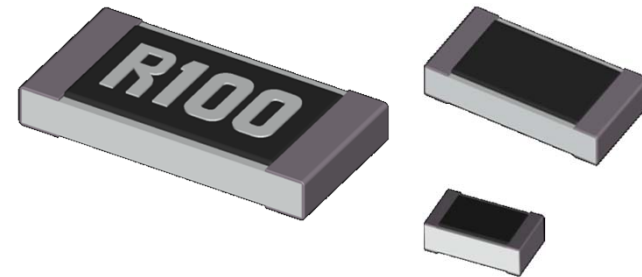


Thick Film Type Current Sensing Resistor (RUT Series)

- 1005(0402), 1608(0603), 2012(0805), 3216(1206)
 - 3225(1210), 5025(2010), 6432(2512)

■ Features

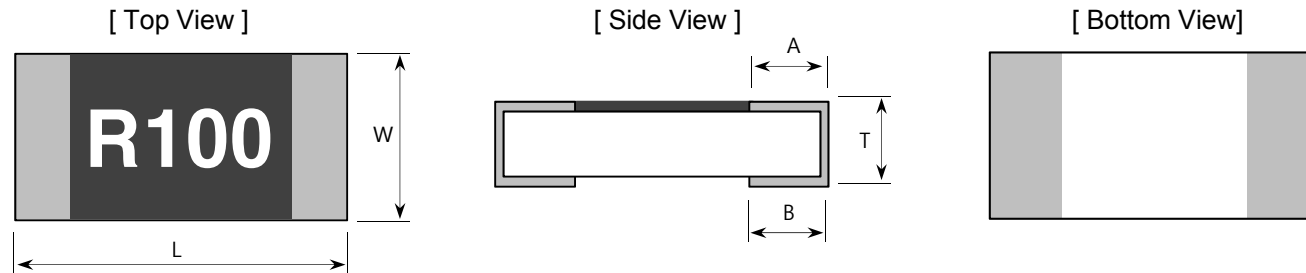
- Current Sensing Resistor
- Very low resistance with high precision reliability.
- Low T. C. R, High power.
- Stable in Sulfur Atmosphere. (Sulfur Resistant)
- 100% Lead Free Component.
- EU RoHS Compliant.



■ Part Number System

RUT		3216		F		R499	CS
Type (Series)		Size : mm (inch)		Tolerance		Resistance Value	Packing Type
RUT	Thick film low ohm chip resistor	1005	1.0×0.5mm (0402)	F	±1%	- 4-digit code System (E-24 series) - 4-digit code System (E-96 series) - R499 : 0.499Ω = 499mΩ	CS 7" reel
		1608	1.6×0.8mm (0603)	J	±5%		ES 10" reel
		2012	2.0×1.2mm (0805)				AS 13" reel
		3216	3.2×1.6mm (1206)				
		3225	3.2×2.5mm (1210)				
		5025	5.0×2.5mm (2010)				
		6432	6.4×3.2mm (2512)				

■ Structure and Dimensions



[Unit : mm]

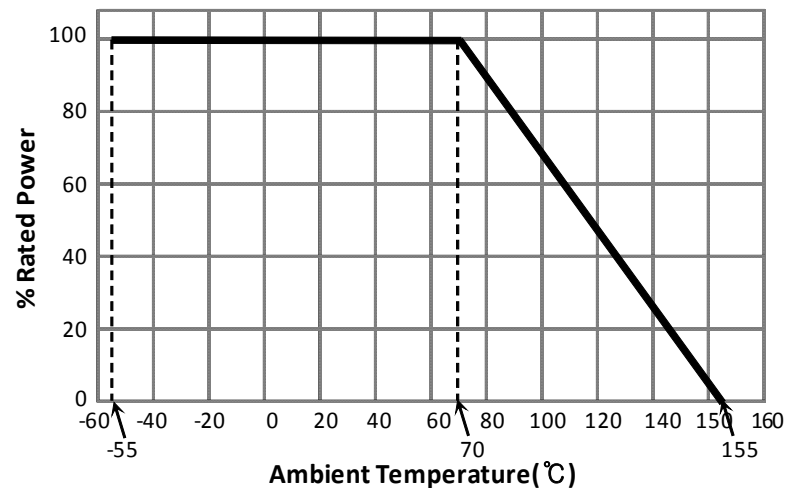
Size (mil)	L	W	T	A	B	Unit Weight
RUT1005 (0402)	1.00±0.05	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10	0.6mg
RUT1608 (0603)	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.35±0.10	2.1mg
RUT2012 (0805)	2.00±0.20	1.25±0.15	0.55±0.10	0.40±0.20	0.35±0.20	4,9mg
RUT3216 (1206)	3.20±0.20	1.60±0.15	0.55±0.10	0.45±0.20	0.40±0.20	9.5mg
RUT3225 (1210)	3.20±0.20	2.55±0.20	0.55±0.10	0.45±0.20	0.40±0.20	16mg
RUT5025 (2010)	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20	26mg
RUT6432 (2512)	6.30±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.60±0.20	41mg

※ 1608 and smaller sizes don't have marking on the top of the chips

■ Application Characteristics

Type mm(mil)	Power Rating [W]	Tolerance [%]	Resistance Range [Ω]	T.C.R * [ppm/°C]	Working Temp. [°C]
RUT1005 (0402)	1/10(0.10)	F : ±1 J : ±5	0.100~0.976	±150	-55°C ~ +155°C
RUT1608 (0603)	1/8(0.125)				
RUT2012 (0805)	1/4(0.25)				
RUT3216 (1206)	1/3(0.33)				
RUT3225 (1210)	1/2(0.50)				
RUT5025 (2010)	2/3(0.66)				
RUT6432 (2512)	1(1.0)				

■ Power Derating Curve



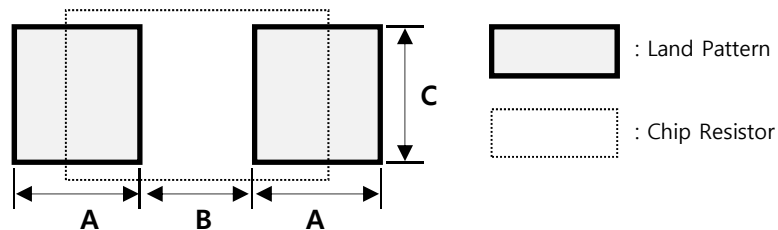
■ Rated Voltage & Current

$$\bullet V = \sqrt{P \times R}$$

$$\bullet I = \sqrt{P / R}$$

V : Rated Voltage (V)
 I : Rated Current (I)
 P : Rated Power (W)
 R : Resistance Value (Ω)

■ Standard Soldering Pad Dimensions



[Unit : mm]

Size (mil)	Reflow Soldering			
	A	B	2A + B	C
RUT1005 (0402)	0.60	0.50	1.70	0.50
RUT1608 (0603)	0.80	0.80	2.40	0.80
RUT2012 (0805)	0.90	1.40	3.20	1.20
RUT3216 (1206)	1.30	1.80	4.40	1.50
RUT3225 (1210)	1.30	1.80	4.40	2.40
RUT5025 (2010)	1.40	3.30	6.10	2.40
RUT6432 (2512)	1.40	4.60	7.40	3.00

■ Performance Characteristics

ITEM	Requirements Specification	Test Conditions (JIS C 5201-1)
	Resistors	
Resistance	Within the specified tolerance	JIS C 5201-1 4.5
Temperature Characteristic	$\Delta R \leq \pm 100 \text{ ppm}$	JIS C 5201-1 4.8 $+20^\circ\text{C} \rightarrow -55^\circ\text{C} / +20^\circ\text{C} \rightarrow +125^\circ\text{C}$
Short time Overload	$\Delta R < \pm 1\% + 0.0005\Omega$	JIS C 5201-1 4.13 Rated Voltage $\times 2.5$, 5sec
Solderability	Immersed over 95%	JIS C 5201-1 4.17 Rosin Ethanol (25%WT) $245 \pm 5 / -0^\circ\text{C}$, 2 ± 0.5 sec
Resistance to Solder Heat	$\Delta R < \pm 1\% + 0.0005\Omega$	JIS C 5201-1 4.18 $260 \pm 5^\circ\text{C}$, 10 ± 1 sec
Temperature Cycle	$\Delta R < \pm 1\% + 0.0005\Omega$	JIS C 5201-1 4.19 $-55^\circ\text{C} \leftrightarrow +155^\circ\text{C}$, 100 cycle
Moisture Resistance	$\Delta R < \pm 3\% + 0.0005\Omega$	JIS C 5201-1 4.24 $40 \pm 2^\circ\text{C}$, 90~95%RH, 1000^{+48} hours
Load Life	$\Delta R < \pm 3\% + 0.0005\Omega$	JIS C 5201-1 4.25 Rated Voltage, $70 \pm 2^\circ\text{C}$, 1000^{+48} hours 90mins ON, 30mins OFF
High Temp. Exposure	$\Delta R < \pm 3\% + 0.0005\Omega$	JIS C 5201-1 4.25.3 $155 \pm 2^\circ\text{C}$, 1000^{+48} hours
Flower of Sulfur (FOS)	$\Delta R < \pm 1\% + 0.1\Omega$	105°C , FoS, 720^{+2} hours

※ The reliability test condition can be replaced by the corresponding accelerated test condition.



Product specifications included in the specifications are effective as of March 01, 2015.

Please be advised that they are standard product specifications for reference only.

We may change, modify or discontinue the product specifications without notice at any time.

So, you need to approve the product specifications before placing an order.

Should you have any question regarding the product specifications,

please contact our sales personnel or application engineers.