



Thick Film Trimmable Chip Resistors(standard)

Document No

TRT-XX0S001

Issue d date

2004/01/05

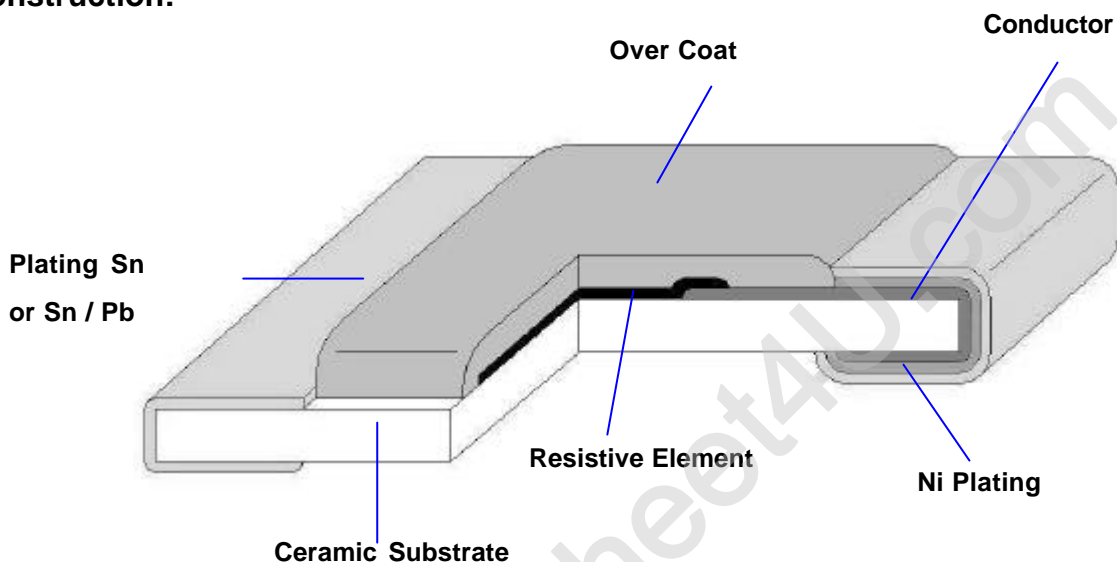
Page

1/8

1.Scope:

This specification applies for the RT (Suitable for laser trimming) series of thick film chip resistors made by TA-I.

2.Construction:



3.Explanation of Part Number:

<u>RT</u>	<u>10</u>	<u>K</u>	<u>T</u>	<u>103</u>
Trimmable Chip Resistor	Series	Tolerance	Packaging	Nominal Resistance
04-0402 1/16W 06-0603 1/10W 10-0805 1/8W	K- ± 10% M- ± 20% N- ± 30%	T-Paper Tape E-Embossed Tape B-Bulk Cassette Special L : 06 – 2mm pitch paper Tape	E24 - 10k	



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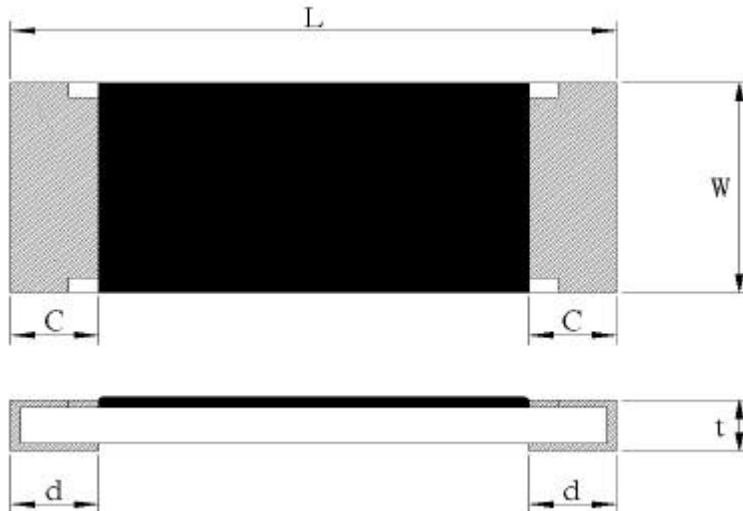
Issue d date

2004/01/05

Page

2/8

4.Dimensions:



UNIT: mm

Style	L	W	C	d	t
RT04	1.0 $\begin{matrix} +0.1 \\ -0.05 \end{matrix}$	0.5 ± 0.05	0.2 ± 0.1	0.25 ± 0.1	0.35 ± 0.05
RT06	1.6 ± 0.1	0.8 ± 0.1	0.3 ± 0.2	0.3 $\begin{matrix} +0.2 \\ -0.1 \end{matrix}$	0.45 ± 0.1
RT10	2.0 ± 0.1	1.25 ± 0.1	0.4 ± 0.2	0.4 ± 0.2	0.5 ± 0.1
RT12	3.1 ± 0.1	1.55 ± 0.1	0.5 ± 0.3	0.4 ± 0.2	0.6 ± 0.1
RT13	3.1 ± 0.1	2.55 ± 0.1	0.5 ± 0.3	0.4 ± 0.2	0.6 ± 0.1

5.Ratings & Characteristics :

Style	Power Rating at 70	Max. Working Voltage	Max. Over Load Voltage	Operating Temp. ()	Resistance Tolerance	Resistance Range ()	Std Res. Value	Temp Co-efficient PPM/
RT04	1/16W	25V	50	-55~+125	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	10 ~1M	E-24	± 200
RT06	1/10W	50V	100					
RT10	1/8W	150V	300V					
RT12	1/4W	200V	400					
RT13	1/3W	200V	400					

Note :Except for the above standardized products, we provide the special specification which meets customer' s requirements.



Thick Film Trimmable Chip Resistors(standard)

Document No

TRT-XX0S001

Issued date

2004/01/05

Page

3/8

5.1 Power Derating :

The rated power at the temperature in excess of 70 shall be derated in accordance with figure 1.

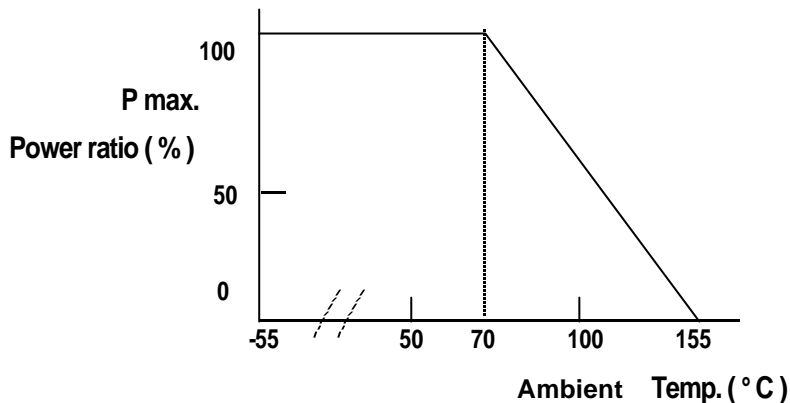


Figure 1

5.2 Rated Voltage:

The D.C. or A.C. continuous working voltage corresponding to the rated power is determined by the following formula:

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

E = Rated Voltage(V)

P = Rated Power(W)

R = Resistance Value()

6. Reliability Tests:(As specified in JIS C 5202)

Test Items	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	JIS-C5202-5.2	+25 ~ +125	Refer 5.0
Short Time Overload	JIS-C5202-5.5	2.5 X rated power for 5s	±(1% + 0.05) Remarks : 0402 : ±(2% + 0.1) 0 : 50m or less
Intermittent Overload Test	JIS-C5202-5.8	3.0 X rated power or Max Overloading Voltage , 1sec "ON" , 25sec "OFF" , 10000 cycles (Remarks : 0201 / 0402 2.5 X RCWV *)	±(5.0%+0.1) 0 : 50m or less
Load Life	JIS-C5202-7.10	1000 hours at rated power , 70 , 1.5hours "ON " , 0.5hour "OFF"	0.5%,1%: ±(1.0%+0.05) 2%,5%: ±(3.0%+0.1) Remarks : 0402 : ±(3.0%+0.1) 0 : 100m or less
Load Life with Humidity	JIS-C5202-7.9	1000 hours at rated power , 40 ± 2 , 90~95% RH 1.5hours "ON " , 0.5hour "OFF"	0.5%,1%: ±(1.0%+0.05) 2%, 5%: ±(3.0%+0.1) Remarks : 0402: ±(3.0%+0.1) 0 : 100m or less



Thick Film Trimmable Chip Resistors(standard)

Document No

TRT-XX0S001

Issued date

2004/01/05

Page

4/8

			Without mechanical damage
Rapid Change of Temperature	JIS-C5202-7.4	-55 (30 min.) / +125 (30 min.) 5 cycles	0.5%,1%: $\pm(0.5\%+0.05)$) 2%, 5%: $\pm(1.0\%+0.05)$) Remarks : 0 : 50m or less
Resistance to Soldering Heat	JIS-C5202-6.10	270 \pm 5 solder , 10 \pm 1 sec dwell .	0.5%,1%: $\pm(0.5\%+0.05)$) 2%, 5%: $\pm(1.0\%+0.05)$) Remarks : 0 : 50m or less
Solderability	JIS-C5202-6.11	235 \pm 5 solder, 2 \pm 0.5 sec dwell.	At least 95% of surface area of electrode shall be covered with new solder.
Robustness of Termination (Bending Strength)	JIS-C5202-6.1	3mm deflection	0.5%,1%: $\pm(0.5\%+0.05)$) 2%,5%: $\pm(1.0\%+0.05)$) Remarks : 0 : 50m or less
Dielectric Withstanding Voltage(Voltage Proof)	JIS-C5202-5.7	Applying voltage : 0201 : 50V , 0402 & 0603 : 300V The other 500V for a minute .	No abnormalities such as flashover, burning dielectric breakdown shall appear.
Insulation Resistance	JIS-C5202-5.6	Applying voltage 100V for 1 minute. Remark : 0201 50V	1G
Resistance to Dry Heat	JIS-C5202-7.2	125 \pm 5 for 96 \pm 4hrs	0.5%,1%: $\pm(1.0\%+0.05)$) 2%,5%: $\pm(2.0\%+0.1)$) Remark : 0 : 50m or less

Note* :RCWV : Rated continuous working voltage .

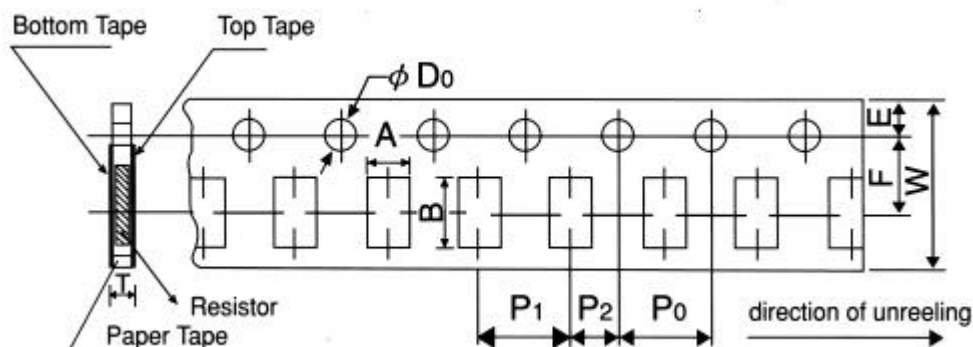
7. Taping & Reel

7.1 Taping Dimensions

7.1.1 4 mm pitch paper

UNIT: mm

Packing	Style	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Paper	RM06	1.1 \pm 0.1	1.9 \pm 0.1	8.0 \pm 0.2	3.5 \pm 0.05	1.75 \pm 0.1	4.0 \pm 0.1	2.0 \pm 0.05	4.0 \pm 0.1	1.5	0.64 \pm 0.1
	RM10	1.6 \pm 0.15	2.4 \pm 0.2								+0.1
	RM12	2.0 \pm 0.15	3.6 \pm 0.2								-0
	RM13	2.8 \pm 0.2	3.6 \pm 0.2								0.84 \pm 0.1





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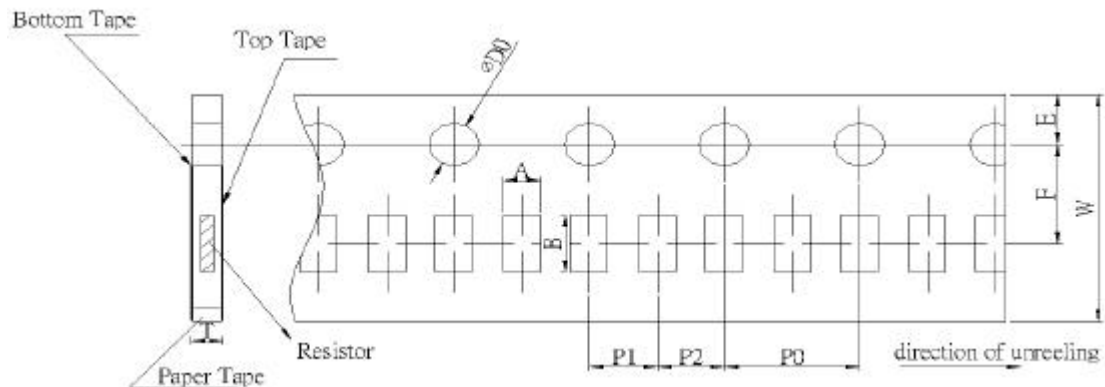
Page

5/8

7.1.2 2 mm pitch paper

UNIT: mm

Packing	Style	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Paper	RM04	0.7±0.05	1.2±0.05	8.0±0.2	3.5±0.05	1.75±0.1	2.0±0.1	2.0±0.1	4.0±0.1	+0.1	0.45±0.1
	RM06	1.1±0.1	1.9±0.1				2.0±0.1	2.0±0.1		1.5	-0



Style	Package Size	Paper Tape				Bulk
		4 mm pitch		2 mm pitch		
		180mm/R	250mm/R	180mm/R	250mm/R	
RM	04			10000	20000	50000
RM	06	5000	10000	10000	20000	20000
RM	10	5000	10000			10000
RM	12	5000	10000			5000
RM	13	5000				

7.2 Storage Conditions:

The resistors with appropriate package would have a preservative duration of 1 year.

Temperature: 5 ~35 ,Humidity:40%~75%

7.3 Reel Specifications



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Document No

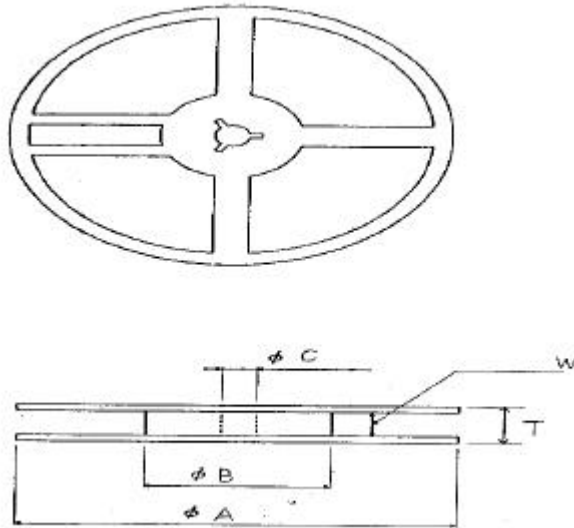
TRT-XX0S001

Issue d date

2004/01/05

Page

6/8

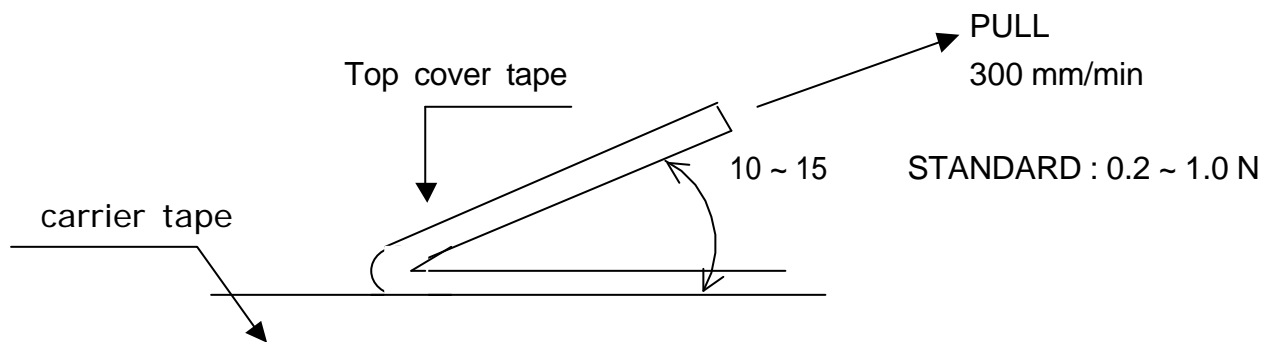


UNIT: mm

Style	A	B	C	W	T
RM04 / 06/10 RM12 /13	180 ⁺⁰ ₋₃	60 min	13.0±1.0	9.0±1.0	11.4±2.0

7.4 Peel –off force :

Peel –off force of paper and blister tape is in accordance with “IEC 60286-3”
that is , 0.2 to 1.0 N at a peel-off speed of 300 mm / minute.





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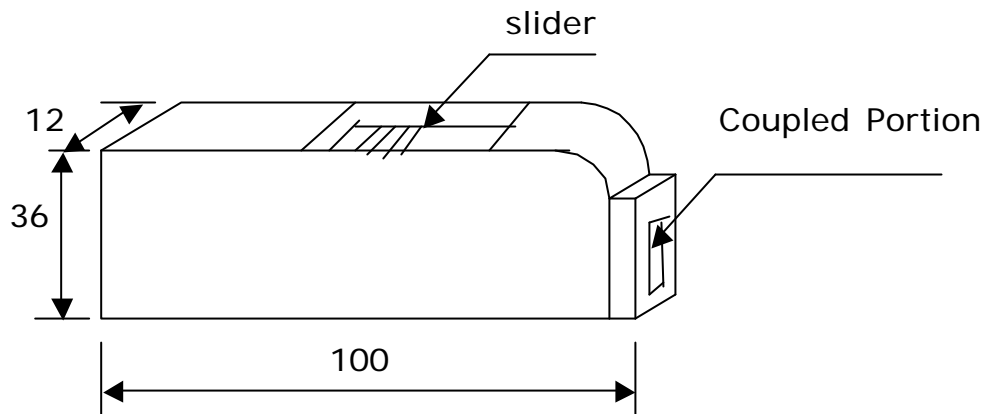
2004/01/05

Page

7/8

8. BULK Case Specifications:

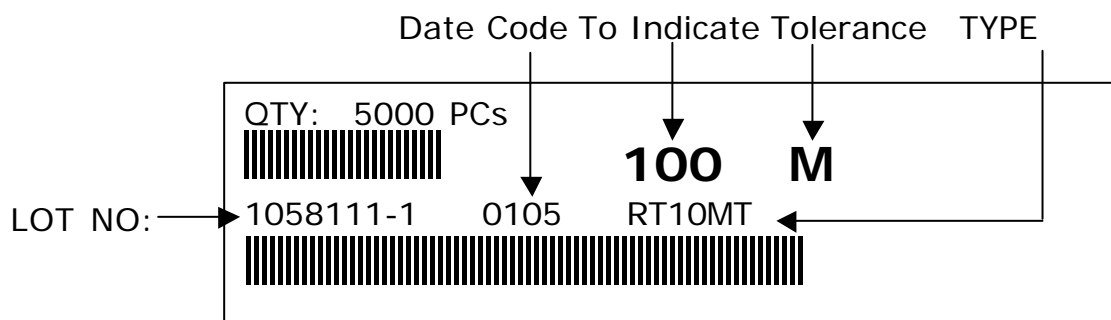
UNIT: mm



9. Label



Customer Label



Manufacture Label



Thick Film Trimmable Chip Resistors(standard)

Document No

TRT-XX0S001

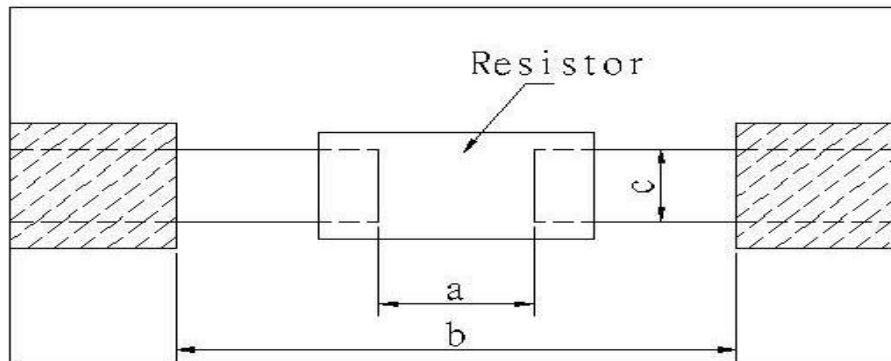
Issued date

2004/01/05

Page

8/8

10. Recommended land patterns



Type	Land pattern Size	Dimension (mm)		
		a	b	c
RM	04 (0402)	0.50~0.6	1.4~1.6	0.4~0.6
RM	06 (0603)	0.7~0.9	2.0~2.2	0.8~1.0
RM	10 (0805)	1.0~1.4	3.2~3.8	0.9~1.4
RM	12 (1206)	2.0~2.4	4.4~5.0	1.2~1.8
RM	13 (1210)	2.0~2.4	4.4~5.0	2.3~3.5

11.ECN

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.

12. Manufacturing Country & City:

TA-I TECHNOLOGY CO., LTD. (Taiwan– Taoyuan)

Tel: 886-3-3246169 Fax : 886-3-3246167

Associated companies :

(1) FORTUNE TASK RESISTOR FACTORY (China - Kwangtung)

Tel : 86-769-3394790 Fax : 86-769-3394794

(2) TA-I TECHNOLOGY (SU ZHOU) CO., LTD. (China – Jiang-Su)

Tel :86- 512-3457879 Fax : 86-512-3457869

(3) TAI OHM ELECTRONICS (M) SDN. BHD. (Malaysia – Pulaupinang)

Tel :604- 3900480 Fax : 604-3901481

(4) P.T.TAI ELECTRONICS Indonesia (Indonesia – Jakarta)

Tel :002-62-21-44820254 Fax : 002-62-21-44820256