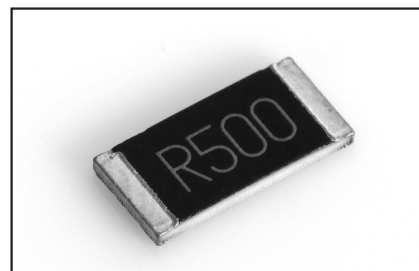


# Thin Film Current Sensing Chip Resistors

- Thin film process
- High power rating up to 3 watts in 2512 size
- Tight tolerance down to  $\pm 0.5\%$
- Extremely low TCR down to  $\pm 50$  PPM/ $^{\circ}\text{C}$
- Resistance values from 50m to 1ohm
- High purity alumina substrate for high power dissipation
- Power management applications
- Switching power supply
- Over current protection in audio applications
- Voltage regulation module(VRM)
- DC-DC converter, battery pack, charger, adaptor
- Automotive engine control
- Disk drive



## GENERAL SPECIFICATIONS

Model	Power Rating	Operating Temperature Range	Resistance Range[mΩ]		TCR[ppm/°C]
			±0.5%	±1%	
CSTN02 (0402)	1/16W	-55°C ~ +155°C	500 ~ 1000		±100
CSTN03 (0603)	1/10W		200 ~ 300		±100
			301 ~ 1000		±50
CSTN05 (0805)	1/8W		200 ~ 300		±100
			301 ~ 1000		±50
CSTN06 (1206)	1/4W		-	50 ~ 100	±200
			101 ~ 300		±100
			301 ~ 1000		±50
			50 ~ 100		±200
CSTN10 (2010)	3/4W		101 ~ 300		±100
			301 ~ 1000		±50
CSTN12 (2512)	1W		50 ~ 100		±200
			101 ~ 300		±100
			301 ~ 1000		±50

## HIGH POWER RATING SPECIFICATIONS

Model	Item	Power Rating at 70 $^{\circ}\text{C}$	Operating Temperature Range	Resistance Range[m $\Omega$ ]	TCR[ppm/ $^{\circ}\text{C}$ ]
				$\pm 1\%$	
CSTN12 (2512)		3W	$-55^{\circ}\text{C} \sim +155^{\circ}\text{C}$	100 ~ 1000	$\pm 100$

\* Operating Voltage =  $\sqrt{P \cdot R}$

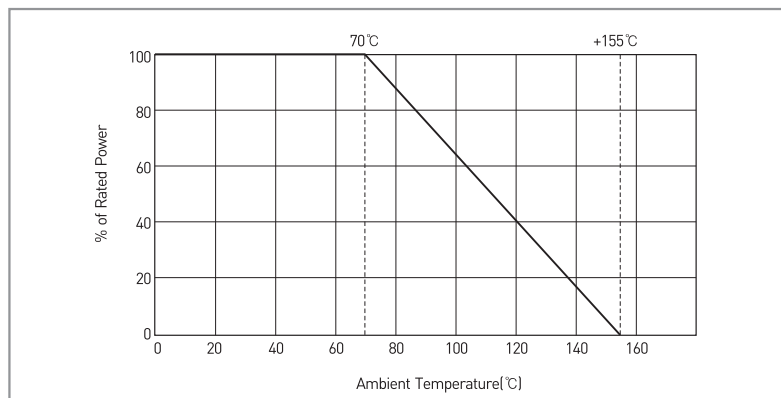
\*\* Overload Voltage =  $2.5 \cdot \sqrt{P \cdot R}$

## CHARACTERISTICS

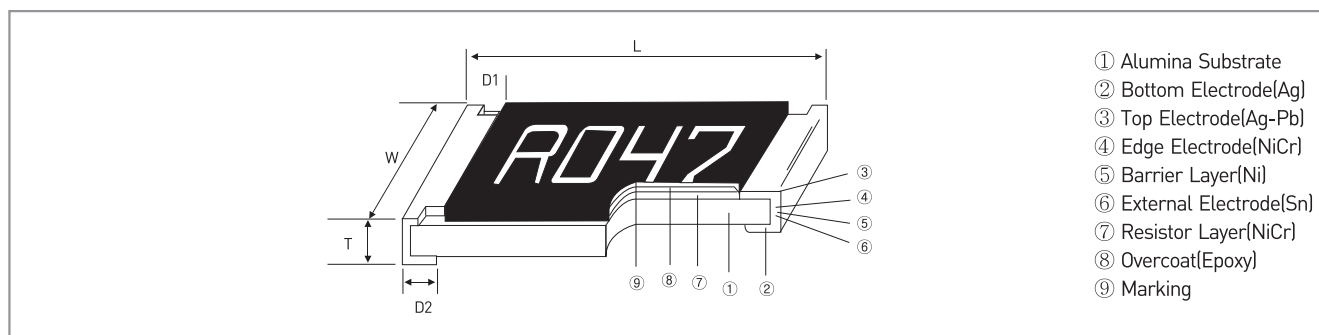
Values in [ ] mean change in  $\Omega$  after test

Temperature Coefficient	As Spec.	$+25/-55/+25/+125/+25^{\circ}\text{C}$
Short Time Overload	$\pm 1\%$	RCWW*2.5 or Max. overloading voltage, 5seconds
Insulation Resistance	$> 1000\text{M}\Omega$	Apply 100VDC for 1minute
Endurance	$\pm 1\%$	70 $\pm 2^{\circ}\text{C}$ , Maximum working voltage for 1000hours with 1.5 hours "ON" and 0.5hour "OFF"
Damp Heat with Load	$\pm 0.5\%$	40 $\pm 2^{\circ}\text{C}$ 90~95% RH maximum working voltage for 1000hours with 1.5hours "ON" and 0.5hour "OFF"
Bending Strength	As Spec.	Bending amplitude 3mm for 10seconds
Solderability	95% coverage minimum	245 $\pm 5^{\circ}\text{C}$ , 2 $\pm 0.5$ seconds
Resistance to Soldering Heat	$\pm 0.5\%$	260 $\pm 5^{\circ}\text{C}$ , 10 $\pm 1$ seconds
Dielectric Withstanding Voltage	By Type	Apply Maximum overload voltage for 1minute
Thermal Shock	$\pm 0.5\%$	$-55^{\circ}\text{C} \sim +150^{\circ}\text{C}$ , 100 cycles
Low Temperature Operation	$\pm 0.5\%$	1 hour, $-65^{\circ}\text{C}$ followed by 45 minutes of RCWW

## DERATING CURVE



## DIMENSIONS [mm]

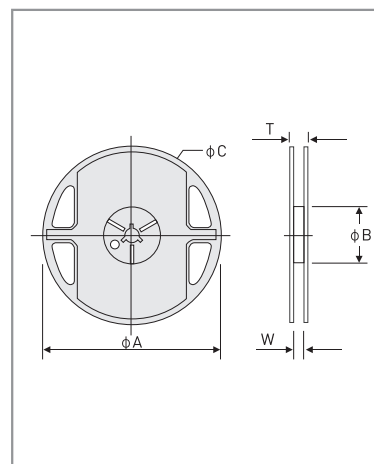


Model	Size(Inch)	L	W	T	D1	D2	Weight(g)(1000pcs)
CSTN02	0402	1.00±0.05	0.50±0.05	0.32±0.10	0.25±0.10	0.20±0.10	0.56
CSTN03	0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	3.1
CSTN05	0805	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25	5.6
CSTN06	1206	3.05±0.15	1.55±0.15	0.55±0.10	0.50±0.30	0.40±0.25	12.3
CSTN10	2010	5.00±0.20	2.45±0.15	0.60±0.15	0.60±0.30	0.50±0.25	26.7
CSTN12	2512	6.35±0.20	3.15±0.15	0.60±0.10	0.60±0.30	0.55±0.25	49.6

## PACKAGING [mm]

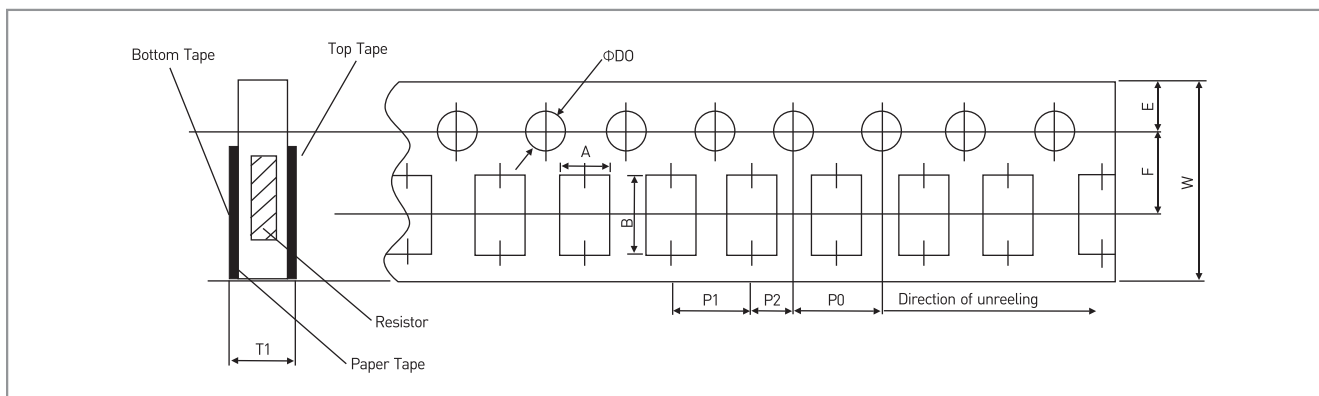
Reel Specifications & Packaging Quantity

Model	Dimension[mm]					Paper Tape [pcs]	Emboss Plastic Tape[pcs]
	ΦA	ΦB	ΦC	W	T		
CSTN02	178±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0	10,000	-
CSTN03	178±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
CSTN05	178±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
CSTN06	178±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
CSTN10	178±1.0	60±1.0	13.5±0.7	13.5±1.0	15.5±1.0	-	4,000
CSTN12	178±1.0	60±1.0	13.5±0.7	13.5±1.0	15.5±1.0	-	4,000



## PAPER TAPE SPECIFICATIONS

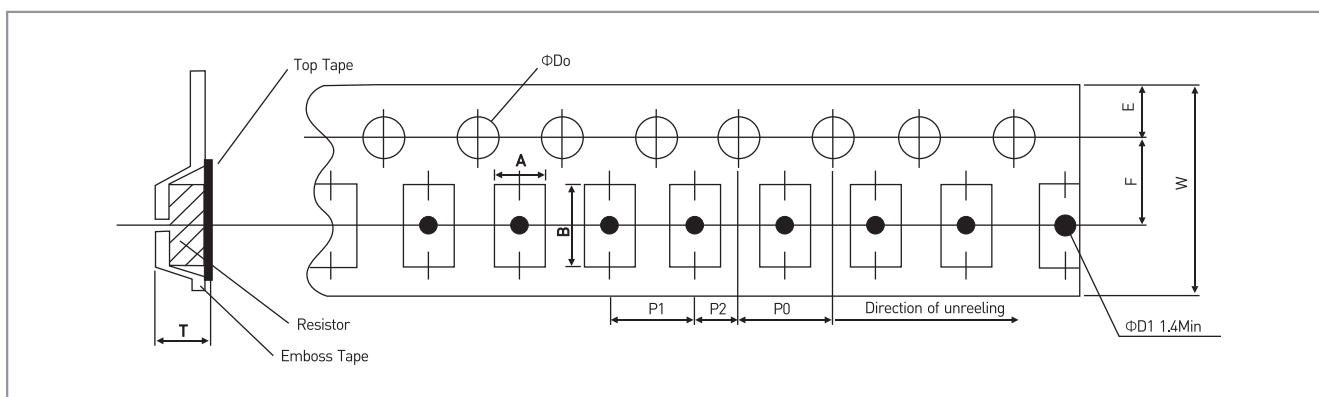
Unit : mm



Model	Dimensions [mm]									
	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	T
CSTN02	0.7±0.05	1.16±0.05	8±0.1	1.75±0.05	3.5±0.05	4±0.1	2±0.05	2±0.05	1.55±0.05	0.40±0.03
CSTN03	1.1±0.05	1.90±0.05	8±0.1	1.75±0.05	3.5±0.05	4±0.1	4±0.05	2±0.05	1.55±0.05	0.60±0.03
CSTN05	1.6±0.05	2.37±0.05	8±0.1	1.75±0.05	3.5±0.05	4±0.1	4±0.05	2±0.05	1.55±0.05	0.75±0.05
CSTN06	2.0±0.05	3.55±0.05	8±0.1	1.75±0.05	3.5±0.05	4±0.1	4±0.05	2±0.05	1.55±0.05	0.75±0.05

## EMBOSSED PLASTIC TAPE SPECIFICATIONS

Unit : mm



Model	Dimensions [mm]									
	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	T
CSTN10	2.85±0.1	5.45±0.1	12±0.1	1.75±0.1	5.5±0.05	4±0.05	4±0.1	2±0.05	1.5±0.1	1±0.2
CSTN12	3.40±0.1	6.65±0.1	12±0.1	1.75±0.1	5.5±0.05	4±0.05	4±0.1	2±0.05	1.5±0.1	1±0.2

## ORDERING PROCEDURE EXAMPLES

Ordering Example	Model	Power Rating	TCR	Resistance	Tolerance	Code
CSTN02 ER500DT	CSTN02	-	E[±100 ppm/°C]	500mΩ	D[±0.5%]	T(Raping Reel)
CSTN03 ER200FT	CSTN03	-	E[±100 ppm/°C]	200mΩ	F[±1%]	T(Raping Reel)
CSTN05 DR500DT	CSTN05	-	D[±50 ppm/°C]	500mΩ	D[±0.5%]	T(Raping Reel)
CSTN06 FR050FB	CSTN06	-	F[±200 ppm/°C]	50mΩ	F[±1%]	B(Bulk)
CSTN10 ER200FB	CSTN10	-	E[±100 ppm/°C]	200mΩ	F[±1%]	B(Bulk)
CSTN12 DR500DB	CSTN12	-	D[±50 ppm/°C]	500mΩ	D[±0.5%]	B(Bulk)
CSTN12 RER100FB	CSTN12	R[3W]	E[±100 ppm/°C]	100mΩ	F[±1%]	B(Bulk)