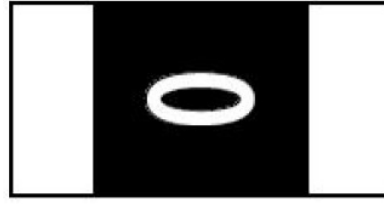
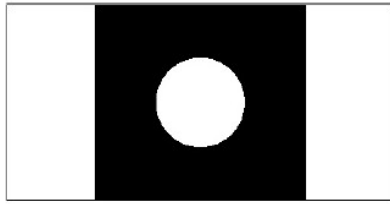


Zero milli-ohm (Jumper) Metal alloy Chip Resistor



(Application)

- DC-DC Converter , Battery Pack, Charge, Adaptor
- Portable Instruments (PDA and Cell Phone)
- Voltage Regulation Module (VRM)
- Computer
- Power Management Applications
- Switching Power Supply

(Features)

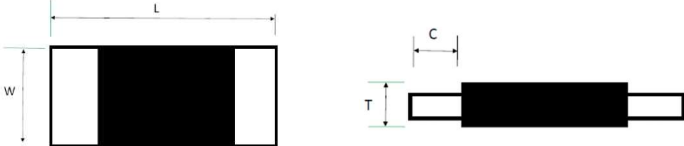
- Good performance for Heat Dissipation
- For High Power Dissipation
- Low Resistance and High Accuracy Resistor for Current Detection
- Pb-free to Meet RoHS Requirements

(Parts Number Explanation) :

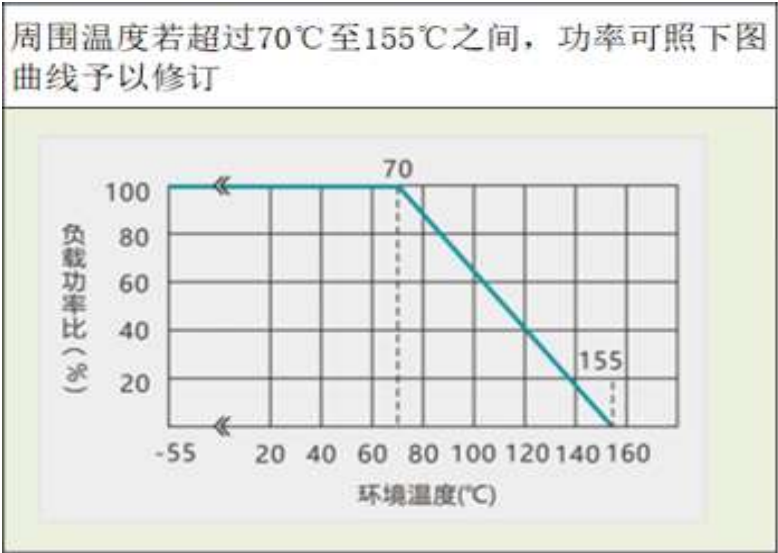
Example: FRM0805FR000TM

<u>F</u>	<u>R</u>	<u>M</u>	<u>25</u>	<u>2W</u>	<u>F</u>	<u>R000</u>	<u>I</u>	<u>M</u>	
FOJAN	R:Resistor P:High Power	M:Metal F:FOIL	06:0603 08:0805 12:1206 25:2512	04:1/4W 05: 1/2W 1W:1W 2W:2W 3W:3W	J:±5%	R000=Below 0.2m Ω	T: 7 inch reel Q:10 inch reel R:13 inch reel B:Bulk	M: MnCu N: NiCu C: Cu	Blank: None
Company code	Type code	Functional code	Size code	Power code	Tolerance code	Resistance code	Packaging code	Material code	Special code

■(Dimension)

尺寸 dimension					(unit) :
	mm				
型别 (Type)	L	W	C	T	
0603-1/4W	1.60±0.10	0.80±0.10	0.30±0.15	0.35±0.15	
0805-1/2W	2.03±0.20	1.27±0.20	0.40±0.15	0.35±0.15	
1206-1/2W 1206-1W	3.20±0.20	1.60±0.20	0.70±0.30	0.50±0.20	
2512-2W	6.35±0.20	3.05±0.20	1.40±0.20	0.60±0.20	
2512-3W	6.35±0.20	3.05±0.20	1.40±0.25	0.60±0.20	

■ (Derating Curve)



▪ (Electrical characteristics)

Type	(Power Rating at 70℃)	Max Loading Current	Resistance (m Ω)
0603	1/4W	28.9A	<0.30
0805	1/2W	50.0A	<0.20
1206	1/2W	50.0A	<0.20
1206	1W	70.7A	<0.20
2512	2W	100.0A	<0.20
2512	3W	122.5A	<0.20

▪ (Performance Specifications)

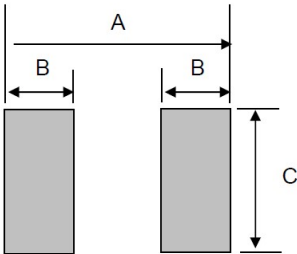
Item	Test Methods	Test Conditions	Specification															
Short-time overload	JIS C 5201 4.13	Applied Overload condition refer to below, for 5 second. Measure the variation of resistance.	0603: ≤0.3m Ω Others: ≤0.2m Ω No evidence of mechanical damage															
		<table><tr><td>Type</td><td>Power (W)</td><td># of rated power</td></tr><tr><td>0603</td><td>1/4</td><td rowspan="6">4 times</td></tr><tr><td>0805</td><td>1/2</td></tr><tr><td rowspan="2">1206</td><td>1/2</td></tr><tr><td>1.0</td></tr><tr><td>2512</td><td>2.0</td></tr><tr><td>2512</td><td>3.0</td></tr></table>	Type	Power (W)	# of rated power	0603	1/4	4 times	0805	1/2	1206	1/2	1.0	2512	2.0	2512	3.0	
		Type	Power (W)	# of rated power														
		0603	1/4	4 times														
		0805	1/2															
		1206	1/2															
			1.0															
		2512	2.0															
2512	3.0																	

Item	Test Methods	Test Conditions	Specification
Solderability	JIS C 5201 4.17	Dip the terminal in a flux and then dip into a soldering bath at $245\pm5^{\circ}\text{C}$ for $3\pm0.5\text{sec}$.	(> 95% coverage)
Resist to soldering heat	JIS C 5201 4.18	Dip the terminal in a flux and then dip into a soldering bath at $260\pm5^{\circ}\text{C}$ for $10\pm0.5\text{sec}$. Measure the variation of resistance.	0603: $\leq 0.3\text{m}\Omega$ Others: $\leq 0.2\text{m}\Omega$ No evidence of mechanical damage
Insulation resistance	JIS C 5201 4.6	Applied the dielectric withstanding voltage on the center of body for $60\pm5\text{seconds}$. Then measure insulation resistance.	$\geq 10^9\Omega$
Dielectric withstanding voltage	JIS C 5201 4.7	Applied the dielectric withstanding voltage on the center of body for $60\pm5\text{seconds}$.	No evidence of flashover, mechanical damage arcing or insulation breakdown
Rapid temperature changes	JIS C 5201 4.19	Put specimen in a chamber which temperature can be T1: $-55\pm3^{\circ}\text{C}$; T2: $155\pm3^{\circ}\text{C}/125\pm3^{\circ}\text{C}$, 30min, repeated 1000 cycles. Measure the variation of resistance.	0603: $\leq 0.3\text{m}\Omega$ Others: $\leq 0.2\text{m}\Omega$ No evidence of mechanical damage

Item	Test Methods	Test Conditions	Specification
Terminal bending	JIS C 5201 4.33	Specimen shall be mounted on test board, then bend the board and maintained for 20±1s. the distance of bending is 5+0.2/0 mm for resistors which size no larger than 1206 or 2+0.2/0 mm which size larger than 1206. Measure the variation of resistance.	0603: ≤0.3mΩ Others: ≤0.2mΩ No evidence of mechanical damage
Load life	JIS C 5201 4.25.1	Put the specimen in a chamber at 70±2℃ temperature, ON TIME:1.5H, OFF TIME:0.5H, and applied rated voltage for 1000 ⁺²⁴ / ₋₀ H. Measure the variation of resistance.	0603: ≤0.3mΩ Others: ≤0.2mΩ No evidence of mechanical damage
Humidity	JIS C 5201 4.24	Put the specimen in a chamber at 40±2℃ temperature and 90~95% relative humidity, then applied rated voltage for1.5H and rested for 0.5H repeatedly till total test time is 1000 ⁺⁴⁸ / ₋₀ H. Measure the variation of resistance.	0603: ≤0.3mΩ Others: ≤0.2mΩ No evidence of mechanical damage

▪ (Recommended pad dimensions)

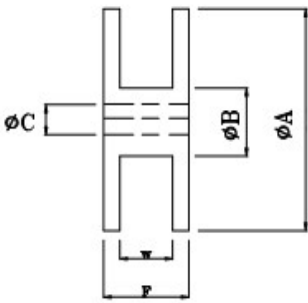
型别 (Type)	A (mm)	B (mm)	C (mm)
0603	2.60	0.90	0.90
0805	3.40	1.30	1.30
1206	4.00	1.50	1.80
2512	7.60	2.60	3.80



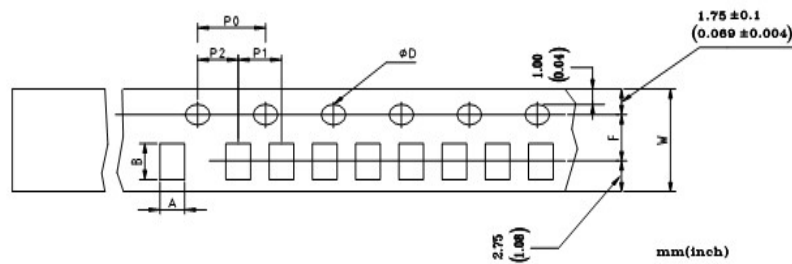
▪ (Tapping Specification)

(Reel dimension)

Type	Size		Unit	A	B	C	F	W
2512	7"	4K/Reel	mm	178 $\pm$ 2.0	80.0 $\pm$ 1.0	13.5 $\pm$ 0.5	15.4 $\pm$ 1.0	13.8 $\pm$ 0.5
0603 0805 1206	7"	5K/Reel	mm	178 $\pm$ 2.0	60.0 $\pm$ 1.0	13.5 $\pm$ 0.5	15.4 $\pm$ 1.0	9.00 $\pm$ 0.5



(packing dimension)

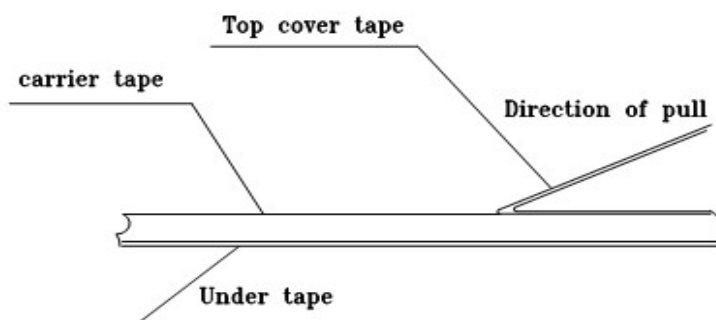


Unit: mm

Dimensions	A	B	D	F	P0	P1	P2	W
0603	1.05±0.05	1.75±0.05	1.50± $\begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	8.0±0.20
0805	1.55±0.10	2.30±0.10	1.50± $\begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	8.0±0.20
1206	1.90±0.20	3.50±0.20	1.50± $\begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	8.0±0.20
2512	3.40±0.10	6.70±0.20	1.50± $\begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	5.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	12.0±0.20

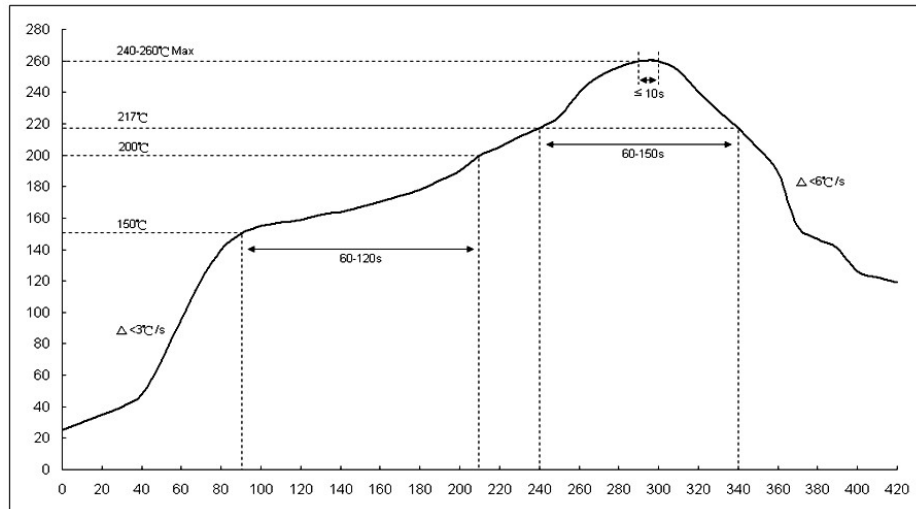
■ (Peel force of top cover tape)

The top cover tape is pulled at a speed of 200 mm/min with the angle between the tape during peel and the direction of unreeling maintained at 165 to 180 degree as following picture. The peel force of paper carrier tape shall be 0.1N to 0.7N(10 to 70 g), the peel force of plastic carrier tape shall be 0.3N to 1N (30 to 100 g)

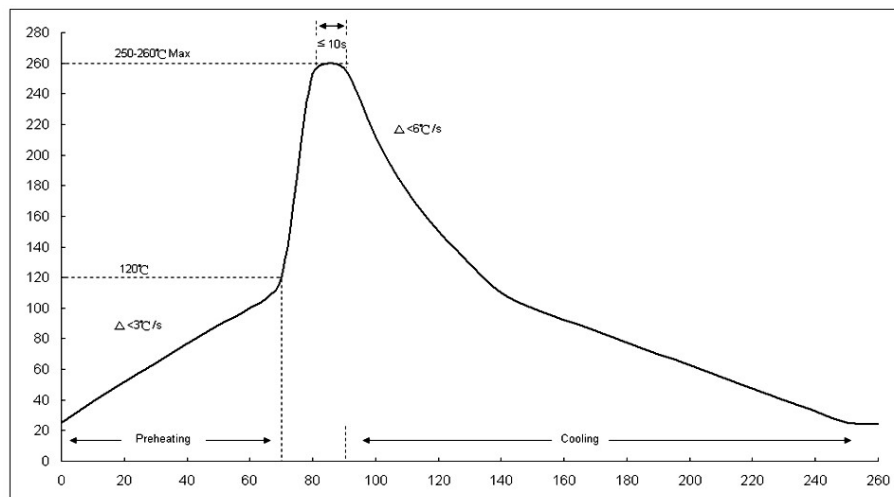


▪ (soldering)

- (Recommend reflow soldering profile)



(Recommend wave soldering profile)



(hand soldering temperature)

The iron temperature is $350 \pm 10^{\circ}\text{C}$, hand soldering time less than 3S. Avoid solder iron tip direct touch the components body

■ (Chip Resistor Instructions for use)

- (Application of the products in a special environment can deteriorate product

performance) :

1. High temperature
2. Near the sea ,or corrosive gas, such as Cl_2 , H_2S , NH_3 , SO_2 , and NO_2 , etc;
3. Unverified liquids, such as water, oil, chemical or organic solvent;
4. Unverified resin or paint to cover products;
5. Products should be washed with soluble cleaner even if non cleaning flux.

- (STORAGE / CARRY CONDITIONS)

6. $25 \pm 5^\circ\text{C}$ Temperature: $25 \pm 5^\circ\text{C}$
7. 30~70%RH Humidity: 30~70%RH
Storage life: 2years FIFO
9. Please hold
box correct orientation when storing and carrying. It is strictly prohibited to fall on the
box. otherwise the product electrode or body may be damaged.