

2-Lines , Bi-directional, Transient Voltage Suppressors

Descriptions

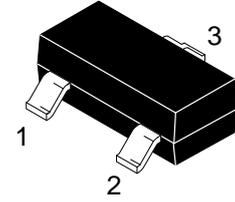
The ESD24R300TA is a TVS (Transient Voltage Suppressor) array designed to protect high speed data interfaces.

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 ESD24R300TA incorporates two pairs of ultra-low capacitance steering diodes plus a TVS diode.

The ESD24R300TA 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 8 A (8/20 μs) according to IEC61000-4-5.

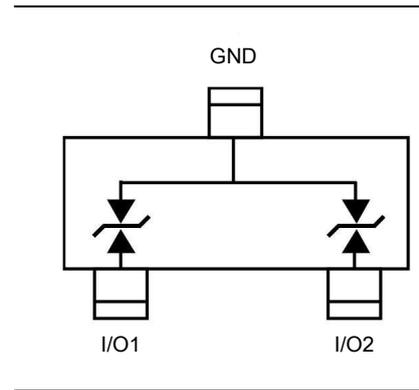
The ESD24R300TA is available in SOT-23 package. Standard products are Pb-free and Halogen-free.



SOT-23 (Top View)

Features

- Stand-off voltage: 24V 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): 8A (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
- ISO 16 -1, Nonrepetitive EMI Surge Pulse 2, 9.5 A (1 x 50 μs)
- ISO 7637-3, Repetitive Electrical Fast Transient (EFT)



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
ESD24R300TA	SOT-23	27E	3000/Tape&Reel

Absolute maximum ratings

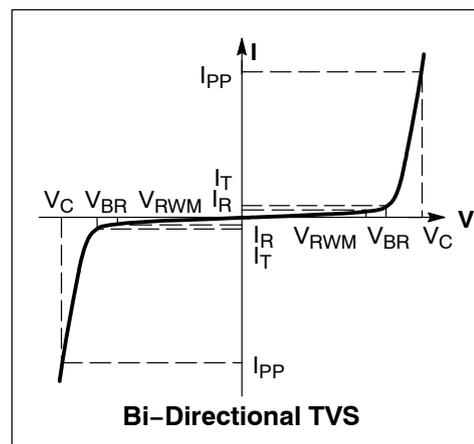
Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	380	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	8	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	
Operation junction temperature	T_J	-55~150	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

Electrical characteristics (TA=25 °C, unless otherwise noted)

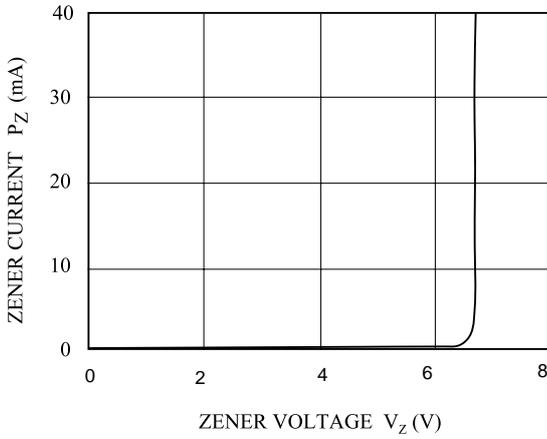
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				± 24.0	V
Reverse leakage current	I_R	$V_{RWM} = 24V$			1.0	μA
Reverse breakdown voltage	$V_{BR(I/O-GND)}$	$I_T = 1mA$	26.5	28.0	30.0	V
Clamping voltage	V_C (I/O-GND)	$I_{pp} = 1.0A$ $t_p = 8/20\mu s$			36.0	V
		$I_{pp} = 8.0A$ $t_p = 8/20\mu s$			48.0	V
Junction capacitance	C_J	$V_R = 0V$, $f = 1MHz$		30.0	45.0	pF

Electrical performance curve

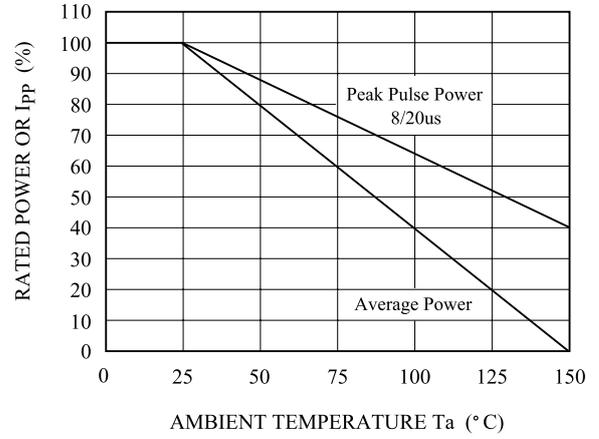
- V_C : Maximum clamping voltage
- V_{br} : Reverse breakdown voltage
- V_{RWM} : Working voltage
- I_{PP} : Maximum peak current



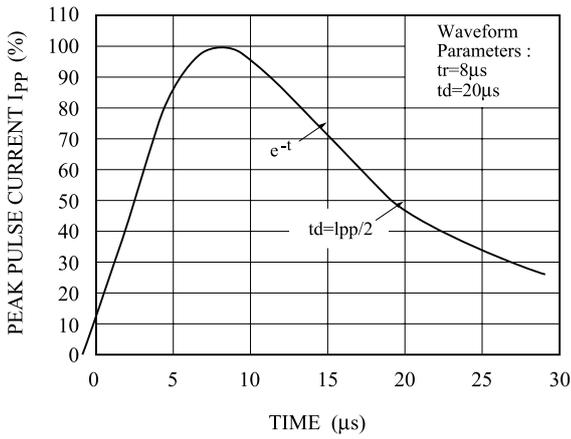
$V_Z - I_Z$



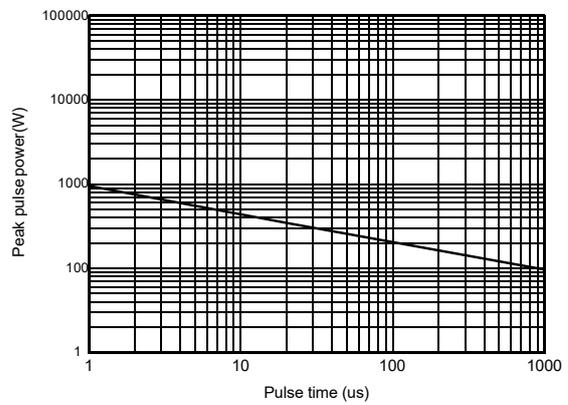
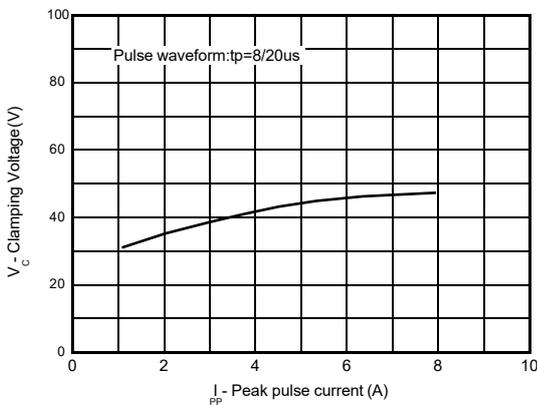
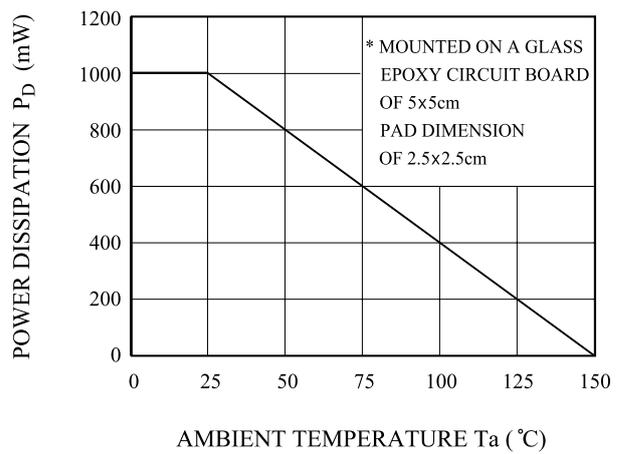
POWER DERATION CURVE



PULSE WAVEFORM



$P_D - T_a$

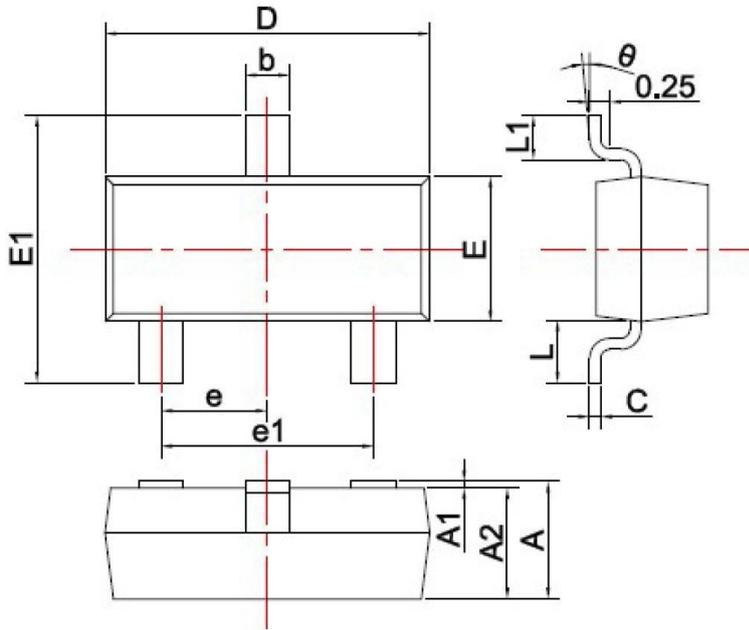


Clamping voltage vs. Peak pulse current

Non repetitive peak pulse power vs. Pulse time

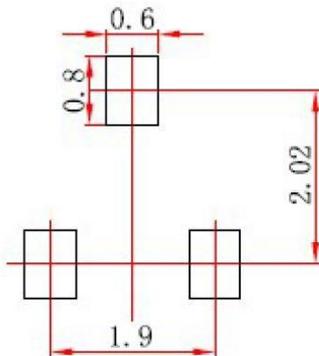
Package outline dimensions

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

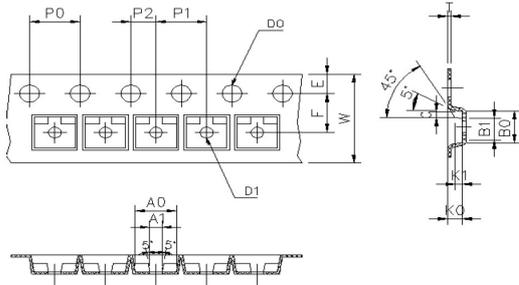


Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05mm.
3. The pad layout is for reference purposes only.

SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

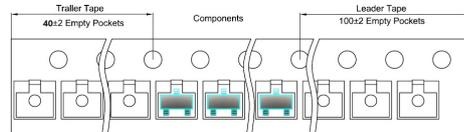


Packaging Description:

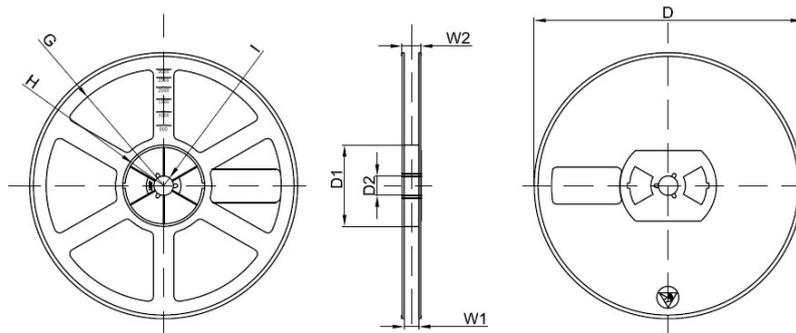
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. The reels are blue in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

Symbol	Spec	Symbol	Spec
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		

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