

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

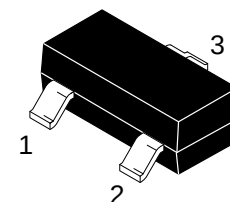
Descriptions

The ESD12R600TR 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).

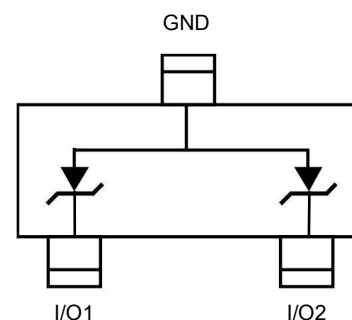
The ESD12R600TR incorporates two pairs of ultra-low capacitance steering diodes plus a TVS diode.

The ESD12R600TR may be used to provide ESD protection up to $\pm 30\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 9A (8/20 μs) according to IEC61000-4-5.

The ESD12R600TR is available in SOT-23 package. Standard products are Pb-free and Halogen-free.



SOT-23 (Top View)



Circuit Diagram

Features

- Stand-off voltage: 12V Max
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 30\text{kV}$ (contact and air discharge)
IEC61000-4-5 (surge): 15A (8/20 μs)
- Ultra-low capacitance: $C_J = 60\text{ pF typ.}$
- Ultra-low leakage current: $I_R < 0.1\mu\text{A typ.}$

Applications

- RS-232, RS-422 & RS-423 Data Lines
- Audio/Video Inputs
- Wireless Network Systems
- Microprocessor Based Equipment
- Medical Sensors
- Notebook Computers

Order information

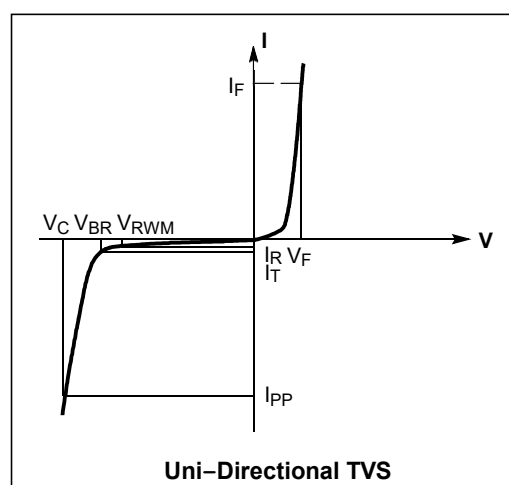
Model	Marking	Package	shipping
ESD12R600TR	M12	SOT-23	3000/Tape&Reel

Electrical characteristic(T=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	TYP.	Max.	Units
Reverse stand-off voltage	V_{RWM}				± 12.0	V
Reverse leakage current	I_R	$V_{RWM}=12V$			0.1	μA
Reveres breakdown voltage	V_{BR}	$I_T=1mA$	13.5			V
Clamping voltage	V_C	$I_{PP}=1A (8/20\mu s)$		15.0		V
		$I_{PP}=15A (8/20\mu s)$			22.0	V
Junction capacitance	C_J (PIN1 TO PIN3)	$V_R=0V f=1MHz$		80.0	100.0	pF
Junction capacitance	C_J (PIN1 TO PIN2)	$V_R=0V f=1MHz$		40.0	50.0	pF

Electrical performance curve

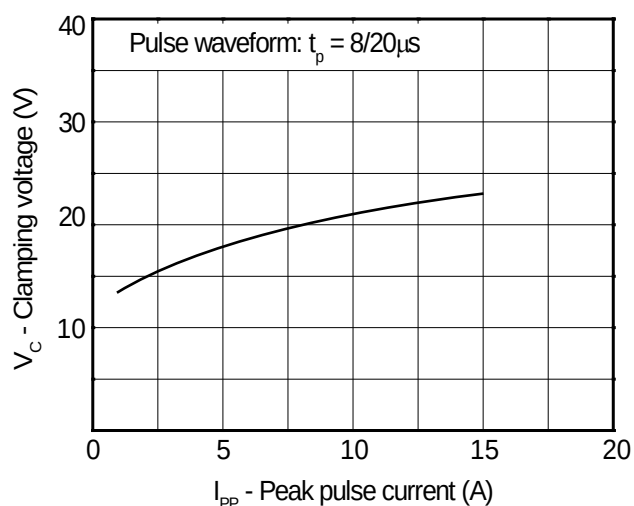
Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
I_F	Forward Current
V_F	Forward Voltage @ I_F



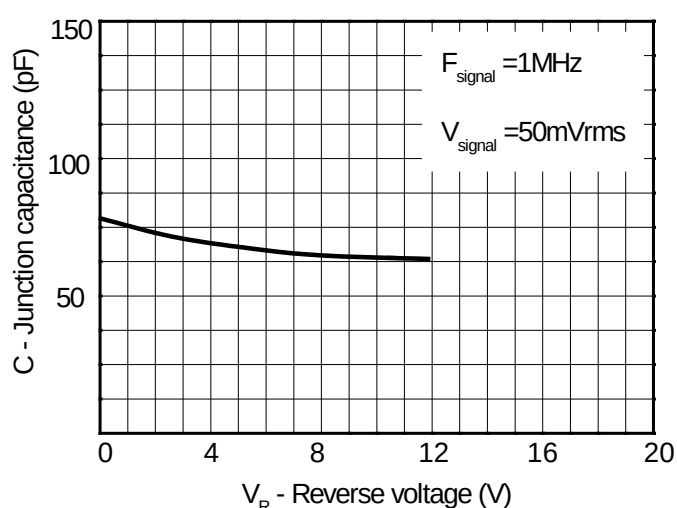
Maximum Rating

Rating	symbol	value	Units
Peak Pulse Current($t_p=8/20\mu s$)	I_{pp}	15.0	A
ESD per IEC61000-4-2(Contact)	V_{ESD}	± 30	KV
ESD per IEC61000-4-2(Air)		± 30	
Operating Temperature	T_J	-40~125	$^{\circ}C$
Storage Temperature	T_{STG}	-55~150	$^{\circ}C$

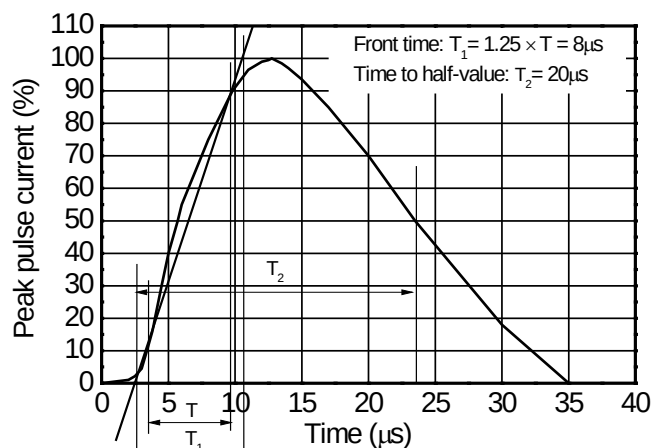
Typical characteristic



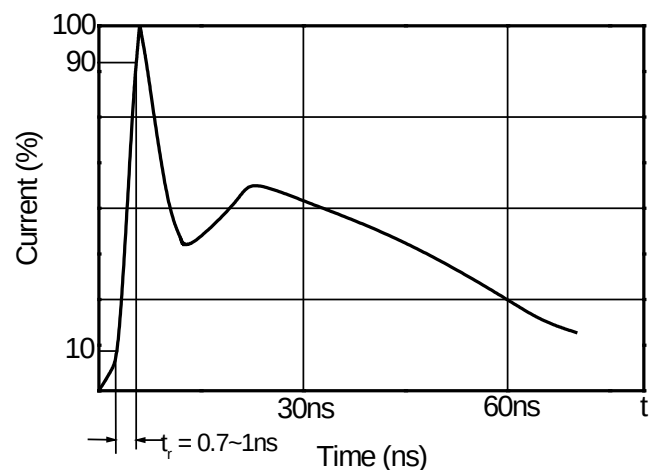
Clamping voltage vs. Peak pulse current



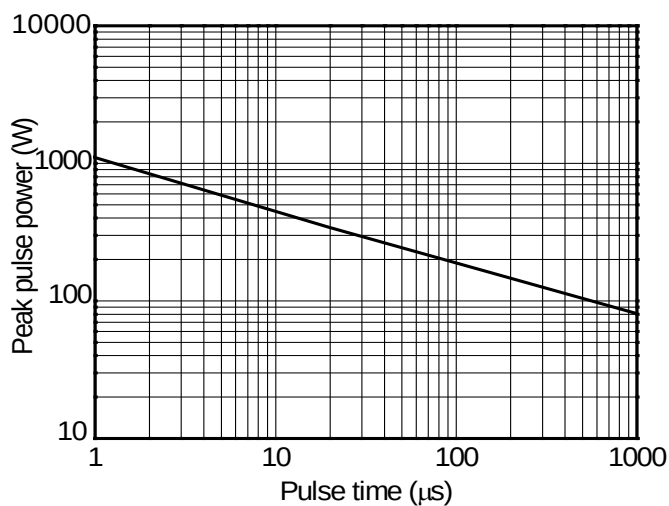
Capacitance vs. Reverse voltage



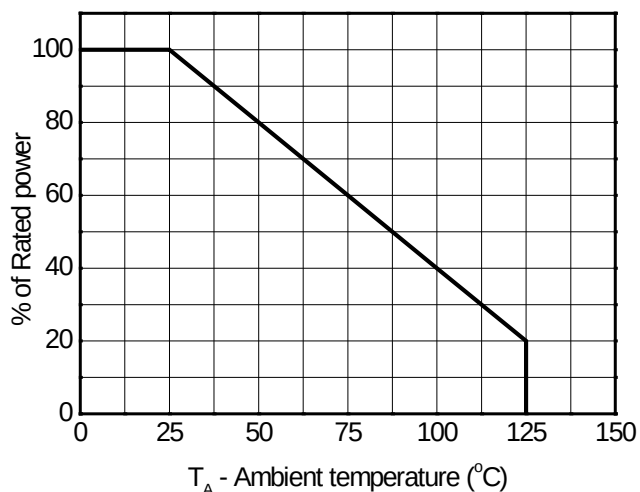
8/20 μs waveform per IEC61000-4-5



Contact discharge current waveform per IEC61000-4-2



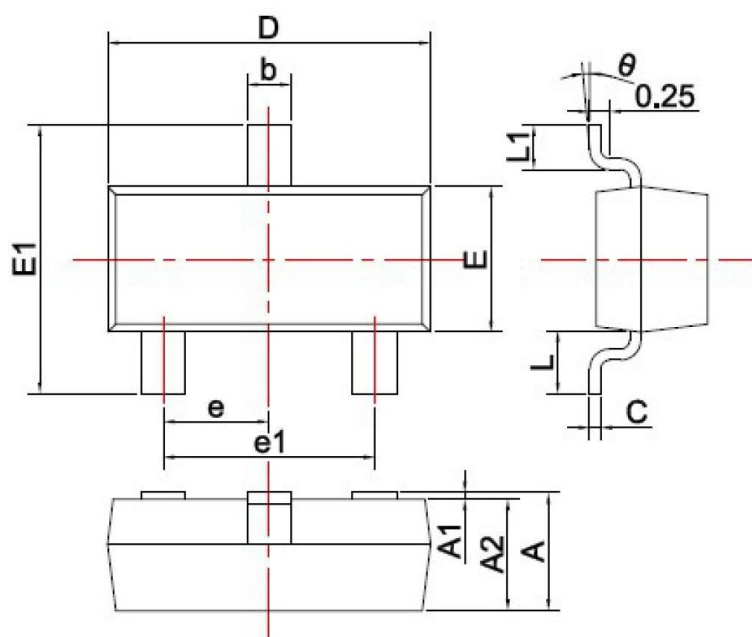
Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature

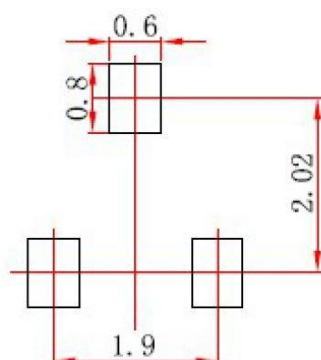
Package outline dimensions

SOT-23



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.