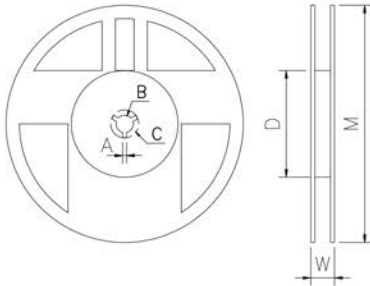


9.2 Packaging Quantity:

Type	Tape Width(mm)	Packaging Quantity (pcs/reel)
TE0816	8.00	5,000
TE/TC1220	8.00	5,000
TE/TC1632	8.00	5,000
TC2550	12.10	4,000
TE/TC3264	12.10	4,000
TC3720	12.00	4,000

9.3 Reel Dimensions:

Unit : mm



Type	M	D	W
TE0816	178	60	18.4
TE/TC1220	178	60	12.4
TE/TC1632			
TC2550	178	60	18.4
TE/TC3264			
TC3720			

10 Attachments

10.1 Document Revise Record

(QA-QR-027)

8 Marking Format: (All the products marking are 4 digits)

8.1 "R" designates the decimal location in ohms, e.g..

For 5mΩ: the product marking is R005



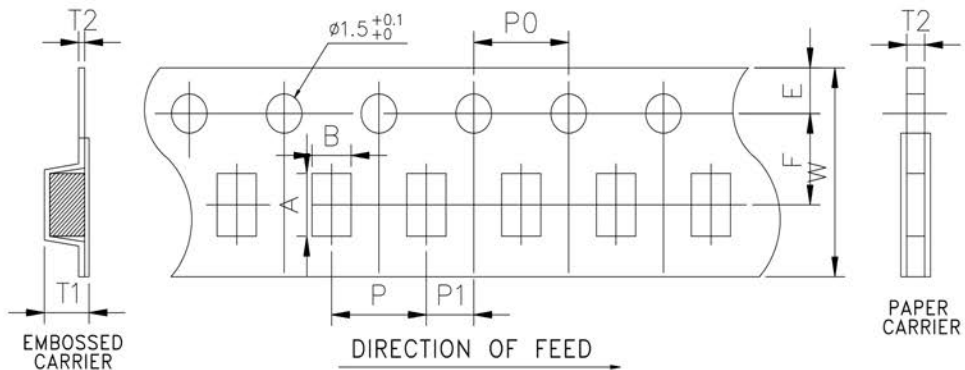
8.2 "m" designates the decimal location in milli-ohms, e.g..

For 1.5mΩ: the product marking is 1m50



9 Taping Specifications

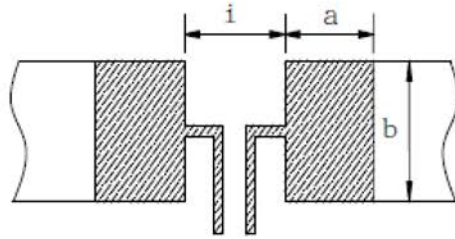
9.1 Tape Dimension:



Unit : mm

DIM TYPE	W	P0	P	P1	B	A	F	E	T2	T1
TE0816	8.00	4.00	4.00	2.00	1.20	1.90	3.50	1.75	0.20	0.85 ± 0.15
TE/TC1220	8.00	4.00	4.00	2.00	1.60	2.30	3.50	1.75	0.85	-
TE/TC1632	8.00	4.00	4.00	2.00	1.82	3.53	3.50	1.75	0.20	0.85 ± 0.15
TC2550	12.10	4.00	4.00	2.00	3.00	5.60	5.50	1.75	0.25	0.85 ± 0.15
TE/TC3264	12.10	4.00	4.00	2.00	3.40	6.70	5.50	1.75	0.20	0.80 ± 0.10
TC3720	12.00	4.00	4.00	2.00	2.30	4.10	5.50	1.75	0.20	0.80 ± 0.10
Tolerance	± 0.30	± 0.10	± 0.10	± 0.10	± 0.15	± 0.15	± 0.10	± 0.10	± 0.10	-

7 Recommend Land Pattern :



Unit : mm

TYPE	Maximum Power Rating(Watts)	Land Pattern Dimensions			
		Resistance Range (mΩ)	i	b	a
TE0816	0.5	10~50	0.6	0.92	2
TE/TC1220	TE1220 (0.5W) TC1220 (0.7W)	4	0.40	1.44	2.30
		5	0.50		2.25
		6~7	0.60		2.10
		8~200	0.80		2.10
TE/TC1632	1.0	3	0.40	1.84	2.90
		4	0.50		2.85
		5~8	0.60		2.80
		9~300	1.20		2.50
TC2550	2.0	2	0.50	2.88	3.75
		3	0.75		3.63
		4	1.00		3.50
		5~9	1.40		3.30
		10~500	2.70		2.65
TE/TC3264	2.0	1	0.40	3.57	4.45
		2	0.60		4.35
		3~4	0.90		4.20
		5~8	1.60		3.85
		9~600	3.10		3.10
TC3720		1	0.50	4.26	2.50
		2	0.70		2.40
		3~400	0.85		2.33

Item	Conditions	Specifications
Moisture Life	Put the tested resistor in chamber under $60 \pm 2^\circ\text{C} / 90 \pm 5\% \text{RH}$ with rating voltage bias and load the rated voltage for 90 minutes on, 30 minutes off, total 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate. Refer to IEC 60115-1 4.25	$\leq \pm (0.5\% + 0.5\text{m}\Omega)$ No evidence of mechanical damage.
Load Life	Put the tested resistor in chamber under temperature $70 \pm 2^\circ\text{C}$ and load the rated voltage for 90 minutes on, 30 minutes off, total 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate. Refer to JIS-C5201-1 4.25	$\leq \pm (1.0\% + 0.5\text{m}\Omega)$ No evidence of mechanical damage.

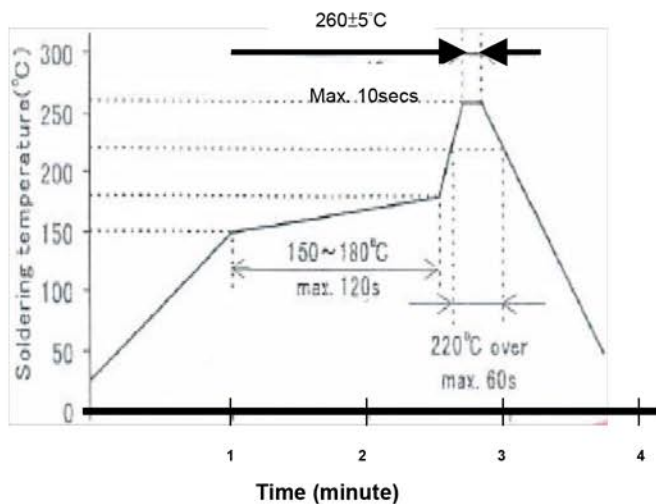
6 Recommend Soldering Method

6.1 IR Reflow Soldering Profile

6.2 Recommend Solder Condition:

6.2.1 Solder iron temperature(hot air): 350°C , 3~5secs

6.2.2 Recommended soldering methods



- The soldering source can be used IR reflow, vapor phase, hot air.
- The device is designed IR reflow instead of wave soldering processing.
- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

5 Reliability Performance Test

5.1 Electrical Performance Test

Item	Conditions	Specifications
Temperature Coefficient of Resistance	$TCR \text{ (ppm/}^\circ\text{C)} = \frac{(R2 - R1)}{R1 (T2 - T1)} \times 10^6$ R1: Resistance at room temperature R2: Resistance at +150°C T1: Room temperature T2: Temperature at +150°C Refer to JIS-C5201-1 4.8	Refer to Paragraph 3. general specifications
Short Time Overload	Applied 2.5 times of rating voltage for 5 seconds and release the load for about 30 minutes , then measure its resistance variance rate. Refer to JIS-C5201-1 4.13	$\leq \pm (0.5\% + 0.5m\Omega)$ No evidence of mechanical damage.

5.2 Mechanical Performance Test

Item	Conditions	Specifications
Solderability	Add flux into tested resistors, immersion into solder bath in temperature 245± 5°C Refer to JIS-C5201-1 4.17	Solder coverage over 90%
Resistance to Soldering Heat	The tested resistor be immersed 25 mm/sec into molten solder of 260 ± 5°C for 10 ± 1 secs. Then the resistor is left in the room for 1 hour , and measured its resistance variance rate. Refer to JIS-C5201-1 4.18	$\leq \pm (0.5\% + 0.5m\Omega)$ No evidence of mechanical damage.

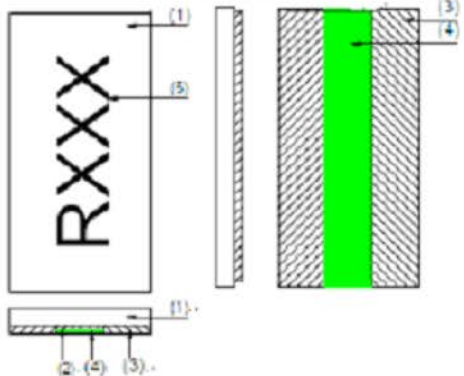
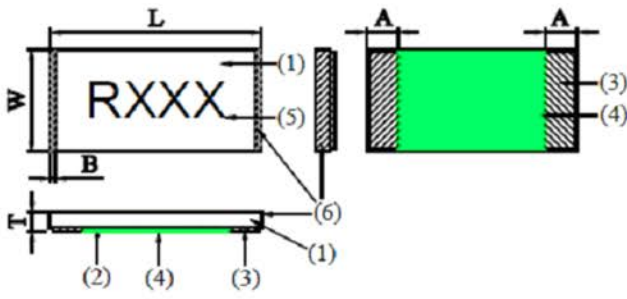
5.3 Environmental Test

Item	Conditions	Specifications
High Temperature Exposure	Put tested resistor in chamber under temperature 170± 5°C for 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes , and measure its resistance variance rate. Refer to JIS-C5201-1 4.23.2	$\leq \pm (0.5\% + 0.5m\Omega)$ No evidence of mechanical damage.
Low Temperature Exposure	Put the tested resistor in chamber under temperature -55± 2°C for 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate. Refer to JIS-C5201-1 4.23.4	$\leq \pm (0.5\% + 0.5m\Omega)$ No evidence of mechanical damage.
Temperature cycling (Rapid Temperature Change)	Put the tested resistor in the chamber under the temperature cycling which shown in the following table shall be repeated 100 times consecutively. Then leaving the tested resistor in the room temperature for 60 minutes, and measure its resistance variance rate.	$\leq \pm (0.5\% + 0.5m\Omega)$ No evidence of mechanical damage.
		Testing Condition
	Lowest Temperature	-55 +0/-10°C
	Highest Temperature	150 +10/-0°C
	Temperature-retaining time	30 min.

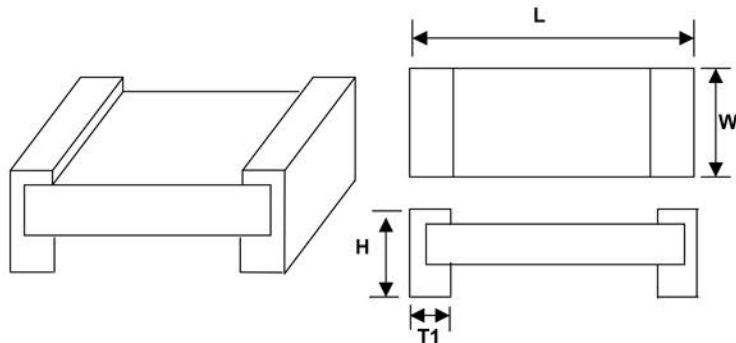
TYPE	Power Rating (W)	Resistance Range (mΩ)	Dimensions (mm)				
			W	L	H	T1	
TE0816	0.5	10~50	0.80± 0.20	1.60± 0.20	0.60± 0.15	0.30± 0.15	
TE1220	0.5	4	1.25± 0.20	2.00± 0.20		0.70± 0.15	
		5				0.63± 0.15	
		6~7				0.55± 0.15	
		8~200				0.40± 0.15	
TC1220	0.7	4	1.25± 0.20	2.00± 0.20		0.65± 0.15	
		5				0.58± 0.15	
		6~7				0.50± 0.15	
		8~200				0.35± 0.15	
TE1632	1.0	3	1.60± 0.20	3.20± 0.20		1.30± 0.20	
		4				1.20± 0.20	
		5~8				1.15± 0.20	
		9~300				0.58± 0.20	
TC1632		1.0	3	1.60± 0.20		3.20± 0.20	1.25± 0.15
			4				1.15± 0.15
			5~8				1.10± 0.15
			9~300				0.53± 0.15
TC2550	2.0	2	2.50± 0.20	5.00± 0.20		2.10± 0.20	
		3				1.90± 0.20	
		4				1.70± 0.20	
		5~9				1.45± 0.20	
		10~500				0.55± 0.20	
TE3264	2.0	1	3.10± 0.20	6.30± 0.20		2.93± 0.20	
		2				2.70± 0.20	
		3			2.50± 0.20		
TE3264	2.0	4	3.10± 0.20	6.30± 0.20	2.15± 0.20		
		5			1.95± 0.20		
		6~8			1.90± 0.20		
		9~600			0.95± 0.20		
TC3264	2.0	1	3.10± 0.20	6.30± 0.20	2.88± 0.20		
		2			2.65± 0.20		
		3			2.45± 0.20		
		4			2.10± 0.20		
		5			1.90± 0.20		
		6~8			1.85± 0.20		
		9~600			0.90± 0.20		
TC3720	2.0	1	3.70± 0.20	2.50± 0.20	0.90± 0.20		
		2			0.70± 0.20		
		3~400			0.55± 0.20		

4 Dimensions:

4.1 Product Struction

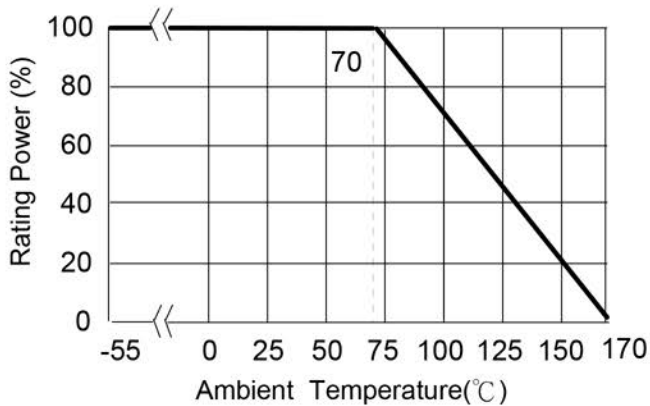
Instruction of TC Series	Instruction of TE Series
	
<p>(1) Substrate: Aluminum Oxide Ceramic Substrate</p> <p>(2) Resistive body: Metal Alloy</p> <p>(3) Terminal: Sn / Ni / Cu</p> <p>(4) Protective coating: Flame-retardant epoxy, to meets UL- 94-V0 requirements (green)</p> <p>(5) Marking: Flame-retardant epoxy, to meets UL- 94-V0 requirements (black)</p> <p>(6) Side termination - TE Series only: NiCr/Cu/Sn plating layer</p>	

4.2 Dimension:



3.1 Power Derating Curve: Operating Temperature Range : - 55 ~+170 °C

For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with figure below.



3.2 Rating Voltage:

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

$$V = \sqrt{P * R}$$

V= Rating voltage (V)

P= Rating power (w)

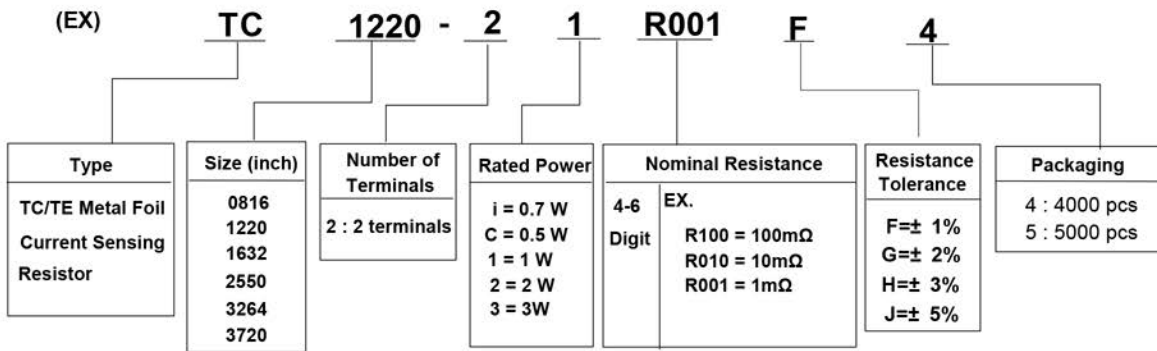
R= Nominal resistance (Ω)

1 Scope:

This specification is applicable to lead free and halogen free for metal foil current sensing resistor by following products:

- TE 0816 series
- TE/TC 1220 series
- TE/TC 1632 series
- TC 2550 series
- TE/TC 3264 series
- TC 3720 series

2 Explanation Of Part Numbers:



3 Product Specifications:

Type	Number of Terminals	Rated Power at 70°C	Max. Rated Voltage	Max. Overload Voltage	T.C.R (ppm / °C)	Resistance Range		Operating Temperature Range
						J(± 5%)	F(± 1%) G(± 2%) H(± 1%) J(± 5%)	
TE0816	2	0.5W	0.16	0.40	10~50 mΩ ≤± 40	N.A	10~50 mΩ	-55°C ~ +170°C
TE1220	2	0.5W	0.32	0.79	4~9 mΩ ≤± 70 10~200mΩ ≤± 40	4 ~5 mΩ	6~200 mΩ	
TC1220	2	0.7W	0.37	0.94	4~9 mΩ ≤± 70 10~200mΩ ≤± 40	4 ~5 mΩ	6~200 mΩ	
TE/TC1632	2	1.0W	0.55	1.37	3~9 mΩ ≤± 70 10~300mΩ ≤± 40	3~5 mΩ	6~300mΩ	
TC2550	2	2.0W	1.00	2.50	2~9 mΩ ≤± 70 10~500mΩ ≤± 40	2 ~5 mΩ	6~500mΩ	
TE/TC3264	2	2.0W	1.10	2.74	1~9 mΩ ≤± 70 10~600mΩ ≤± 40	1~5 mΩ	6~600mΩ	
TC3720	2	2.0W	0.89	2.23	1~9 mΩ ≤± 70 10~400mΩ ≤± 40	1~5 mΩ	6~400mΩ	