

2-Lines , Bi-directional, Transient Voltage Suppressors

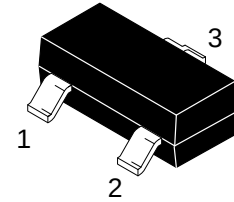
Descriptions

The ESD15R300TA 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 ESD15R300TA incorporates two pairs of ultra-low capacitance steering diodes plus a TVS diode.

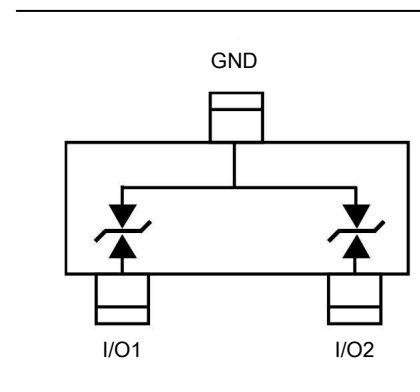
The ESD15R300TA may be used to provide ESD protection up to $\pm 30\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 12A (8/20 μs) according to IEC61000-4-5.



SOT-23 (Top View)

Features

- Stand-off voltage: 15.0V 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): 12A (8/20 μs)
- Ultra-low capacitance: $C_J = 30\text{ pF typ.}$
- 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	Shipping
ESD15R300TA	SOT-23	3000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	12.0	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 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 $^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				± 15.0	V
Reverse leakage current	I_R	$V_{RWM} = 15.0V$			1.0	μA
Reverse breakdown voltage	$V_{BR(I/O-GND)}$	$I_T = 1mA$	16.0			V
Clamping voltage	V_C (I/O-GND)	$I_{pp} = 1.0A$ $t_p = 8/20\mu s$			21.0	V
		$I_{pp} = 12.0A$ $t_p = 8/20\mu s$			28.0	V
Junction capacitance	C_J	$V_R = 0V$, $f = 1MHz$		30.0	50.0	pF

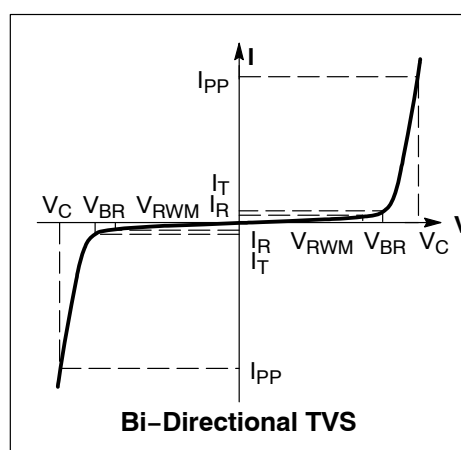
Electrical performance curve

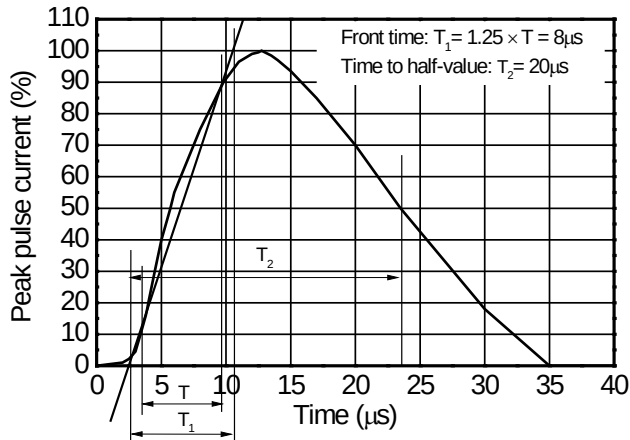
V_C : Maximum clamping voltage

V_{br} : Reverse breakdown voltage

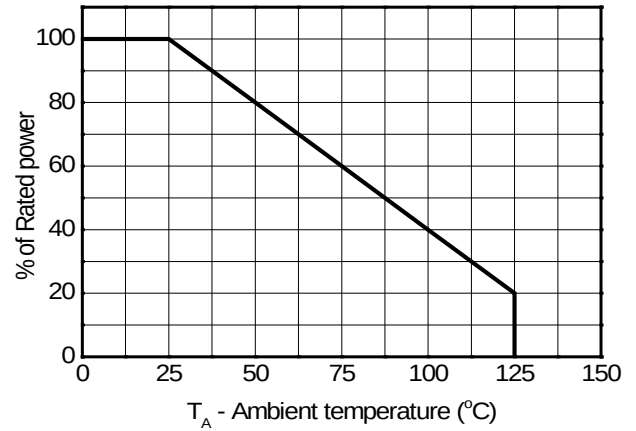
V_{RWM} : Working voltage

I_{PP} : Maximum peak current

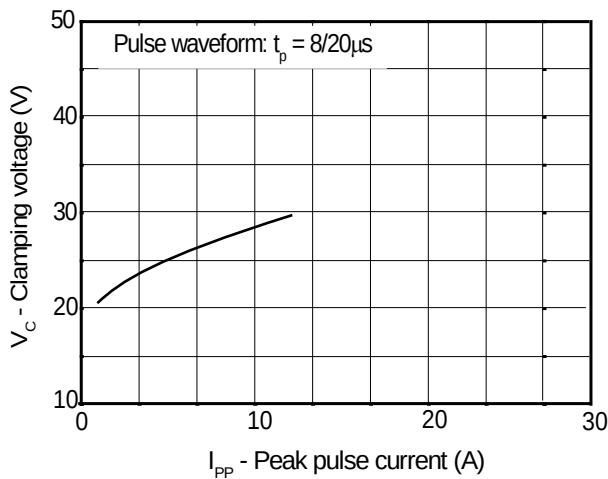




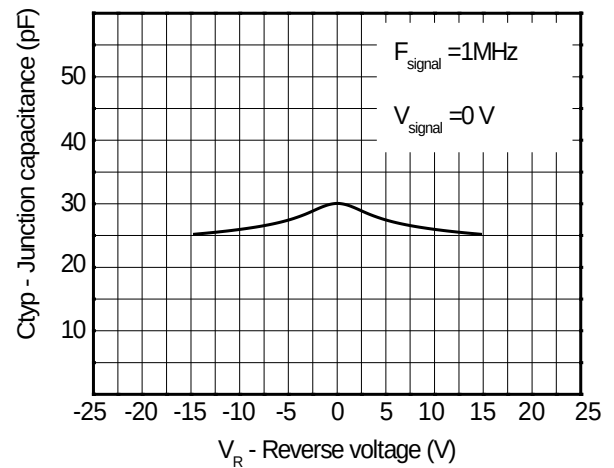
8/20 μs waveform per IEC61000-4-5



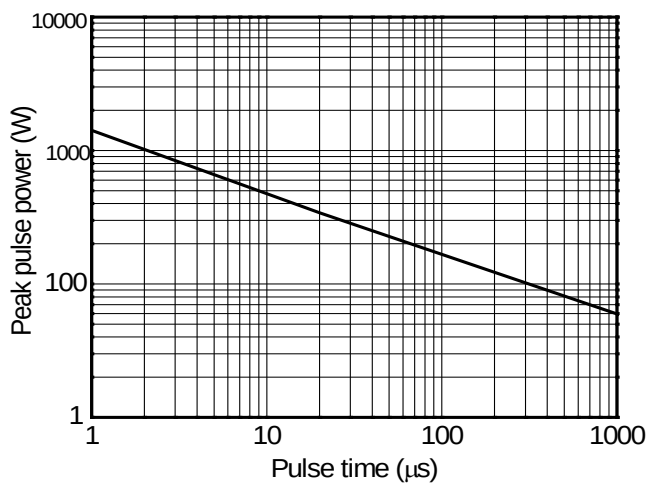
Power derating vs. Ambient temperature



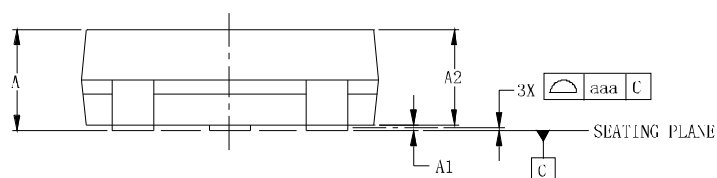
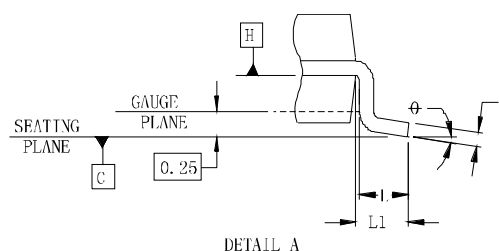
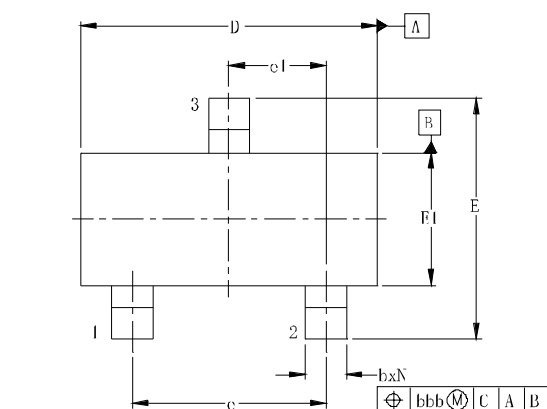
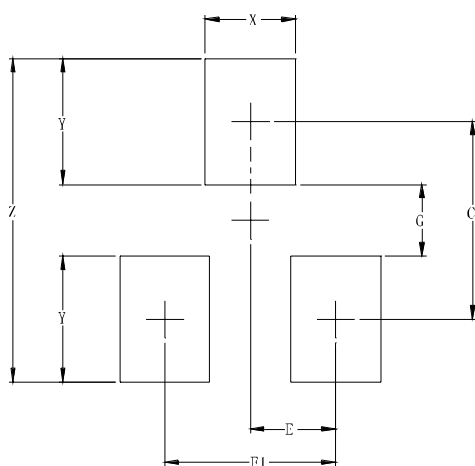
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage



Non-repetitive peak pulse power vs. Pulse time

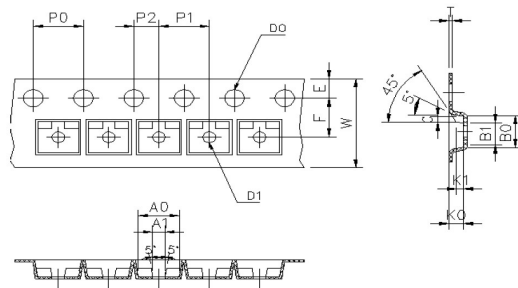
Package outline dimensions
SOT-23

Suggested Land Pattern

Contact Information

DIMENSIONS						
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		
θ	0°	-	8°	0°	-	8°
aaa	0.004			0.10		
bbb	0.008			0.20		

DIMENSIONS		
SYM	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

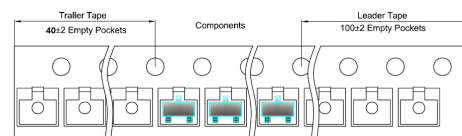


Symbol	Spec	Symbol	Spec
W	8.00±0.10	A₀	3.15±0.10
E	1.75±0.10	A₁	1.09±0.10
F	3.50±0.10	B₀	2.77±0.10
D₀	1.50±0.10	B₁	2.15±0.10
D₁	1.00±0.10	K₀	1.22±0.10
P₀	4.00±0.10	10*P₀	40.00±0.20
P₁	4.00±0.10		
P₂	2.00±0.10		
t	0.19-0.22		
10*P₀	40.00±0.20		

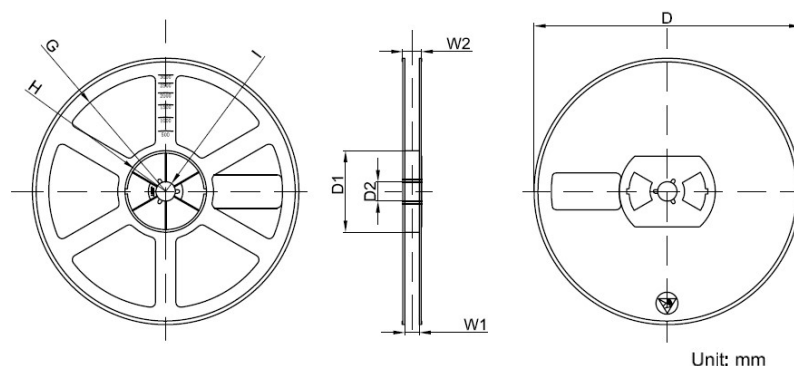
Packaging Description:

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.

SOT-23 Tape Leader and Trailer



SOT-23 Reel



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