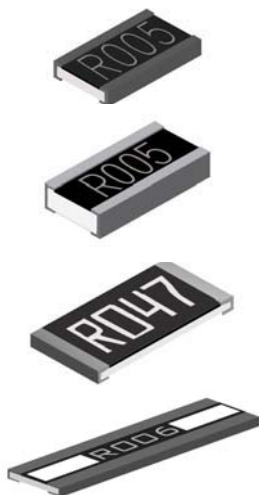


## Current Sensing Chip Resistor – CS Series

電流感測貼片電阻

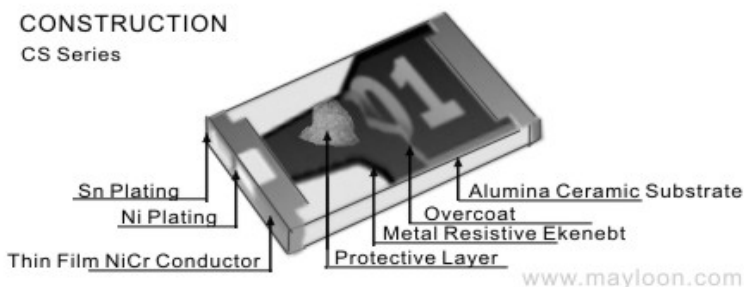


### Features

- 3W Rating in 1W size, 1225 Package
- Low TCR from  $\pm 100$  PPM  $\sim \pm 600$  PPM/ $^{\circ}$ C
- Resistance Values from 1 to 1000 m ohms
- High Purity Alumina Substrate for High Power Dissipation

### Construction

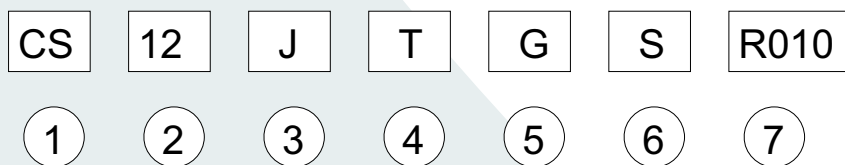
CONSTRUCTION  
CS Series



### Applications

- Power Management Applications
- Switching Power Supply
- Over Current Protection in Audio Application
- Voltage Regulation Module (VRM)
- DC-DC Converter, Battery Pack, Charger, Adaptor
- Automotive Engine Control
- Disk Driver
- Portable Devices (PDA, Cell phone)

### Part Numbering



#### ① Product Type

Product Type	Description
CS	Current Sensing Chip Resistor

#### ② Dimensions (LxW)

Codes	Dimensions (LxW)	Part No.
CS02	1.00x0.50mm	0402
CS03	1.60x0.80mm	0603
CS05	2.00x1.25mm	0805
CS06	3.10x1.55mm	1206
CS10	5.00x2.50mm	2010
CS12	6.30x3.10mm	2512
CS25	3.10x6.30mm	1225
CS37	3.75x2.00mm	3720
CS75	7.50x2.00mm	7520

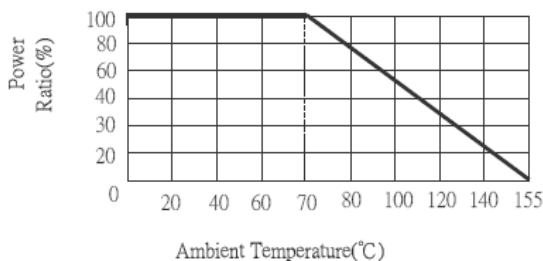
#### ③ Resistance Tolerance

Codes	Resistance Tolerance
J	$\pm 5\%$
H	$\pm 3\%$
G	$\pm 2\%$
F	$\pm 1\%$

#### ④ Packaging

Codes	Type
T	Taping Reel
B	Bulk

Derating Curve



#### ⑤ TCR

Codes	Type
E	$\pm 100$ PPM/ $^{\circ}$ C
F	$\pm 200$ PPM/ $^{\circ}$ C
G	$\pm 300$ PPM/ $^{\circ}$ C
H	$\pm 400$ PPM/ $^{\circ}$ C
I	$\pm 500$ PPM/ $^{\circ}$ C
J	$\pm 600$ PPM/ $^{\circ}$ C

#### ⑥ Power Rating

Codes	Type
	Standard
R	3W
S	2W
T	1W
U	1/2W
V	1/4W
W	1/8W
X	1/10W
Y	1/16W
Z	1/32W

#### ⑦ Resistance

Codes	Type
R010	0.010 $\Omega$
R100	0.100 $\Omega$
1R00	1.000 $\Omega$

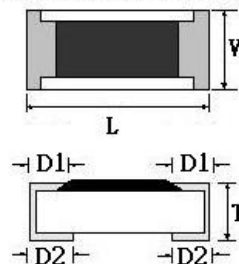
MAYLOON ELECTRONIC CO., LTD.

## Dimensions

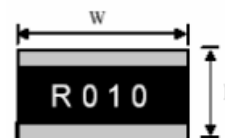
Unit: mm

Codes	L	W	T	D1	D2
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±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25
CS06	3.05±0.15	1.55±0.15	0.55±0.10	0.50±0.30	0.40±0.25
CS10	5.00±0.20	2.45±0.15	0.60±0.15	0.60±0.30	0.50±0.25
CS12	6.35±0.20	3.15±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	0.55±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

0402/0603/0805/1206/2010/2512



1225/3720/7520



## Standard Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Resistance Tolerance	Resistance Range	TCR (PPM/°C)
CS02 (0402)	1/16W	-55 ~ +155°C	±1%, ±2%, ±5%	50mΩ~100mΩ	±400
CS03 (0603)	1/10W			101mΩ~500mΩ	±300
				501mΩ~1000mΩ	±200
				20mΩ~50mΩ	±600
CS05 (0805)	1/8W			51mΩ~100mΩ	±400
				101 mΩ~500mΩ	±300
				501mΩ~1000mΩ	±200
CS06 (1206)	1/4W			20mΩ~50mΩ	±600
				51mΩ~100mΩ	±400
				101mΩ~500mΩ	±300
CS10 (2010)	1/2W	501mΩ~1000mΩ	±200		
		10mΩ~20mΩ	±600		
		21mΩ~50mΩ	±400		
CS12 (2512)	1W	51mΩ~500mΩ	±300		
		501mΩ~1000mΩ	±200		
		3mΩ~10mΩ	±450		
CS25 (1225)	3W	11mΩ~19mΩ	±300		
		20mΩ~50mΩ	±200		
		51mΩ~200mΩ	±150		
CS37 (3720)	1W	10mΩ~19mΩ	±300		
		20mΩ~500mΩ	±150		
CS75 (7520)	2W	±2%, ±5%	1mΩ~4mΩ	±300	
		±1%, ±2%, ±5%	5mΩ~10mΩ	±200	
				11mΩ~350mΩ	±150

## High Power Rating Electrical Specifications

Type	Item	Power Rating at 70°C	Operating Temp. Range	Resistance Tolerance	Resistance Range
CS05	□□□□V□□□□	1/4W	-55 ~ +155°C	±1%, ±2%, ±5%	100mΩ~1000mΩ
CS06	□□□□U□□□□	1/2W			100mΩ~1000mΩ

## Low TCR Electrical Specifications

Type	Item	Power Rating at 70°C	Operating Temp. Range	Resistance Tolerance	Resistance Range	TCR (PPM/°C)
CS06	□□□□E□□□□	1/4W	-55 ~ +155°C	±1%	100mΩ~1000mΩ	±100
CS10	□□□□E□□□□	1/2W		±2%	100mΩ~1000mΩ	±100
CS12	□□□□E□□□□	1W		±5%	100mΩ~1000mΩ	±100

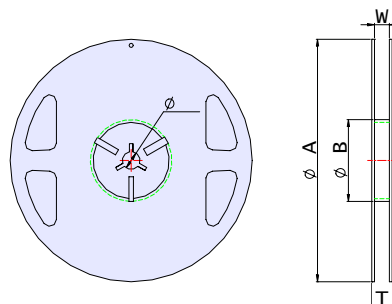
Operating Current  $I = \sqrt{P/R}$ , Operating Voltage  $V = \sqrt{P \cdot R}$

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

MAYLOON ELECTRONIC CO., LTD.

## Marking for 0603

Code	Type
1R0	1.000Ω
R10	0.100Ω
R01	0.010Ω
<u>101</u>	0.101Ω
<u>035</u>	0.035Ω



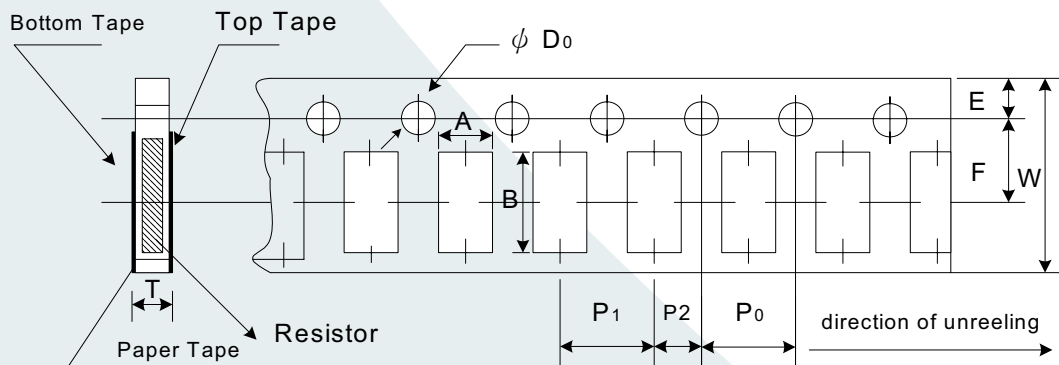
## Packaging

### Packaging Quantity & Reel Specifications

Unit: mm

Packaging Codes	ΦA	ΦB	ΦC	W	T	Paper Tape (EA)	Emboss Plastic Tape (EA)
CS02	178±1	60.0±0.5	13.0±0.20	9.00±0.50	12.0±0.15	10,000	-
CS03	178±1	60.0±0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
CS05	178±1	60.0±0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
CS06	178±1	60.0±0.5	13.0±0.20	9.00±0.50	12.0±0.15	5,000	-
CS10	178±1	60.2±0.5	13.0±0.50	13.2±1.500	16.0±0.20	-	4,000
CS12	178±1	60.2±0.5	13.0±0.50	13.2±1.50	16.0±0.20	-	4,000
CS25	178±1	60.2±0.5	13.0±0.50	13.2±1.50	16.0±0.20	-	2,000
CS37	178±1	60.2±0.5	13.0±0.50	13.2±1.50	16.0±0.20	-	2,000
CS75	178±1	60.2±0.5	13.0±0.50	17.0±0.50	19.0±1.00	-	2,000

### Paper Tape Specifications



Unit: mm

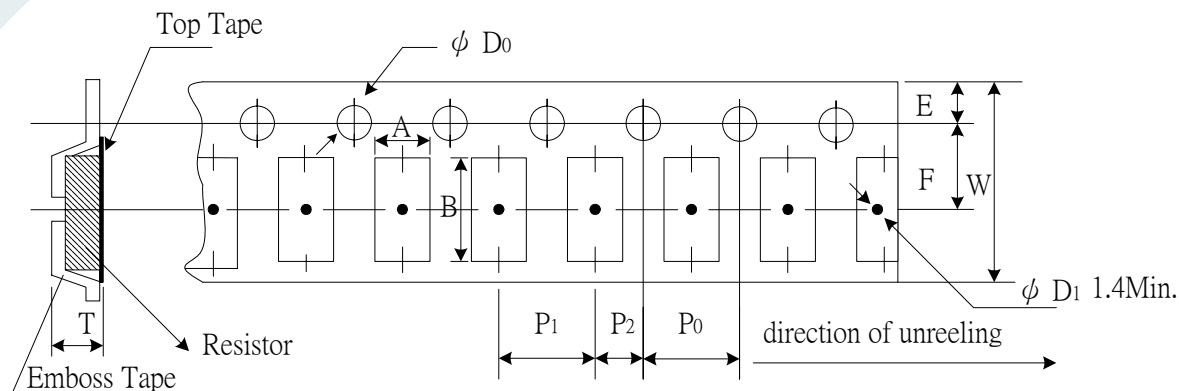
Codes	A	B	W	E	F	P0	P1	P2	ΦD0	T
CS02	0.67±0.03	1.15±0.03	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	2.00±0.05	2.00±0.05	1.54±0.03	0.40±0.03
CS03	1.10±0.05	1.90±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.60±0.03
CS05	1.60±0.05	2.37±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.75±0.05
CS06	2.00±0.05	3.55±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.75±0.05

MAYLOON

## Packaging

電流感測貼片電阻

### Emboss Plastic Tape Specifications



Unit: mm

Codes	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	T
CS10	2.85±0.10	5.45±0.10	12.0±0.10	1.75±0.10	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20
CS12	3.40±0.10	6.65±0.10	12.0±0.10	1.75±0.10	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20
CS25	3.40±0.10	6.65±0.10	12.0±0.10	1.75±0.10	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.50±0.10
CS37	2.50±0.20	4.45±0.20	12.0±0.30	1.75±0.01	5.5±0.05	4.00 ±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.50 ±0.10
CS75	2.50±0.20	8.30±0.20	16.0±0.30	1.75±0.01	7.8±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.50 ±0.10

## Environmental Characteristics

Item	Specification	Test Method
1 Temperature Coefficient of Resistance	As Spec	MIL-STD-202F Method 304 +25/-55/+25/+125/+25°C
2 Short Time Overload	±(0.5% + 0.05Ω)	JIS-C-5202-5.5 RCWV*2.5 or Max Overloading Voltage 5 seconds
3 Dielectric Withstand Voltage	by Type	MIL-STD-202F Method 301 Apply Max Overload Voltage for 1 minute
4 Insulation Resistance	>1000MΩ	MIL-STD-202F Method 302 Apply 100VDC for 1minute
5 Thermal Shock	±(0.5% + 0.05Ω)	MIL-STD-202F Method 107G -55°C ~ 150°C, 100cycles
6 Load Life	±(1% + 0.05Ω)	MIL-STD-202F Method 108A RCWV, 70°C, 1.5 hours on, 0.5 hours off Total 1000~1048 hours
7 Humidity (Steady State)	±(0.5% + 0.05Ω)	MIL-STD-202F Method 103B 40°C, 90~95%RH, RCWV 1.5 hours ON, 0.5 hours OFF, total 1000 ~ 1048 hours
8 Resistance to Dry Heat	±(0.5% + 0.05Ω)	JIS-C-5202-7.2 96hours @ +155°C without load
9 Low Temperature Operation	±(0.5% + 0.05Ω)	JIS-C-5202-7.1 1hour, -65°C followed by 45 minutes of RCWV
10 Bending Strength	AS SPEC.	JIS-C-5202-6.1.4 Bending Amplitude 3mm for 10 seconds
11 Solderability	95%min coverage	MIL-STD-202F Method 208H 235°C±5°C, 2±0.5 (sec)
12 Resistance to Soldering Heat	±(0.5% + 0.05Ω)	MIL-STD-202F Method 210E 260±5°C, 10±1 seconds

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