

### FEATURES:

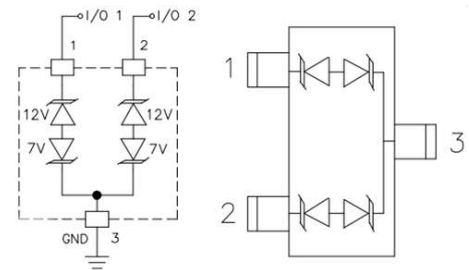
- ✧ Ultra low leakage: nA level
- ✧ Operating voltage: 7V or 12V
- ✧ Low clamping voltage
- ✧ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±8kV
  - IEC61000-4-5 (Lightning) 13A for 12V (8/20µs)
  - IEC61000-4-5 (Lightning) 18A for 7V (8/20µs)
- ✧ RoHS Compliant



SOT-23

### MAIN APPLICATIONS

- ✧ USB 2.0 power and data line
- ✧ Set-top box and digital TV
- ✧ Digital video interface (DVI)
- ✧ Notebook Computers
- ✧ SIM Ports
- ✧ 10/100 Ethernet



PIN Configuration

### MECHANICAL CHARACTERISTICS

- ✧ Package SOT-23
- ✧ Molding Compound Flammability Rating : UL 94V-O
- ✧ Quantity Per Reel : 3,000pcs
- ✧ Lead Finish : Lead Free
- ✧ Marking : 712

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, RH=45%-75%, unless otherwise noted)

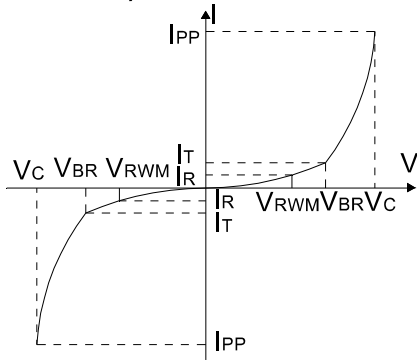
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp = 8/20µs),(V <sub>RWM</sub> =7V/V <sub>RWM</sub> =12V)	P <sub>PPM</sub>	360	W
Peak Pulse Current (tp = 8/20µs),(V <sub>RWM</sub> =7V/V <sub>RWM</sub> =12V)	I <sub>PPM</sub>	18/13	A
ESD voltage IEC 61000-4-2 (air discharge)	V <sub>ESD</sub>	15	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V <sub>ESD</sub>	8	kV
Maximum lead temperature for soldering during 10s	T <sub>L</sub>	260	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C
Operating Temperature Range	T <sub>OP</sub>	-55 to +125	°C

**Electrical Characteristics** (TA=25°C unless otherwise specified)

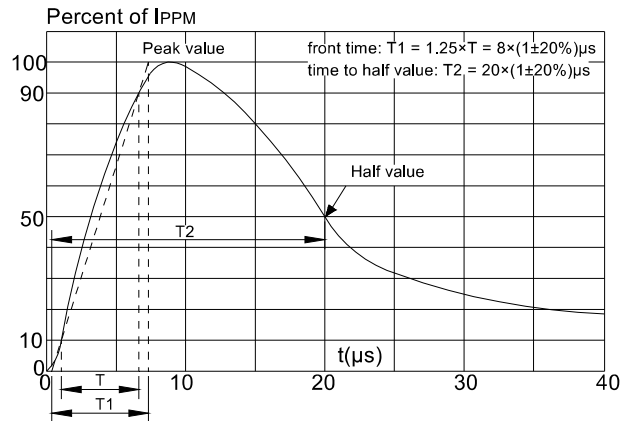
Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V <sub>RWM</sub>	--	--	7.0	V	Pin3 to Pin1 or 2
		--	--	12.0		Pin1 or 2 to Pin3
Breakdown Voltage	V <sub>BR</sub>	7.5	--	--	V	I <sub>T</sub> =1mA, Pin3 to Pin1 or 2
		13.3	--	--		I <sub>T</sub> =1mA, Pin1 or 2 to Pin3
Leakage Current I <sub>Leak</sub>	I <sub>R</sub>	--	--	1.0	μA	V <sub>RWM</sub> =7V, Pin3 to Pin1 or 2
		--	--	1.0		V <sub>RWM</sub> =12V, Pin1 or 2 to Pin3
Clamping Voltage	V <sub>C</sub>	--	--	20.0	V	I <sub>PP</sub> =18A, T <sub>p</sub> =8/20μs, Pin3 to Pin1 or 2
		--	--	30.0		I <sub>PP</sub> =13A, T <sub>p</sub> =8/20μs, Pin1 or 2 to Pin3
Junction Capacitance	C <sub>J</sub>	--	45.0	--	pF	V <sub>R</sub> =0V, f=1MHz, Pin1 or 2 to Pin3

**Characteristic Curves**

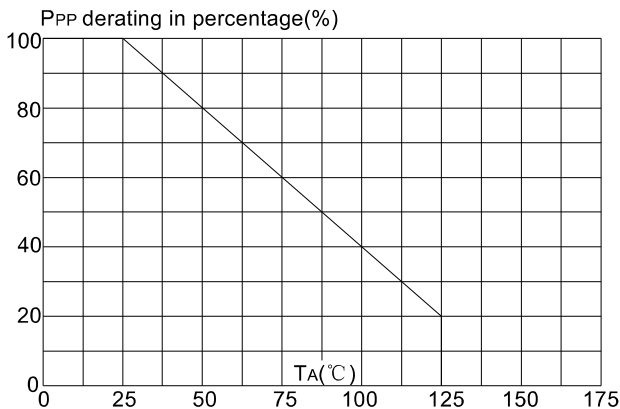
**FIG.1: V- I curve characteristics (Bi-directional)**



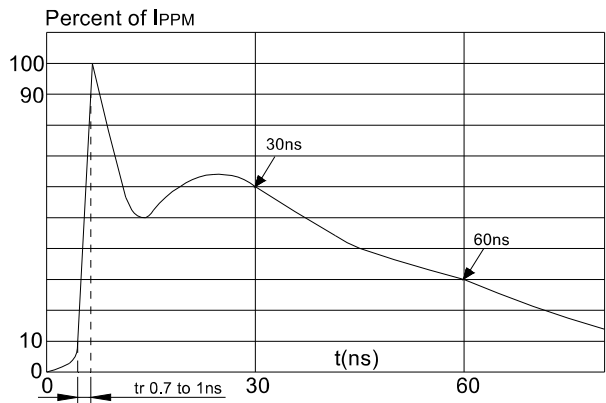
**FIG.2: Pulse waveform (8/20μs)**



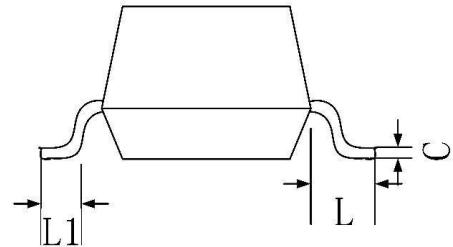
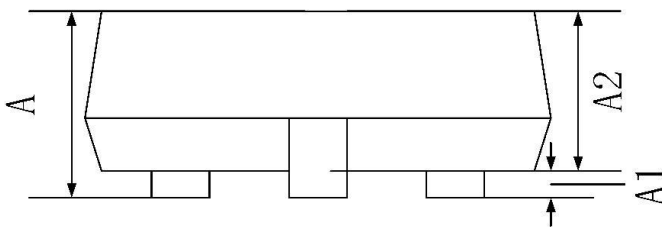
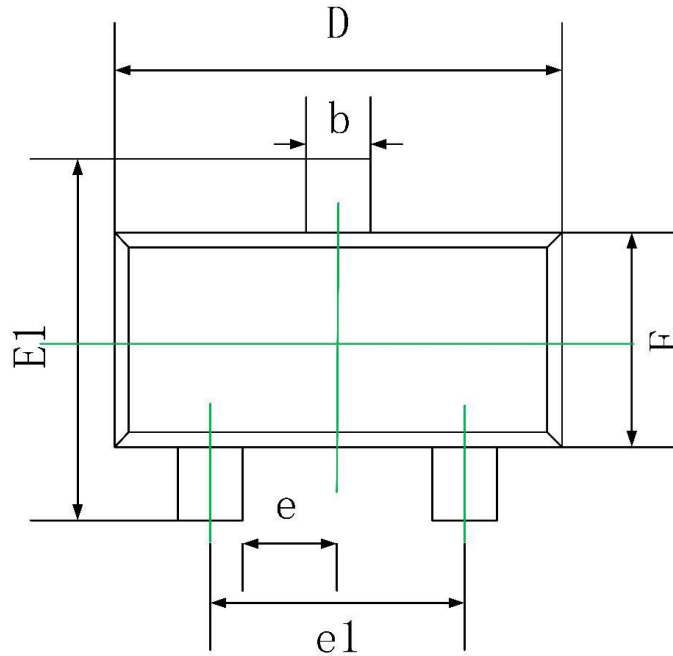
**FIG.3: Pulse derating curve**



**FIG.4: ESD clamping (8KV contact)**



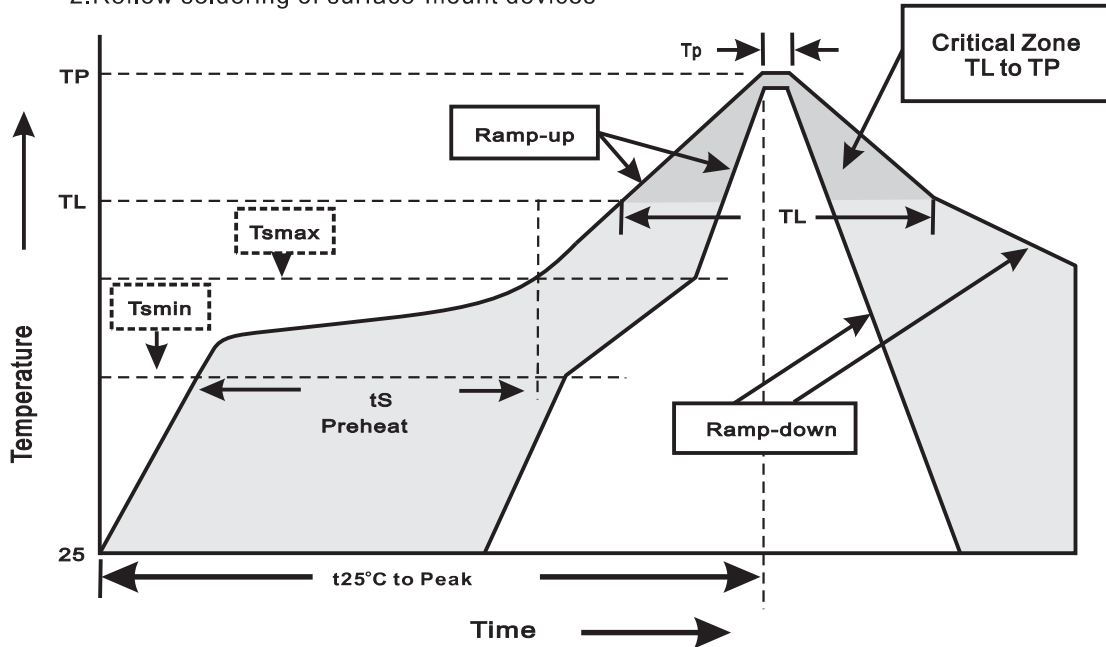
**SOT-23 Package Information**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020

**Suggested thermal profiles for soldering processes**

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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