



## Thick Film Trimmable Chip Resistors(standard)

Document No

TRT-XX0S001

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2004/01/05

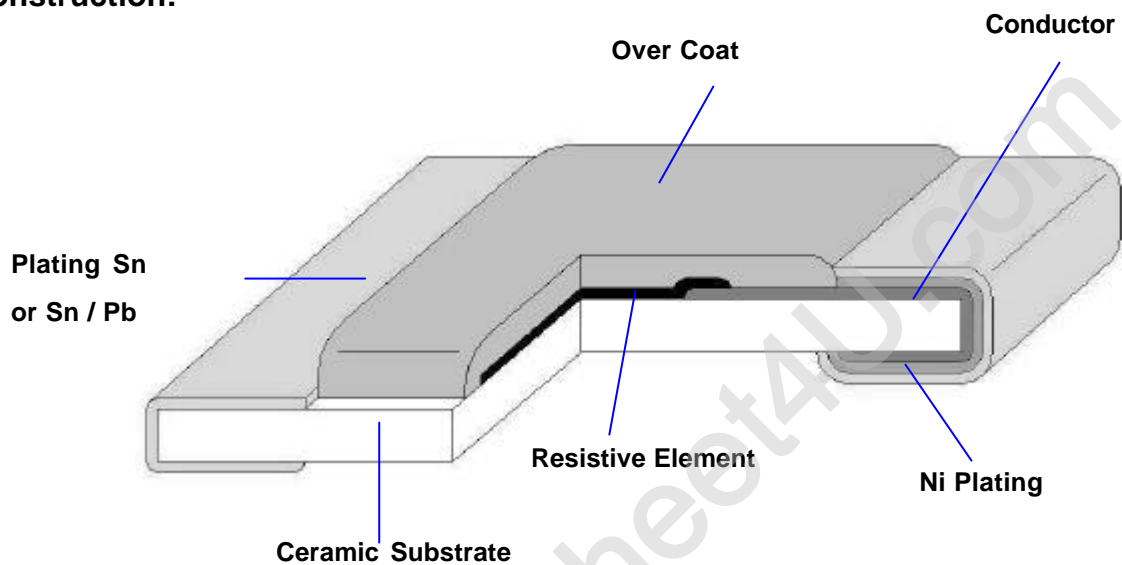
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### 1.Scope:

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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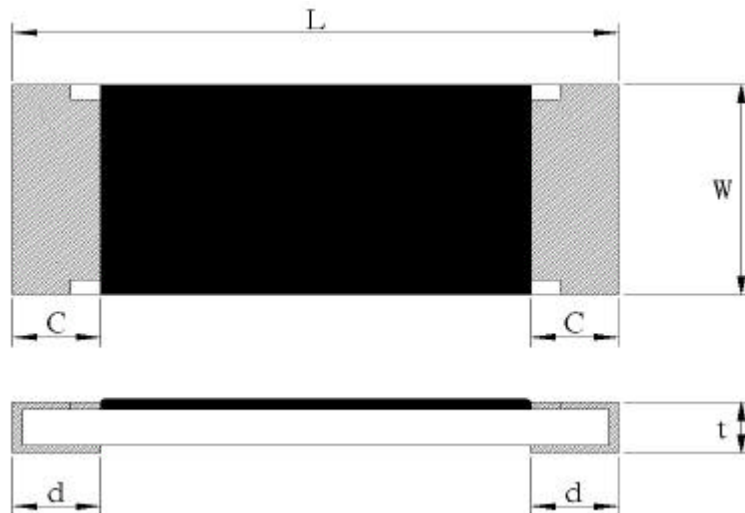
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### 4.Dimensions:



UNIT: mm

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

### 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	$\pm 200$
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.



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### 5.1 Power Derating :

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

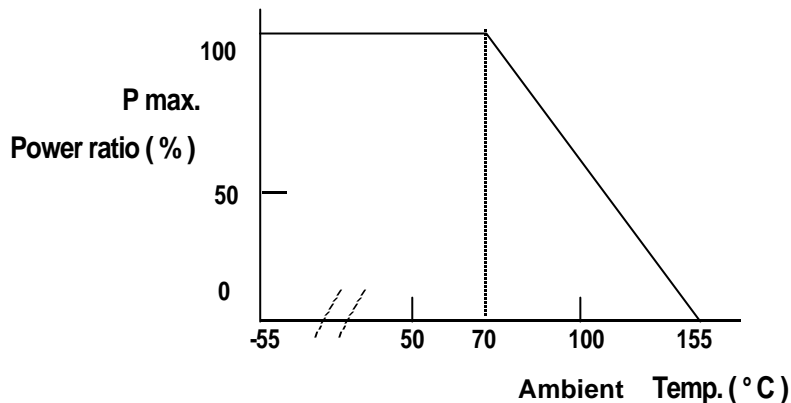


Figure 1

### 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



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			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\* :RCWW : Rated continuous working voltage .

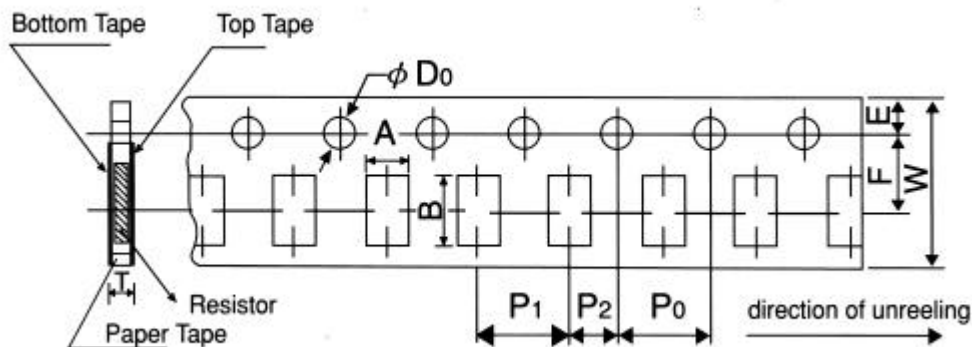
## 7. Taping & Reel

### 7.1 Taping Dimensions

#### 7.1.1 4 mm pitch paper

UNIT: mm

Packing	Style	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	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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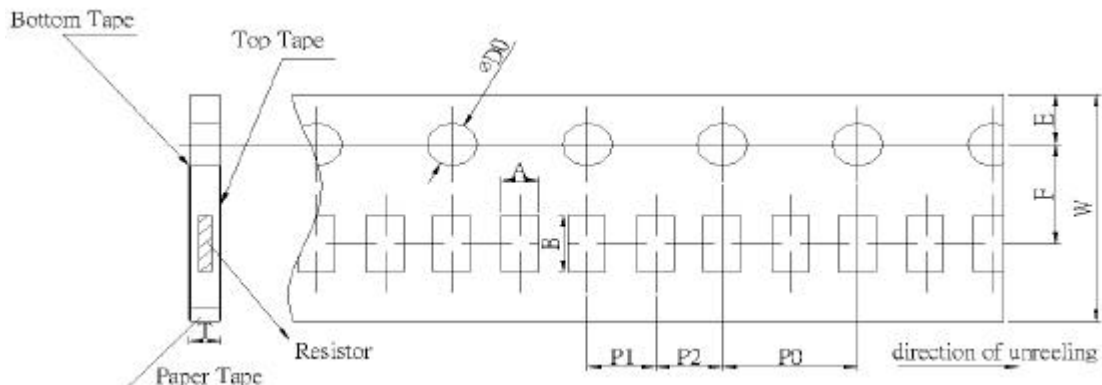
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### 7.1.2 2 mm pitch paper

UNIT: mm

Packing	Style	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	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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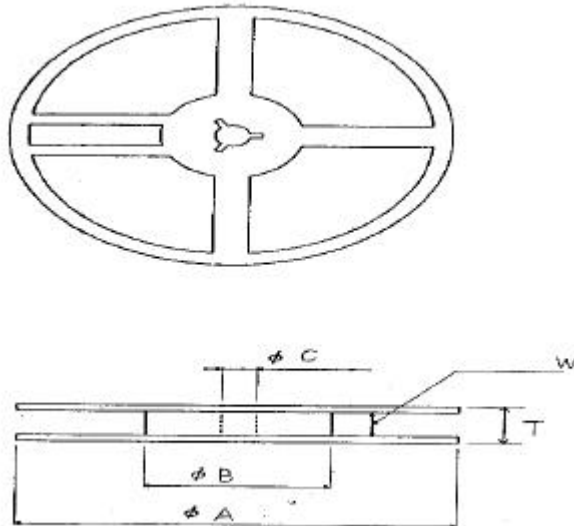
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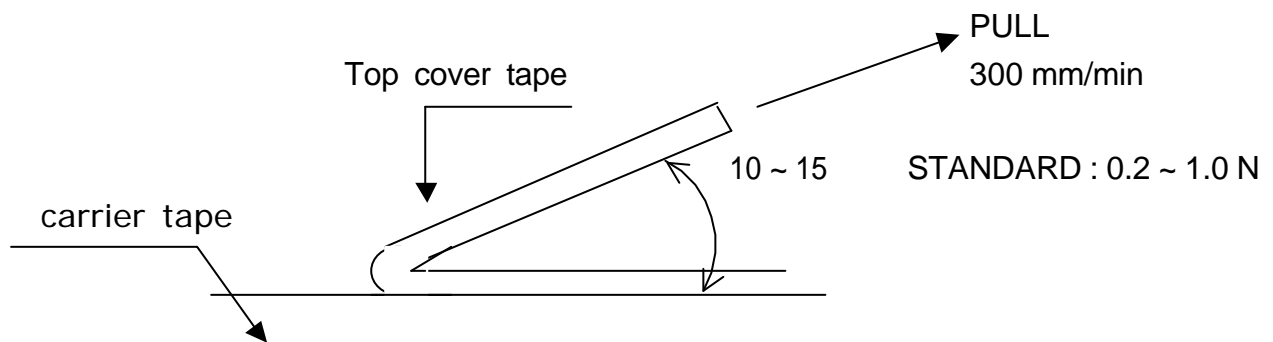


UNIT: mm

Style	A	B	C	W	T
RM04 / 06/10 RM12 /13	180 <sup>+0</sup> <sub>-3</sub>	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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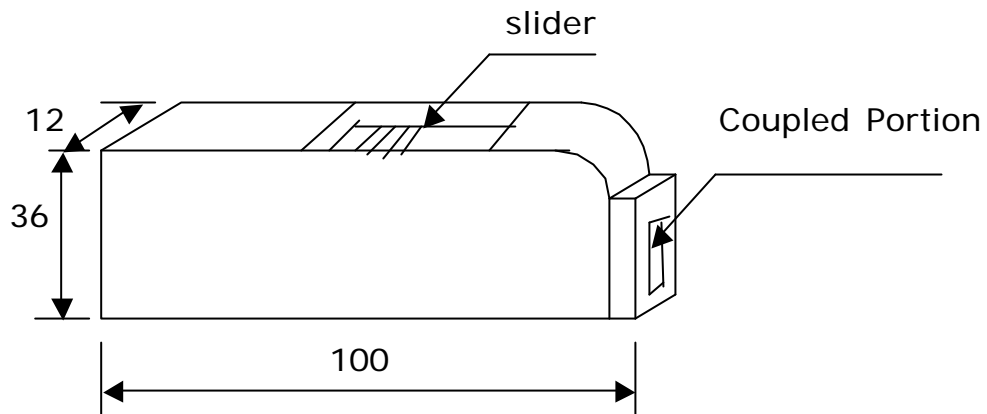
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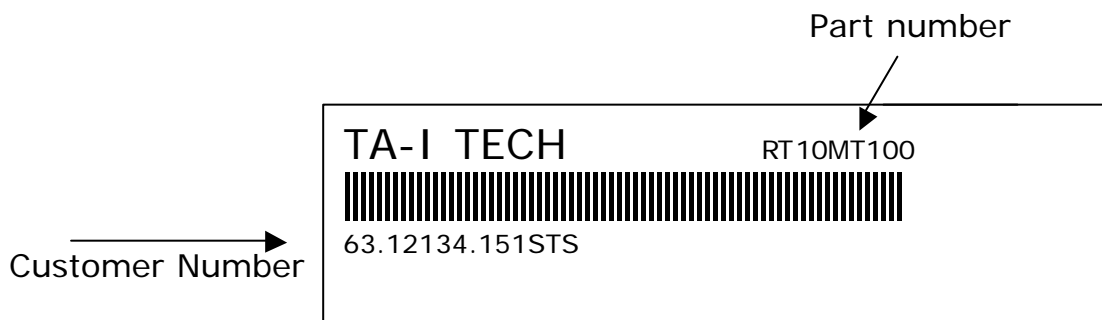
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## 8. BULK Case Specifications:

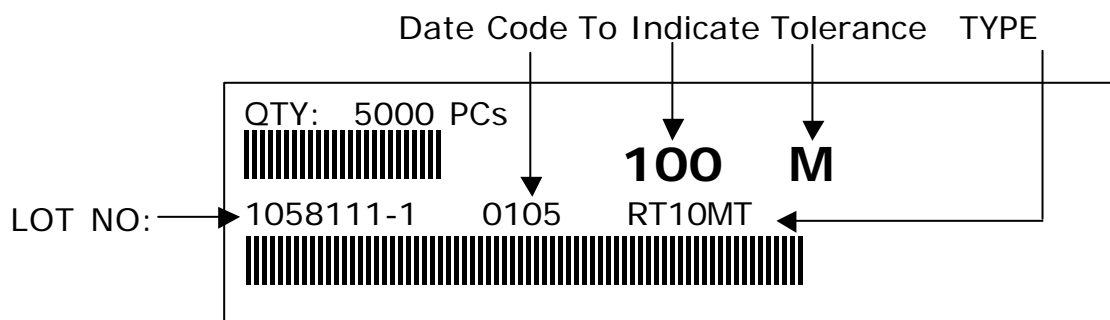
UNIT: mm



## 9. Label



Customer Label



Manufacture Label



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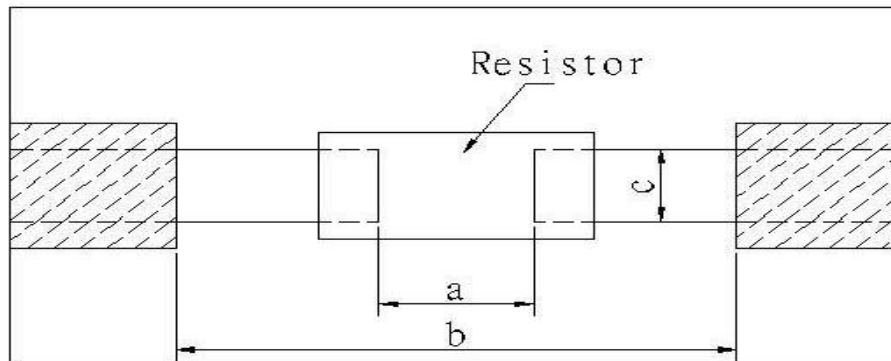
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### 10. Recommended land patterns



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