

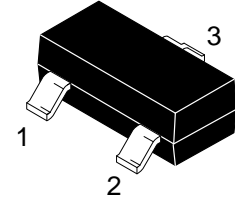
### Descriptions

The ESD12R100TA is a 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 ESD12R100TA incorporates two pairs of ultra-low capacitance steering diodes plus a TVS diode.

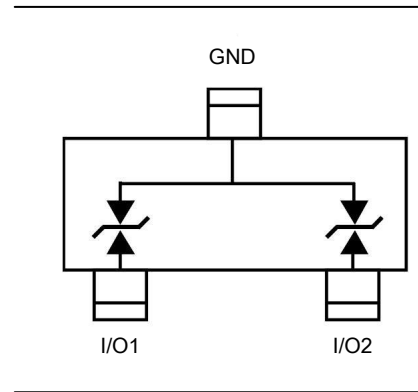
The ESD12R100TA may be used to provide ESD protection up to  $\pm 30\text{kV}$  (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 5 A (8/20 $\mu\text{s}$ ) according to IEC61000-4-5.



SOT-23 (Top View)

### Features

- Stand-off voltage: 12.0V Max
- Transient protection for each line according to IEC61000-4-2 (ESD):  $\pm 30\text{kV}$  (contact and air discharge)  
IEC61000-4-4 (EFT): 40A (5/50ns)  
IEC61000-4-5 (surge): 5A (8/20 $\mu\text{s}$ )
- Ultra-low capacitance:  $C_J = 10\text{ pF typ.}$
- Ultra-low leakage current:  $I_R < 1\mu\text{A typ.}$
- Solid-state silicon technology



### Applications

- Industrial Control Networks  
Smart Distribution Systems  
Device Net
- Automotive Networks  
Low and High-Speed CAN  
Fault Tolerant CAN

### Order information

Device	Package	Marking	Shipping
ESD12R100TA	SOT-23	12C	3000/Tape&Reel

### Absolute maximum ratings

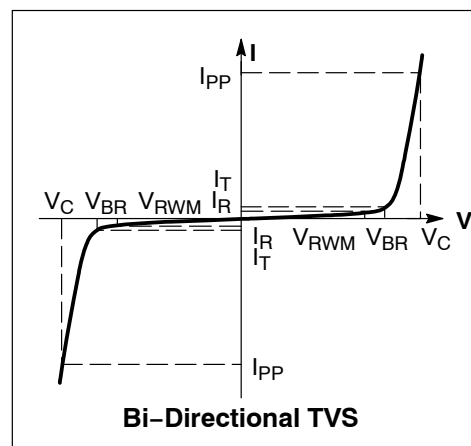
Parameter	Symbol	Rating	Unit
Peak pulse power ( $t_p = 8/20\mu s$ )	$P_{pk}$	100	W
Peak pulse current ( $t_p = 8/20\mu s$ )	$I_{PP}$	5.0	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 30$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 30$	
Operation junction temperature	$T_J$	-55~150	$^{\circ}C$
Lead temperature	$T_L$	260	$^{\circ}C$
Storage temperature	$T_{STG}$	-55~150	$^{\circ}C$

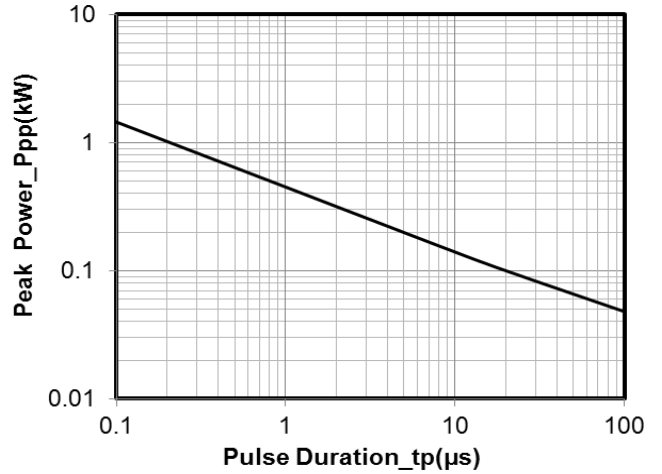
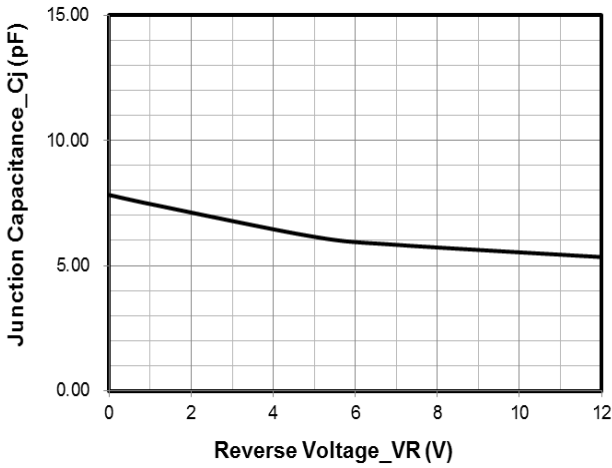
### Electrical characteristics (TA=25 oC, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				$\pm 12.0$	V
Reverse leakage current	$I_R$	$V_{RWM} = 12.0V$			1.0	$\mu A$
Reverse breakdown voltage	$V_{BR(I/O-GND)}$	$I_T = 1mA$	13.0		15.5	V
Clamping voltage	$V_C$ (I/O-GND)	$I_{pp} = 1.0A$ $t_p = 8/20\mu s$			16.0	V
		$I_{pp} = 5.0A$ $t_p = 8/20\mu s$			20.0	V
Junction capacitance	$C_J$	$V_R = 0V$ , $f = 1MHz$		10.0	20.0	pF

### Electrical performance curve

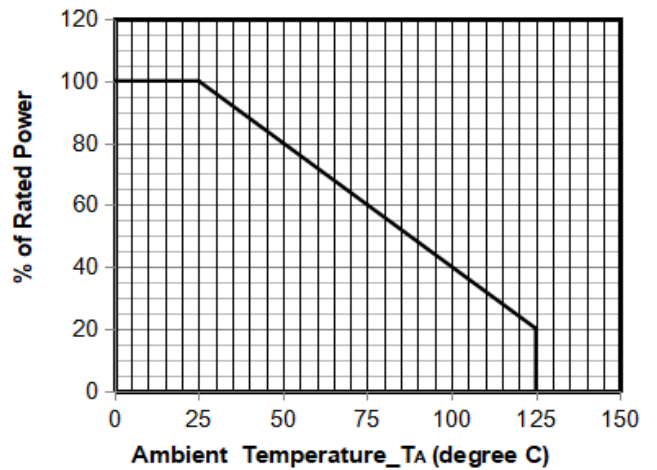
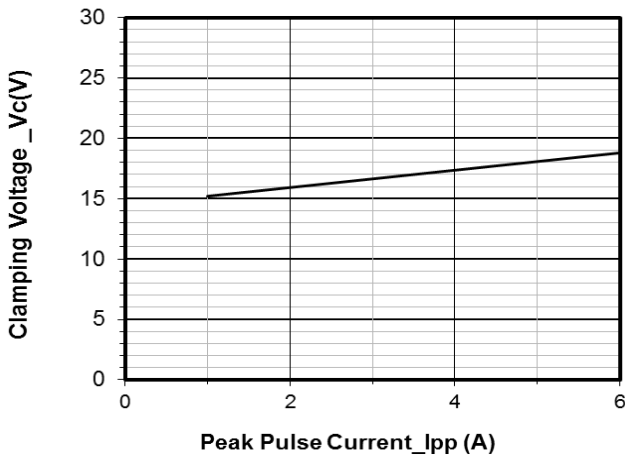
- $V_C$ : Maximum clamping voltage
- $V_{br}$ : Reverse breakdown voltage
- $V_{RWM}$ : Working voltage
- $I_{PP}$ : Maximum peak current





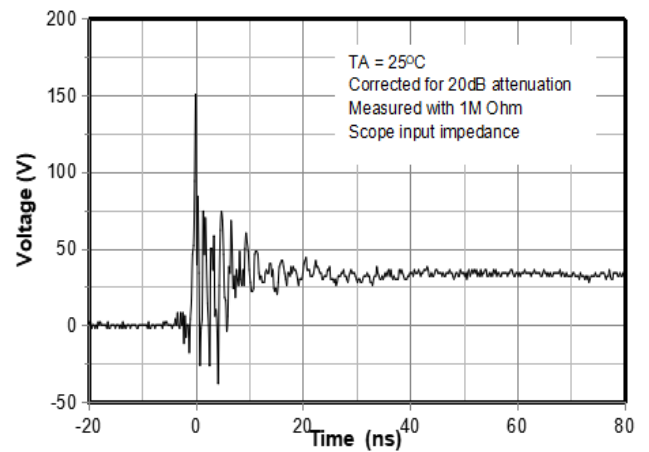
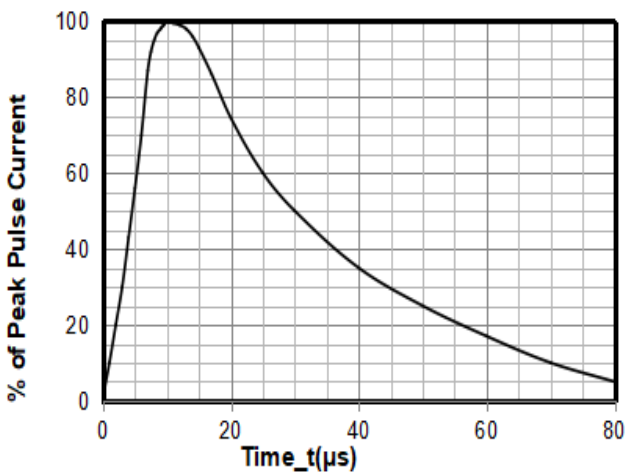
Junction Capacitance vs. Reverse Voltage

Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

Power Derating Curve

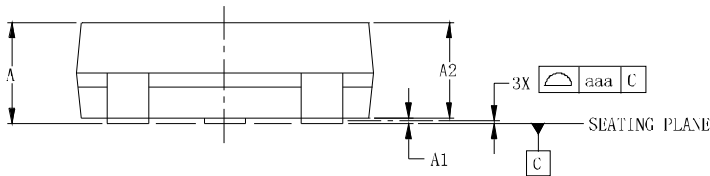
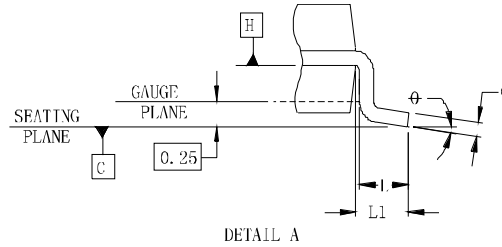
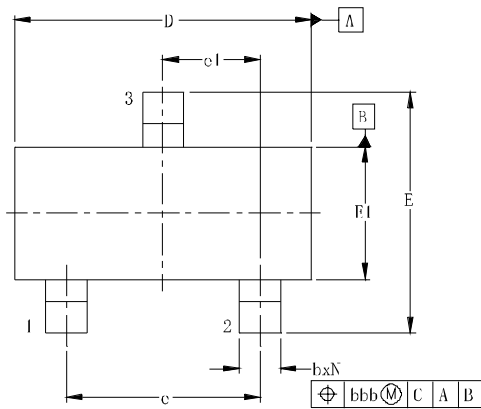


8 X 20μs Pulse Waveform

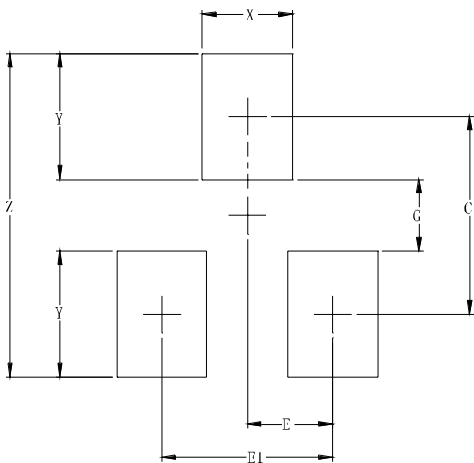
ESD Clamping Voltage  
8 kV Contact per IEC61000-4-2

## Package outline dimensions

### SOT-23



### Suggested Land Pattern



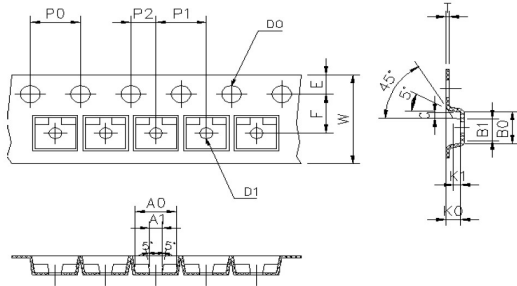
SYM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.035	-	0.044	0.89	-	1.12
A1	0.000	-	0.004	0.01	-	0.10
A2	0.035	0.037	0.040	0.88	0.95	1.02
b	0.012	-	0.020	0.30	-	0.51
c	0.003	-	0.007	0.08	-	0.18
D	0.110	0.114	0.120	2.80	2.90	3.04
E	0.082	0.093	0.104	2.10	2.37	2.64
E1	0.047	0.051	0.055	1.20	1.30	1.40
e	0.075			1.90BSC		
e1	0.037			0.95BSC		
L	0.015	0.020	0.024	0.40	0.50	0.60
L1	0.022			0.55		
N	3			3		
φ	0°	-	8°	0°	-	8°
aaa	0.004			0.10		
bbb	0.008			0.20		

### Contact Information

SYM	DIMENSIONS	
	INCHES	MILLIMETERS
C	0.087	2.20
E	0.037	0.95
E1	0.075	1.90
G	0.031	0.80
X	0.039	1.00
Y	0.055	1.40
Z	0.141	3.60

## SOT-23 Tape and reel

### SOT-23 Embossed Carrier Tape

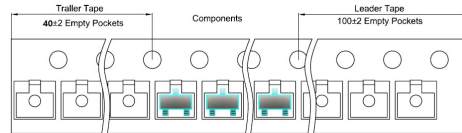


### Packaging Description:

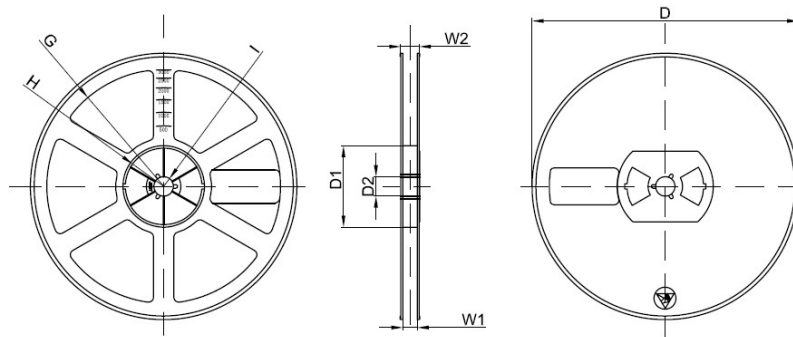
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. The reels are blue in color and made of recyclable plastic.

Symbol	Spec	Symbol	Spec
<b>W</b>	8.00±0.10	<b>A<sub>0</sub></b>	3.15±0.10
<b>E</b>	1.75±0.10	<b>A<sub>1</sub></b>	1.09±0.10
<b>F</b>	3.50±0.10	<b>B<sub>0</sub></b>	2.77±0.10
<b>D<sub>0</sub></b>	1.50±0.10	<b>B<sub>1</sub></b>	2.15±0.10
<b>D<sub>1</sub></b>	1.00±0.10	<b>K<sub>0</sub></b>	1.22±0.10
<b>P<sub>0</sub></b>	4.00±0.10	<b>10*P<sub>0</sub></b>	40.00±0.20
<b>P<sub>1</sub></b>	4.00±0.10		
<b>P<sub>2</sub></b>	2.00±0.10		
<b>t</b>	0.19-0.22		
<b>10*P<sub>0</sub></b>	40.00±0.20		

SOT-23 Tape Leader and Trailer



### SOT-23 Reel



Unit: mm

Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30
Tolerance	±2	±1	±1	±1	±1	±1	±1	±1

### Packaging Quantity

Reel	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
3,000	7 inch	45,000	210*208*203	180,000	440*440*230