

The importance of final adjustment of electric circuits is increasing as electrical products that become more sophisticated and diversified.

Instead of a variable resistor, the TCR series Chip Resistor are developed for those purposes.

Application

- ◆Entertainment: Stereo, TV tuners, Tape recorder.
- ◆Appliance: Air conditioner, Refrigerator
- ◆Computer & relative products: Main board, PDA.
- ◆Communication equipment: Cell phone, Fax machine
- ◆Power equipment: Power supply, Illumination equipment.
- ◆Measuring instrument: Electric meter, Navigation equipment.

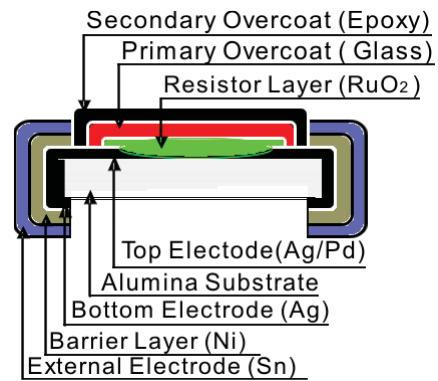
FEATURE

- ◆Small size and light weight.
- ◆Reduction of assembly costs matching with placement machines
- ◆Reliability high quality and fast delivery

FIGURE



CONSTRUCTION



ORDERING INFORMATION

Example: TCR05MF102

Power	Size	Type	Tolerance	TCR/ppm°C	Resistance	Packing
0.063W	0402	TCR02	K = +0/-1% L = +0/-15% M = +0/-20% P = +0/-30%	E=±100ppm	E24	10K Reel
0.1W	0603	TCR03		K=±150ppm	10R = 100	5K Reel
0.125W	0805	TCR05		F=±200ppm	100R = 101	5K Reel
0.25W	1206	TCR06		G=±300ppm	1K = 102	5K Reel
0.333W	1210	TCR10			10K = 103	5K Reel
0.5W	1812	TCR12			100K = 104	4K Reel
0.5W	2010	TCR20			1M = 105	4K Reel
1W	1218	TCR28			10M = 106	4K Reel
1W	2512	TCR25				4K Reel
2W	2030	TCR30				2K Reel

DIMENSION

Power	Size	Type	L	W	H	D1	D2	Fig.
0.063W	0402	TCR02	1.00±0.10	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10	Fig-1
0.1W	0603	TCR03	1.60±0.20	0.80±0.15	0.40±0.10	0.30±0.20	0.30±0.15	
0.125W	0805	TCR05	2.00±0.20	1.25±0.15	0.50±0.15	0.35±0.15	0.35±0.15	
0.25W	1206	TCR06	3.20±0.20	1.60±0.20	0.55±0.15	0.45±0.20	0.45±0.20	
0.333W	1210	TCR10	3.20±0.20	2.50±0.20	0.55±0.15	0.50±0.20	0.50±0.20	
0.5W	1812	TCR12	4.50±0.10	3.00±0.10	0.55±0.05	0.55±0.10	0.80±0.10	
0.5W	2010	TCR20	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20	Fig-2
1W	1218	TCR28	3.10±0.10	4.60±0.10	0.55±0.50	0.45±0.10	0.40±0.10	
1W	2512	TCR25	6.30±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.60±0.20	Fig-1
2W	2030	TCR30	5.10±0.10	7.60±0.10	0.60±0.05	0.80±0.10	0.70±0.10	Fig-2

Fig-1

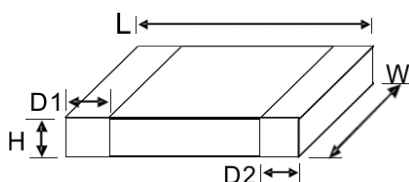
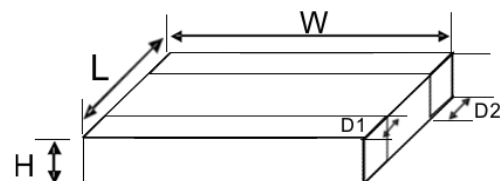


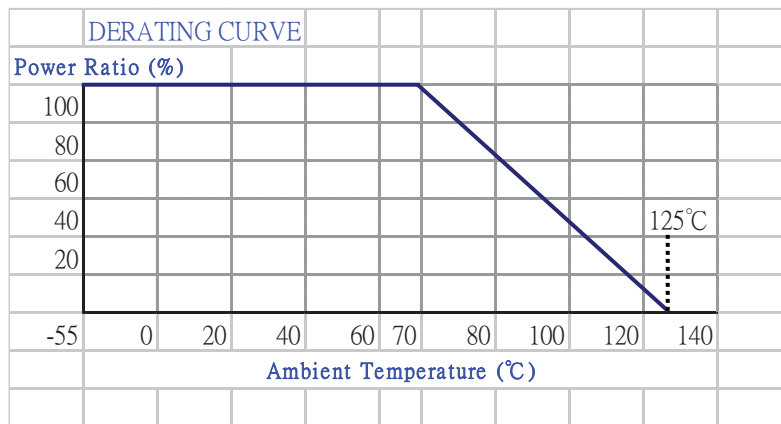
Fig-2



GENERAL ELECTRICAL SPECIFICATION

TYPE	POWER at 70°C	Working (Vw) Max	Over Load (Vo) Max	TCR (ppm/°C)	Tolerance Res. (%)	Resistance Range (Ω)	Operating Temperature (°C)
TCR02	0.063W	50V	100V	±200	±15% ±20% ±30%	10~1M	-55°C ~ +125°C
TCR03	0.1W	50V	100V	±200			
TCR05	0.125W	150V	300V	±200			
TCR06	0.25W	200V	400V	±200			
TCR10	0.333W	200V	400V	±200			
TCR12	0.5W	200V	400V	±200			
TCR20	0.5W	200V	400V	±200			
TCR28	1W	200V	400V	±200			
TCR25	1W	200V	400V	±200			
TCR30	2W	200V	400V	±200			

POWER DERATING CURVE



In case resistors operating ambient temperature in excess of the temperature range -55°C ~ +125°C power ratio will be derated in accordance with the figure as shown on the right.

VOLTAGE RATING OR CURRENT RATING

Resistance Range:  $\geq 1\Omega$

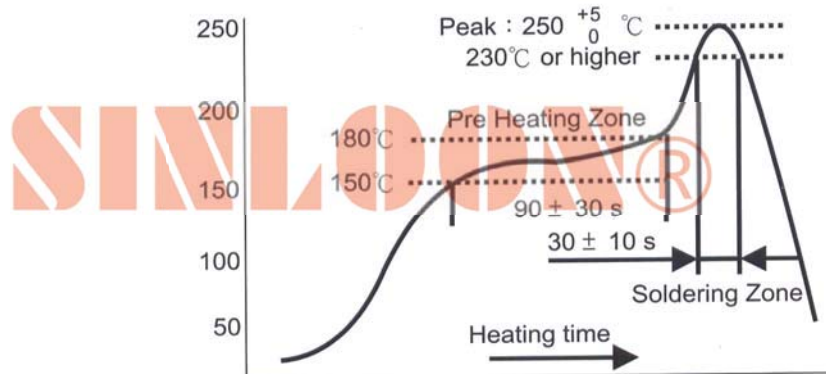
Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

$E = \sqrt{R \times P}$      $E = \text{Rated voltage (V)}$      $E = \sqrt{R \times P}$      $P = \text{Power rating (W)}$      $R = \text{Nominal resistance (}\Omega\text{)}$

OPERATION AND STORAGE TEMPERATURE

Operation temperature	Min. -55°C	Max. 70°C
Storage temperature	Min. 20°C	Max. 30°C
Storage humidity	Min. 30%	Max. 70%

SOLDERING PROFILE



☐ RESISTANCE RISING RATE:

This trimmable chip resistor is suitable for the circuit demanding stability as a replacement of variable resistor adjusting circuit. Please note that customer needs laser trimming machine by themselves. Trimmed by laser, Resistance rising rate is up to initial resistance X 2. As rising rate differs depend on trimming form. Please refer to fig-3

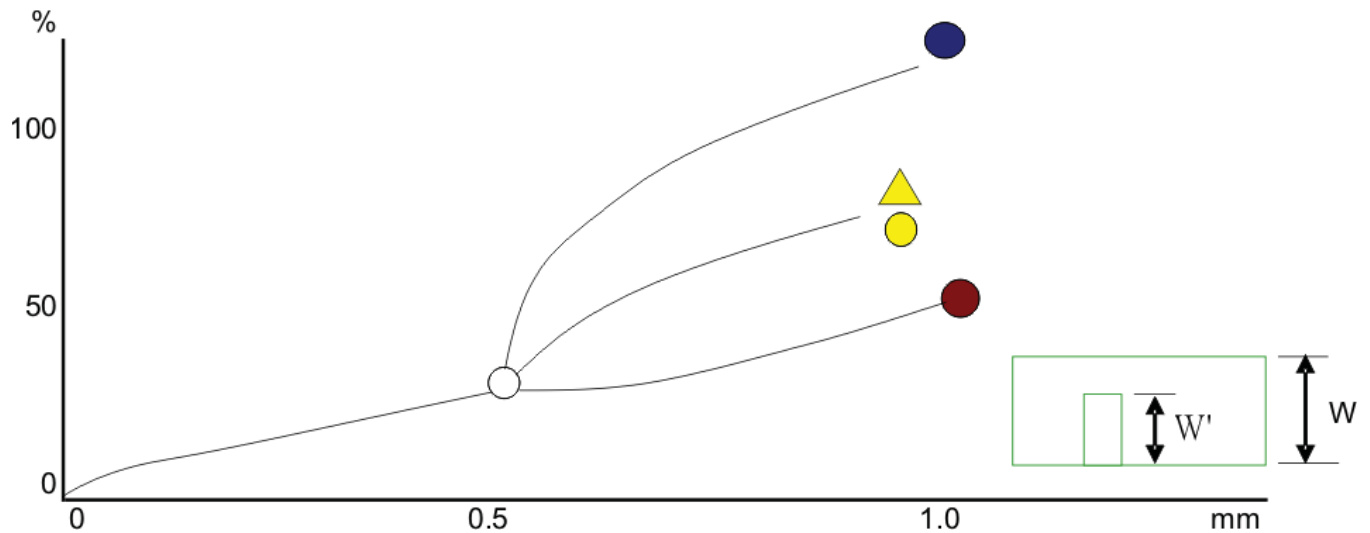
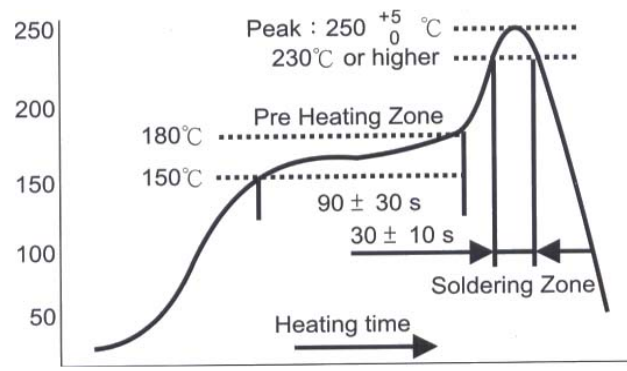


Fig-3

- Single cut
- Double cut
- Double reverse cut
- L cut

**SINLOON®**

Test Procedures and Requirements

Test Item	Procedue	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R)	-55°C ~ +155°C, 20°C is the reference temperature	Refer to Rating	JIS C 5201-1 clause 4.8
Short Time Overload	General: 2.5 time RCWV or Max. Overload voltage for 5 seconds. High Power: 2.5 times RCWV of Mac. Overload voltage for 2 seconds.	±1=±(1.0% +0.05Ω) ±5=±(2.0% +0.1Ω)	JIS C 5201-1 clause 4.13
IR Reflow	 <p>Peak : 250 <sup>+5</sup>/<sub>0</sub> °C 230°C or higher Pre Heating Zone 180°C 150°C 90 ± 30 s 30 ± 10 s Soldering Zone Heating time</p>	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	SONY SS-00254
Leaching	260±5°C for 30 seconds	>95% Coverage	SONY SS-00254-9
Soldering Heat	260±5°C for 10 seconds	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	JIS C 5201-2 clause 4.18
Temperature Cycling	-55°C to +155°C 5 cycles	0.10%,0.50%,1% : ±(0.1%+0.05Ω) 2%,5%: ±(0.1%+0.01Ω)	JIS C 5201-2 clause 4.19
Electric Iron	Preheating temperature : 350±5°C Electric iron preheating time: 3+1/0 second	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	SONY SS-00254-5
Resistance Solcent	The tested resistor be immersed into isproply alcohol of 20 ~ 25°C for 60 secs. Then the resistor is left in the room for 48 hours.	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	JIS C 5201-1 clause 4.29
Load life in Humidity	40±2°C, 90-95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	0.10%,0.50%,1% : ±(0.1%+0.05Ω) 2%,5%: ±(2%+0.05Ω)	JIS C 5201-1 clause 4.24
Load life (Endurance)	70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	0.10%,0.50%,1% : ±(0.1%+0.05Ω) 2%,5%: ±(2%+0.05Ω)	JIS C 5201-1 clause 4.24
Insulation Resistance	Max. Overload voltage for 1 mminute	≥ 10G Ω	JIS C 5201-1 clause 4.6

EQUIPMENT APPLICABLE:

Our company's products are produced under low temperature processing applicable to IR reflow surface mounting devices. It is comparatively not applicable to wave soldering which will have the possibility of the risk ablating the element protection layer and the front conductor that shall cause the drift of the resistance value and ablation of the markings

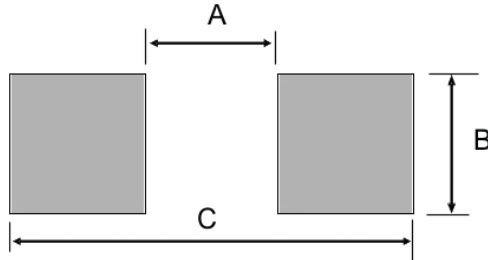
PRODUCT TESTING METHOD:

Our products are tested with our company's tapping & testing equipments by using four-fer probe to touch at the back of both electrodes, Supposed different testing points or methods are requested, please advise beforehand and customer-made production is available.

RECOMMEND LAND PATTERN DESIGN (For Reflow Soldering)

Unit: mm

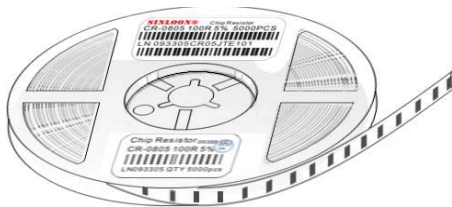
Type	TCR02	TCR03	TCR05	TCR06	TCR10	TCR12	TCR20	TCR28	TCR25	TCR30
Dim.	0402	0603	0805	1206	1210	1812	2010	1218	2512	2030
A	0.60	0.80	1.30	2.20	2.00	3.11	3.80	2.04	4.90	3.50
B	0.70	1.00	1.40	1.70	2.70	3.00	2.70	4.50	3.40	7.80
C	1.60	2.40	2.90	4.20	4.40	5.91	6.60	4.24	8.10	7.50



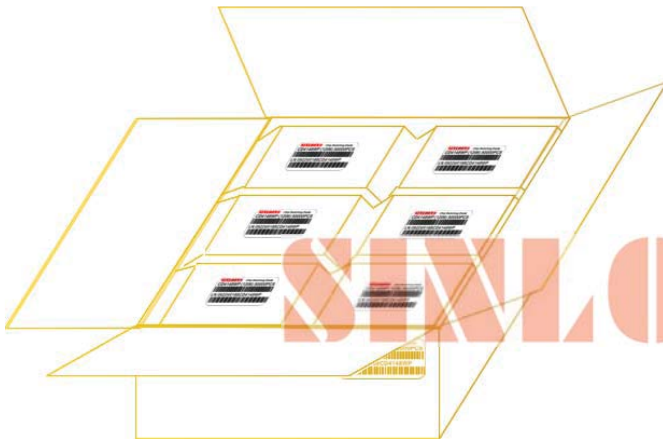
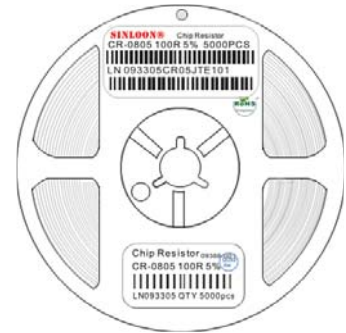
PACKAGE SPECIFICATION

Power	Size	Type	Quantity(ea)			SINLOON® RoHS Compliant 品質承諾標誌 QUALITY COMMITMENT
			Paper Reel Tape	In Box	Carton	
0.063W	0402	TCR02	10,000 Pcs	7" Reel	100K pcs	600K pcs
0.1W	0603	TCR03	5,000 Pcs	7" Reel	50K pcs	300K pcs
0.125W	0805	TCR05	5,000 Pcs	7" Reel	50K pcs	300K pcs
0.25W	1206	TCR06	5,000 Pcs	7" Reel	50K pcs	300K pcs
0.333W	1210	TCR10	4,000 Pcs	7" Reel	40K pcs	240K pcs
0.5W	1812	TCR12	4,000 Pcs	7" Reel	40K pcs	240K pcs
0.5W	2010	TCR20	4,000 Pcs	7" Reel	40K pcs	240K pcs
1W	1218	TCR28	4,000 Pcs	7" Reel	40K pcs	240K pcs
1W	2512	TCR25	4,000 Pcs	7" Reel	40K pcs	240K pcs
2W	2030	TCR30	2,000 Pcs	7" Reel	20K pcs	120K pcs

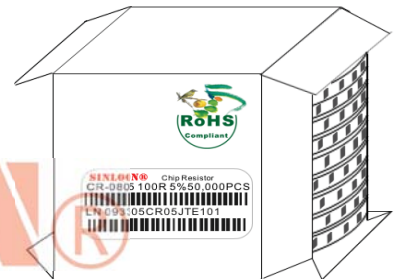
Paper Reel Tape



Reel Tape Leble



In Box



Carton Pack

※ 美隆電子產品規格特性參數的改變或更新,將不會另行通知。  
※ Mayloon characteristic parameters of electronic product specification changes or updates without prior notice

