

ESD4U5V0ASG

Transient Voltage Suppressor

Descriptions

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD. The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

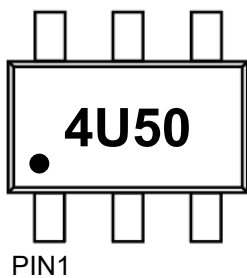
Features

- Uni-directional ESD Protection of four lines
- Low reverse stand-off voltage: 5V
- Low reverse clamping voltage
- Low leakage current
- Fast response time
- IEC 61000-4-2(ESD) : $\pm 15\text{KV}$ (Air Model), $\pm 10\text{KV}$ (Contact Model)

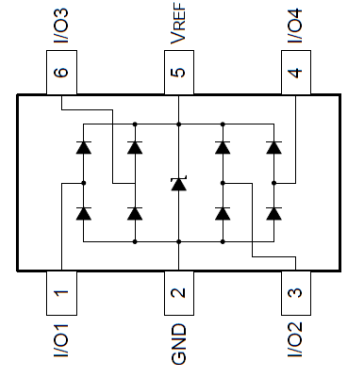
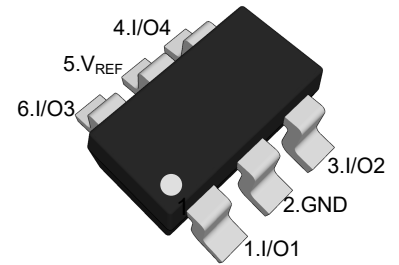
Applications

- Computers and peripherals
- Audio and video equipment
- High Definition Multi-Media Interface (HDMI)
- Cell phone

Marking Code



SOT-23-6



Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$)

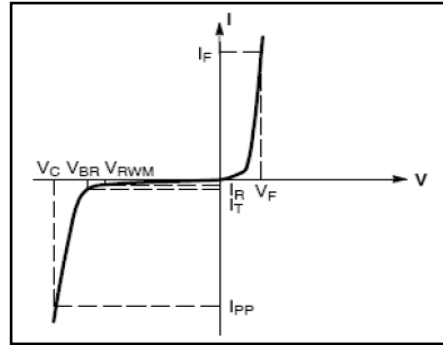
Parameter		Symbols	Value	Unit
IEC61000-4-2 ESD Voltage ^{Note1}	Air Model	V_{ESD}	± 15	KV
	Contact Model		± 10	
Peak Pulse Power Dissipation ^{Note2}		P_{PP}	100	W
Peak Pulse Current ^{Note2}		I_{PP}	5	A
Junction Temperature		T_J	125	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-55 to +150	$^{\circ}\text{C}$

Note: 1. Device stressed with ten non-repetitive ESD pulses.

2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

Electrical Parameter

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Standoff Voltage
V_F	Forward Voltage @ I_F
I_F	Forward Current



V-I characteristics for a uni-directional TVS

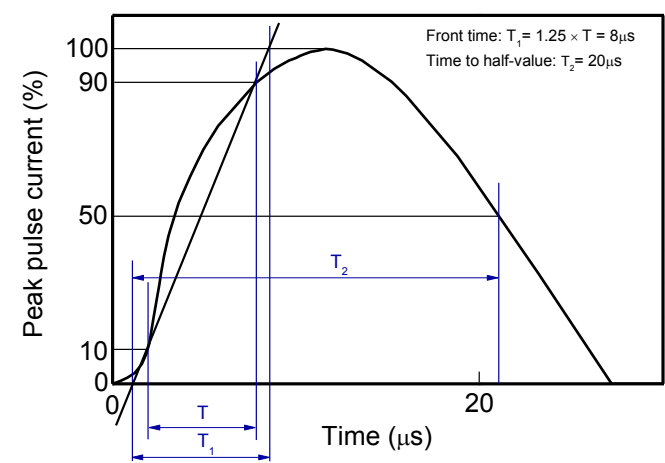
Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

Parameter	Symbols	Min.	Typ.	Max.	Unit
Reverse stand-off voltage ^{Note1}	V_{RWM}	--	--	5.0	V
Breakdown Voltage at $I_T = 1 \text{ mA}$ (I/O to GND)	V_{BR}	6.0	--	--	V
Reverse Leakage Current at $V_{\text{RWM}} = 5 \text{ V}$ (I/O to GND & V_{REF} to GND)	I_R	--	--	1.0	μA
Forward Voltage ^{Note2} at $I_F = 1 \text{ A}$ (GND to I/O & GND to V_{REF}) at $I_F = 5 \text{ A}$ (GND to I/O & GND to V_{REF})	V_F	-- --	1.8 5.0	-- --	V
Clamping Voltage ^{Note2} at $I_{\text{PP}} = 1 \text{ A}$ (I/O to GND & V_{REF} to GND) at $I_{\text{PP}} = 5 \text{ A}$ (I/O to GND & V_{REF} to GND)	V_C	-- --	-- --	12 16	V
Junction Capacitance at $V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ at $V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ (I/O to I/O)	C_J	-- --	-- --	0.8 0.4	pF

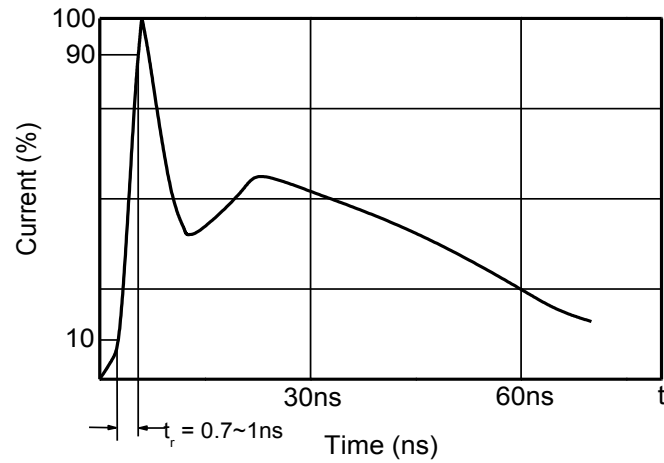
Note: 1. Other voltages available upon request.

2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

Typical Characteristic Curves



8/20μs waveform per IEC61000-4-5

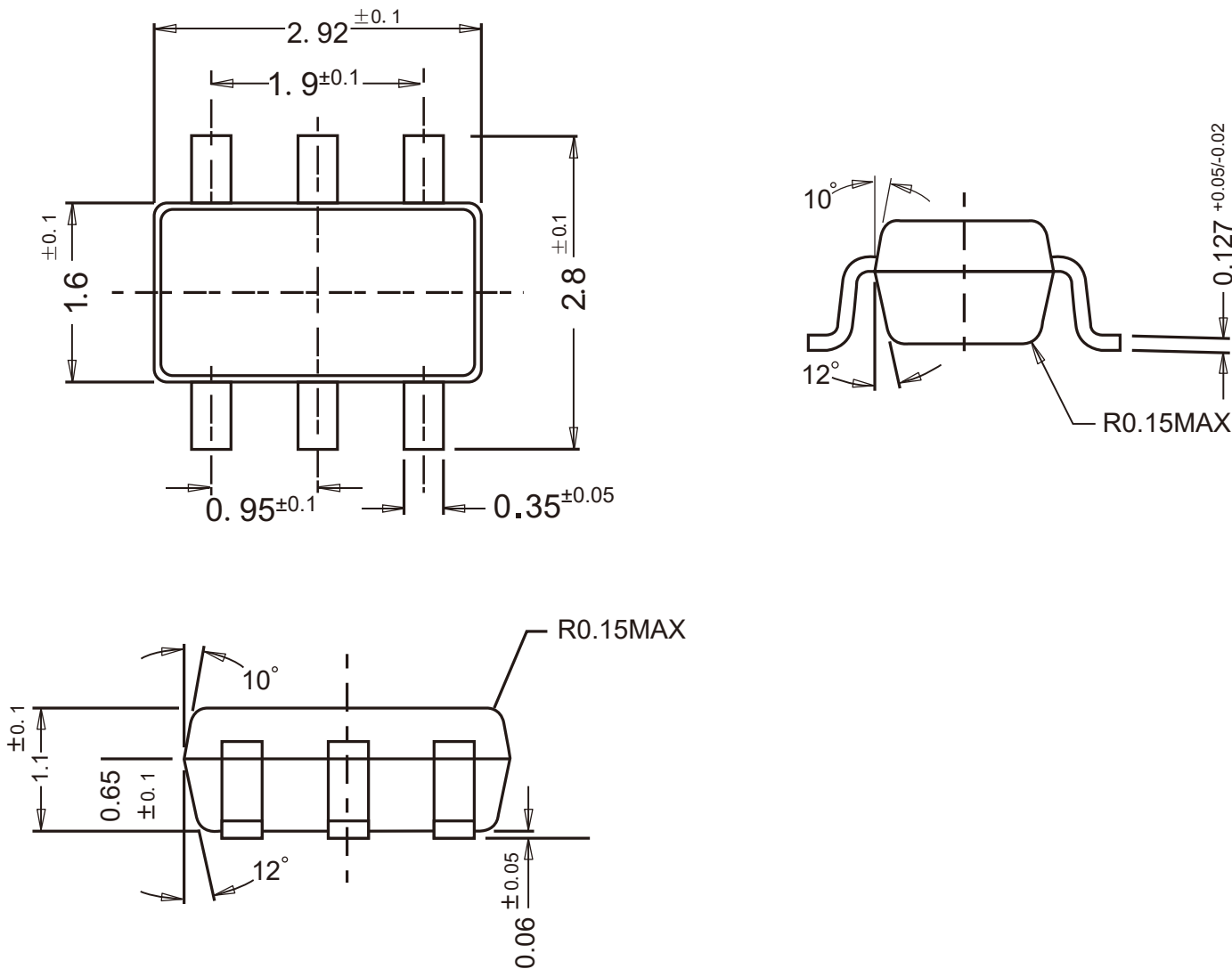


Contact discharge current waveform per IEC61000-4-2

Package Outline

SOT-23-6

Dimensions in mm

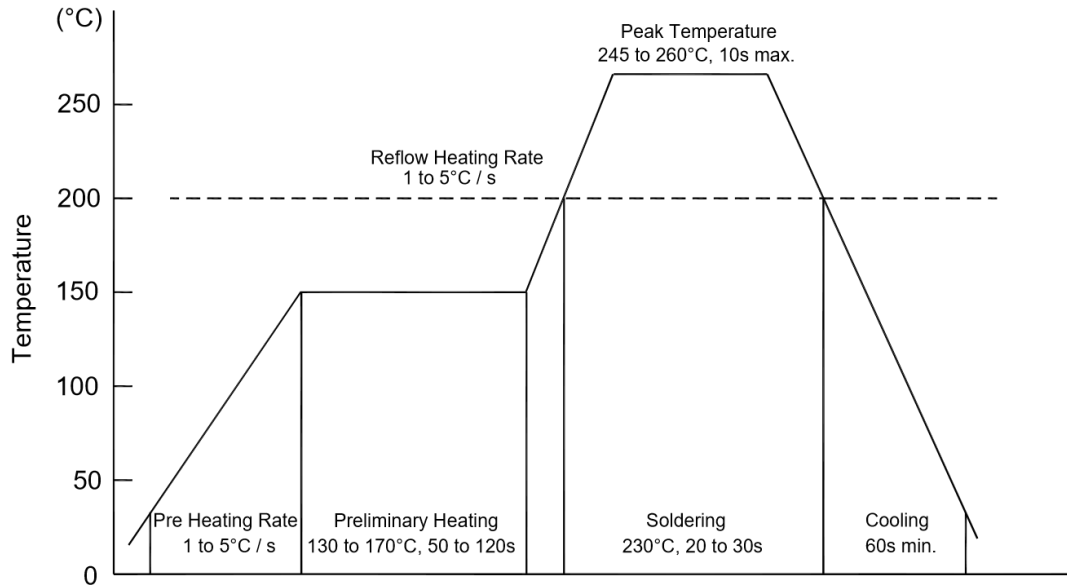


Ordering Information

Device	Package	Shipping
ESD4U5V0ASG	SOT-23-6	3,000PCS/Reel&7inches

Conditions of Soldering and Storage

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245 °C. If peak temperature is below 245 °C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

◆ Conditions of hand soldering

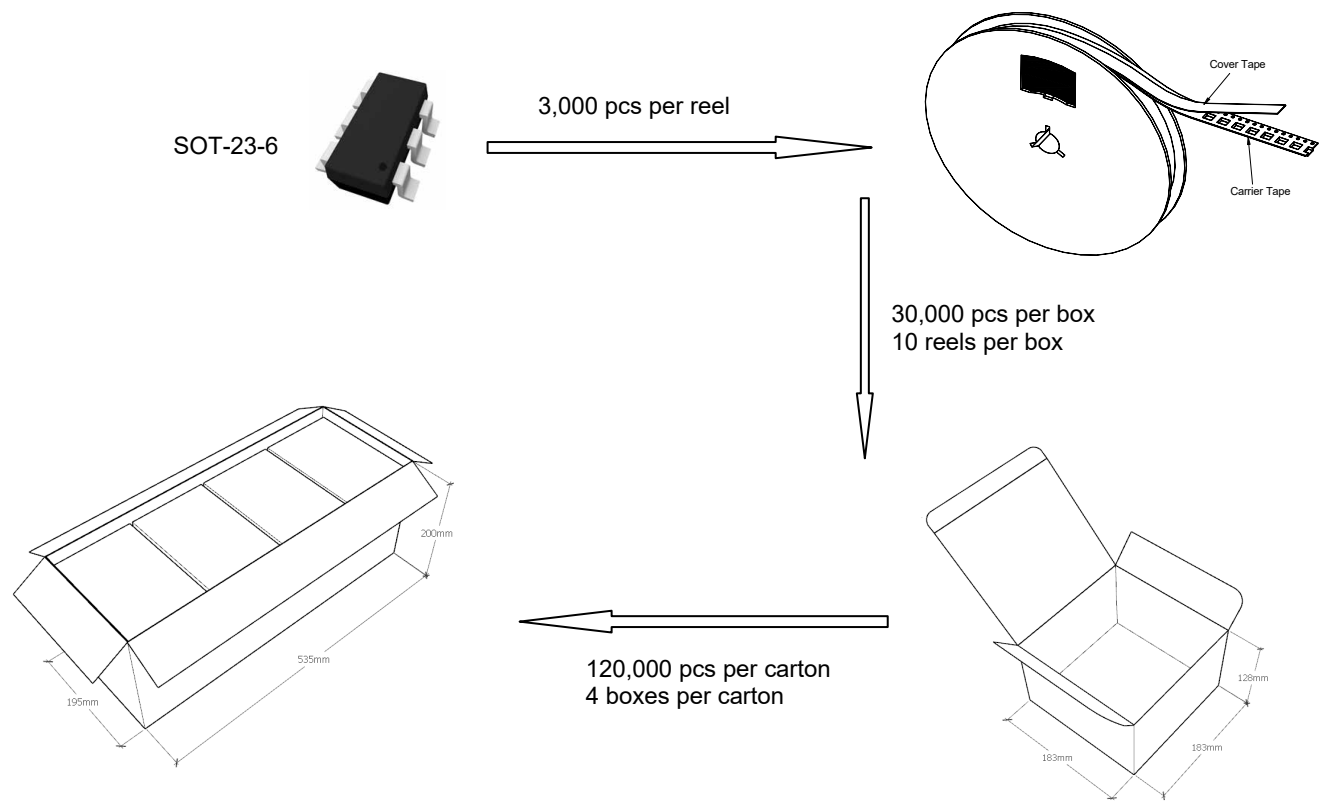
- Temperature: 370 °C
- Time: 3s max.
- Times: one time

◆ Storage conditions

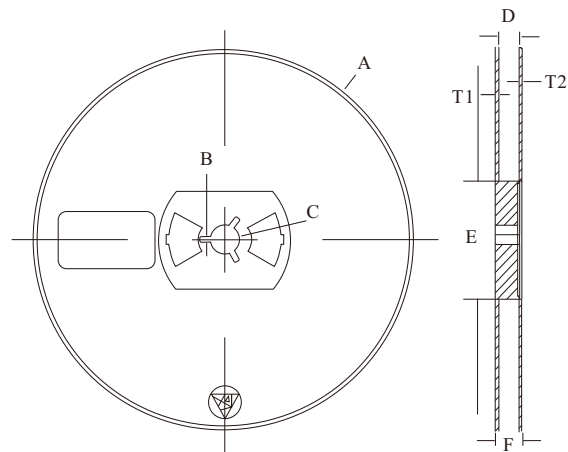
- **Temperature**
5 to 40 °C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications

- The method of packaging

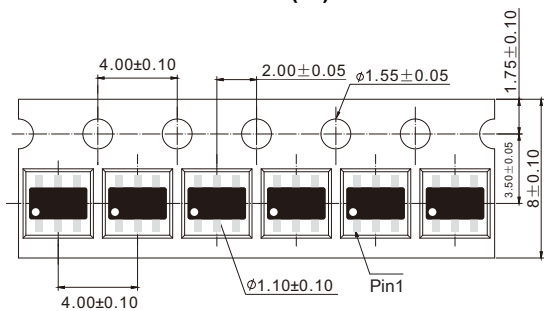


◆ Embossed tape and reel data



Symbol	Value (unit: mm)
A	Ø 177.8±1
B	2.7±0.2
C	Ø 13.5±0.2
E	Ø 54.5±0.2
F	12.3±0.3
D	9.6+2/-0.3
T1	1.0±0.2
T2	1.2±0.2

Reel (7")



Tape (8mm)

Contact Information

TANI website: <http://www.tanisemi.com> Email: tani@tanisemi.com For additional information, please contact your local Sales Representative.

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Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications.

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Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. TANI shall assume no responsibility for any consequences resulting from such usage.

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