

ESD0201D5V0C018

Scope

ESD0201D5V0C018 is a TVS diode designed to protect one power/control line or one low speed signal line from overvoltage hazard of Electrostatic Discharge (ESD).

GENERAL DESCRIPTION

ESD0201D5V0C018 is a silicon base in ultra small Surface-Mounted Device (SMD) special packages. It is designed to protect sensitive electronics from damage or latch up due to Electrostatic Discharge (ESD), lightning, and other voltage induced transient events.

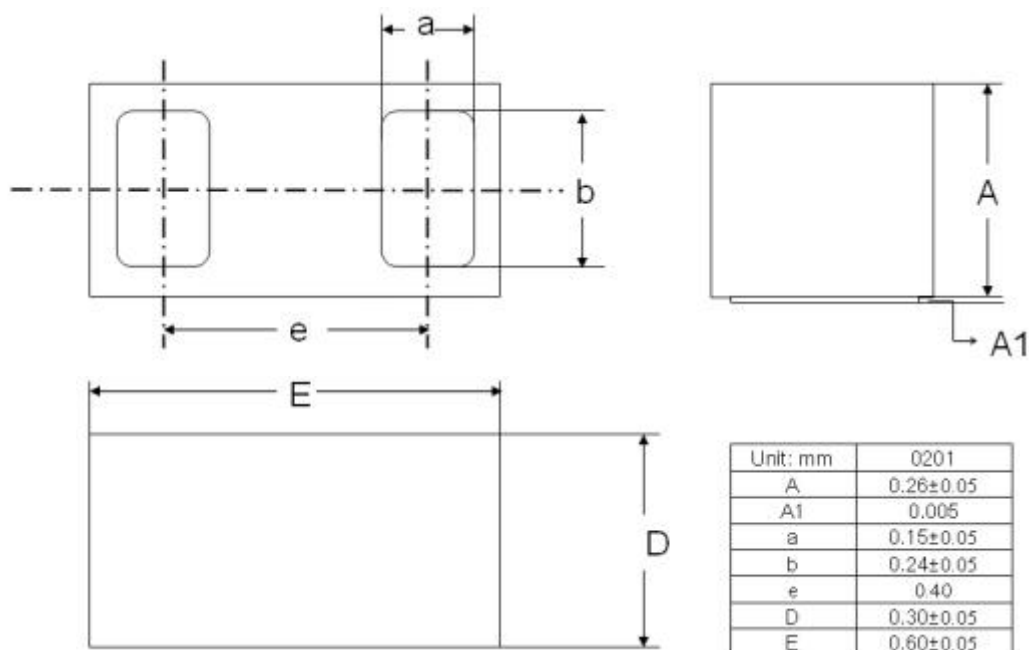
FEATURES

- Bi-directional ESD Protection of one line.
- Max ESD protection 30 KV
- IEC 61000-4-2, level 4 (ESD)
- Low clamping voltage: $V_{CL} = 8.5\text{ V}$ (1 A, $t_p = 8/20\mu\text{s}$)
- Ultra small SMD special packages

APPLICATIONS

- Cellular handsets and accessories
- Audio and video equipment
- Communication systems
- Portable electronics
- Computers and peripherals

Circuit Diagram & Dimension



Specifications

ABSOLUTE MAXIMUM RATINGS

PARAMETER	PARAMETER	RATING	UNITS
Operating Supply Voltage	VDC	5	V
Operating Temperature range	To	-40 ~+85	°C
Storage Temperature range	TS	-55 ~ +125	°C
Lead Soldering Temperature	TSOL	260 (10 sec.)	°C

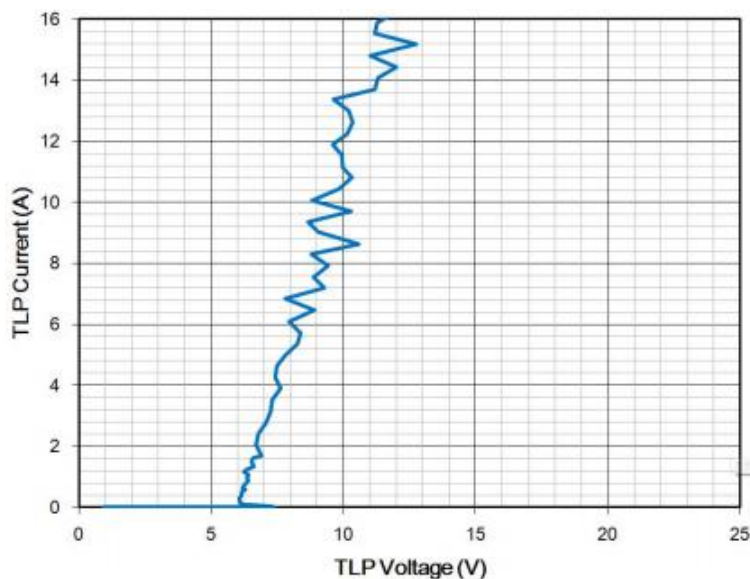
ESD standards compliance

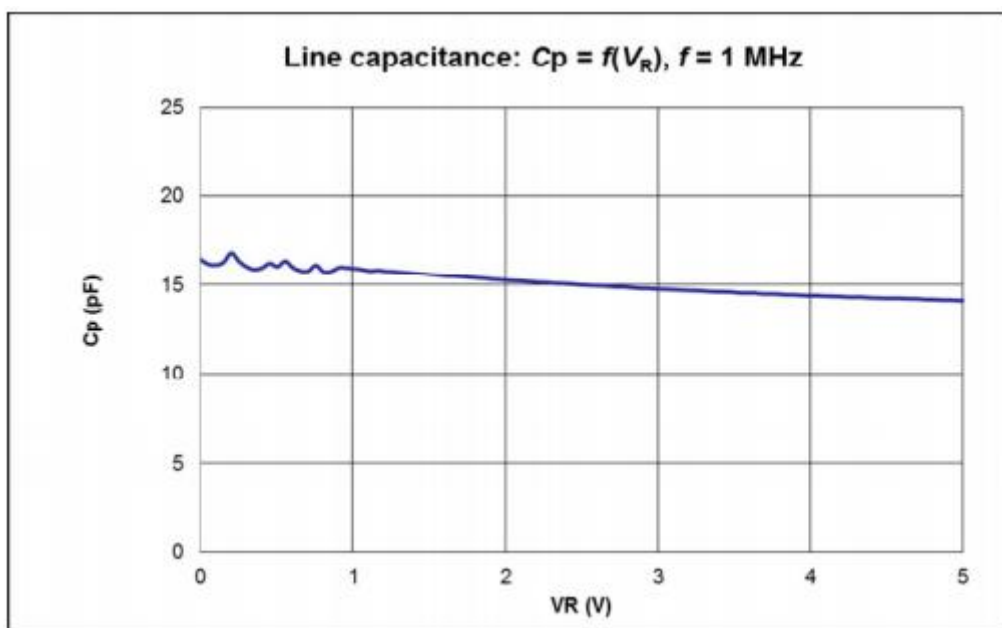
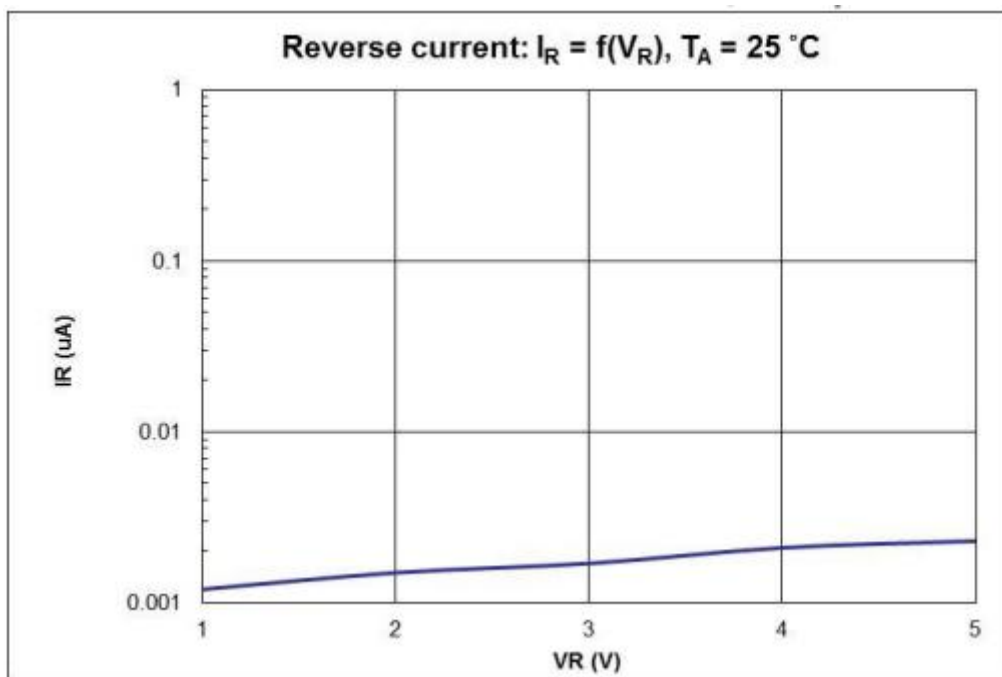
PARAMETER	PARAMETER	RATING			UNITS
		MIN	TYP	MAX	
ESD per IEC 61000-4-2 (Contact)	VESD		±20	±30	KV
ESD per IEC 61000-4-2 (Air)	VESD		±20		KV
Peak Pulse Current	Ipp		10		A

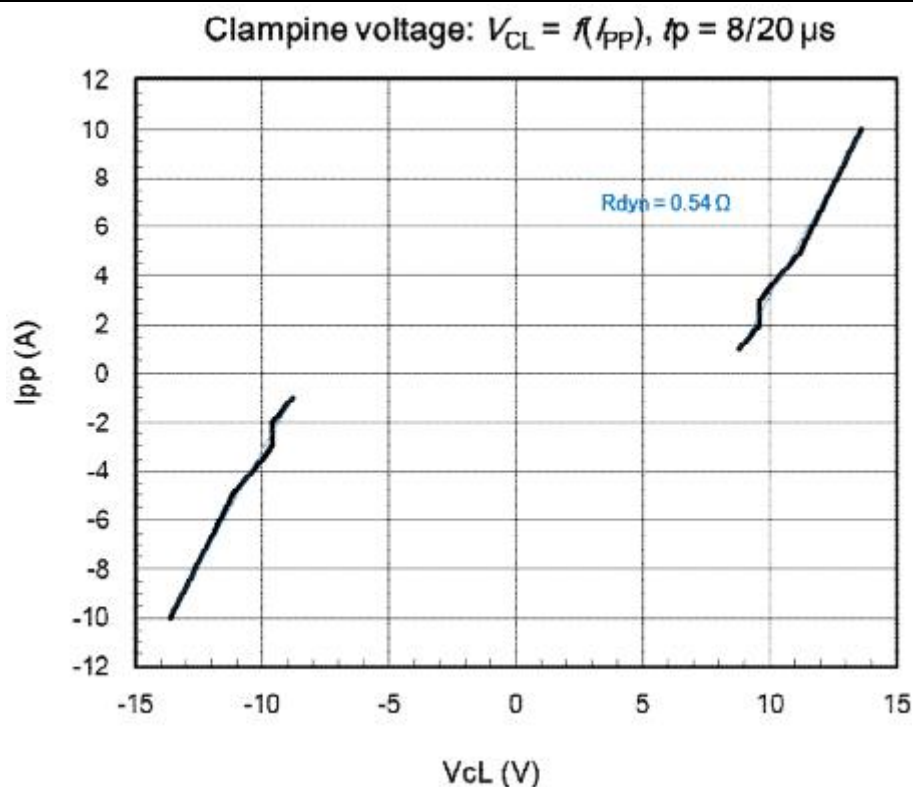
ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MINI	TYP	MAX	UNITS
Reverse Stand-Off Voltage	V_{RWM}	$T=25^{\circ}C$	-5		+5	V
Reverse Leakage Current	I_{Leak}	$V_{RWM} = 5V, T=25^{\circ}C$		100	1000	nA
Reverse Breakdown Voltage	V_{BV}	$I_{BV} = 1mA, T=25^{\circ}C$	6	7		V
Clamping Voltage	V_{CL}	$P_P=1A, t_p=8/20\mu s, T=25^{\circ}C$		8.5		V
Clamping Voltage	V_{CL}	$P_P=3A, t_p=8/20\mu s, T=25^{\circ}C$		9.6		V
Clamping Voltage	V_{TLP_CL}	$I_{TLP} = 5 A$		8		V
Clamping Voltage	V_{TLP_CL}	$I_{TLP} = 16 A$		11		V
Diode Capacitance	C_{IN}	$V_R = 0V, f = 1MHz, T=25^{\circ}C$		18		pF
Dynamic resistance	R_{DYN}	between $I_{TLP1} = 2A$ and $I_{TLP2} = 15A$		0.2		Ω

TYPICAL CHARACTERISTICS





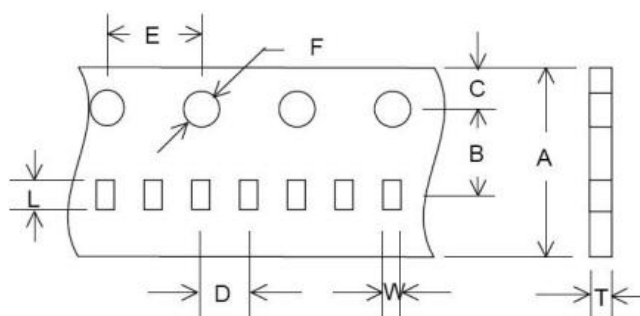


Taping Package and Label Marking

Packaging method

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

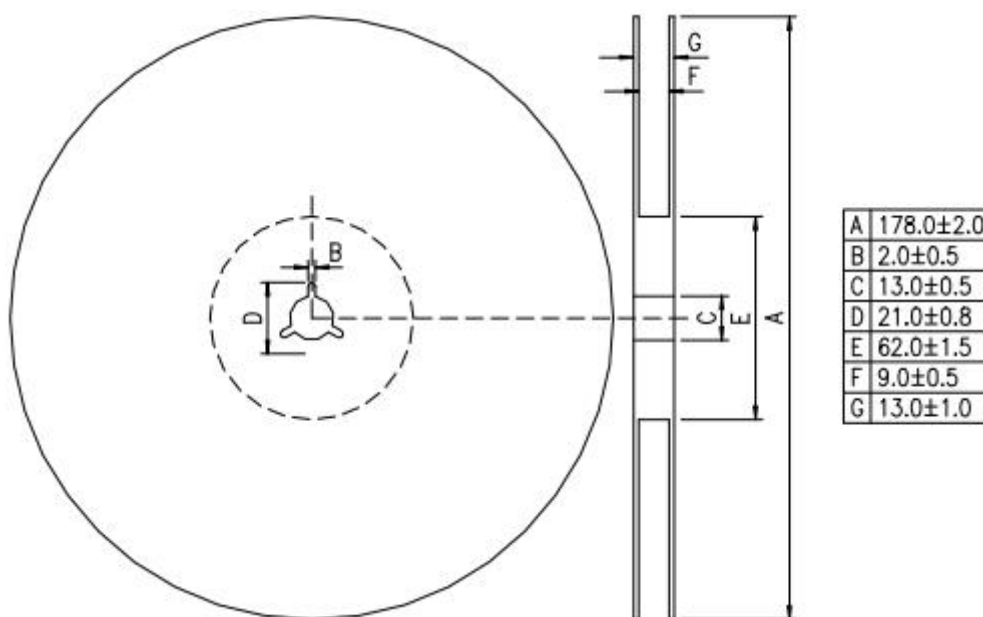
Carrier tape dimensions



	0201
A	8.00±0.30
B	3.50±0.05
C	1.75±0.10
D	2.00±0.05
E	4.00±0.10
F	1.50±0.10
L	0.69±0.03
W	0.39±0.03
T	0.42±0.03

Unit: mm

Taping reel dimensions



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.

Quantity of products in the taping package

- (1) Standard quantity: 15000pcs/Reel for ESD0201 Series
- (2) Shipping quantity is a multiple of standard quantity.

Storage Condition with package

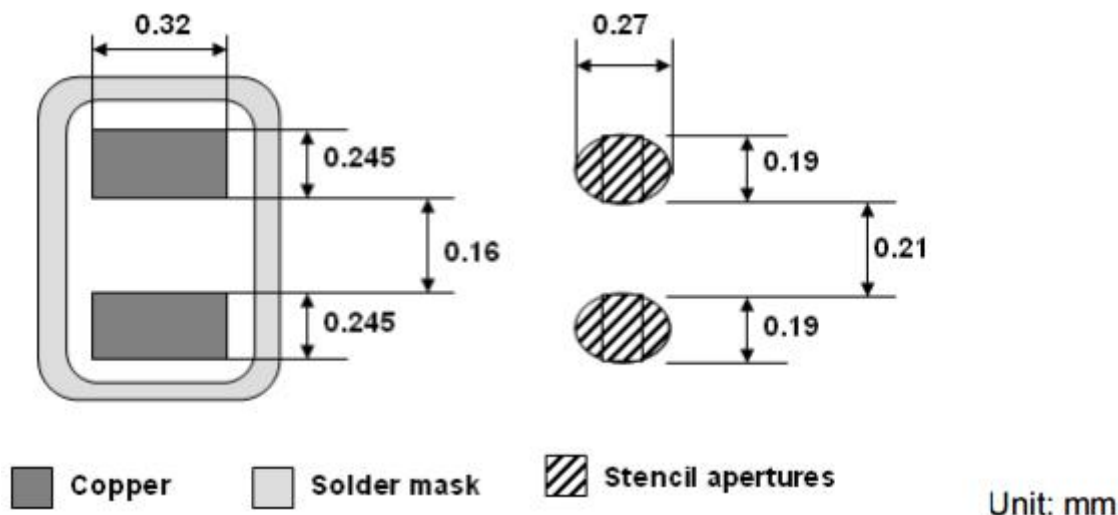
Storage Time: 12 months max
Storage Temperature : 5 to 30°C
Relative Humidity: to 60 %

Precautions for Handling

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 80to 100 μm.
- (2) Dimensions: millimeters (inches)



Notes: This LAND LAYOUT is for reference purposes only. Please consult your manufacturing partners to ensure your company's PCB design guidelines are met.

Precaution for handling of substrate

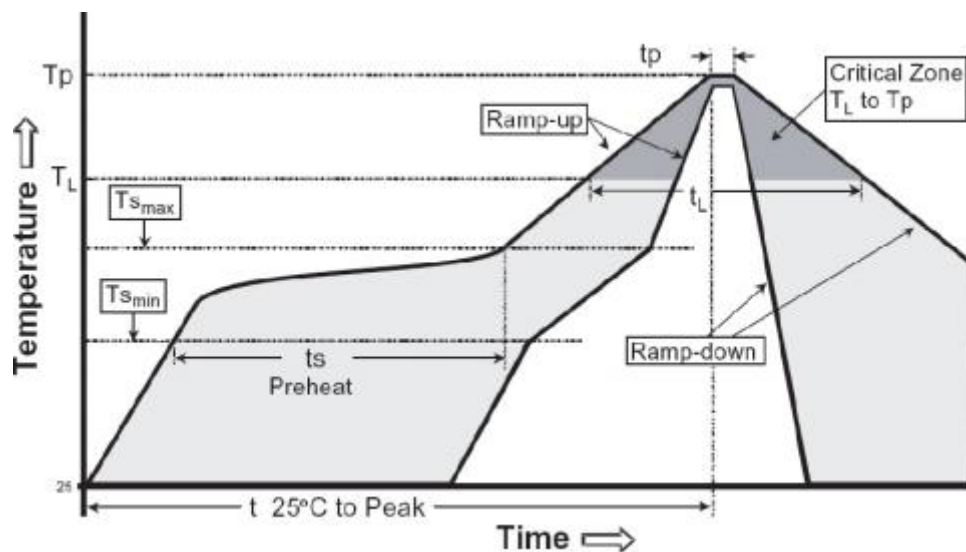
Do not exceed to bend the board after soldering this product extremely. (Reference examples)

- 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.

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.

Recommendable reflow soldering





Reference IPC-020c-5-1

Profile Feature	Pb free Assembly
Average Ramp Rate (Ts max to Tp)	3 °C/second max
Preheat - Temperature Min (T _{smin}) - Temperature Min (T _{smax}) - Time(t _{smin} to t _{smin})	150°C 200°C 60-180 seconds
Time maintained above: - Temperature (T _L) - Time (t _L)	217°C 60-150 seconds
Peak Temperature (T _p)	260°C +0/ -5 °C
Time within 5 °C of actual °C Peak Temperature (T _p)	6°C /second max
Time 25 °C to Peak Temperature °C	8 minutes max

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 seconds by using soldering gun less than 30 W.
- (2) The soldering gun tip shall not touch this product directly.

Soldering volume

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