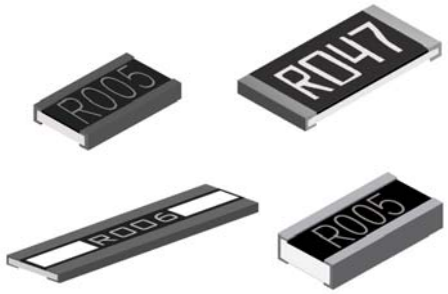
Current Sensing Chip Resistor—CS Series (電流感測晶片電阻)



Features

—3W Rating in 1W size, 1225 Package

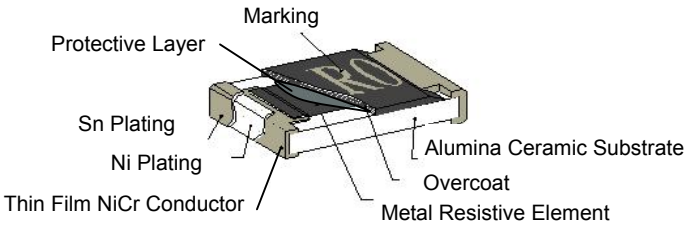
—Low TCR from ±100 PPM ~±600 PPM/℃

—Resistance Values from 1 to 1000 m ohms

—High Purity Alumina Substrate for High Power Dissipation

—Products with Pb-free Terminations Meet RoHS Requirements

Construction



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)

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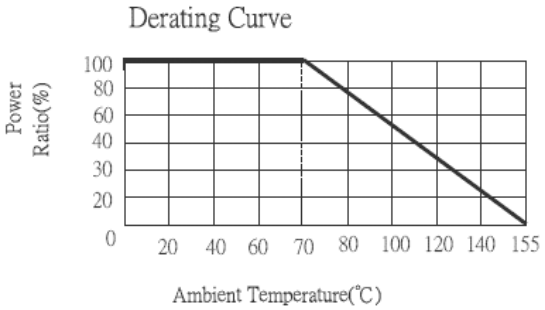


Part Numbering

CS	12	J	T	G	S	R010
①	②	③	④	⑤	⑥	⑦

① Product Type

Product Type	
CS	Current Sensing Chip Resistor

② Dimensions (L×W)

Codes	Dimensions (LxW)	
CS02	1.00×0.50mm	0402
CS03	1.60×0.80mm	0603
CS05	2.00×1.25mm	0805
CS06	3.10x1.55mm	1206
CS10	5.00x2.50mm	2010
CS12	6.30×3.10mm	2512
CS25	3.10×6.30mm	1225
CS37	3.75×2.00mm	3720
CS75	7.50×2.00mm	7520

③ Resistance Tolerance

Codes	Resistance Tolerance
J	±5%
H	±3%
G	±2%
F	±1%

④ Packaging

Codes	Type
T	Taping Reel
B	Bulk

⑤TCR

Codes	Type
E	±100 PPM/℃
F	±200 PPM/℃
G	±300 PPM/℃
H	±400 PPM/℃
I	±500 PPM/℃
J	±600 PPM/℃

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

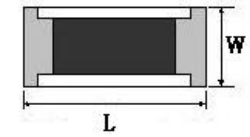
Codes	Type
R010	0.010Ω
R100	0.100Ω
1R00	1.000Ω

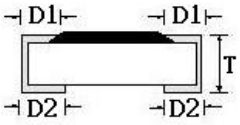
Dimensions

Unit: mm

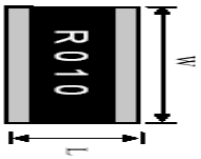
Codes	L	W	T	D1	D2
CS02	1.00±0.05	0.50±0.05	0.32±0.10	0.25±0.10	0.20±0.10
CS03	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
CS05	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25
CS06	3.05±0.15	1.55±0.15	0.55±0.10	0.50±0.30	0.40±0.25
CS10	5.00±0.20	2.45±0.15	0.60±0.15	0.60±0.30	0.50±0.25
CS12	6.35±0.20	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℃	Operating Temp. Range	Resistance Tolerance	Resistance Range	TCR (PPM/℃)
CS02 (0402)	1/16W	-55 ~ +155℃	±1% ±2% ±5%	50mΩ~100mΩ 101mΩ~500mΩ 501mΩ~1000mΩ	±400 ±300 ±200
CS03 (0603)	1/10W			20mΩ~50mΩ 51mΩ~100mΩ 101 mΩ~500mΩ 501mΩ~1000mΩ	±600 ±400 ±300 ±200
CS05 (0805)	1/8W			20mΩ~50mΩ 51mΩ~100mΩ 101mΩ~500mΩ 501mΩ~1000mΩ	±600 ±400 ±300 ±200
CS06 (1206)	1/4W			10mΩ~20mΩ 21mΩ~50mΩ 51mΩ~500mΩ 501mΩ~1000mΩ	±600 ±400 ±300 ±200
CS10 (2010)	1/2W				
CS12 (2512)	1W				
CS25 (1225)	3W			5mΩ~49mΩ 50mΩ~200mΩ	±600 ±200
CS37 (3720)	1W			10mΩ~500mΩ	±300
CS75 (7520)	2W			1mΩ~500mΩ	±300

igh Power Rating Electrical Specifications

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

Low TCR Electrical Specifications

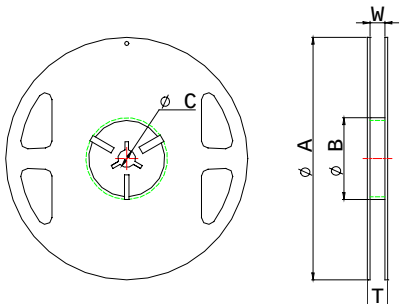
Item / Type	Power Rating at 70℃	Operating Temp. Range	Resistance Tolerance	Resistance Range	TCR (PPM/℃)
CS06□□E□□□□	1/4W	-55 ~ +155℃	±1%	100mΩ~1000mΩ	±100
CS10□□E□□□□	1/2W		±2%	100mΩ~1000mΩ	±100
CS12□□E□□□□	1W		±5%	100mΩ~1000mΩ	±100

Operating Current I=√(P/R), Operating Voltage V=√(P*R)

***Viking is capable to manufacture the optional spec based on customer's requirement.**

Marking for 0603

Code	Type
1R0	1.000Ω
R10	0.100Ω
R01	0.010Ω
101	0.101Ω
035	0.035Ω



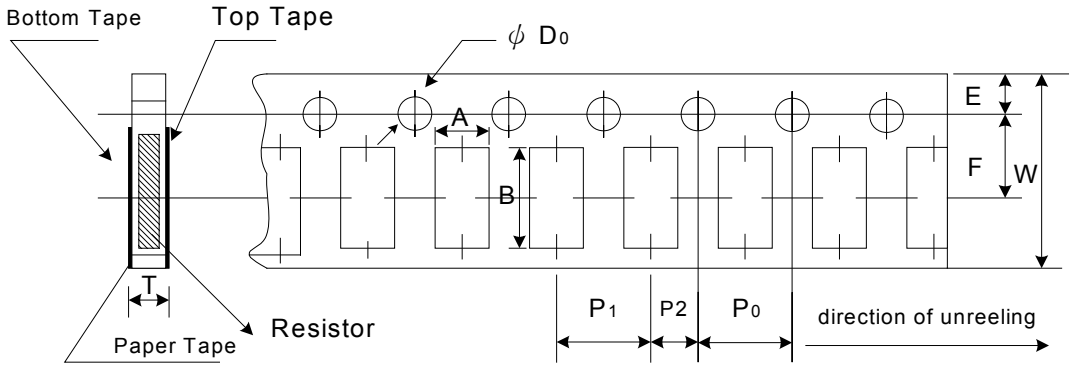
Packaging

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

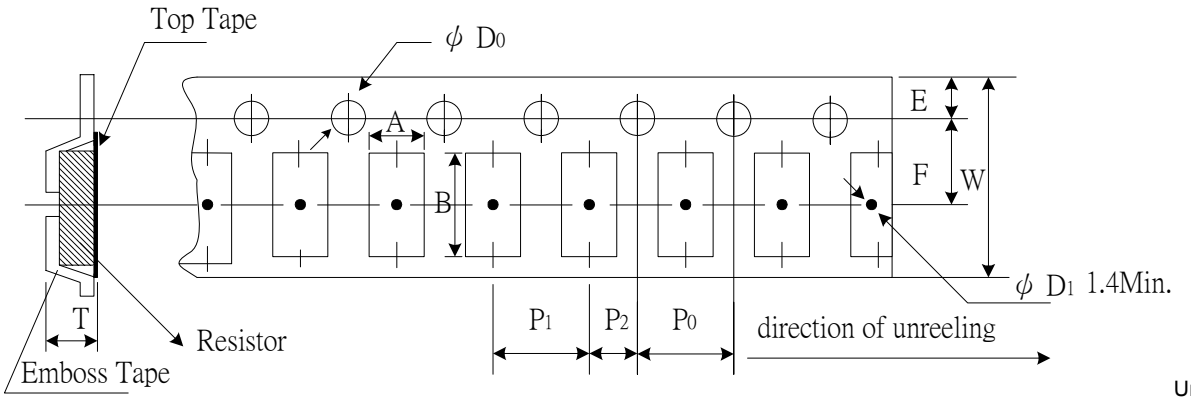


Unit: mm

Codes	A	B	W	E	F	P0	P1	P2	ψD0	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

Packaging

Emboss Plastic Tape Specifications



Unit: mm

Codes	A	B	W	E	F	P_0	P_1	P_2	ψD_0	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℃
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 I 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℃～150℃,100cycles
6	**Load Life**	±(1% + 0.05Ω)	**MIL-STD-202F Method 108A** RCWV, 70℃,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℃ , 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℃ without load
9	**Low Temperature Operation**	±(0.5% + 0.05Ω)	**JIS-C-5202-7.1** 1hour,-65℃ 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** 260℃±5℃,2±0.5（sec）
12	**Resistance to Soldering Heat**	±(0.5% + 0.05Ω)	**MIL-STD-202F Method 210E** 260±5℃,10±1 seconds

＊Storage Temperature :25±3℃; Humidity <80%RH