

2-Lines, Uni-directional, Ultra-low Capacitance Transient Voltage Suppressors

Descriptions

The ESD5R005TA is an ultra-low capacitance TVS (Transient Voltage Suppressor) array designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge).

The ESD5R005TA incorporates two pairs of ultra-low capacitance steering diodes plus a TVS diode.

The ESD5R005TA may be used to provide ESD protection up to $\pm 20\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 4A (8/20 μs) according to IEC61000-4-5.

The ESD5R005TA is available in SOT-23 package. Standard products are Pb-free and Halogen-free.

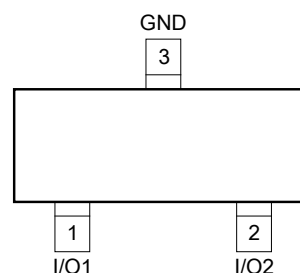
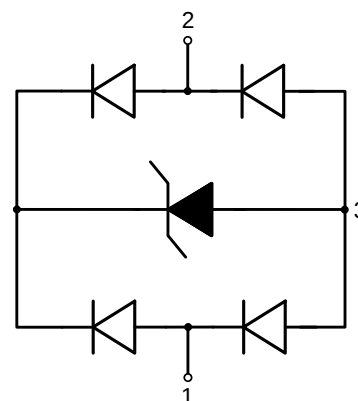
Features

- Stand-off voltage: 5V Max
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 20\text{kV}$ (contact and air discharge)
IEC61000-4-4 (EFT): 40A (5/50ns)
IEC61000-4-5 (surge): 4A (8/20 μs)
- Ultra-low capacitance: $C_J = 0.3\text{pF}$ typ.
- Ultra-low leakage current: $I_R < 1\mu\text{A}$ typ.
- Solid-state silicon technology

Applications

- USB 2.0 and USB 3.0
- HDMI 1.3 and HDMI 1.4
- SATA and eSATA
- DVI
- IEEE 1394
- PCI Express
- Portable Electronics
- Notebooks

SOT-23 (Top View)



Order information

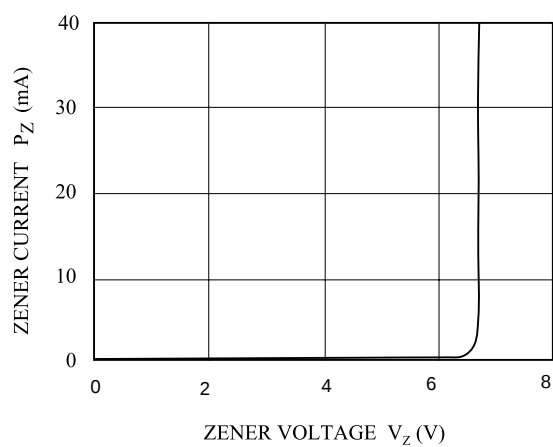
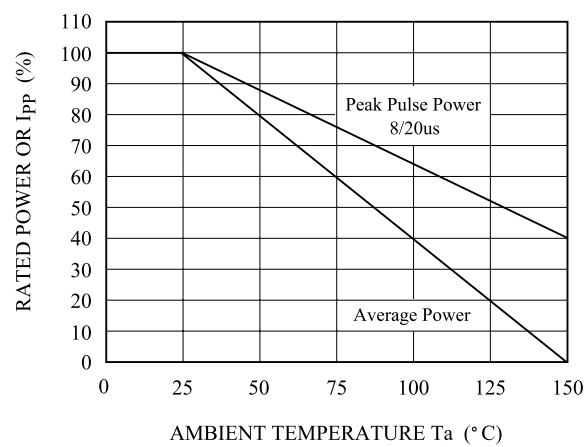
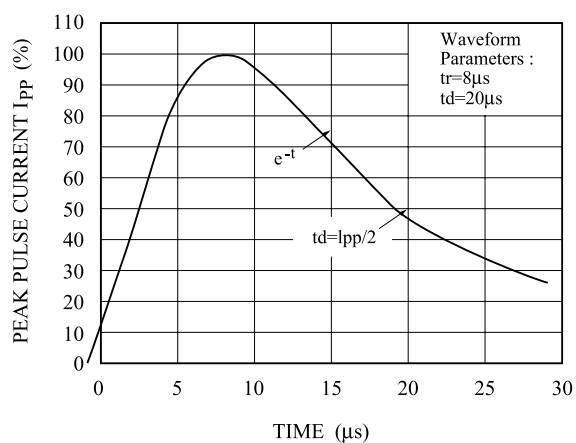
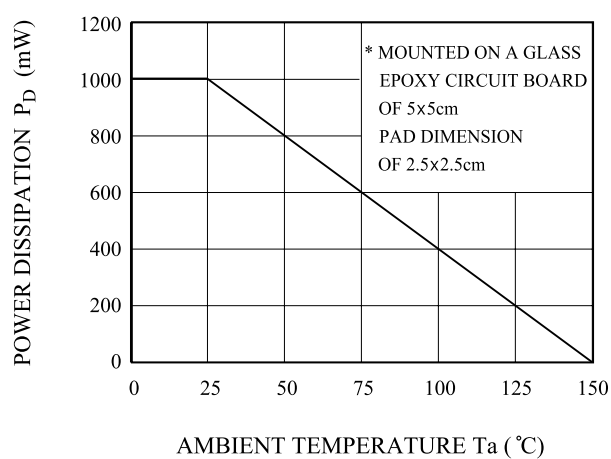
Device	Marking	Package	Shipping
ESD5R005TA	5ML	SOT-23	3000/Tape&Reel

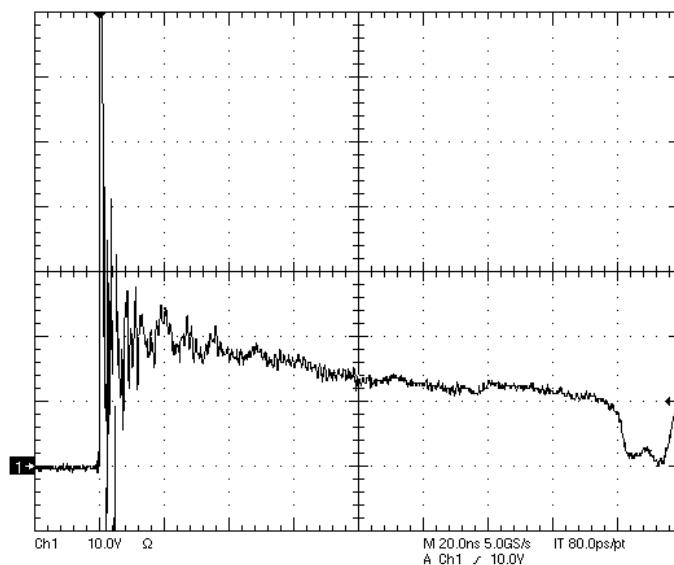
Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	4.0	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 20	kV
ESD according to IEC61000-4-2 contact discharge		± 20	
Operation junction temperature	T_J	-55~150	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

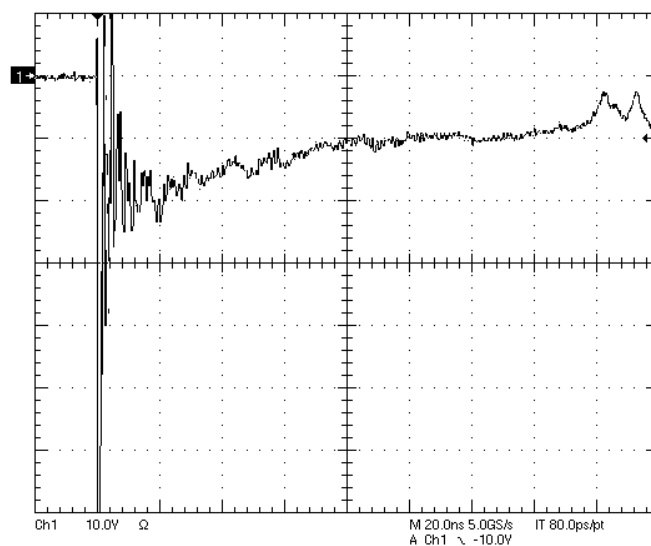
Electrical characteristics (TA=25 $^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5.0	V
Reverse leakage current	I_R	$V_{RWM} = 5 \text{ V}$			0.5	μA
Reveres breakdown voltage	V_{BR12}	$I_T = 1mA$	6.0	8.0	9.5	V
Clamping voltage	V_C	$I_{pp} = 1.0A$ $t_p = 8/20\mu s$			11.0	V
		$I_{pp} = 4.0A$ $t_p = 8/20\mu s$			15.0	V
Junction capacitance	C_J	$V_R = 5V$, $f = 1MHz$		0.3	0.5	pF

$V_Z - I_Z$

POWER DERATION CURVE

PULSE WAVEFORM

 $P_D - T_a$




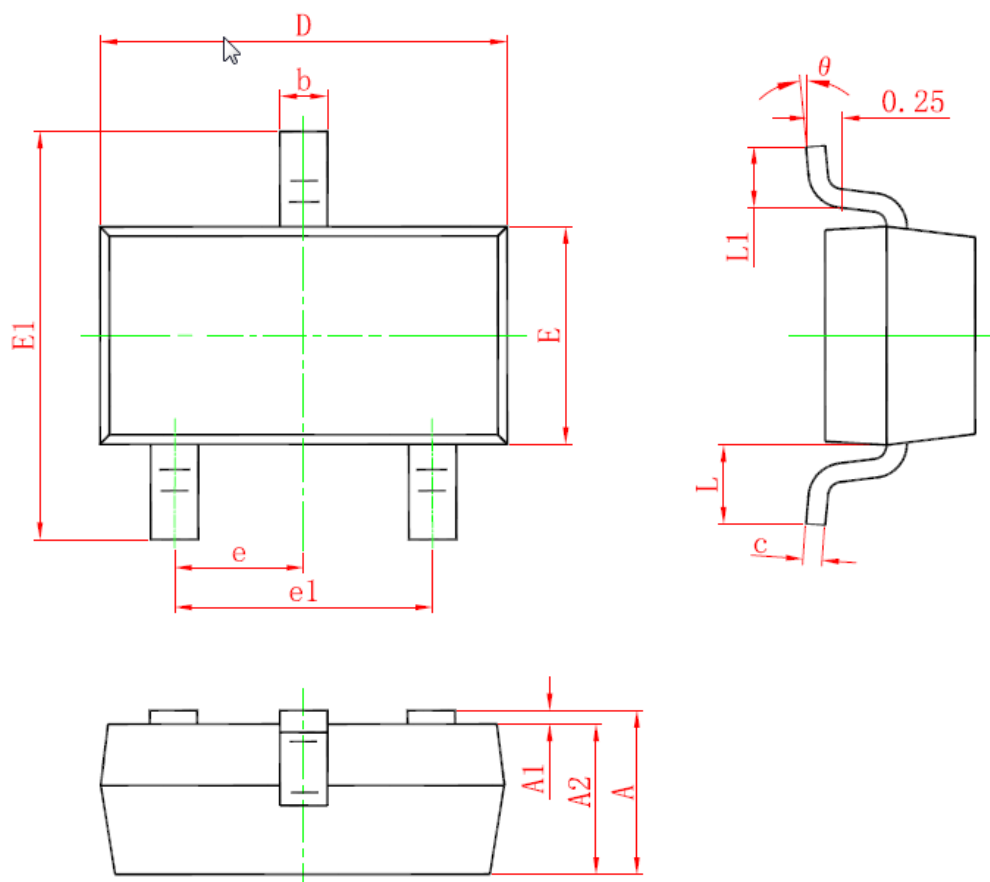
**Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV Contact per IEC61000-4-2**



**Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV Contact per IEC61000-4-2**

Package outline dimensions

SOT-23



Symbol	Dimensions in millimeter		Dimensions in inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°