

# Surface Mount Polymer ESD Suppressors

## ESD0201E002N05

### Description

This specification is applied to electrostatic discharge (ESD) protection. It is designed to protect the high-speed data lines against ESD transients. It has very low capacitance and fast turn on times makes it ideal for data and transmission lines with high data rates. According to the special property of device, we recommend not to use on such application as DC/AC power line.

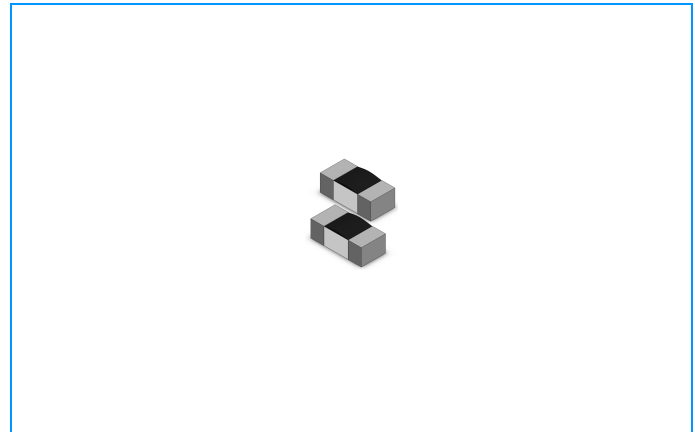
### Features

- u Protection against ESD voltages and currents (IEC 61000-4-2 Level 4)
- u Extremely quick response time (<1 ns) present ideal ESD protection
- u Extremely low capacitance (0.2pF typical)
- u Extremely low leakage current
- u Bi-directional device
- u Surface mount device
- u Zero signal distortion

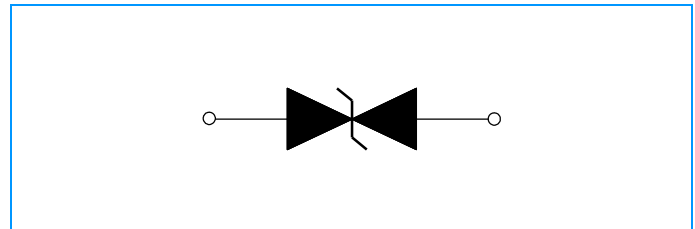
### Applications

ESD0201E002N05 is applied to high speed signal interface

- u Antenna circuit
- u USB2.0 / USB3.0
- u IEEE-1394
- u DVI
- u HDMI



### Equivalent Circuits



### Product Model

- u Digital Video Equipment
- u Mobil Phone
- u GPS Antenna
- u Bluetooth Communication Equipment

### Electrical Characteristics

	Symbol	Unit	Min	Typical	Max.
Rated Voltage	$V_{DC}$	V			5
Leakage current	$I_L$	$\mu A$		0.01	
Trigger Voltage	$V_T$	V		250	
Clamping Voltage	$V_C$	V		30	
Capacitance, @1MHz	$C_P$	pF		0.2	0.5
Response time		ns			1
ESD Voltage Capability, Contact Discharge Mode		KV		8	
ESD Voltage Capability, Air Discharge Mode		KV		15	
ESD Pulse Withstand		Pulses		1000	

$V_T$  - Measurement by using Transmission Line Pulse (TLP)

$V_C$  - Measurement by using Transmission Line Pulse (TLP)

$C_P$  - Device Capacitance measured with 1Vrms

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### Explanation of Part Number

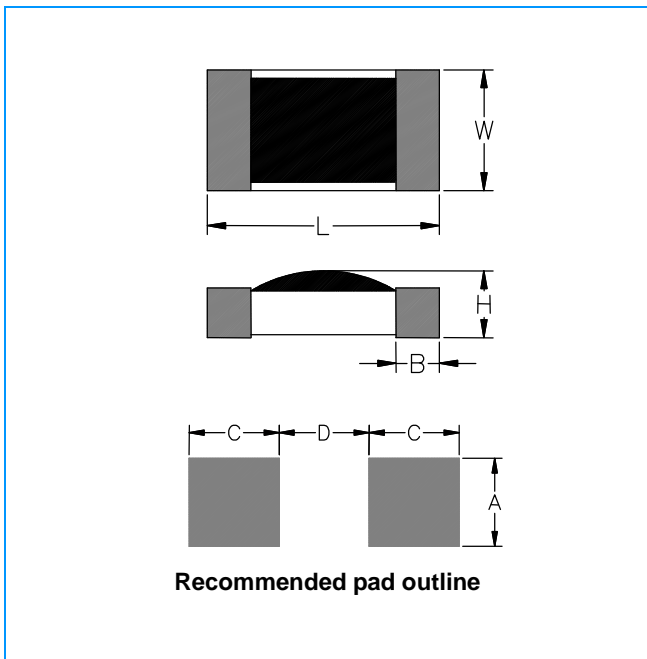
**ESD**   **0201**   **E**   **002**   **N**   **00**  
 (1)   (2)   (3)   (4)   (5)   (6)

- (1) Series Type: ESD Guard™ Series
- (2) Chip Size (EIA): 0201
- (3) Series Type: EMI / ESD Protection
- (4) Capacitance: Value - Exxx, E002=0.2pF
- (5) Capacitance Tolerance: N - ±30%, M - ±20%
- (6) Rated Voltage, VDC

### Construction & Dimensions Unit: mm

<b>Substrate</b>	Ceramic (Alumina)
<b>Encapsulate</b>	Polymer
<b>End termination</b>	Ag / Ni / Sn

Symbol	Spec.
<b>L</b>	0.63±0.05
<b>W</b>	0.30±0.03
<b>H</b>	0.23±0.05
<b>B</b>	0.165±0.05
<b>A</b>	0.35±0.05
<b>C</b>	0.35±0.05
<b>D</b>	0.35±0.05



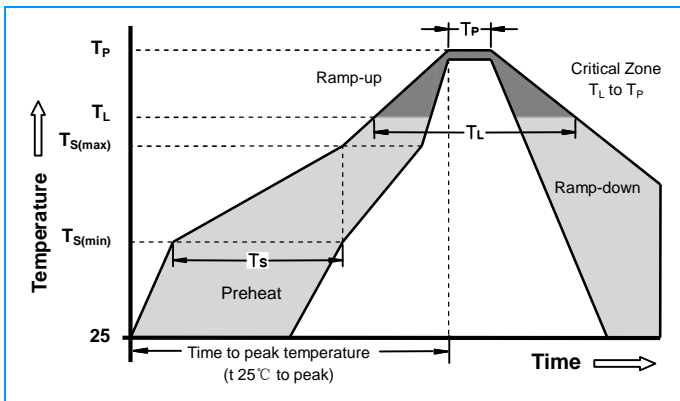
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### Temperature Specifications

Parameter		Value	Unit
Operating Temperature		-55 to +125	°C
Storage Temperature		-55 to +125	°C
Taping Package Storage Condition	Storage Temperature	5 to 40	°C
	Relative Humidity	<65	%RH
	Storage Time	12 Max	Month

### Soldering Parameters



### Precaution for soldering

Note that this product will be easily damaged by rapid heating, rapid cooling or local heating.  
Do not give heat shock over 100°C in the process of soldering.  
We recommend to take preheating and gradual cooling

### Soldering gun procedure

- Note the follows, in case of using solder gun for replacement.
- 1) The tip temperature must be less than 280 for the period within 3 seconds by using soldering gun under 30W
  - 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.

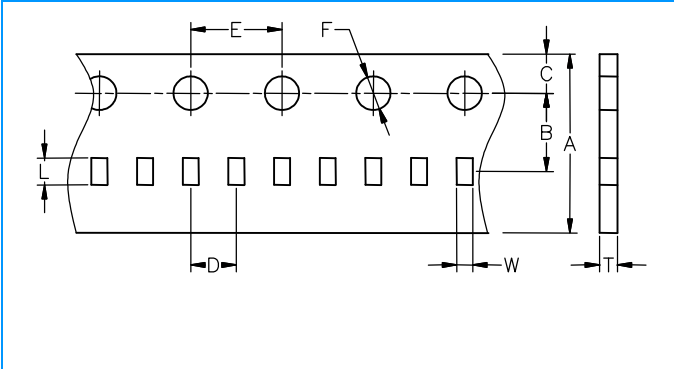
Reflow Condition		Pb free assembly
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max ( $T_{s(max)}$ )	+200°C
	-Time (min to max) ( $T_s$ )	60 -180 Seconds
Average ramp up rate ( Liquidus Temp $T_L$ ) to peak		3°C/Second Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/Second Max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	+217°C
	- Time (min to max) ( $T_L$ )	60 -150 Seconds
Peak Temperature ( $T_P$ )		260 +0/-5°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 ( $T_P$ )		8 minutes Max

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### Packaging Information

#### Carrier Tape Dimensions Unit: mm

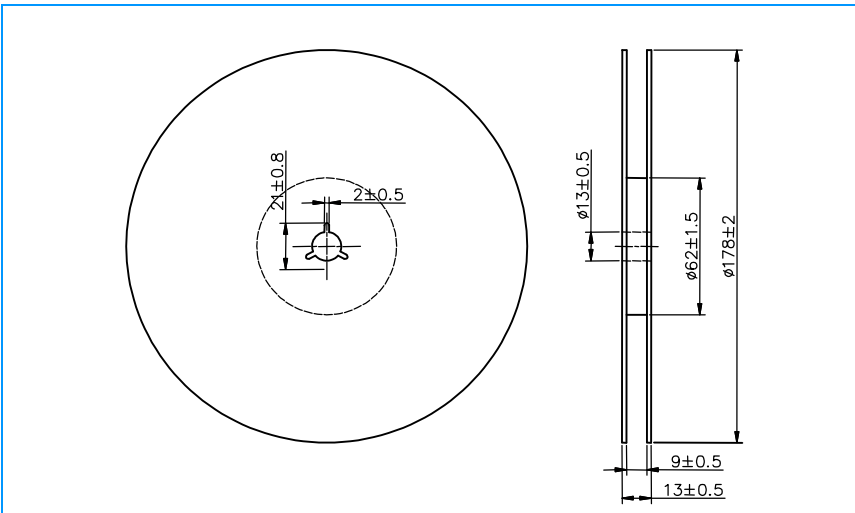


Symbol	Spec.
A	8.00±0.30
B	3.50±0.05
C	1.75±0.10
D	2.00±0.05
E	4.00±0.10
F	1.50±0.10
L	0.71±0.02
W	0.39±0.03
T	0.42±0.03

#### Packaging method

- Products shall be heat-sealed in the chip pocket, spacing pitch 2-mm of paper carrier tape with cover tape, and carrier tape shall be reeled to the reel.
- Tape material to be paper.
- Cover Tape adhesion to be 40±15 grams.

#### Taping Reel Dimensions Unit: mm



#### 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 heat of taping.

#### Quantity of products in the taping package

<b>Standard Quantity</b>	15,000PCS / Reel
Shipping quantity is a multiple of standard quantity	