

FEATURES:

- ✧ Protects one bi-directional I/O line
- ✧ Low clamping voltage
- ✧ Low operating voltage: 5.0V
- ✧ ROHS compliant

MAIN APPLICATIONS

- ✧ Fire wire & USB
- ✧ Sensitive analog inputs
- ✧ Notebook computers
- ✧ Portable electronics
- ✧ LAN/WAN equipment
- ✧ Video line protection
- ✧ Microcontroller input protection

PROTECTION SOLUTION TO MEET

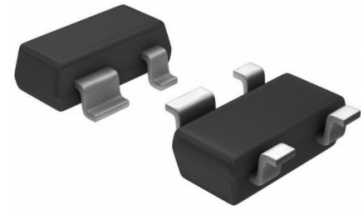
- ✧ IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)

MECHANICAL CHARACTERISTICS

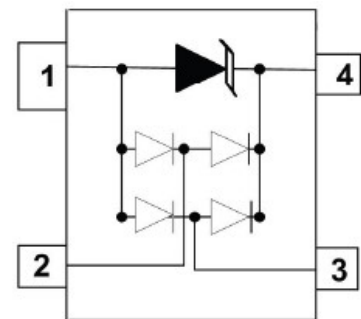
- ✧ Package SOT-143
- ✧ Molding Compound Flammability Rating : UL 94V-O
- ✧ Quantity Per Reel : 3,000pcs
- ✧ Lead Finish : Lead Free
- ✧ Marking : E5R

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

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$
Operating junction temperature range	T_j	-55 to +125	$^\circ\text{C}$
Lead Soldering Temperature	T_L	260 (10 sec.)	$^\circ\text{C}$
Peak pulse power dissipation on 8/20 μs waveform	P_{PP}	60	W
ESD per IEC 61000-4-2 (Air)	V_{ESD}	+/- 15	kV
ESD per IEC 61000-4-2 (Contact)		+/- 8	



SOT-143



PIN Configuration

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse working voltage	V_{RWM}				5.0	V
Reverse breakdown voltage	V_{BR}	$I_T = 1\text{mA}$	6.0			V
Reverse leakage current	I_R	$V_{RWM} = 5\text{V}$ pin4 to pin1			1	μA
Clamping voltage (I/O pin to Ground)	V_C	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$		9	10	V
		$I_{PP} = 5\text{A}$, $t_p = 8/20\mu\text{s}$		12	13	V
Junction capacitance	C_J	$V_{RWM} = 0\text{V}$, $f = 1\text{MHz}$ Any I/O pin to Ground		0.8	1.0	pF
		$V_{RWM} = 0\text{V}$, $f = 1\text{MHz}$ Between I/O pins		0.4	0.6	

RATINGS AND V-I CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

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

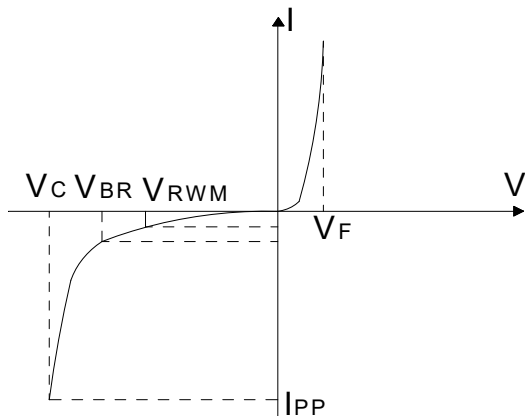


FIG.2: Pulse waveform (8/20 μs)

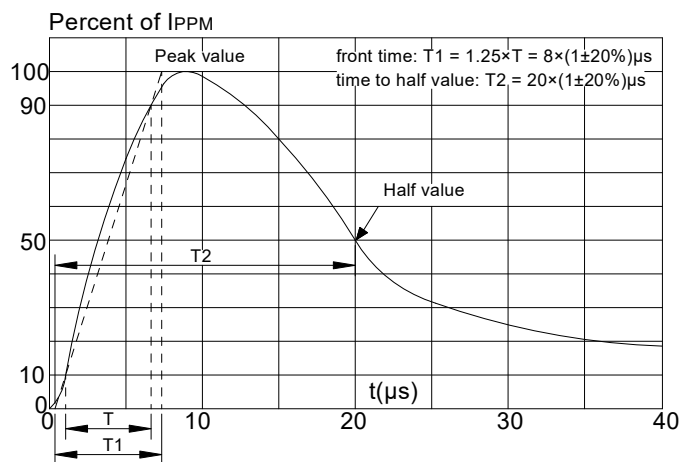


FIG.3: Pulse derating curve

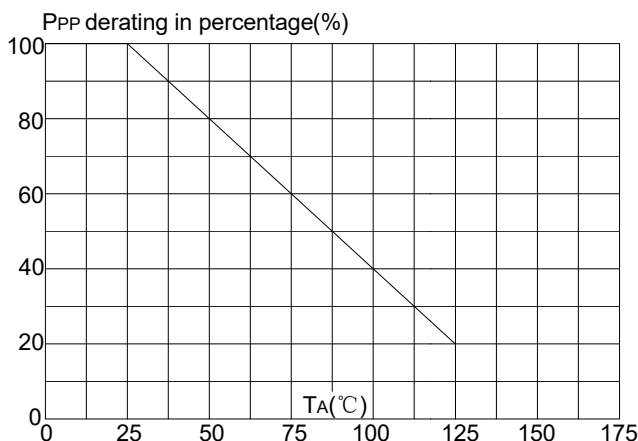
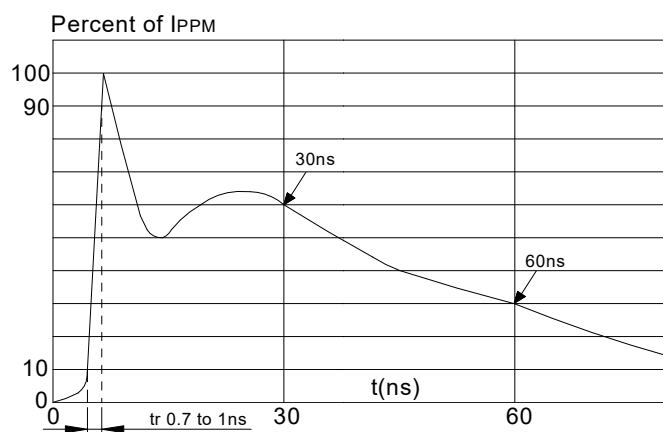
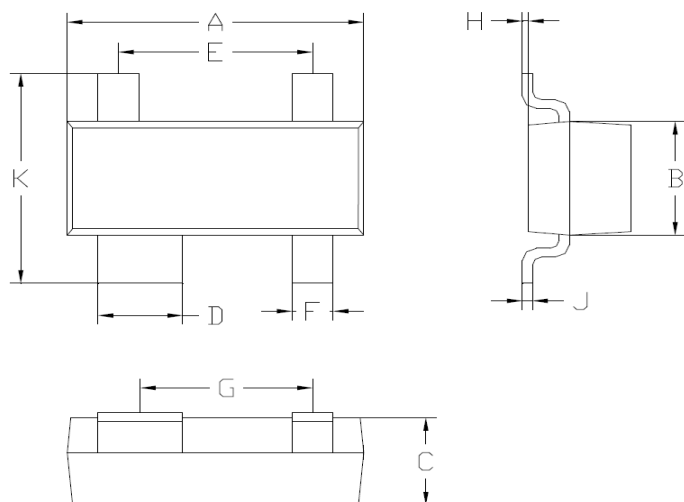


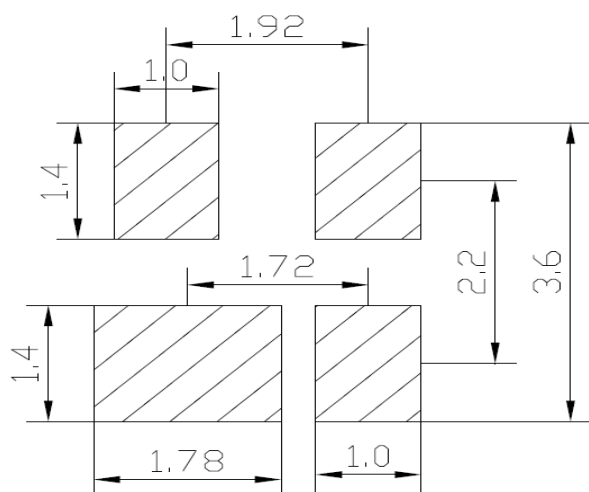
FIG.4: ESD clamping (8KV contact)



PACKAGE MECHANICAL DATA



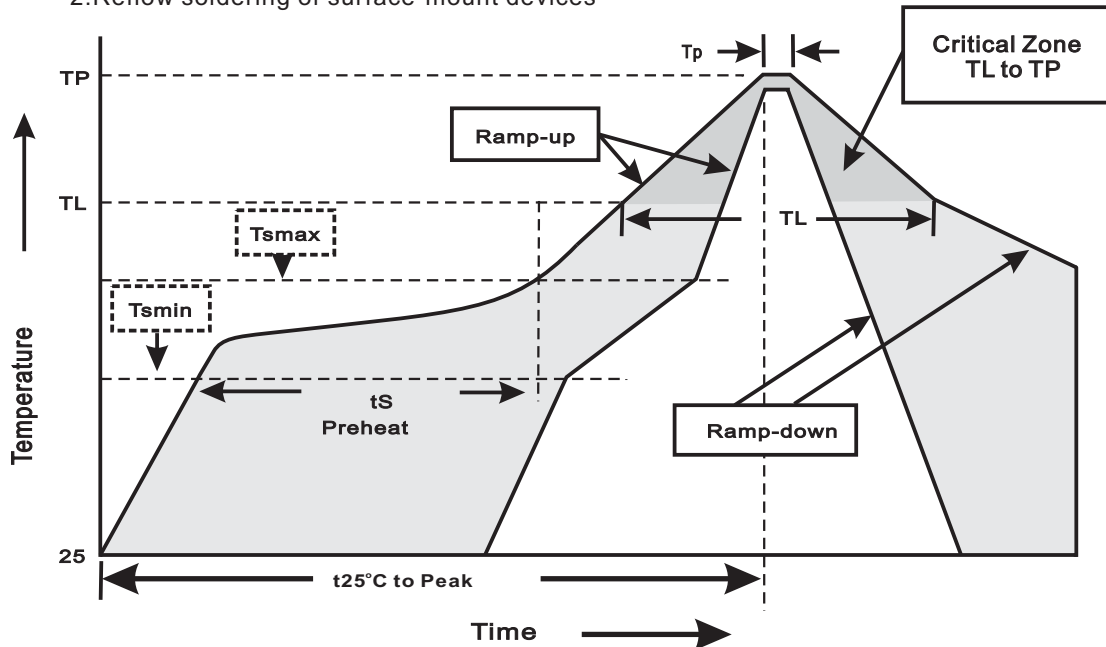
SOT-143		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.9	1.1
D	0.78	0.88
E	1.80	2.00
F	0.37	0.43
G	1.59	1.79
H	0.02	0.1
J	0.05	0.15
K	2.20	2.60
ALL Dimensions in mm		



Unit : mm

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(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes