SuperESD - SET23AXXL02

1. Description

The SET23AXXL02 is a Transient Voltage Suppressor Arrays 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 are discharge method.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - ±30kV Contact Discharge
  - ±30kV Air Discharge
- 450W Peak pulse Power (8/20us)
- Low clamping voltage
- Protects one bidirectional or two Unidirectional lines
- Low leakage current
- ESD protection > 15kV
- RoHS compliant

3. Applications

- Portable electronic
- Control & monitoring systems
- Servers, notebooks, and desktop PCs
- Set-top box
- Communications systems

4. Ordering Information

Part Number	Package	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
SET23AXXL02	SOT-23	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches
Marking for the SET23AXXL02 series						
V_{RWM}	3.3V	5V	7V	12V	15V	24V	36V
Marking	-	-	-	M12	M15	M24	M36

Table-1 Ordering information

5. Pin Configuration and Functions
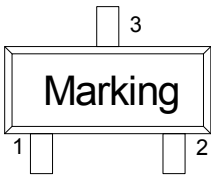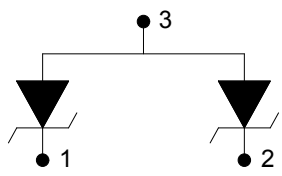
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO	Marking	
3	GND	Connect to GND		

Table-2   Pin configuration

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}	-	450	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

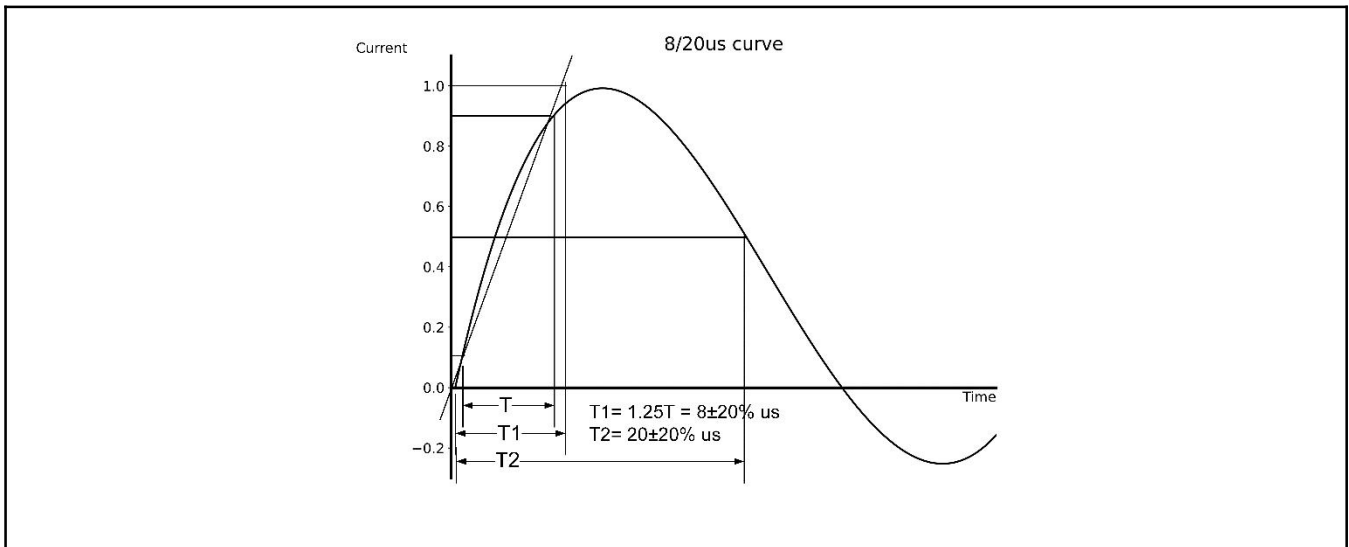| Symbol	Description
V_{RWM}	Rated reverse stand-off voltage
V_{BR}	Minimum breakdown voltage @I_T = 1mA
V_{CL}	Clamping voltage
I_{PP}	Maximum peak pulse current
I_R	Reverse leakage current @V_{RWM}
C_O	Typical line capacitance (V_{IO}=0V, V_{P-P} = 30mV, f = 1MHz)

Table-4   Parameters Description

At TA = 25℃ unless otherwise noted

Part Number	V_{RWM}	V_{BR}	V_{CL}@I=1A	I_{PP}	V_{CL}@I=I_{PP}	I_R	C_O
	(V)	(V)	(V)	(A)	(V)	(uA)	(pF)
SET23A12L02	12	13.5	18	15	28	1.0	100
SET23A15L02	15	16.5	22	11	33	1.0	80
SET23A24L02	24	26.5	33	6	48	1.0	60
SET23A36L02	36	40	55	3	65	1.0	50

Table-5   Electrical Characteristics for All Series

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7. Typical Characteristic

Current
8/20us curve

1.0
0.8
0.6
0.4
0.2
0.0
−0.2

Time

T
T1
T2

T1= 1.25T = 8±20% us
T2= 20±20% us

8. Typical Application

I/O1
I/O2
I/O3
I/O4

IC

GND
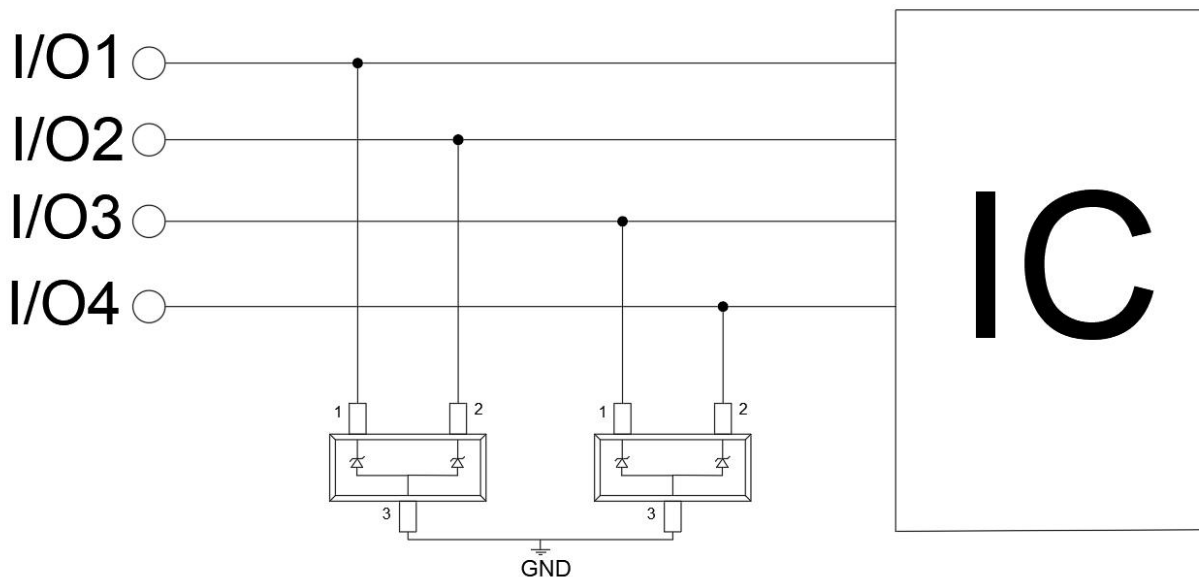
Typical Interface Application

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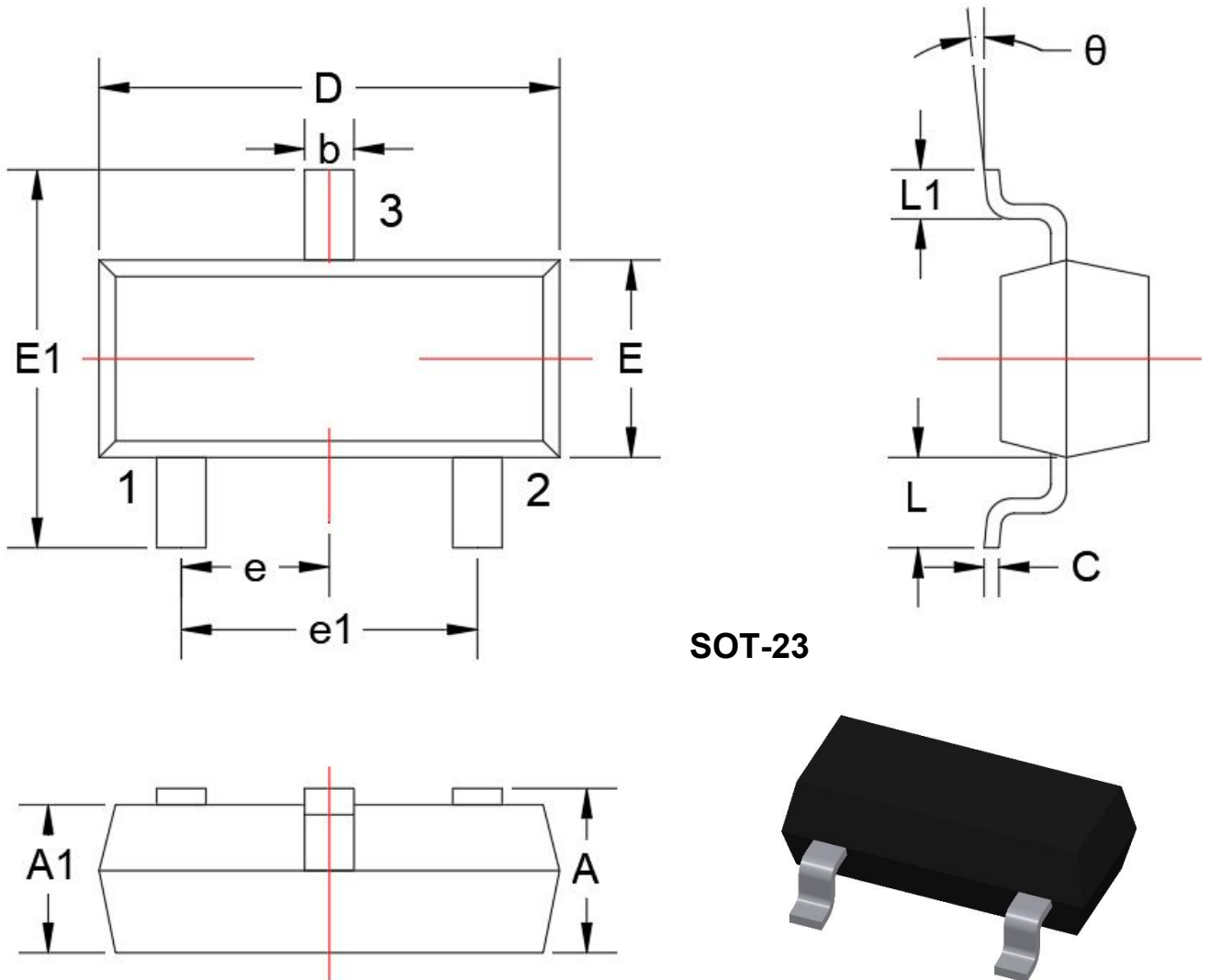
9. Dimension

SOT-23

Dimensions in Millimeters					
Symbol	Min.	Max.	Symbol	Min.	Max.
A	0.90	1.15	e1	1.80	2.00
A1	0.90	1.05	L	0.55REF	
b	0.30	0.50	L1	0.30	0.50
C	0.08	0.15	θ	0°	8°
D	2.80	3.00			
E	1.20	1.40			
E1	2.25	2.55			
e	0.95TYP				

Table-5   Product dimensions

10. Recommended Land Pattern
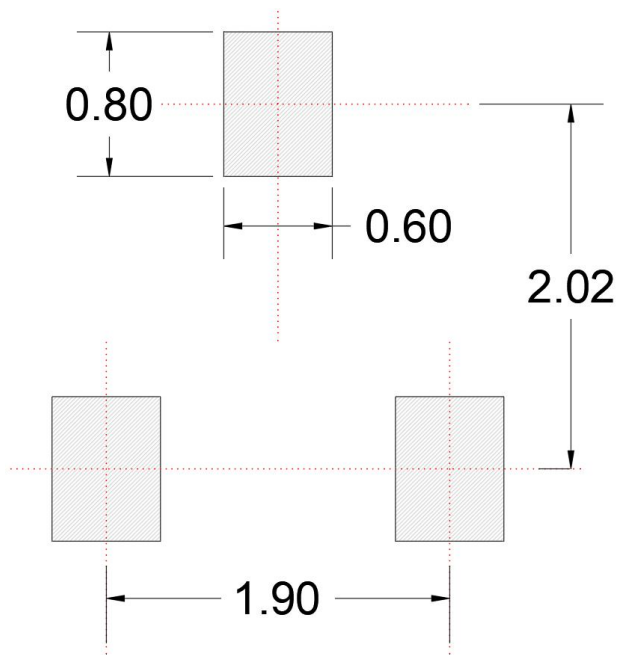
Note:

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

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