

1 Scope

For RoHS Compliance

V	P	O	R	T	0	6	0	3	2	2	0	M	V	1	2	
1	2				3				4			5	6			7

1. Over Voltage Protection
2. For I/O Port
3. Size
4. Capacitance , The first two digits are the significant figures of the capacitance value. The third one denotes the order of 10 or number of zeros following
5. Capacitance Tolerance , $K=\pm 10\%$ 、 $M=\pm 20\%$.
6. Working Voltage
7. Suffix for Special Requirement

The diagram illustrates the structure and electrical characteristics of a Lead Free Over Coating. The top part shows a circuit symbol for a diode with a capacitor in parallel. The bottom part shows a 3D cross-section of the device. The cross-section labels include: Lead Free Over Coating, Metal Oxide Layer, Inner Electrode, 100% Ag Layer, 100% Ni Barrier Layer, and 100% Sn Plated Layer. Dimensions L , W , T , and C are indicated.

Lead-free for the termination and Over-Coating!

Unit: mm	0603
L	1.60±0.15
W	0.80±0.1
t	0.80±0.1
c	0.30±0.20

4 Part characteristics:

4.1 General Characteristics (25±5°C)

V-PORT-0603 –xxxx-V12

Item	A	B	C	D	E	F	G	H	I	J
◆ 220	12V	<15 μ A	>1000	±30KV	22	41	42	K :±10% M :±20%	4.0% max.	Δ C: +15%/-15%
◆ 330					33	38	40			
◆ 470					47	36	38			
151					150	30	35			
181					180	29	31			
◆ 331					330	28	30			

Item	Description
A	Max. Continuous operating voltage (V_{DC})
B	Leakage current (I_L). Measured at rated continuous operating voltage.
C	In-system ESD withstands pulses. Per IEC61000-4-2, 15KV, contact discharge method.
D	In-system ESD withstands voltage. Design and method guarantee this property.
E	Capacitance (C_p) . The test condition is 1KHz($\geq 100pF$)/ 1MHz(<100pF), 1Vrms±10% and the environment temperature is 25±2°C.
F	Typical Clamping voltage (V_{ec}) Per IEC61000-4-2, 8KV, contact discharge method.
G	Max.Clamping voltage (V_c). V_c – Maximum peak voltage across the varistor measured at 8/20us waveform and 1A pulse current
H	Capacitance Tolerance. Capacitance tolerance , K=±10% 、M=±20%.
I	Dissipation Factor
J	Temperature Characteristic. -30°C ~ +85°C
◆	Mass Production with MOQ Limit

5 General electrical specifications

5.1 General technical data

Operating temperature	-40 ~ +85°C
Storage temperature(on board)	-40~ +85°C
Response time	<1 ns
Solderability (CONTROL LEVEL : A)	245±5°C, 3±1sec
Solder leach resistance (CONTROL LEVEL : A)	260±5°C, 10±1sec

5.2 Environmental Specifications

Characteristics	Specifications	Test condition
Moisture resistance	1. $I_L \leq 15 \mu A$ at working voltage 2. $\Delta C_p / C_p \leq \pm 10\%$ 3. Solder Wetting area $\geq 95\%$	90%RH, 40°C, maximum operating voltage, 1000 hours
Thermal shock		-40°C to 85°C, 30 min. cycle, 5 cycles
Full load voltage		Maximum operating voltage, 85°C, 1000 hours
Solder leach resistance		260°C, 10s

5.3 Storage Condition

Storage Temperature : 5 to 30°C

Relative Humidity: to 60 %

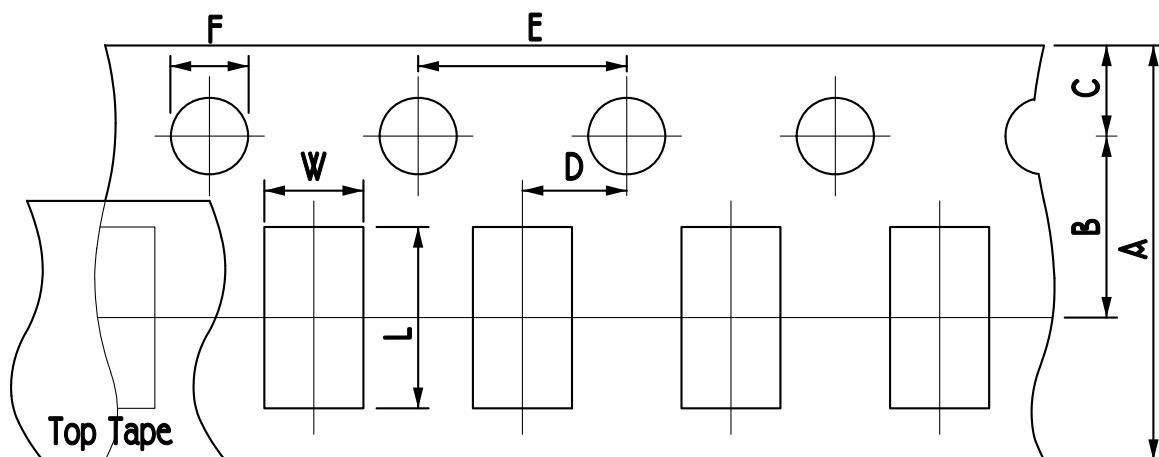
Storage Time: 12 months max

6 Taping Package and Label Marking

6.1 Packaging method

Products shall be heat-sealed in the chip pocket, spacing pitch 4-mm of plastic carrier tape with cover tape, and the carrier tape shall be reeled to the reel.

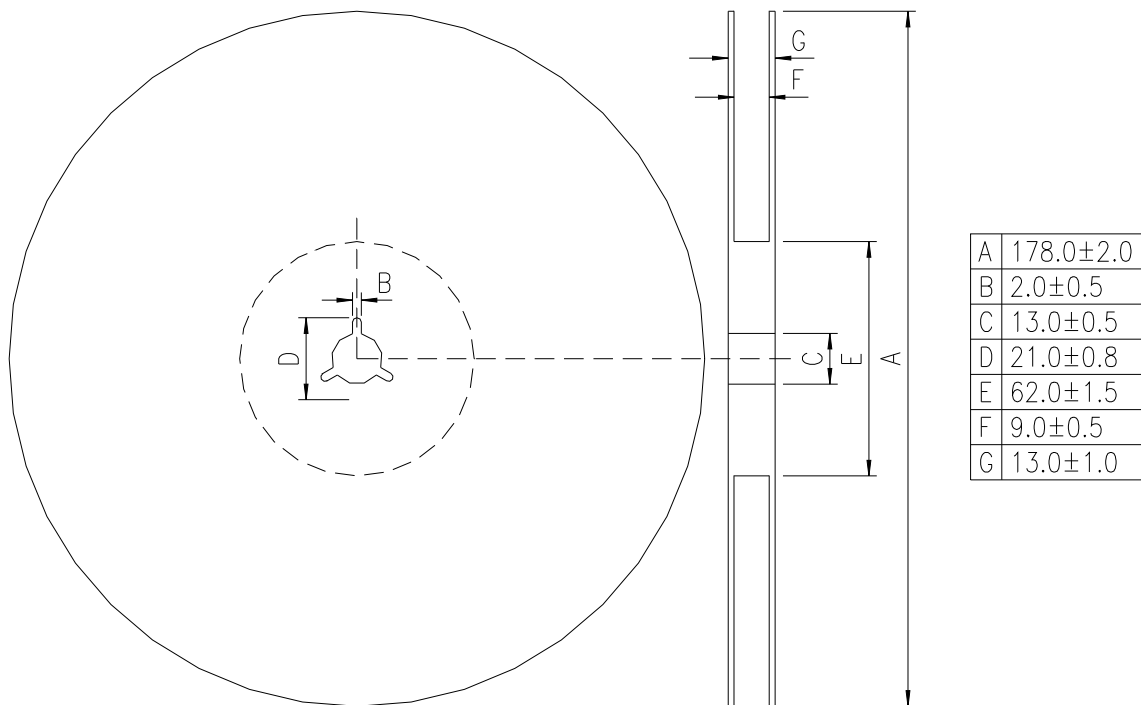
6.2 Carrier tape dimensions



UNIT: mm

Type	A	B	C	D	E	F	L	W
0603	8.00± 0.30	3.50± 0.05	1.75± 0.10	2.00± 0.05	4.00± 0.10	1.50± 0.10	1.90± 0.15	1.05± 0.15

6.3 Taping reel dimensions



6.4 Taping specifications

There shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the head of taping.

6.5 Label Marking

The label specified as follows shall be put on the side of reel.

- (1) Part No.
 - (2) Quantity
 - (3) Lot No.
- Part No. And Quantity shall be marked on outer packaging.

6.6 Quantity of products in the taping package

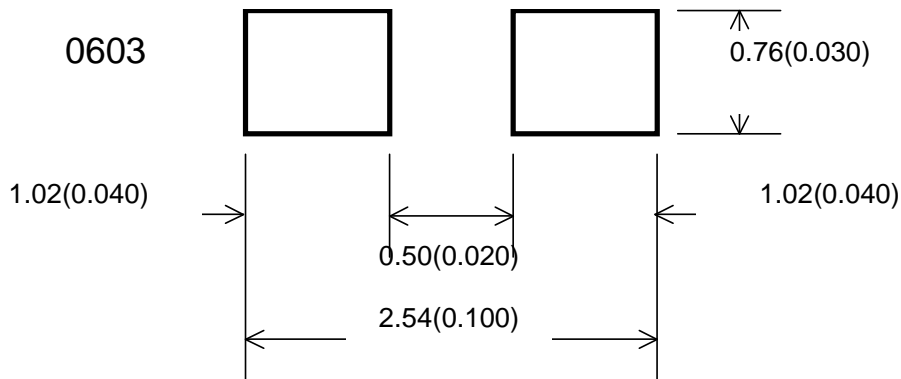
- (1) Standard quantity : 4000pcs/Reel for V-PORT-0603-XXXX-XXX
- (2) Shipping quantity is a multiple of standard quantity.

7 Precautions for Handling

7.1 Solder cream in reflow soldering

Refer to the recommendable land pattern as printing mask pattern for solder cream.

- (1) Print solder in a thickness of 150 to 200 μm .
- (2) Dimensions: millimeters (inches)



7.2 Precaution for handling of substrate

Do not exceed to bend the board after soldering this product extremely.

(Reference examples)

- Mounting place must be as far as possible from the position, which is close to the break line of board, or on the line of large holes of board.
- Do not bend extremely the board, in mounting another components.

If necessary, use back-up pin (support pin) to prevent from bending extremely.

- Do not break the board by hand. We recommend using the machine or the jig to break it.

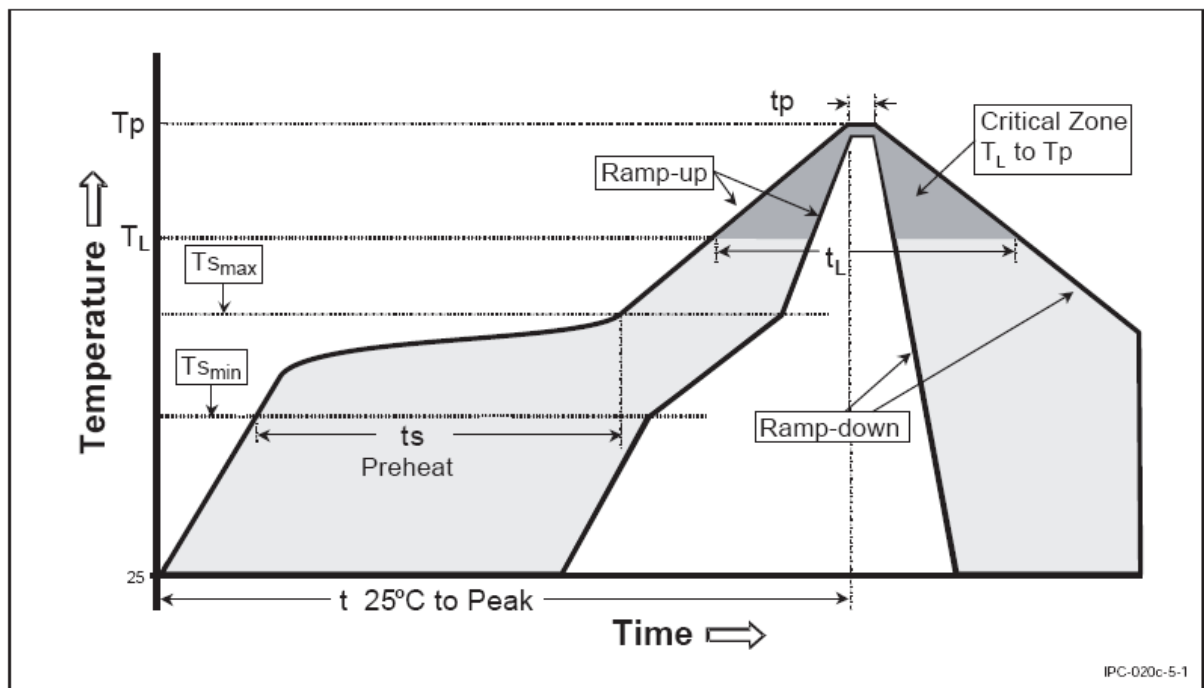
7.3 Precaution for soldering

Note that rapid heating, rapid cooling or local heating will easily damage this product.

Do not give heat shock over 100°C in the process of soldering. We recommend taking preheating and gradual cooling.

7.4 Recommendable reflow soldering

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T _{smax} to T _p)	3° C/second max.
Preheat – Temperature Min (T _{smin}) – Temperature Max (T _{smax}) – Time (t _{smin} to t _{smax})	150 °C 200 °C 60-180 seconds
Time maintained above: – Temperature (T _L) – Time (t _L)	217 °C 60-150 seconds
Peak/Classification Temperature (T _p)	260 °C
Time within 5 °C of actual Peak Temperature (t _p)	20-40 seconds
Ramp-Down Rate	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.



*reference: J-STD-020C

7.5 Caution of flow soldering

We can not recommend the flow soldering to this product, because we afraid that solder bridge happens owing to narrow 0.8mm pitch of this product.

7.6 Soldering gun procedure

Note the follows, in case of using solder gun for replacement.

- (1) The tip temperature must be less than 350°C for the period within 5 ± 0.5 seconds by using soldering gun under 30 W.
- (2) The soldering gun tip shall not touch this product directly.

7.7 Soldering volume

Note that excess of soldering volume will easily get crack the body of this product.