

1. Description

The T12S5-7-ES is a Transient Voltage Suppressor that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast Transients (EFT), and lightning. All pins are rated to withstand 30kV ESD pulses using the IEC61000-4-2 air discharge methods.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - ±30kV Contact Discharge
 - ±30kV Air Discharge
- 200W Peak pulse Power (8/20us)
- RoHS compliance
- Unidirectional configuration
- Low clamping voltage
- Low leakage current
- Protects one power or I/O

3. Applications

- Portable electronics
- Control & monitoring systems
- Servers, notebooks, and desktop PCs
- Set-top box
- Communication systems
- Digital cameras

4. Ordering Information

Part Number	Package	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
T12S5-7-ES	SOD-523	Halogen free	Tape & Reel	3000 PCS	UL 94V-0	7 inches
Marking for the T12S5-7-ES series						
V _{RWM}	3.3V	5V	7V	12V	15V	24V
Marking	N1	N2	Z.H.8	N3	N4	N5

Table-1 Ordering information

5. Pin Configuration and Functions

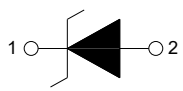
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO	Note1 	
2	GND	Connect to GND		

Table-2 Pin configuration

Note1: This diagram is only an electrical schematic, and the actual pin size is based on POD.

6. Specification

6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25℃	P _{pk}	-	200	W
Peak pulse current (tp=8/20us)@25℃	I _{PP}	-	Refer to Table-5	A
ESD (IEC61000-4-2 air discharge) @25℃	V _{ESD}	-	±30	kV
ESD (IEC61000-4-2 contact discharge) @25℃	V _{ESD}	-	±30	kV
Junction temperature	T _J	-	150	℃
Operating temperature	T _{OP}	-40	125	℃
Storage temperature	T _{STG}	-55	150	℃
Lead temperature	T _L	-	260	℃

Table-3 Absolute Maximum rating

6.2. Electrical Characteristics

Symbol	Description
V_{RWM}	Rated reverse stand-off voltage
V_{BR}	Minimum breakdown voltage @ $I_T = 1mA$
V_{CL}	Typical Clamping voltage
I_{PP}	Maximum peak pulse current
I_R	Reverse leakage current @ V_{RWM}
C_O	Typical line capacitance ($V_{IO}=0V$, $V_{P-P} = 30mV$, $f = 1MHz$)

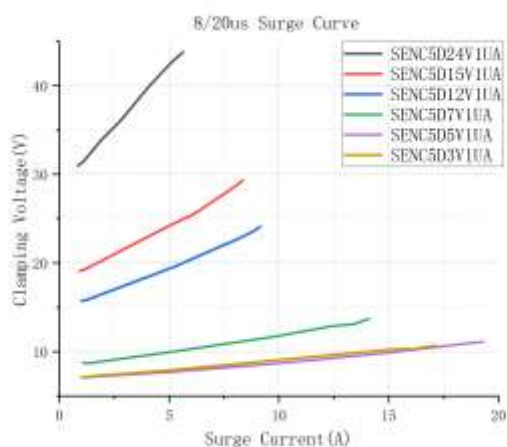
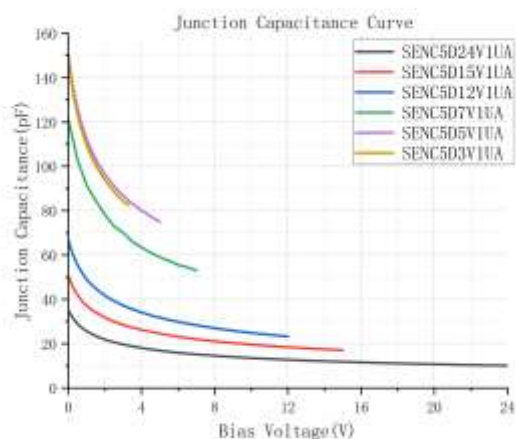
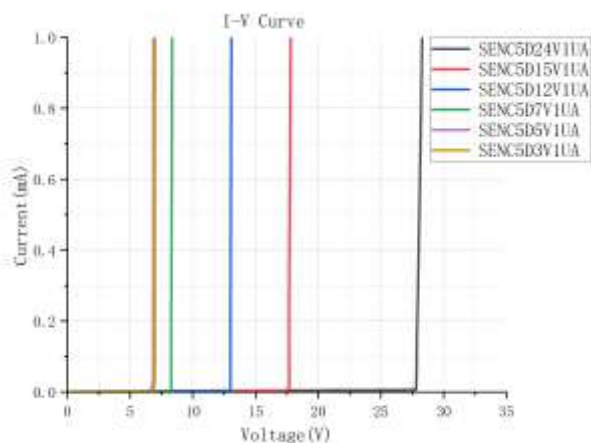
Table-4 Parameters Description

At $T_A = 25^{\circ}C$ unless otherwise noted

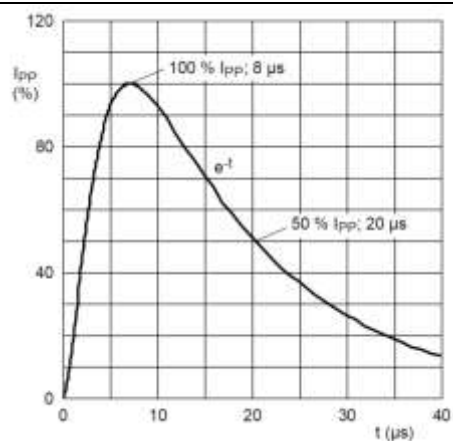
Part Number	V_{RWM} (Max.)	V_{BR} (Min.)	$V_{CL}@I=1A$ (Typ.)	I_{PP} (Max.)	$V_{CL}@I=I_{PP}$ (Typ.)	I_R (Max.)	C_O (Typ.)	C_O (Max.)
	(V)	(V)	(V)	(A)	(V)	(μA)	(pF)	(pF)
T12S5-7-ES	12.0	13.3	16.0	8	23	1.0	65	100

Table-5 Electrical Characteristics for All Series

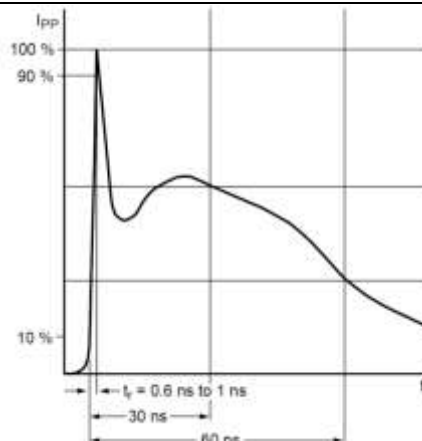
7. Typical Characteristic



Measurement Wave According to IEC Standard

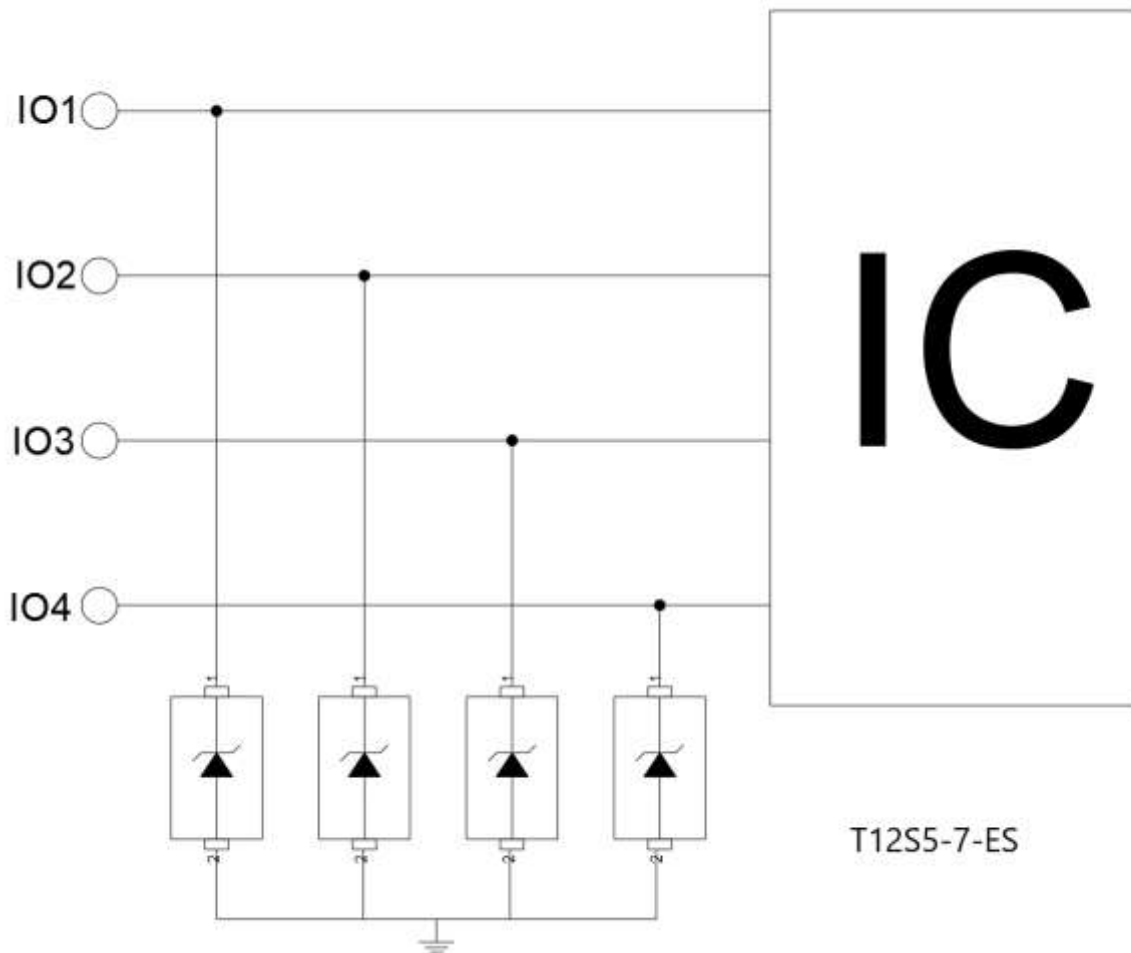


8/20 μ s pulse waveform according to IEC 61000-4-5



ESD pulse waveform according to IEC 61000-4-2

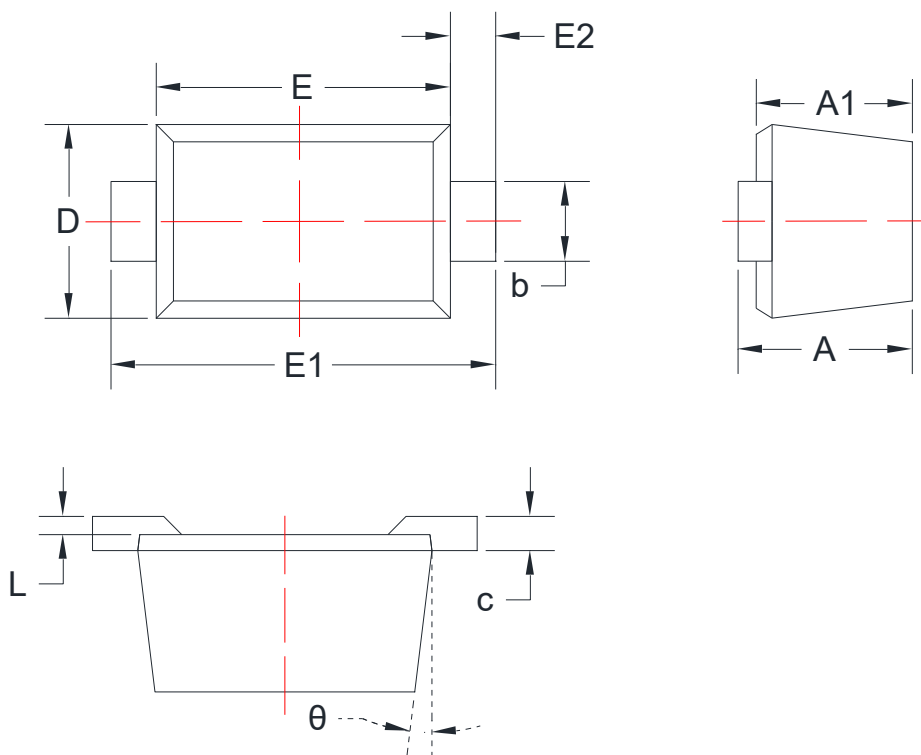
8. Typical Application



Pic-3 Typical Internet 1G Interface Application

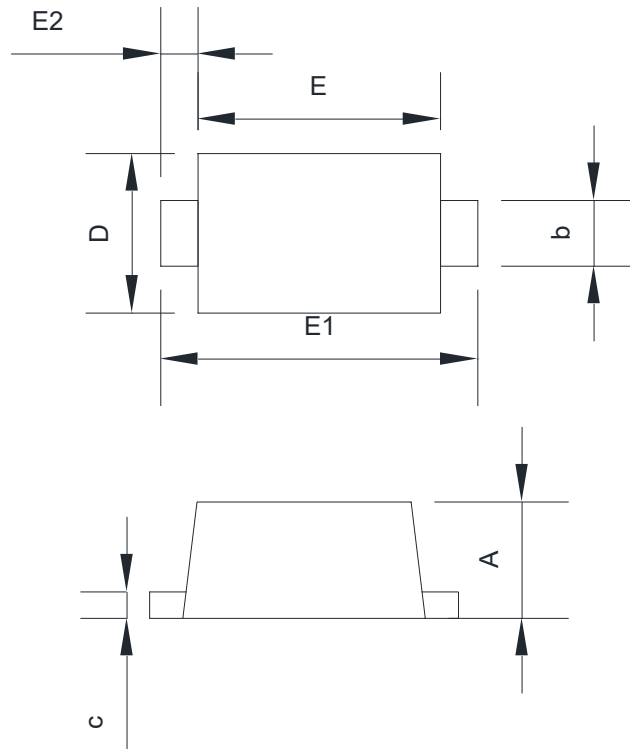
9. Dimension (SOD-523)

POD A(SX)



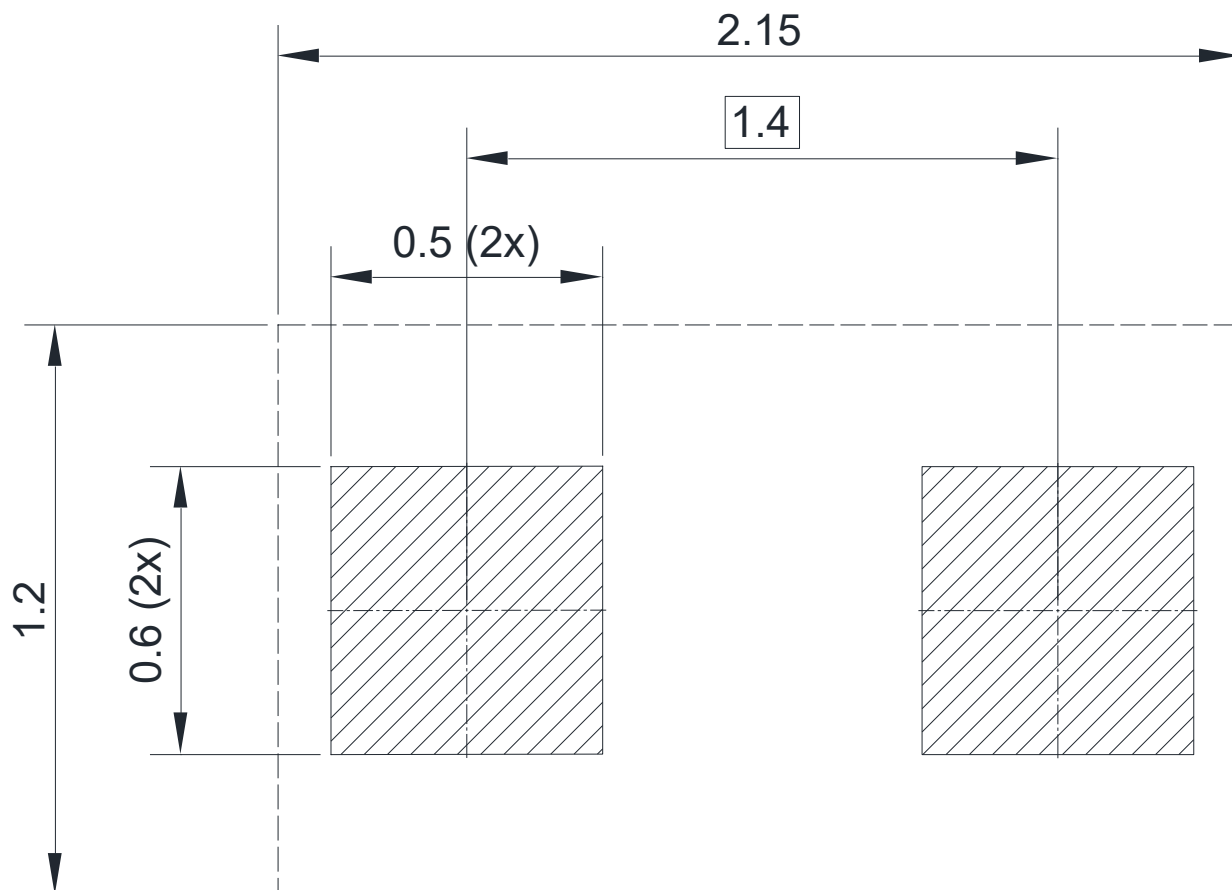
Symbol	Dimensions in Millimeters	
	Min.	Max.
A	0.50	0.73
A1	0.45	0.70
b	0.25	0.38
c	0.08	0.20
D	0.70	0.90
E	1.10	1.30
E1	1.50	1.70
E2	0.10	0.30
L	0.00	0.07
θ	7° REF	

POD B(H)



Symbol	Dimensions in Millimeters	
	Min.	Max.
A	0.50	0.70
b	0.25	0.35
c	0.10	0.20
D	0.75	0.85
E	1.10	1.30
E1	1.50	1.70
E2	0.10	0.30

10. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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