

## ESD Diode

### Features

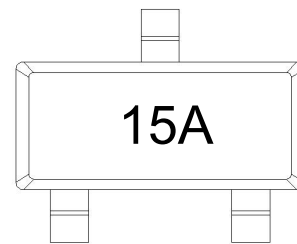
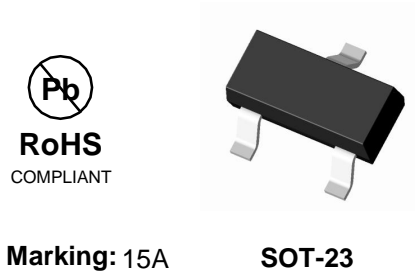
- Up to 2 lines protects
- Junction capacitance (Max value:90pF)
- Peak Pulse current (8/20μs) MAX: 12A
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- Low leakage current
- Working voltages:12V
- RoHS Compliant

### Applications

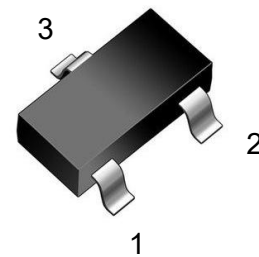
- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Set Top Box
- Industrial Controls
- Server and Desktop PC

### Mechanical Characteristics

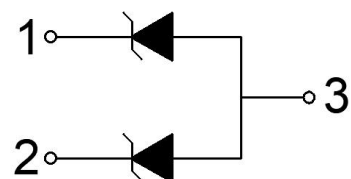
- Package: SOT-23
- Ideal for Automated Placement
- Case Material: “Green” Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020



#### Pin definition



#### Equivalent circuit



Absolute Maximum Ratings (T <sub>A</sub> =25°C unless otherwise noted)			
Parameter	Symbol	Limit	Unit
Peak Pulse Power (tp=8/20μs waveform)	P <sub>PP</sub>	300	W
Peak Pulse Current (8/20μs)	I <sub>PP</sub>	12	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	±30	KV
ESD per IEC 61000-4-2 (Contact)		±30	KV
Forward voltage @IF=10mA	V <sub>F</sub>	0.9	V
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

Electrical Specifications (T <sub>A</sub> =25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V <sub>RWM</sub>				12	V
Reverse Breakdown Voltage	V <sub>(BR)R</sub>	I <sub>R</sub> = 1mA	14.2		15.8	V
Reverse Leakage Current	I <sub>R</sub>	V <sub>R</sub> = 12V			1	uA
Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> = 1A (8 x 20uS pulse)			20	V
Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> = 12A (8 x 20uS pulse)			25	V
		V <sub>R</sub> = 0V, f = 1MHz		60	90	pF

## Ratings and Characteristics Curves

(TA = 25°C unless otherwise noted)

FIG1: Power rating derating curve

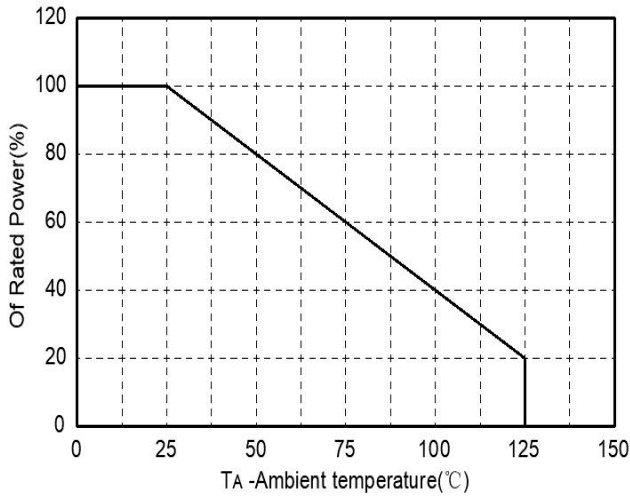


FIG2: pulse Waveform

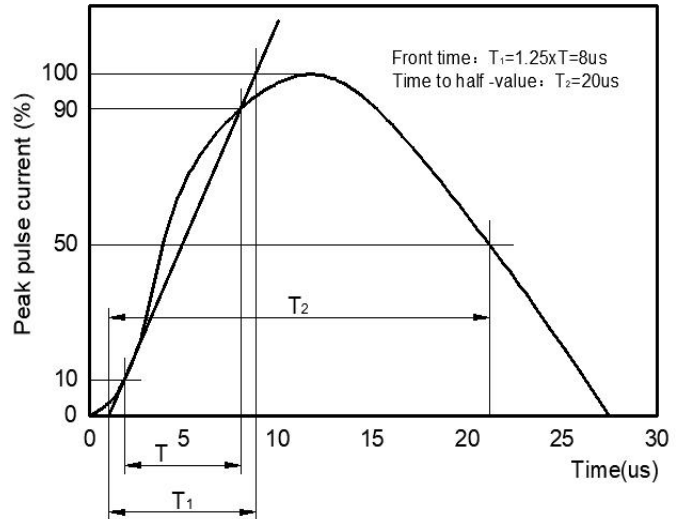


FIG3: Capacitance between terminals characteristics

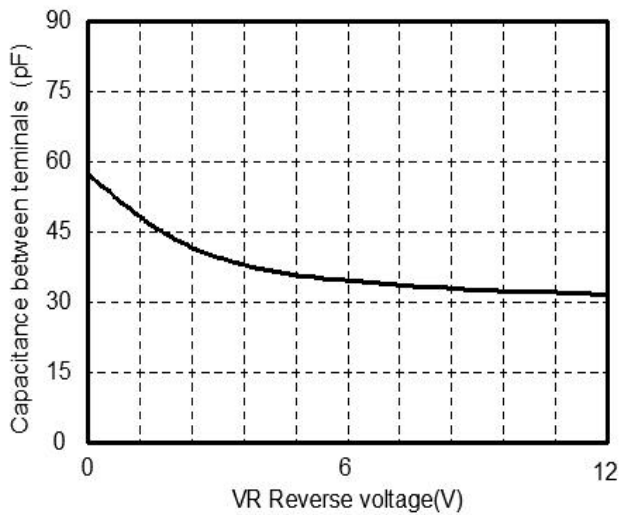
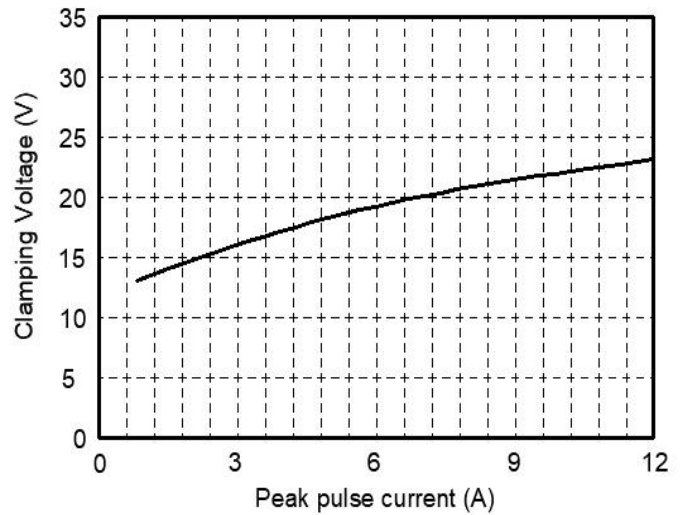
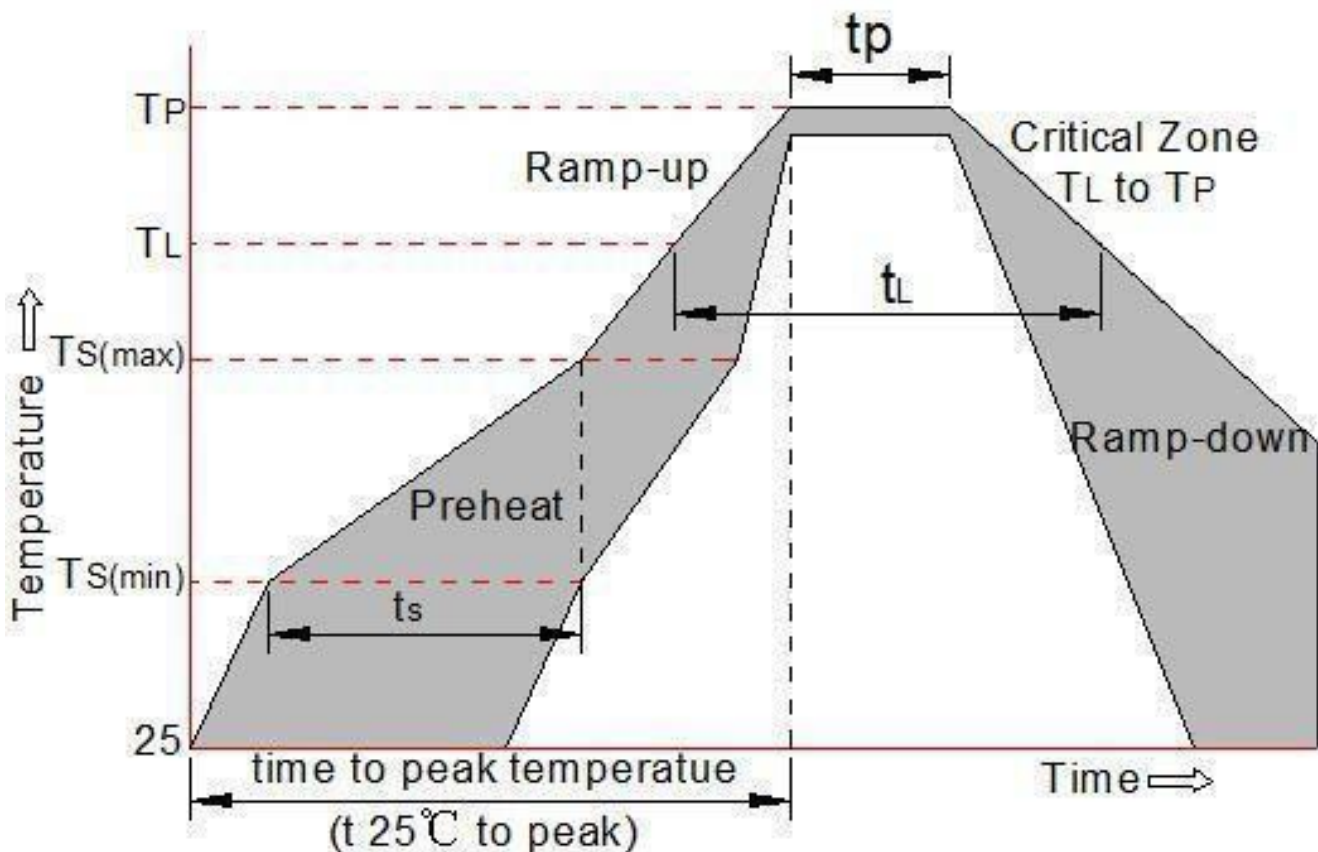


FIG4: Clamping Voltage vs. Peak Pulse Current



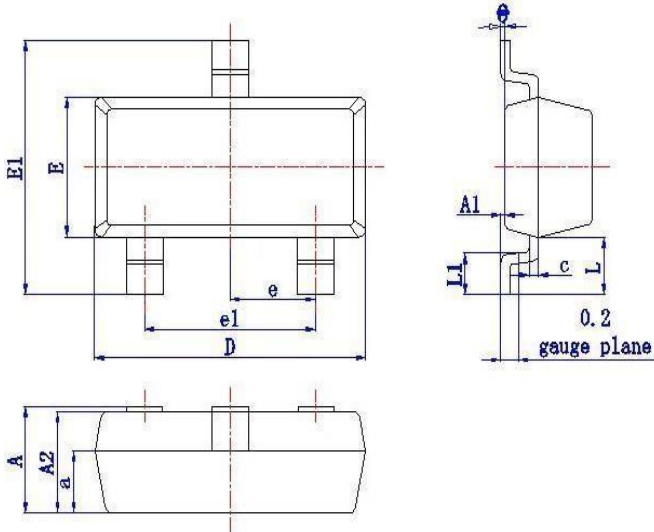
## Soldering Parameters

Reflow Condition		Pb -Free assembly (see as bellow)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150 °C
	-Temperature Max( $T_{s(max)}$ )	+200 °C
	-Time (Min to Max) ( $t_s$ )	60 -180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3 °C /sec. Max
$T_{s(max)}$ to $T_L$ - Ramp -up Rate		3 °C /sec. Max
Reflow	-Temperature( $T_L$ ) (Liquid us)	+217 °C
	-Temperature( $t_L$ )	60 -150 secs.
Peak Temp ( $T_p$ )		+260(+0/ -5) °C
Time within 5 °C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp -down Rate		6 °C /sec. Max
Time 25 °C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260 °C



## Package Outline Dimensions

millimeters



Symbol	Dimensional	
	Millimeters	
	min	max
A	0.9	1.15
A1	0	0.1
A2	0.9	1.05
a	(0.6)	
D	2.8	3.0
E	1.2	1.4
E1	2.25	2.55
e	(0.95)	
e1	1.8	2.0
b	0.3	0.5
c	0.08	0.15
L	(0.55)	
L1	0.3	0.5
$\theta$	0°	8°

## Part Number System

**S E N 12 3 2 S2 --X** (Notice1)



## Revision History

Document Version	Date of release	Description of changes
Rev.A	2022.05.10	First issue

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