

FEATURES:

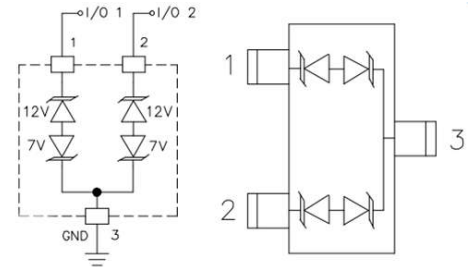
- ✧ Ultra low leakage: nA level
- ✧ Operating voltage: 7V or 12V
- ✧ Low clamping voltage
- ✧ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 15\text{kV}$
 - Contact discharge: $\pm 8\text{kV}$
 - IEC61000-4-5 (Lightning) 13A for 12V (8/20 μs)
 - IEC61000-4-5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



SOT-23

MAIN APPLICATIONS

- ✧ Protection of RS-485 transceivers with extended common-mode range
- ✧ Security systems
- ✧ Automatic Teller Machines
- ✧ HFC systems
- ✧ Networks



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 ($T_A=25^\circ\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power ($t_p = 8/20\mu\text{s}$), ($V_{RWM}=7\text{V}/V_{RWM}=12\text{V}$)	P_{PPM}	360	W
Peak Pulse Current ($t_p = 8/20\mu\text{s}$), ($V_{RWM}=7\text{V}/V_{RWM}=12\text{V}$)	I_{PPM}	18/13	A
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	15	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	8	kV
Maximum lead temperature for soldering during 10s	T_L	260	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$
Operating Temperature Range	T_{OP}	-55 to +125	$^\circ\text{C}$

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

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	7.0	V	Pin3 to Pin1 or 2
		--	--	12.0		Pin1 or 2 to Pin3
Breakdown Voltage	V_{BR}	7.5	--	--	V	$I_T=1mA$, Pin3 to Pin1 or 2
		13.3	--	--		$I_T=1mA$, Pin1 or 2 to Pin3
Leakage Current I_{Leak}	I_R	--	--	1.0	μA	$V_{RWM}=7V$, Pin3 to Pin1 or 2
		--	--	1.0		$V_{RWM}=12V$, Pin1 or 2 to Pin3
Clamping Voltage	V_C	--	--	20.0	V	$I_{PP}=18A$, $T_p=8/20\mu s$, Pin3 to Pin1 or 2
		--	--	30.0		$I_{PP}=13A$, $T_p=8/20\mu s$, Pin1 or 2 to Pin3
Junction Capacitance	C_J	--	45.0	--	pF	$V_R=0V$, $f=1MHz$, Pin1 or 2 to Pin3

Characteristic Curves

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

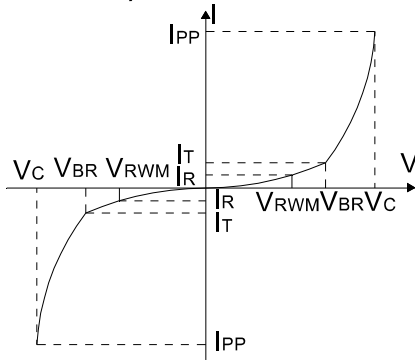


FIG.2: Pulse waveform (8/20μs)

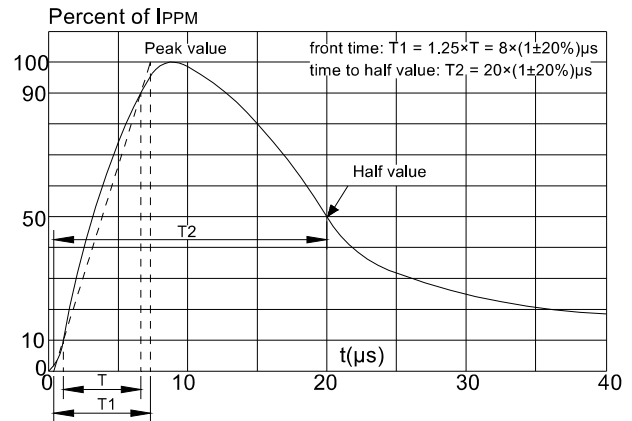


FIG.3: Pulse derating curve

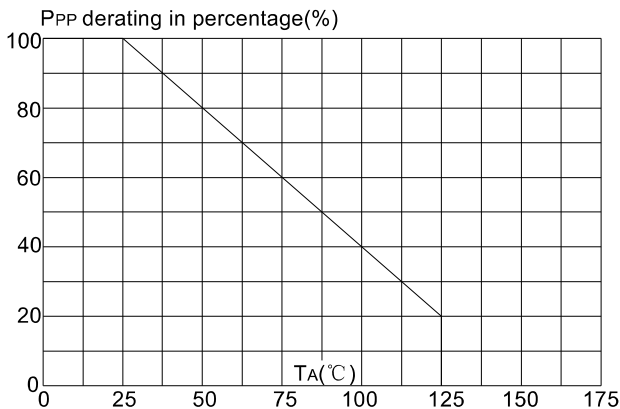
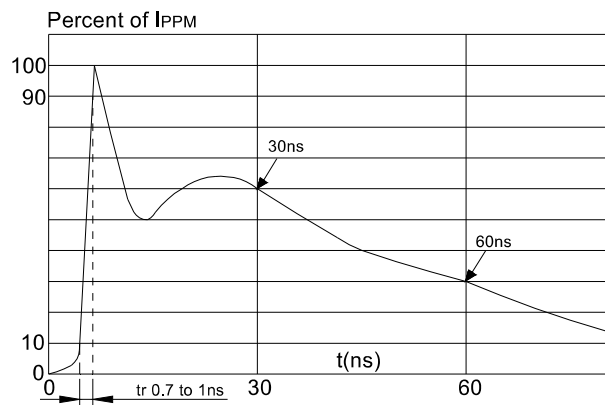
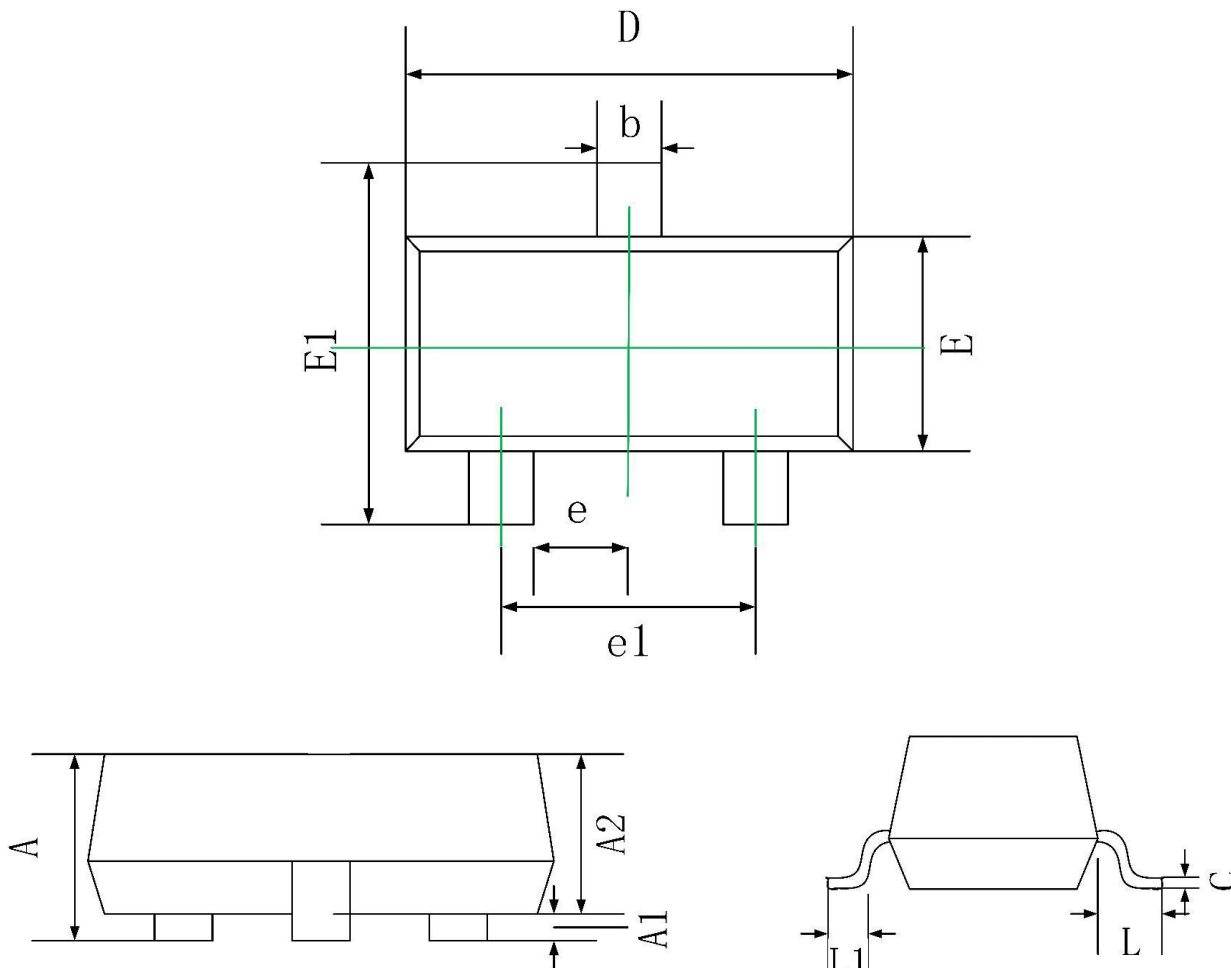


FIG.4: ESD clamping (8KV contact)



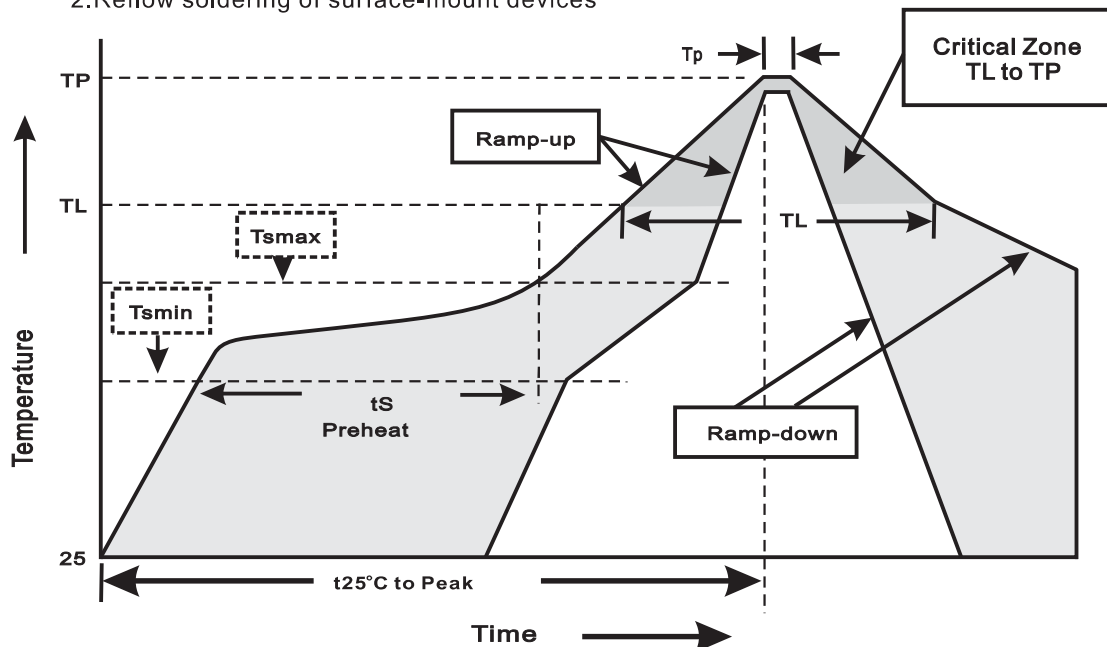
SOT-23 Package Information



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