LITE-ON SEMICONDUCTOR

L30ESDxxxC3-2

DUAL ESD PROTECTION DIODES

STAND-OFF VOLTAGE - **5 ~24** Volts
POWER DISSIPATION - **300** WATTS

GENERAL DESCRIPTION

- The L30ESD5V0C3-2~L30ESD24VC3-2 are a dual voltage suppressor designed to protect components which are connected to data and transmission lines against Electro Static Discharge (ESD).
- It clamps the voltage just above the logic level supply for positive transients , and to a diode drop below ground for negative transients.
- It can work as bi-directional suppressor by connecting only pin 1 to 2.

FEATURES

- 2 Unidirectional ESD protection.
- Max. peak pulse power : Ppp = 300W at tp = 8/20 us
- Ultra low leakage current : IRM < 1uA @ VBR
- ESD protection > 25KV per MIL-STD-883C, Method 3015-6: Class 3.
- IEC 61000-4-2, level 4 (ESD),>15KV(air) ;>8KV(contact).
- Ultra small SMD plastic packages

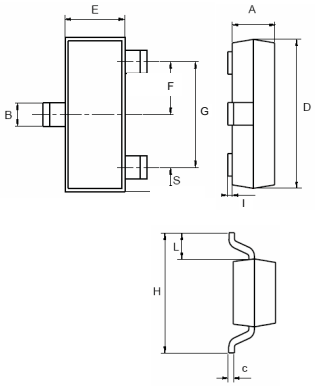
APPLICATION

- Computers and peripherals
- Communication system
- Portable electronics
- Cellular handsets and accessories.

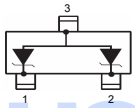
MECHANICAL DATA

- Case Material: "Green" molding compound UL flammability classification 94V-0 (No Br.Sb, Cl)
- Terminals: Lead Free Plating (Matte Tin Finish), solderable per J-STD-002 and JESD22-B/02.
- Moisture Sensitivity: Leve 1 per J-STD-020C
- Component in accordance to RoHs 2002/95/EC

SOT23

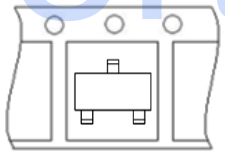


SOT23		
DIM.	MIN.	MAX.
A	0.89	1.05
B	0.30	0.51
C	0.085	0.18
D	2.75	3.04
E	1.20	1.60
F	0.85	1.05
G	1.70	2.10
H	2.10	2.75
I	0.0	0.1
L	0.6 typ.	
S	0.35	0.65
All Dimensions in millimeter		



PIN ASSIGNMENT	
1,2	Cathode
3	Ground

Marking & Orientation



Marking: L30ESD5V0C3-2, XX XX: LT E5
L30ESD12VC3-2, XXX XX: VCC YM
L30ESD24VC3-2, XXX XX: VCO YM

MAXIMUM RATINGS (Tj= 25℃ unless otherwise noticed)

Rating	Symbol	Value	Unit
Peak pulse Power (8/20us Waveform)	P_{PPM}	300	W
Operating Junction Temperature Range	T_J	-55 to + 125	℃
Storage Temperature Range	Tstg	-55 to + 150	℃
Soldering Temperature, t max = 10s	T_L	260	℃

ELECTRICAL CHARACTERISTICS (Tj= 25℃ unless otherwise noticed)

L30ESD5V0C3-2

Parameter	Symbol	Conditions	Mln	Typ	Max	Unit
Reverse standoff voltage	V_{DRM}	---	---	---	5	V
Reverse leakage current	I_{RM}	V_{DRM} = 5V	---	---	1	uA
Peak pulse Current	Ipp	tp = 8/20us	---	---	17	A
Breakdown voltage	V_{BR}	I_R = 1 mA	6.4	---	7.2	V
Diode capacitance	CJ	V_R = 0 V , f = 1MHz	---	156	160	pF
Clamping Voltage	V_{CL}	Ipp= 1 A, tp = 8/20us	---	----	9.8	V
Clamping Voltage	V_{CL}	Ipp= 15 A, tp = 8/20us	---	----	20	V

L30ESD12VC3-2

Parameter	Symbol	Conditions	Mln	Typ	Max	Unit
Reverse standoff voltage	V_{DRM}	---	---	---	12	V
Reverse standoff voltage	I_{RM}	V_{DRM} = 12 V	---	---	1	uA
Peak pulse Current	Ipp	tp = 8/20us	---	---	12	A
Breakdown voltage	V_{BR}	I_R = 1 mA	14.2	---	15.8	V
Diode capacitance	CJ	VR = 0 V , f = 1MHz	---	78	100	pF
Clamping Voltage	V_{CL}	Ipp= 1 A, tp = 8/20us	---	---	19	V
Clamping Voltage	V_{CL}	I_{pp}= 12 A, tp = 8/20us	---	---	25	V

L30ESD24VC3-2

Parameter	Symbol	Conditions	Mln	Typ	Max	Unit
Reverse standoff voltage	V_{DRM}	---	---	---	24	V
Reverse leakage current	I_{RM}	V_{DRM} = 24V	---	---	1	uA
Peak pulse Current	Ipp	tp = 8/20us	---	---	4	A
Breakdown voltage	V_{BR}	I_R = 1 mA	26.7	---	29.6	V
Diode capacitance	CJ	V_R = 0 V , f = 1MHz	---	30	60	pF
Clamping Voltage	V_{CL}	Ipp= 1 A, tp = 8/20us	---	---	36	V
Clamping Voltage	V_{CL}	Ipp= 4 A, tp =8/20us	---	---	43	V

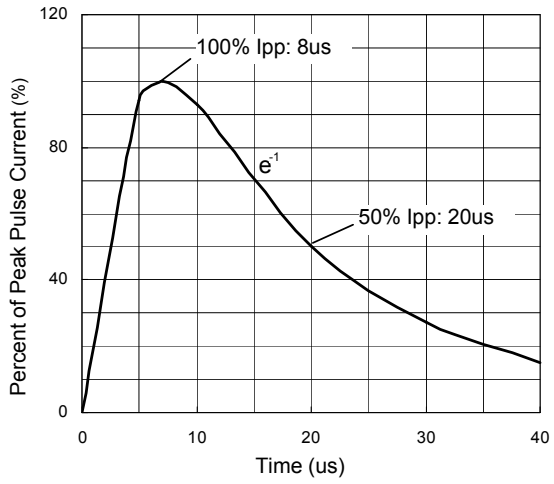


Figure 1. 8/20 us pulse waveform according to IEC 61000-4-5

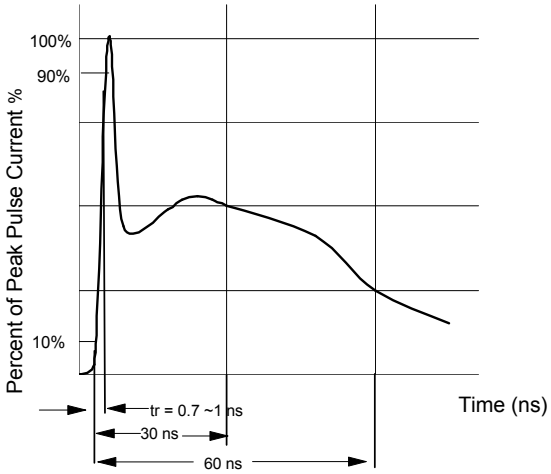


Figure 2. ESD pulse waveform according to IEC 61000-4-2

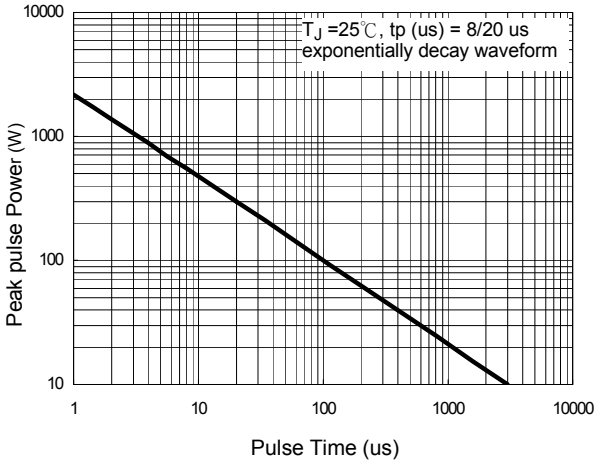


Figure 3. Power Dissipation versus Pulse Time

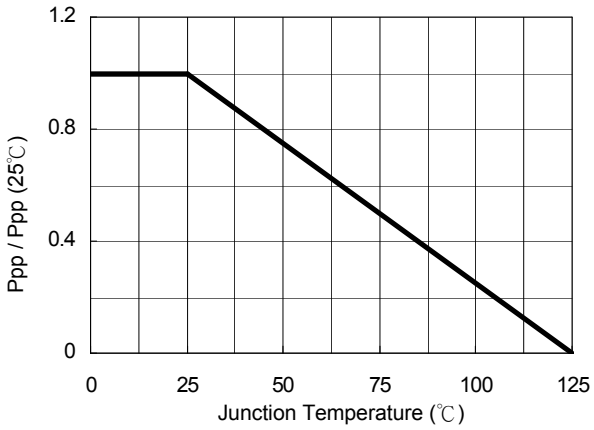


Figure 4. Peak pulse power versus TJ

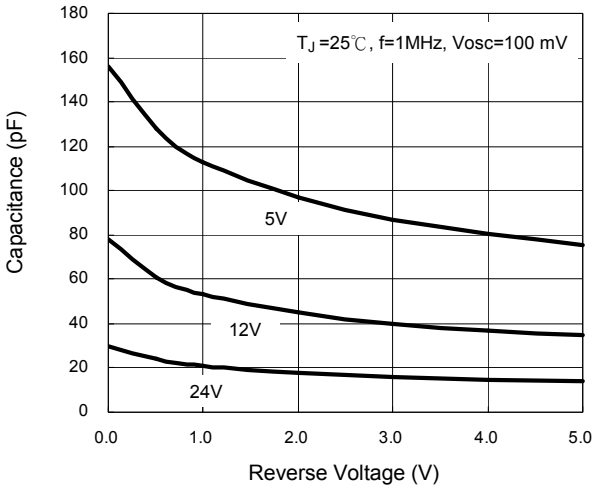


Figure 5. Typical Junction Capactiance

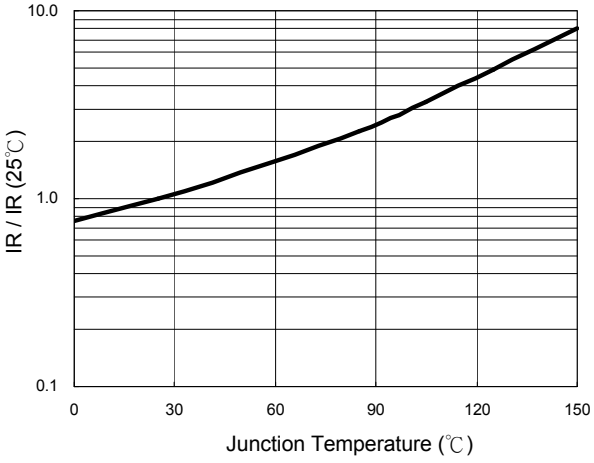


Figure 6. Reverse Leakage Current versus TJ

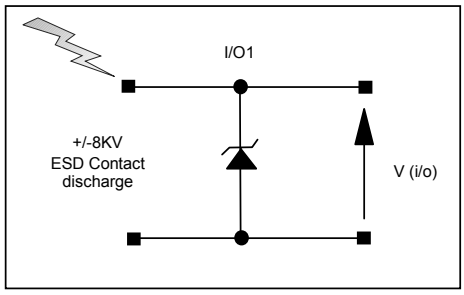


Figure 7. ESD Test Configuration

L30ESD5V0C3-2

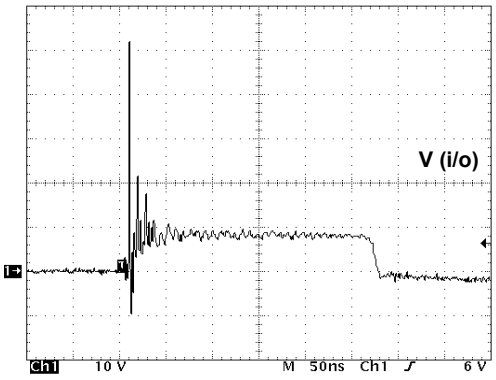


Figure 8. Clamped +8 kV ESD voltage waveform

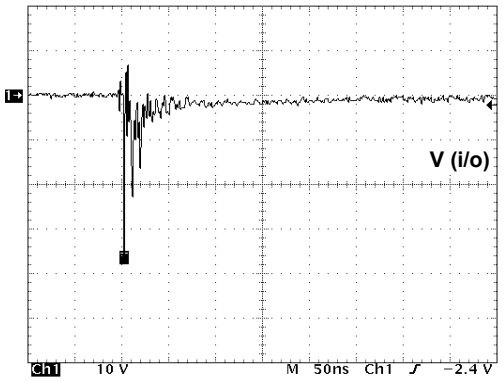


Figure 9. Clamped -8 kV ESD voltage waveform

L30ESD12VC3-2

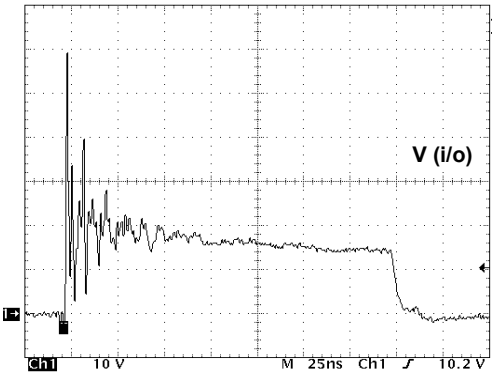


Figure 10. Clamped +8 kV ESD voltage waveform

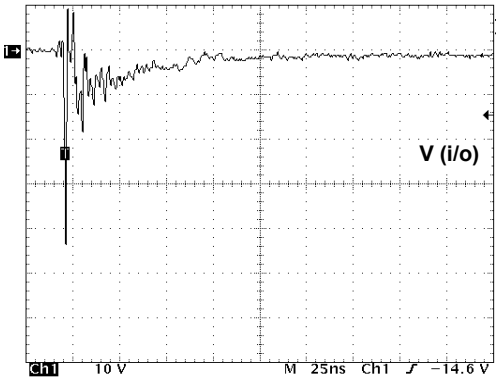


Figure 11. Clamped -8 kV ESD voltage waveform

L30ESD24VC3-2

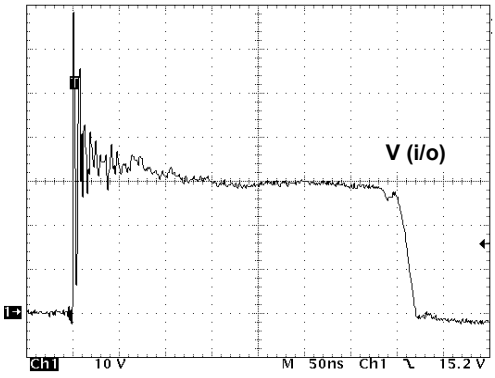


Figure 12. Clamped +8 kV ESD voltage waveform

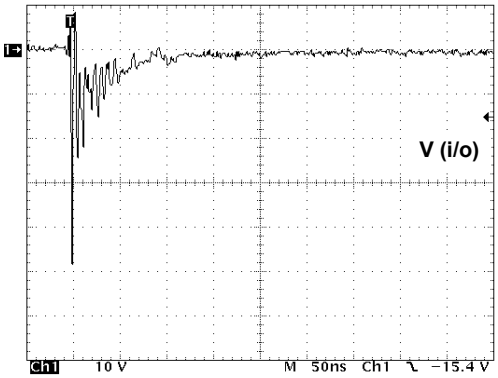


Figure 13. Clamped -8 kV ESD voltage waveform

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