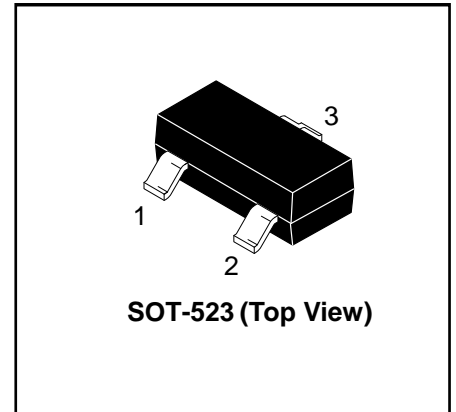


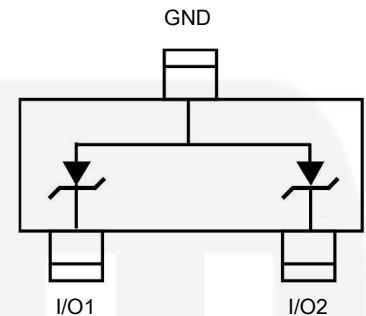
## Description

- ◆ This low-power TVS (Transient Voltage Suppressor) is mainly used for signal and power supply to protect the back-stage circuit from ESD (Electrostatic Discharge) and EFT (Electrical Fast Transients) and improve the reliability of the product, because its extremely small package is suitable for various portable devices and mobile electronic devices.



## Features

- ◆ IEC61000-4-2(ESD): ±25KV Max Air  
±20KV Max Contact
- ◆ IEC61000-4-4(EFT): 40A(5/50ns)
- ◆ IEC61000-4-5(Surge): 4A( 8/20us)
- ◆ Line capacitance: 0.5 pF (typical) @ 1MHz
- ◆ Very low reverse current:  $I_R < 0.1 \mu A$  (typical)
- ◆ Halogen free, Lead free and RoHs



**Circuit Diagram**

## Application

- ◆ Cellular phones
- ◆ Portable devices
- ◆ Digital cameras
- ◆ Player
- ◆ Smart home
- ◆ Robot

## Order information

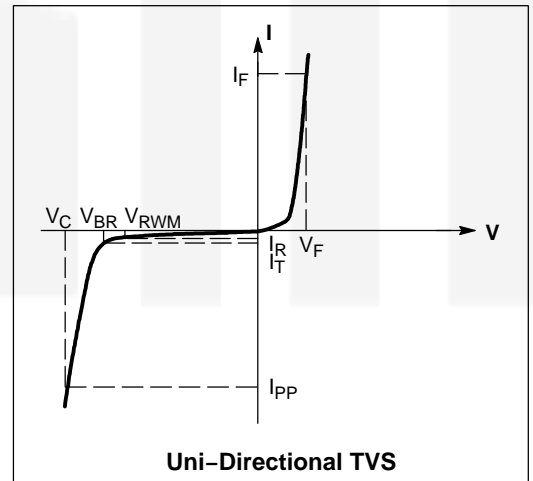
Model	Marking	Package	shipping
ESD5Q005TR	P5	SOT-523	3000/Tape&Reel

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

Parameter	Symbol	Conditions	Min.	TYP.	Max.	Units
Reverse stand-off voltage	$V_{RWM}$ pin1/2 to pin3				5.0	V
Reverse leakage current	$I_R$ pin1/2 to pin3	$V_{RWM}= 5.0V$			0.1	uA
Reveres breakdown voltage	$V_{BR}$ pin1/2 to pin3	$I_T=1mA$	6.0		9.0	V
Clamping voltage	$V_C$ pin1/2 to pin3	$I_{PP}=1A(8/20us)$			10.0	V
		$I_{pp}=4A(8/20us)$			13.5	V
Junction capacitance	$C_J$ pin1/2 to pin3	$V_R=0V$ $f=1MHz$		0.5	0.7	pF

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

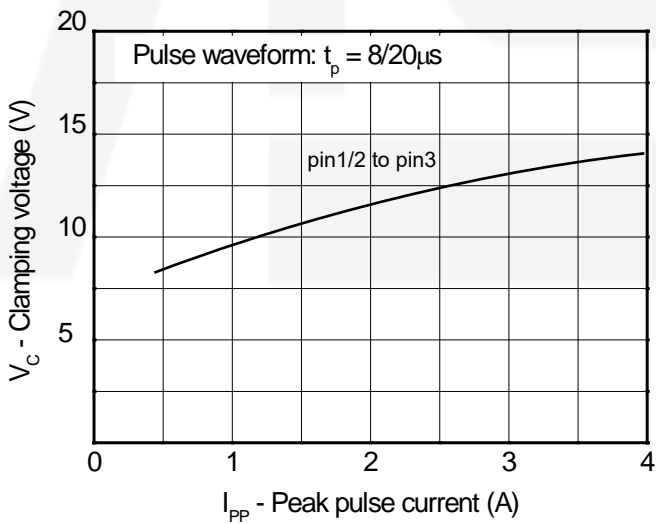
Symbol	Parameter
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



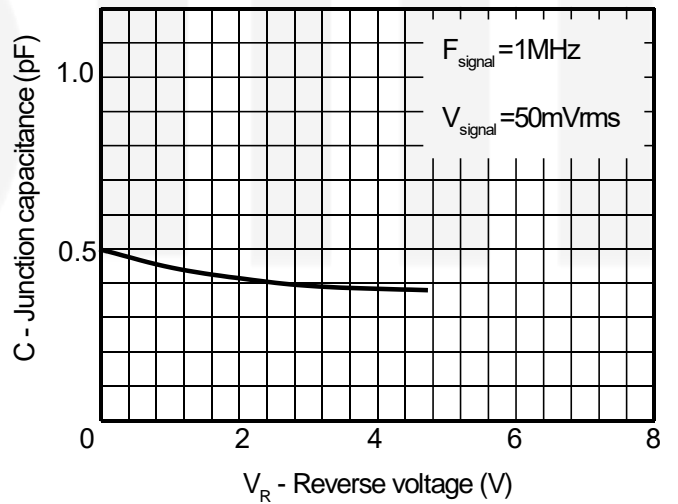
**Maximum Rating**

Rating	symbol	value	Units
Peak Pulse Current( $t_p=8/20\mu s$ )	$I_{pp}$	4.0	A
ESD per IEC61000-4-2(Contact)	$V_{ESD}$	$\pm 20$	KV
ESD per IEC61000-4-2(Air)		$\pm 25$	
Operating Temperature	$T_J$	-55~125	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55~150	$^{\circ}C$

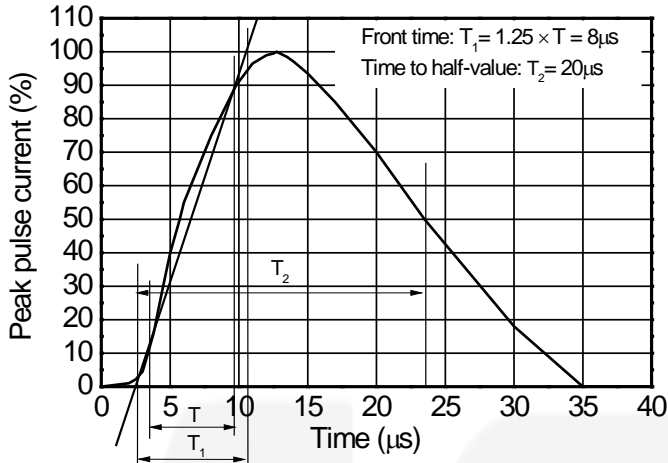
**Typical characteristic**



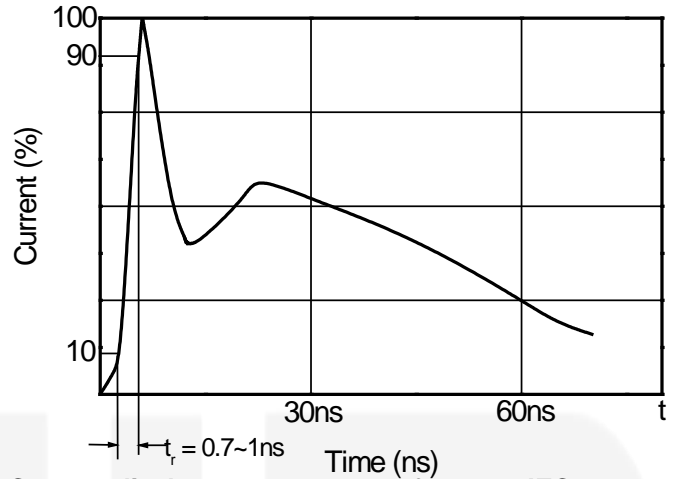
**Clamping voltage vs. Peak pulse current**



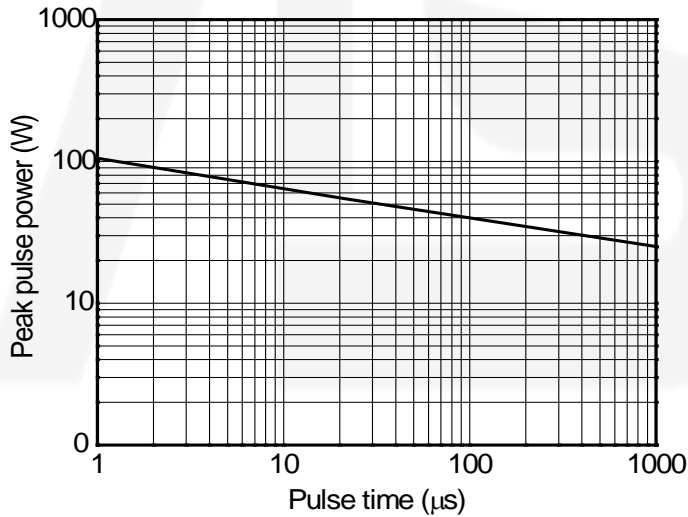
**Capacitance vs. Reverse voltage**



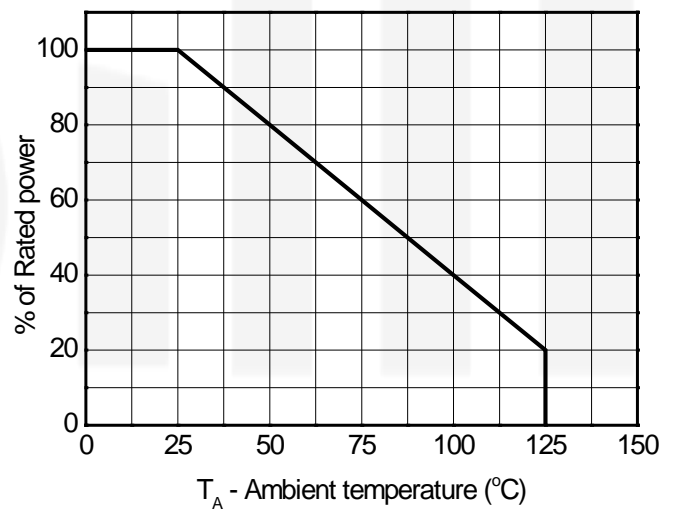
**8/20 $\mu\text{s}$  waveform per IEC61000-4-5**



**Contact discharge current waveform per IEC61000-4-2**

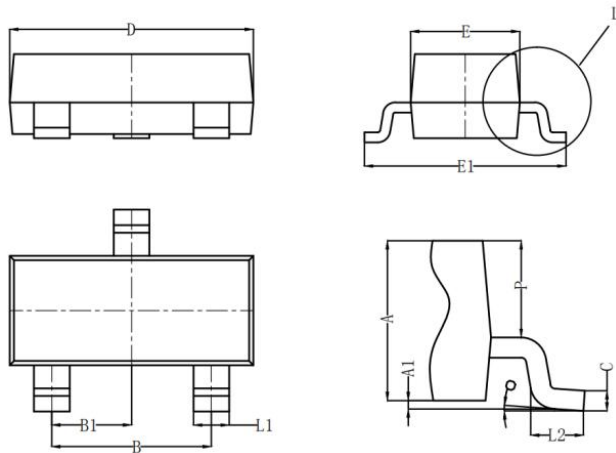


**Non-repetitive peak pulse power vs. Pulse time**



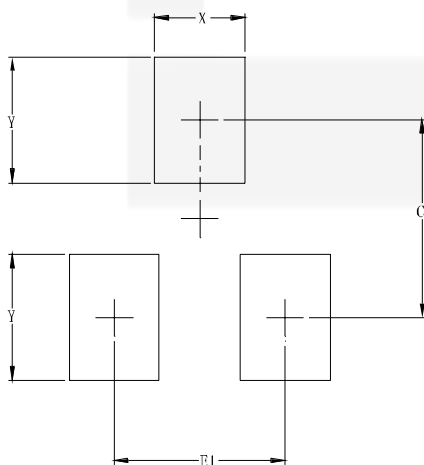
**Power derating vs. Ambient temperature**

## Dimension outline Unit:mm SOT-523



Symbol	Dimensions (mm)	
	Min	Max
A	0.68	0.92
A1	0.00	0.15
L1	0.15	0.25
C	0.10	0.20
D	1.48	1.72
E	0.68	0.92
E1	1.42	1.77
B	0.90	1.10
B1	0.50TYP	
L2	0.26	0.46
o	0°	8°

## Recommended Mounting Pad Layout Unit:mm



DIMENSIONS	
SYM	MILLIMETERS
C	1.24
E1	1.0
X	0.5
Y	0.6