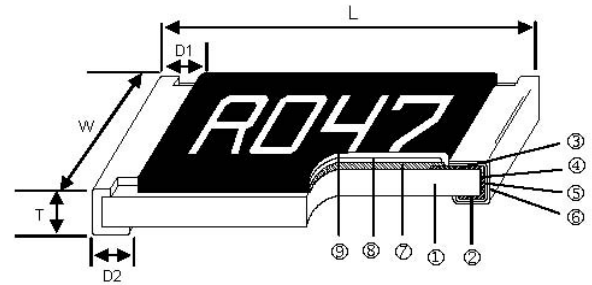


# RC series Thick Film Low Ohm Chip Resistor

## ◆ Features

- » Low inductance
- » Highly reliable multilayer electrode construction
- » Higher component and equipment reliability
- » Reduced size of final equipment reliability



## ◆ Applications

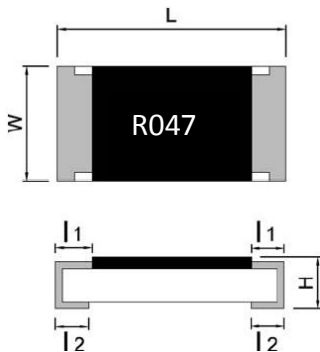
- » Power Management Applications
- » Switching Power Supply
- » Over Current Protection in Audio Application
- » Voltage Regulation Module (VRM)
- » DC-DC Converter, Battery Pack, Charger Adaptor
- » Automotive Engine Control
- » Disk Driver

## ◆ Configuration

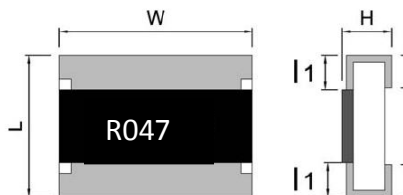
1	Alumina Substrate	6	External Electrode (Sn)
2	Bottom Electrode (Ag)	7	Resistor Layer (RuO <sub>2</sub> /Ag)
3	Top Electrode (Ag-Pd)	8	Primary Overcoat (Glass)
4	Edge Electrode (NiCr)	9	Secondary Overcoat (Epoxy)
5	Barrier Layer (Ni)		

## ◆ Dimension

Unit: mm



RC0402 / RC0603 / RC0805 / RC1206  
RC1210 / RC1812 / RC2010 / RC2512



RC1218

TYPE	L	W	H	I1	I2
RC0402	1.00±0.01	0.50±0.05	0.30±0.05	0.20±0.10	0.25±0.10
RC0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.15	0.30±0.15
RC0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.35±0.15
RC1206	3.05±0.10	1.55±0.10	0.55±0.15	0.45±0.20	0.35±0.15
RC1210	3.05±0.10	2.55±0.10	0.55±0.10	0.50±0.20	0.50±0.20
RC1812	4.50±0.10	3.00±0.10	0.55±0.05	0.55±0.20	0.70±0.20
RC2010	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20
RC1218	3.10±0.10	4.60±0.10	0.55±0.05	0.40±0.20	0.50±0.20
RC2512	6.40±0.20	3.20±0.20	0.60±0.15	0.60±0.25	0.90±0.25

## ◆ Standard Electrical Specifications

TYPE	Power Rating At 70°C (W)	Max Working Voltage	Max Overload Voltage	TCR (ppm/°C) Lower available	Resistance Range (mΩ)	
					1%	5%
RC0402	1/16 W (0.063 W)	0.25V	0.624V	±800	50~990	50~990
RC0603	1/10 W (0.1 W)	0.31V	0.775V	±1200	20~47	20~47
				±800	50~330	50~330
				±600	332~510	332~510
				±500	511~990	511~990
RC0805	1/8 W (0.125 W)	0.35V	0.875V	±1500	10~18	10~18
				±1200	20~50	20~50
				±800	51~100	51~100
				±600	102~330	102~330
				±500	332~990	332~990
RC1206	1/4 W (0.25 W)	0.5V	1.25V	±1500	10~18	10~18
				±1200	20~47	20~47
				±800	50~91	50~91
				±600	100	100
				±500	102~990	102~990
RC1210	1/3 W (0.33 W)	0.57V	1.425V	±1500	10~18	10~18
				±800	20~91	20~91
				±600	100	100
				±500	102~990	102~990
RC1812	1/2 W (0.5 W)	0.7V	1.75V	±800	10~50	10~50
				±600	51~100	51~100
				±500	101~330	101~330
				±400	332~990	332~990
RC2010	1/2 W (0.5 W)	0.7V	1.75V	±1500	10~18	10~18
				±800	20~100	20~100
				±600	102~330	102~330
				±500	332~990	332~990
RC1218	1 W	0.99V	2.475V	±800	10~50	10~50
				±400	51~990	51~990
RC2512	1W	0.99V	2.475V	±1500	10~18	10~18
				±800	20~91	20~91
				±700	100	100
				±500	102~990	102~990

● Note: Lower TCR value is available for customer's requirement.

## ◆ High Power Electrical Specifications

TYPE	Power Rating At 70°C (W)	Max Working Voltage	Max Overload Voltage	TCR (ppm/°C) Lower available	Resistance Range (mΩ)	
					1%	5%
RC0402	1/10 W (0.1 W)	0.25V	0.624V	±800	50~91	50~91
				±500	100~976	100~976
RC0603	1/8 W (0.125 W)	0.352V	0.879V	±1200	20~47	20~47
				±800	50~91	50~91
RC0805	1/4 W (0.25 W)	0.497V	1.244V	±500	100~990	100~990
				±1500	10~18	10~18
				±1200	20~47	20~47
				±800	50~91	50~91
RC1206	1/2 W (0.5 W)	0.704V	1.759V	±500	100~990	100~990
				±1500	10~18	10~18
				±1200	20~47	20~47
				±800	50~91	50~91
RC1210	1/3 W (0.66 W)	0.808V	2.021V	±500	100~900	100~900
				±1500	10~18	10~18
				±800	20~91	20~91
RC1812	1 W	0.995V	2.487V	±800	10~50	10~50
				±600	51~100	51~100
				±500	101~330	101~330
				±400	331~990	331~990
RC2010	1W	0.995V	2.487V	±1500	10~18	10~18
				±800	20~91	20~91
				±500	100~900	100~900
RC2512	2W	1.407V	3.518V	±1500	10~18	10~18
				±800	20~91	20~91
				±500	100~900	100~900

● Note: Lower TCR value is available for customer's requirement.

## ◆ Part Number

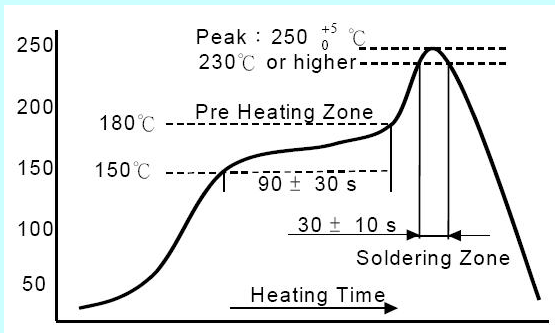
RC	0603	J	0R47	□	□□	
Type	Size	Tolerance	R VALUE	Reel Size	Package Quantity	Rated Power
RC	0402	J=5%	47mΩ= 0R47	Blank = 7"	(Standard Package As below)	Blank = normal
	0603	F=1%	0.1Ω= 0R1	B= 13"	10 = 10K per reel	V= 1/4W
	0805			C= 10"	20 = 20K per reel	U= 1/2W
	1206				08= 8K per reel	T = 1W
	1210				16= 16K per reel	S = 2W
	1218					
	2512					

» Standard Package Q'ty for each size is as following.

TYPE	Standard Package Q'ty
RC0402	10K per reel
RC0603	5K per reel
RC0805	5K per reel
RC1206	5K per reel
RC1210	5K per reel
RC1812	4K per reel
RC2010	4K per reel
RC1218	4K per reel
RC2512	4K per reel

## ◆ Specification

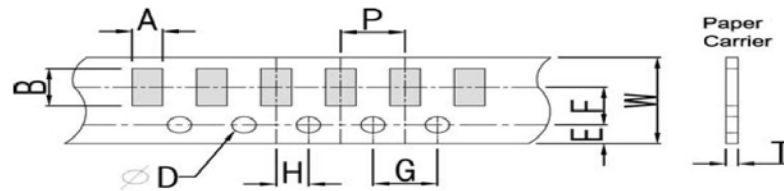
### Specification and Test Methods

TEST ITEM	TEST METHOD	SPECIFICATON	REQUIREMENTS
Temperature Coefficient of Resistance (T.C.R)	JIS C 5201-1 clause 4.8	-55℃ ~+155℃, 20℃ is the reference temperature	Refer to Ratings
Short Time Overload	JIS C 5201-1 clause 4.13	General : 2.5 times RCWV or Max. Overload voltage for 5 seconds. High Power : 2.5 times RCWV or Max. Overload voltage for 2 seconds.	±1% : ±(1.0%+0.05Ω) ±5% : ±(2.0%+0.1Ω)
IR Reflow	Sony SS-00254	 <p>The graph shows a temperature profile for IR reflow. The y-axis represents temperature in degrees Celsius (50 to 250), and the x-axis represents heating time. Key points include: a pre-heating zone starting at 150°C and reaching 180°C; a soldering zone peaking at 250°C (with a tolerance of +5/-0) or higher; and a heating time of 90 ± 30 seconds for the pre-heating zone and 30 ± 10 seconds for the soldering zone.</p>	±1% : ±(1.0%+0.05Ω) ±5% : ±(1.0%+0.05Ω)
Leaching	Sony SS-00254-9	260±5℃ for 30 seconds.	>95% Coverage
Soldering Heat	JIS C 5201-1 clause 4.18	260±5℃ for 10 seconds.	±1% : ±(0.5%+0.05Ω) ±5% : ±(1.0%+0.05Ω)
Temperature Cycling	JIS C 5201-1 clause 4.19	-55℃ to +155℃, 5 cycles	±1% : ±(0.5%+0.05Ω) ±5% : ±(1.0%+0.10Ω)
Electric Iron	Sony SS-00254-5	Preheating temperature : 350±10℃ Electric iron preheating time : 3+1/-0 sec	±1% : ±(1.0%+0.05Ω) ±5% : ±(1.0%+0.05Ω)
Resistance to Solvent	JIS C 5201-1 clause 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25℃ for 60 secs. Then the resistor is left in the room for 48 hrs.	±1% : ±(0.5%+0.05Ω) ±5% : ±(0.5%+0.05Ω)
Load Life in Humidity	JIS C 5201-1 clause 4.24	40±2℃, 90~95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	±1% : ±(0.5%+0.05Ω) ±5% : ±(2.0%+0.05Ω)
Load Life (Endurance)	JIS C 5201-1 clause 4.25	70±2℃, or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	±1% : ±(1.0%+0.05Ω) ±5% : ±(3.0%+0.10Ω)
Terminal Bending Strength	JIS C 5201-1 clause 4.33	Bending once for 5 seconds D : 0402、0603、0805=5mm 1206、1210、1812=3mm 1218、2010、2512=2mm	±1% : ±(1.0%+0.05Ω) ±5% : ±(1.0%+0.05Ω)
Insulation Resistance	JIS C 5201-1 clause 4.6	Max. Overload voltage for 1 minute.	≥ 10GΩ

## ◆ Packing

### Tape Dimension

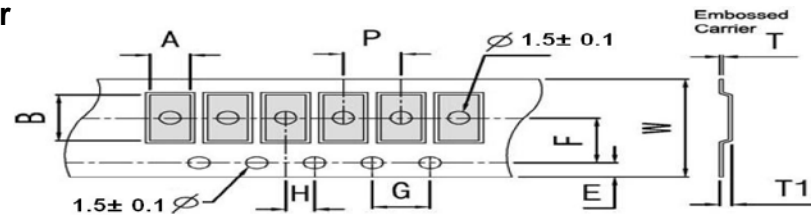
#### » Paper Carrier



Unit: mm

TYPE	A	B	W	E	F	G	H	T	$\phi D$	P
RC0402	$0.70 \pm 0.1$	$1.20 \pm 0.1$	$8.0 \pm 0.2$	$1.75 \pm 0.1$	$3.5 \pm 0.05$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$0.45 \pm 0.1$	$1.5 \pm 0.1$	$2.0 \pm 0.1$
RC0603	$1.05 \pm 0.2$	$1.80 \pm 0.2$	$8.0 \pm 0.2$	$1.75 \pm 0.1$	$3.5 \pm 0.05$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$0.60 \pm 0.1$	$1.5 \pm 0.1$	$4.0 \pm 0.1$
RC0805	$1.55 \pm 0.2$	$2.30 \pm 0.2$	$8.0 \pm 0.2$	$1.75 \pm 0.1$	$3.5 \pm 0.05$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$0.75 \pm 0.1$	$1.5 \pm 0.1$	$4.0 \pm 0.1$
RC1206	$1.90 \pm 0.2$	$3.50 \pm 0.2$	$8.0 \pm 0.2$	$1.75 \pm 0.1$	$3.5 \pm 0.05$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$0.75 \pm 0.1$	$1.5 \pm 0.1$	$4.0 \pm 0.1$
RC1210	$2.85 \pm 0.2$	$3.50 \pm 0.2$	$8.0 \pm 0.2$	$1.75 \pm 0.1$	$3.5 \pm 0.05$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$0.75 \pm 0.1$	$1.5 \pm 0.1$	$4.0 \pm 0.1$

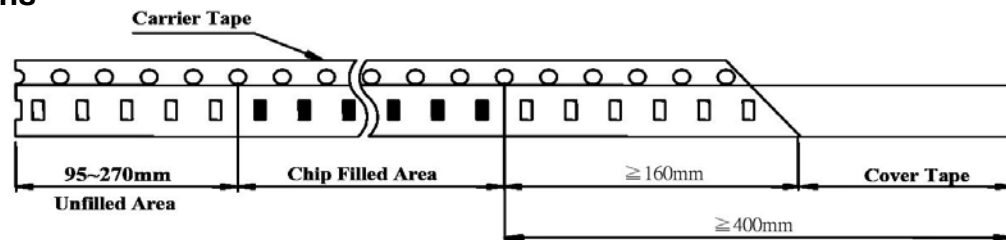
#### » Embossed Carrier



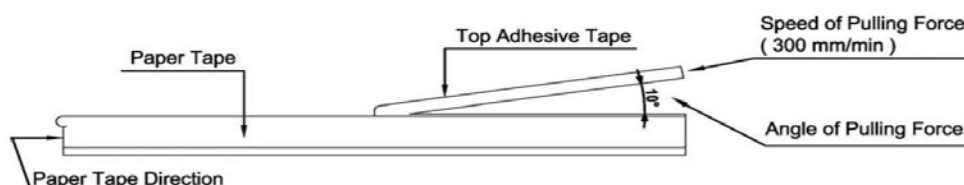
Unit: mm

TYPE	A	B	W	E	F	G	H	T	T1	P
RC1812	$3.30 \pm 0.2$	$4.60 \pm 0.2$	$12.0 \pm 0.2$	$1.75 \pm 0.1$	$5.5 \pm 0.05$	$4.0 \pm 1$	$2.0 \pm 0.05$	$0.23 \pm 0.1$	$0.85 \pm 0.15$	$4.0 \pm 0.1$
RC2010	$2.80 \pm 0.2$	$5.60 \pm 0.2$	$12.0 \pm 0.2$	$1.75 \pm 0.1$	$5.5 \pm 0.05$	$4.0 \pm 1$	$2.0 \pm 0.05$	$0.23 \pm 0.1$	$0.85 \pm 0.15$	$4.0 \pm 0.1$
RC1218	$3.30 \pm 0.2$	$4.60 \pm 0.2$	$12.0 \pm 0.2$	$1.75 \pm 0.1$	$5.5 \pm 0.05$	$4.0 \pm 1$	$2.0 \pm 0.05$	$0.23 \pm 0.1$	$0.85 \pm 0.15$	$4.0 \pm 0.1$
RC2512	$3.40 \pm 0.2$	$6.70 \pm 0.2$	$12.0 \pm 0.2$	$1.75 \pm 0.1$	$5.5 \pm 0.05$	$4.0 \pm 1$	$2.0 \pm 0.05$	$0.23 \pm 0.1$	$0.85 \pm 0.15$	$4.0 \pm 0.1$

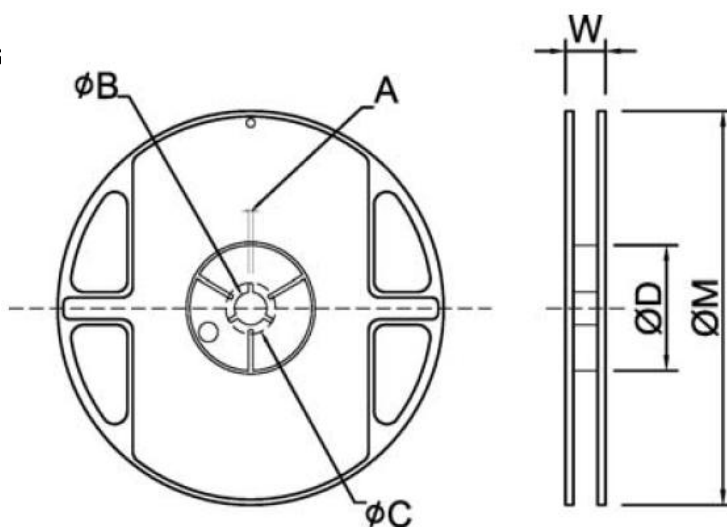
### Lead Dimensions



Top Adhesive Peel Off Strength : 10~70g



# ◆ **Packing** Reel Dimensions



Unit: mm

TYPE	SIZE		A	$\phi B$	$\phi C$	$\phi D$	W	$\phi M$
RC0402	7"	10K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
RC0603	7"	5K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
RC0805								
RC1206								
RC1210								
RC1812	7"	4K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0
RC2010								
RC1218								
RC2512								