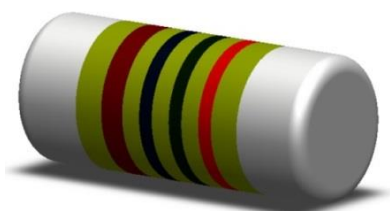


	TRM Series Thin Film MELF Resistor Product Specifications	Document No.	S-10-12-151-07
		Revision Date	2025/06/17
		Page No.	1/9

■ Thin Film MELF Resistor — TRM Series



■ Applications

- Industrial.
- Measuring instrument.
- Telecommunication.
- Automotive.

■ Features

- Sputtered thin film technology.
- Best in class pulse load capability.
- RoHS compliant and lead free.
- Intrinsic sulfur resistance.
- AEC-Q200 compliant.

■ Description

The process of thin film MELF resistors (TRM Series) are sputtered thin film on high grade Alumina rod and achieved the desired temperature coefficient by annealing. It is achieved the target resistive value by laser trimming a helical groove in the metal layer. The resistive film is covered by epoxy designed for electrical, mechanical and climatic protection. Four color code rings designate the resistance value in accordance with IEC 60062.

TRM series are the perfect choice for most fields of modern professional electronics where reliability and stability of major concern. The typical applications in the fields of Industrial, measuring instrument and telecommunication equipment reflect the outstanding level of proven reliability.

■ Parts Number Explanation

■ Example:

TRM	0204	X2	F	1K00	E	03	25	Z
Product Type	Size (Inch)	Power Rating	Tolerance	Resistance	Package	Quantity (PCS)	TCR (ppm / ° C)	Optional
TRM	0204 0207	X2 : 0.25W 04 : 0.4W 05 : 0.5W 10 : 1.0W	B : ±0.1% D : ±0.5% F : ± 1 %	4 digits Ex. 1K00=1KΩ 332K=332KΩ 1M00= 1MΩ	E : Embossed Taping	02 : 2000 03 : 3000	25 : ±25ppm 50 : ±50ppm A0 : ±100ppm	Z : Dafault Code A : AEC-Q200 Compliant



TRM Series Thin Film MELF Resistor
Product Specifications

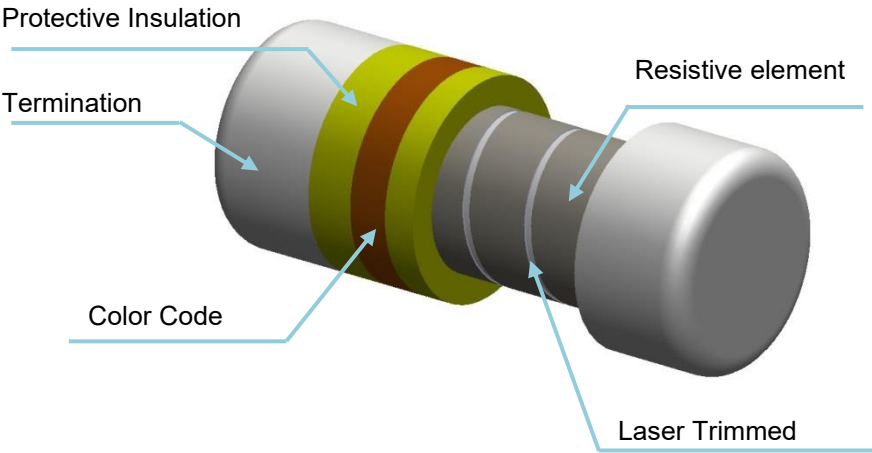
Document No.	S-10-12-151-07
Revision Date	2025/06/17
Page No.	2/9

■ Standard Electrical Specifications

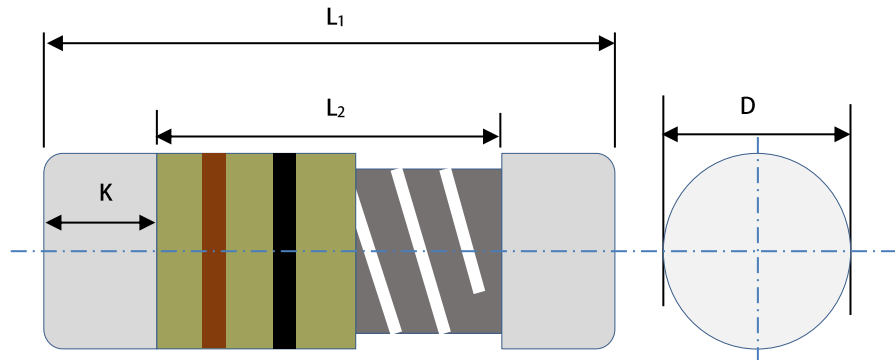
Type \ Item	Rated Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range		
					B ± 0.1%	D ± 0.5%	F ± 1%
TRM0204	0.25W	200V	400V	± 25	-	1K~1MΩ	
				± 50	-	1K~1MΩ	
				± 100	-	1K~1MΩ	
	0.4W	200V	400V	± 25	-	1K~1MΩ	
				± 50	-	1K~1MΩ	
				± 100	-	1K~1MΩ	
TRM0207	0.5W	300V	600V	± 25	1K~1MΩ		
				± 50	1K~1MΩ		
				± 100	1K~1MΩ		
	1W	350V	700V	± 25	1K~1MΩ		
				± 50	1K~1MΩ		
				± 100	1K~1MΩ		

- For non-standard parts, please contact our sales dept.
- Operating Temperature Range : -55°C ~ +155°C.

■ Construction



■ Dimension



Unit : mm

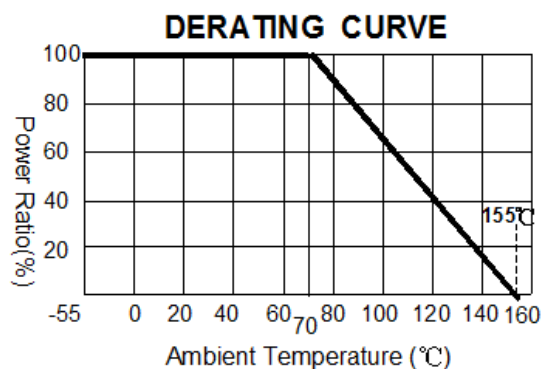
Type	L ₁	D	L ₂	K
TRM0204	3.40 ±0.20	1.34 ±0.20	1.75±0.20	0.80 ±0.20
TRM0207	5.90 ±0.20	2.05 ±0.20	3.40±0.30	1.10 ±0.20

■ Performance Characteristics

■ Power Derating Curve

The Operating Temperature Range: -55°C ~+155°C.

Power rating is in the case based on continuous full-load at ambient temperature of 70°C. For operation at ambient temperature in excess of 70°C, the load should be derated in accordance with figure of derating Curve.



■ Rated Voltage

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:

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

V = Rated voltage (V)
 P = Rated power (W)
 R = Nominal resistance (Ω)

	TRM Series Thin Film MELF Resistor Product Specifications	Document No.	S-10-12-151-07
		Revision Date	2025/06/17
		Page No.	4/9

■ Reliability Tests and Requirement

Test Item	Test Method	Procedure	Requirements	
			1K to 100KΩ	>100KΩ
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25°C /-55°C ^{Note1} and 25°C /+125°C, 25°C is the reference temperature	Refer to Standard Electrical Specifications	
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds.	±(0.10%+0.05Ω)	±(0.15%+0.05Ω)
			No Visual damage	No Visual damage
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	245±5°C for 3 seconds.	>95% Coverage	
			No Visual damage	
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5°C for 10 seconds.	±(0.50%+0.05Ω)	
			No Visual damage	
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5°C for 30 seconds.	>95% Coverage	
			No Visual damage	
Rapid Change of Temperature	JIS-C-5201-1 4.19 IEC-60115-1 4.19	-55°C to +125°C, 1000 cycles	±(0.5%+0.05Ω)	
			No Visual damage	
High Temperature Exposure	JIS C 5201-1 4.23.2 IEC 60068-2-2	At 155±5°C for 1000 +48/-0 hours.	±(0.5%+0.05Ω)	
Resistance to Solvent	JIS-C-5201-1 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25°C for 60 secs. Then the resistor is left in the room for 48 hrs.	No Visual damage	
Damp heat steady state accelerated	JIS C 5201-1 4.37 IEC 60068-2-67	1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion.	±(0.5%+0.05Ω)	
Load life in humidity	JIS C 5201-1 4.24 IEC 60015-1 4.24	Over load rated voltage or Max work voltage(get the lower) for 1000 hours (1.5hours on and half hour off) at the 40±2°C and 90~95% relative humidity.	±(0.5%+0.05Ω)	
ESD	AEC-Q200-002 or ISO/DIS 10605	Human Body Model 0204 2KV;0207:4KV	±(0.5%+0.05Ω)	
Operational Life	MIL-STD-202 Method 108	Condition D Steady State TA=85°C at derated power. Measurement at 24±4 hours after test conclusion.	±(0.25%+0.05Ω)	
Load Life (Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2°C, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	±(0.25%+0.05Ω)	
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending 2mm for 60 sec	±(0.5%+0.05Ω)	
			No Visual damage	
Vibration	MIL-STD 202 Method 204	5g's for 20 min., 12 cycles each of 3 orientations,10 2000Hz	±(0.5%+0.05Ω)	

We can provide AEC-Q200 reliability test report if required by customers.

Note1: If product feature is TCR 25ppm and the resistance range from >100KΩ ~ 1MΩ, it's not applicable to the TCR test requirement of 25°C /-55°C.

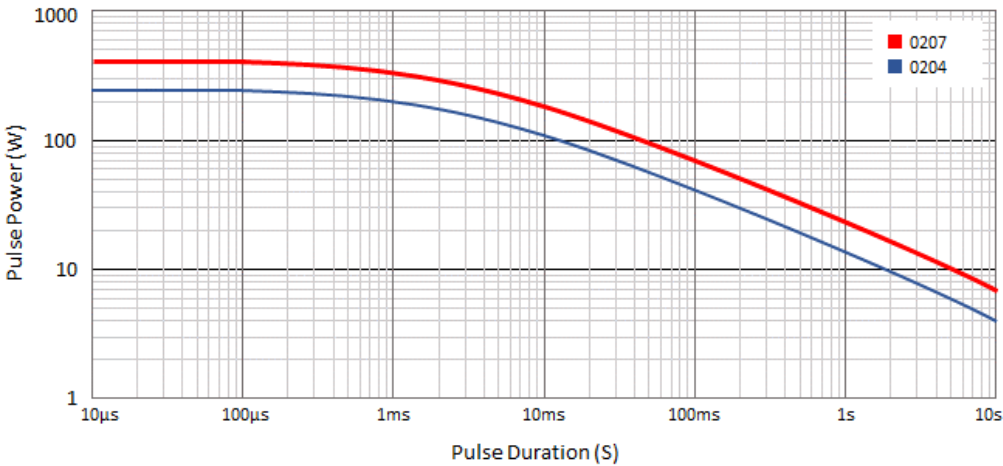


TRM Series Thin Film MELF Resistor
Product Specifications

Document No.	S-10-12-151-07
Revision Date	2025/06/17
Page No.	5/9

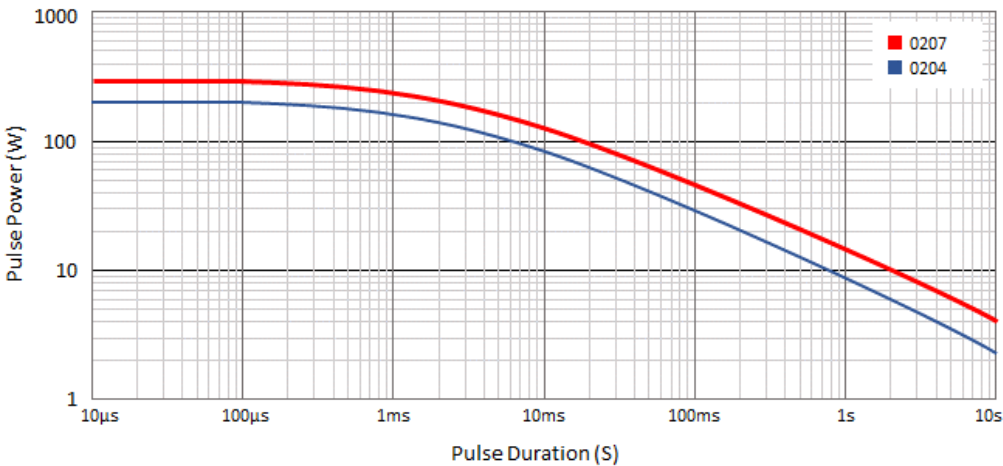
■ PULSE LOAD PERFORMANCE:

Single Pulse :



Maximum pulse load, single pulse; applicable if $P \rightarrow 0$ and $U \leq U_{max}$;
for permissible resistance change $\pm (0.5 \% R + 0.01 \Omega)$

Continuous Pulse :



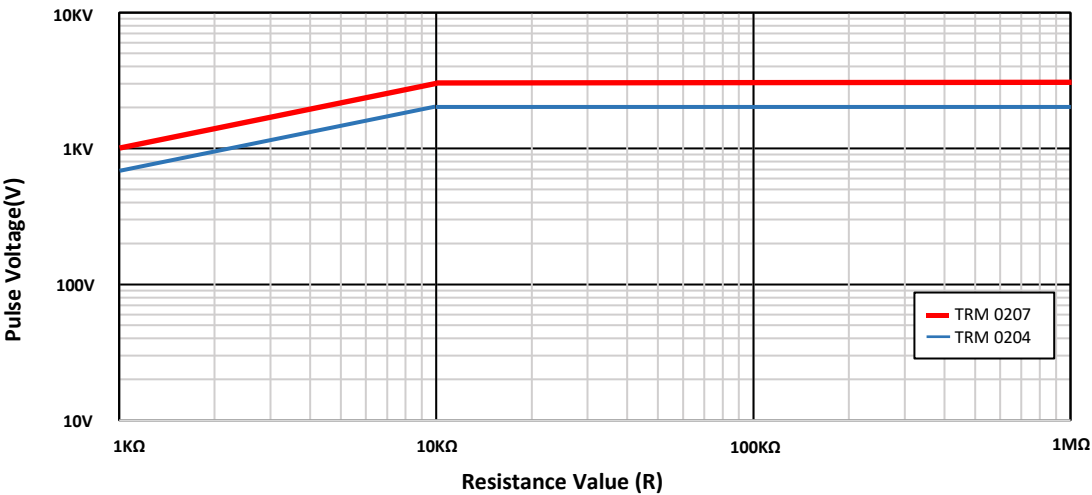
Maximum pulse load, continuous pulse; applicable if $P \leq P(\vartheta_{amb})$ and $U \leq U_{max}$;
for permissible resistance change $\pm (0.5 \% R + 0.01 \Omega)$



TRM Series Thin Film MELF Resistor
Product Specifications

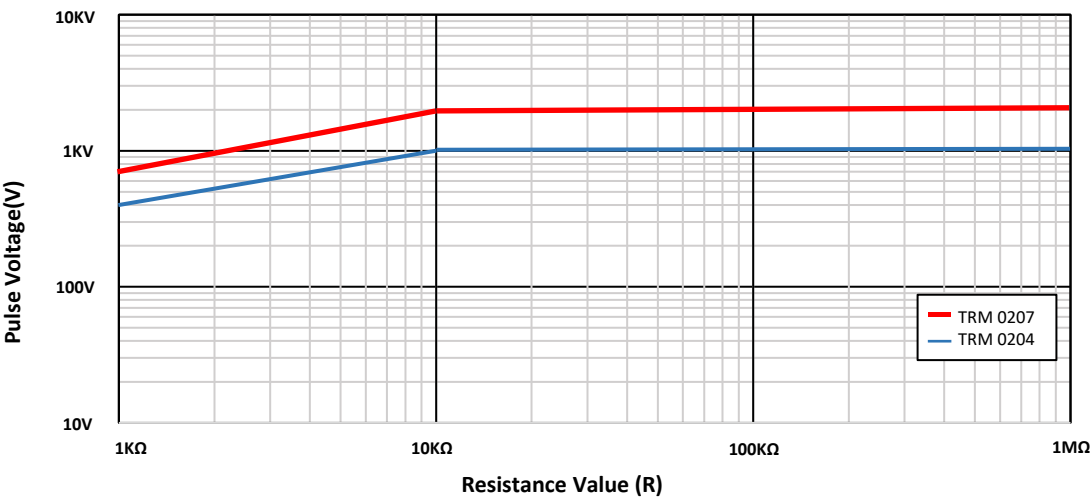
Document No.	S-10-12-151-07
Revision Date	2025/06/17
Page No.	6/9

1.2 / 50 Pulse :



Pulse load rating accordance with IEC 60115-1, 4.27; 1.2μs / 50μs;
5 Pulses at 12s intervals; for permissible resistance change ±(0.5% R +0.05Ω)

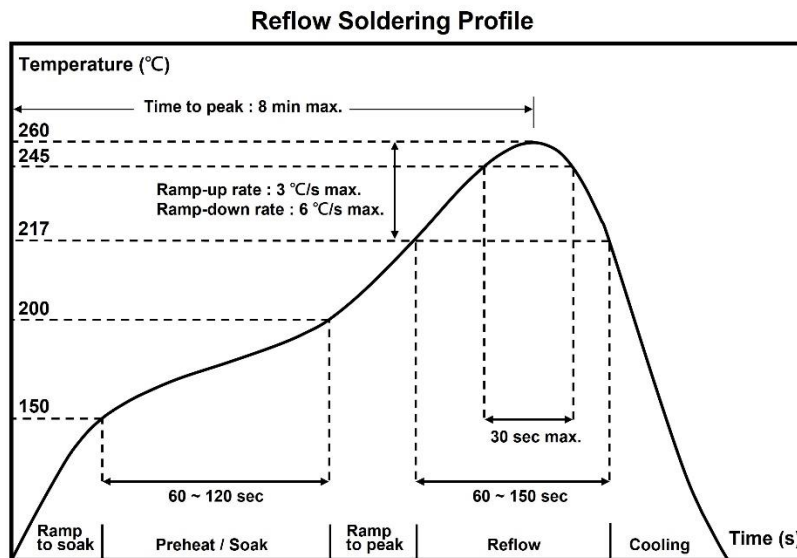
10 / 700 Pulse :



Pulse load rating accordance with IEC 60115-1, 4.27; 10μs / 700μs;
10 Pulses at 1 minute intervals; for permissible resistance change ±(0.5% R +0.05Ω)

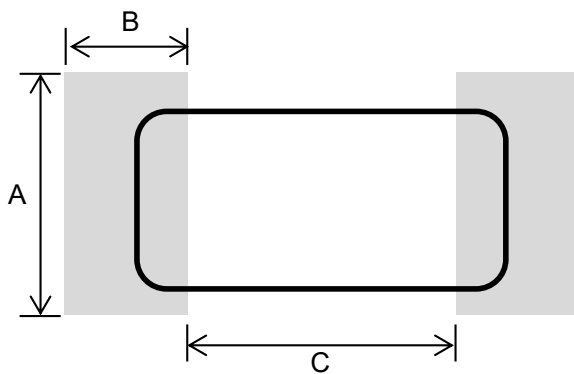
■ Recommended Customer Soldering Parameters

■ Solder reflow Temperature condition



- The peak temperature of soldering heat is 260°C for 10s.
- Number of reflow cycles allowed: 3 times.

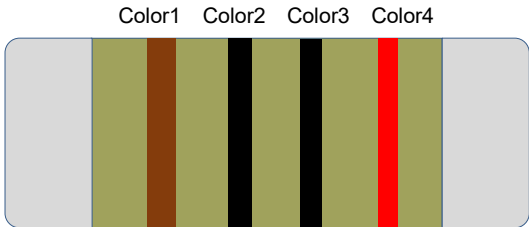
■ Recommend Land Pattern Design



Unit: mm

Type	0204	0207
A	2.1	2.6
B	1.5	2.2
C	1.5	2.8

Marking



Resistance Values more than two digital tags (<1R) or more than three digital tags (>1R) will not provide marking.

Color 1	Color 2	Color 3	Color 4
0	0	0	10 ⁰
1	1	1	10 ¹
2	2	2	10 ²
3	3	3	10 ³
4	4	4	10 ⁴
5	5	5	10 ⁵
6	6	6	
7	7	7	
8	8	8	10 ⁻¹
9	9	9	10 ⁻²

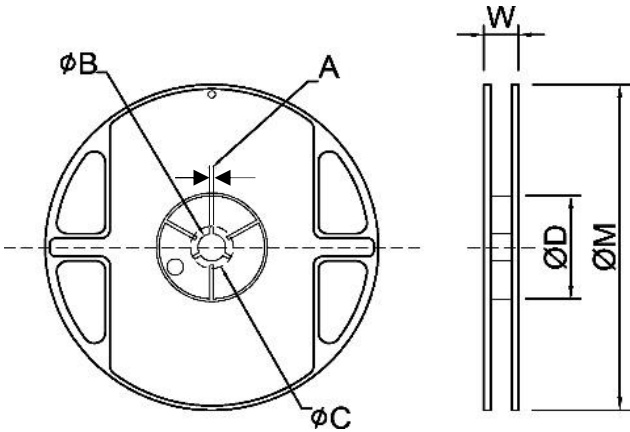
Plating Thickness

Ni: ≥ 2μm

Sn (Tin): ≥ 3μm

Packaging Information

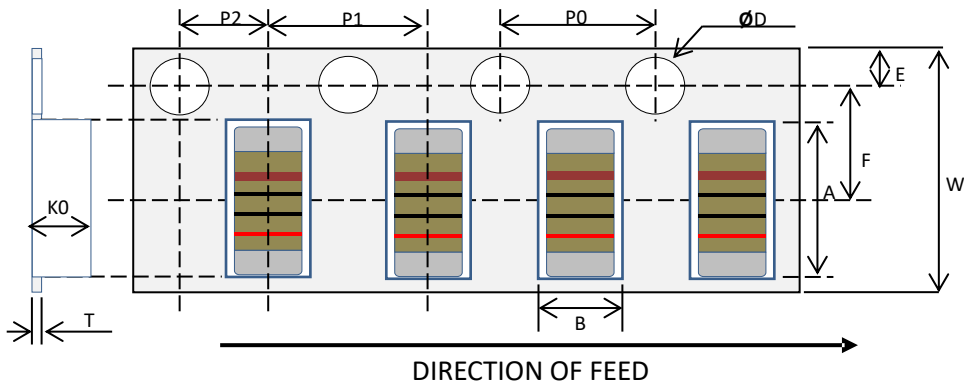
Reel Dimensions



Unit: mm

Type	Size		A	ØB	ØC	ØD	W	ØM
0204	7"	3K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
0207	7"	2K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0

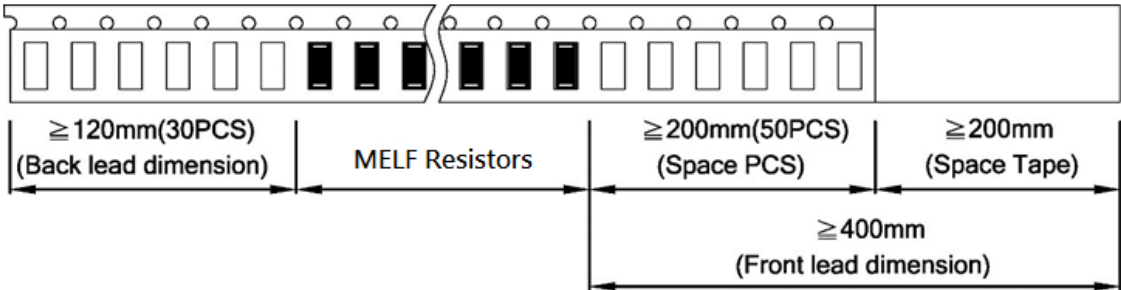
■ Embossed Dimensions



Unit: mm

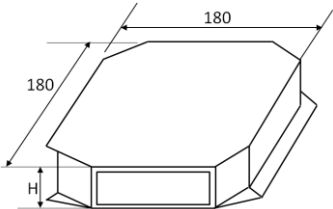
Type	A	B	W	E	F	P0	P1	P2	ØD	K0	T
TRM0204	3.65±0.10	1.50±0.10	8.0±0.2	1.75±0.10	3.50±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50 ^{+0.10} ₀	1.50±0.10	0.22±0.05
TRM0207	6.15±0.10	2.40±0.10	12.0±0.2	1.75±0.10	5.50±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50 ^{+0.10} ₀	2.35±0.10	0.25±0.05

■ Front & Back Lead Dimensions

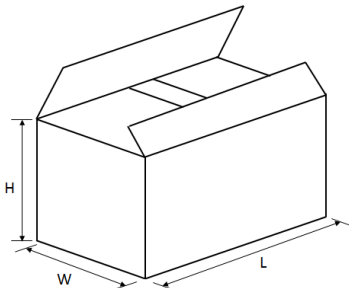


■ Package

Inner Box Size	
Reel	Size H(mm)
1	13
2	24
3	36
5	60
10	113



External Box Size			
Contain (Kpcs)	Length (mm)	Width (mm)	Height (mm)
25K	180	180	60
50K	180	180	110
150K	430	200	200
300K	400	400	200



■ Storage Data :

Storage time at the environment temp: 25±5°C& humidity: 60±20% is valid for two years.