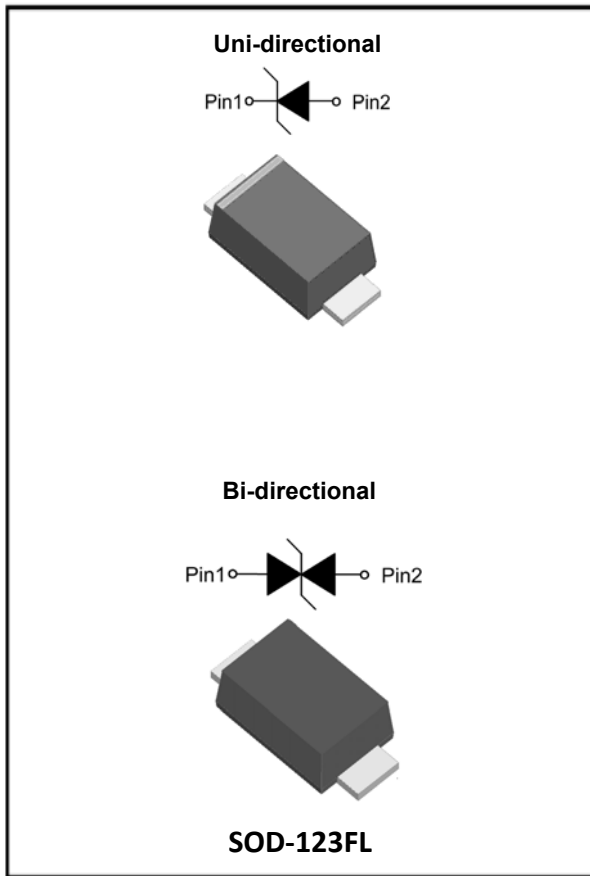


1-Line , Transient Voltage Suppressor For ESD Protection



Features

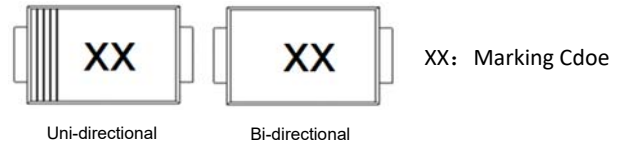
- Ultra small package
 - Stand-off voltage: 5V ~36V
- Transient protection for each line according to
 - IEC61000-4-2(ESD): $\pm 30\text{kV}$ (contact)
 - IEC61000-4-4 (EFT): 80A (5/50ns)
 - IEC61000-4-5(surge) :
 - 8/20 μs waveform: I_{PPM} see Table 4
- Low clamping voltage
- RoHS Compliant

Applications

- Power supply protection
- Power management
- Battery Contacts

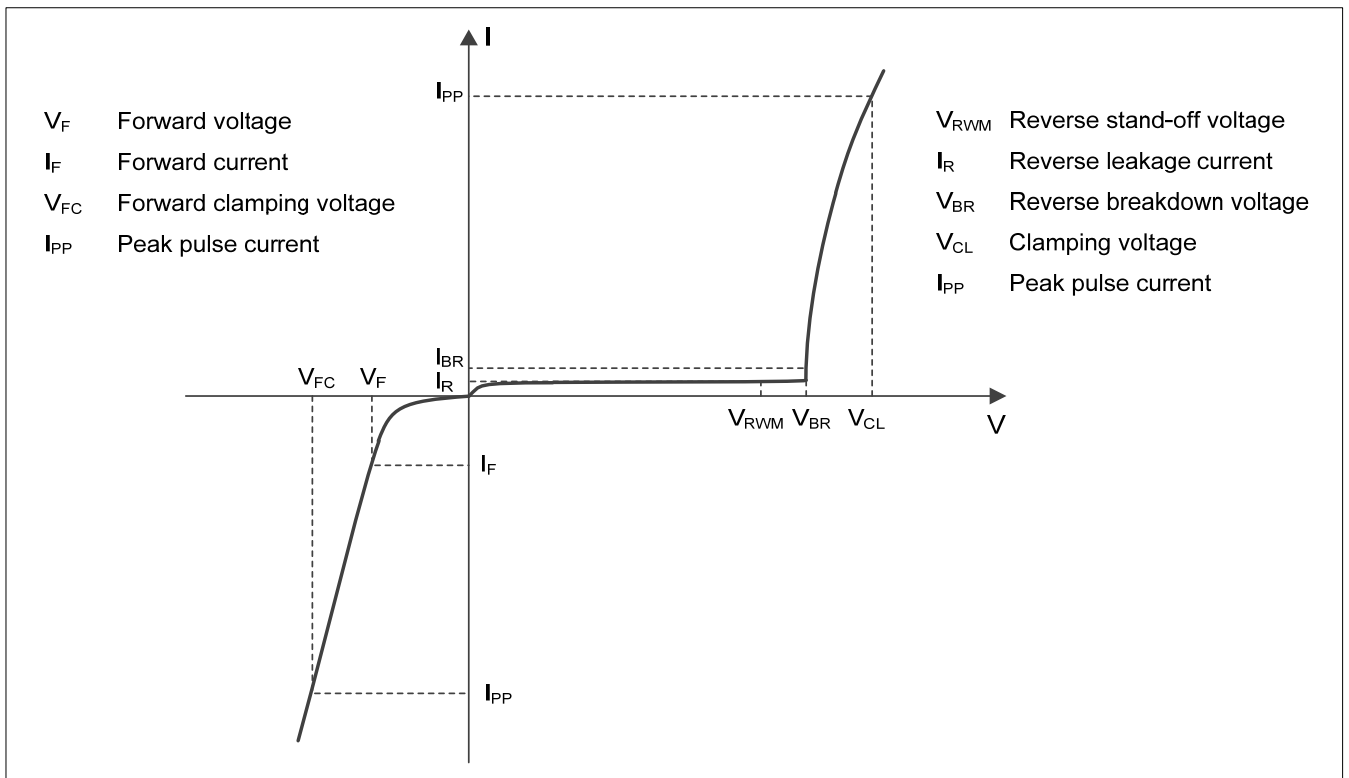
Mechanical Characteristics

- Package: SOD-123FL
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below



For uni-directional types the band denotes cathode end, no marking on bi-directional types

■Definitions of electrical characteristics





ESDXXF1 SERIES

■Absolute Maximum Ratings (Ta=25°C unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	1300	W
ESD IEC61000-4-2(ESD)Air	V_{ESD}	± 30	KV
ESD IEC61000-4-2(ESD)Contact		± 30	KV
Operating Temperature Range	T_J	-55~150	°C
Storage Temperature Range	T_{STG}	-55~150	°C

■Electrical Characteristics (Ta=25°C Unless otherwise specified)

Uni-directional

Part Number	Marking Code	Reverse Working Voltage $V_{RWM}(V)$	Breakdown Voltage $V_{BR}(V)@I_T=1mA$		Reverse Leakage Current $I_R(\mu A)@V_{RWM}$	Forward Voltage $V_F(V)@I_F=1mA$		Junction Capacitance $C_j(pF)@VR=0V, f=1MHz$	
		Max	Min	Max	Max	Min	Max	Typ	Max
ESD5V0F1	05	5	6.4	7.1	400	0.45	1.5	1600	2000
ESD7V0F1	07	7	7.7	8.7	100	0.45	1.5	900	1200
ESD12VF1	12	12	13.2	15	2.5	0.45	1.5	600	900
ESD15VF1	15	15	16.5	19	1	0.45	1.5	450	700
ESD18VF1	18	18	20.0	23	1	0.45	1.5	400	600
ESD24VF1	24	24	26.7	30	1	0.45	1.5	270	400
ESD36VF1	36	36	40	45	1	0.45	1.5	200	300

Bi-directional

Part Number	Marking Code	Reverse Working Voltage $V_{RWM}(V)$	Breakdown Voltage $V_{BR}(V)@I_T=1mA$		Reverse Leakage Current $I_R(\mu A)@V_{RWM}$	Junction Capacitance $C_j(pF)@VR=0V, f=1MHz$	
		Max	Min	Max	Max	Typ	Max
ESD5V0F1B	5B	5	6.4	7.1	400	850	1200
ESD7V0F1B	7B	7	7.7	8.7	100	700	900
ESD12VF1B	12B	12	13.2	15	2.5	400	600
ESD15VF1B	15B	15	16.5	19	1	250	400
ESD18VF1B	18B	18	20.0	23	1	170	250
ESD24VF1B	24B	24	26.7	30	1	160	240
ESD36VF1B	36B	36	40	45	1	100	160



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Part Number		Rated peak pulse current IPP (A) ¹⁾	Clamping voltage VCL(V) @ IPP (A) ¹⁾	
Uni	Bi	Max	Typ	Max
ESD5V0F1	ESD5V0F1B	105	-	12
ESD7V0F1	ESD7V0F1B	85	-	16
ESD12VF1	ESD12VF1B	50	-	26
ESD15VF1	ESD15VF1B	40	-	32
ESD18VF1	ESD18VF1B	35	-	38
ESD24VF1	ESD24VF1B	25	-	51
ESD36VF1	ESD36VF1B	17	-	75

Notes:

(1). Non-repetitive current pulse, according to IEC61000-4-5. (8/20 μ s current waveform).

■ Typical Performance Characteristics (T_a=25°C unless otherwise Specified)

Fig.1 8/20 μ s waveform per IEC61000-4-5

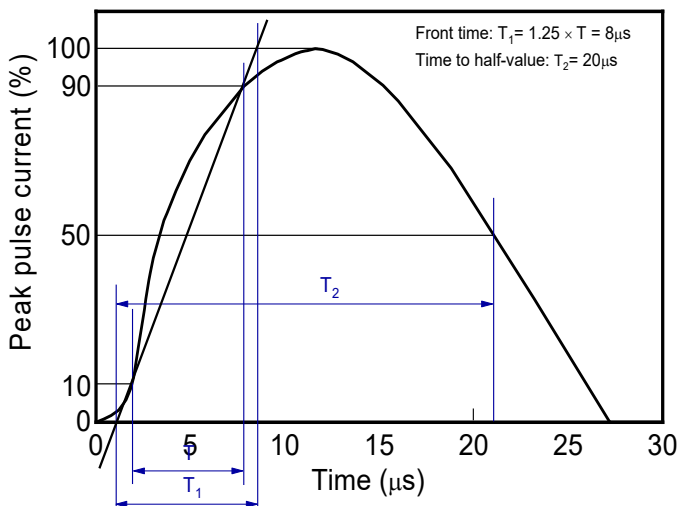


Fig.3 Non-repetitive peak pulse power vs. Pulse time

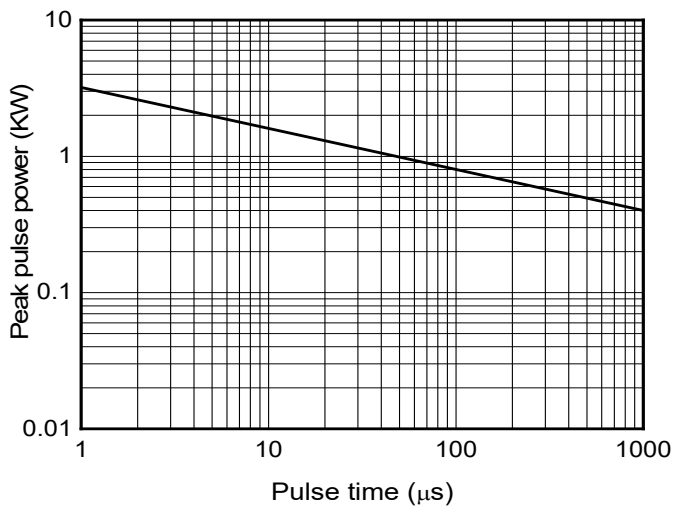


Fig.2 Contact discharge current waveform per IEC61000-4-2

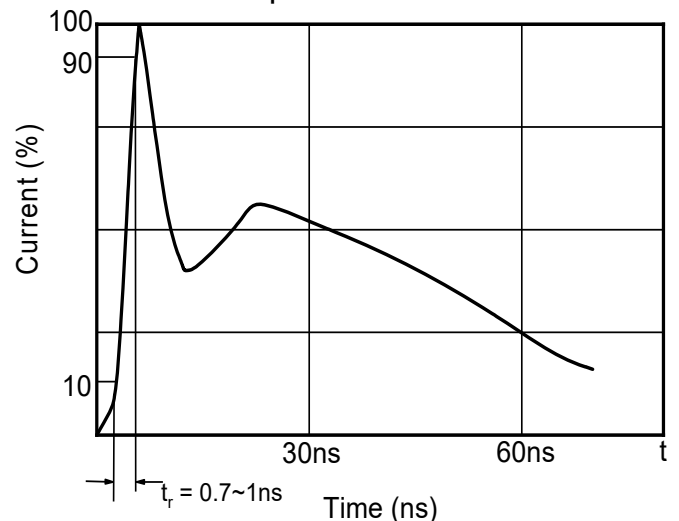
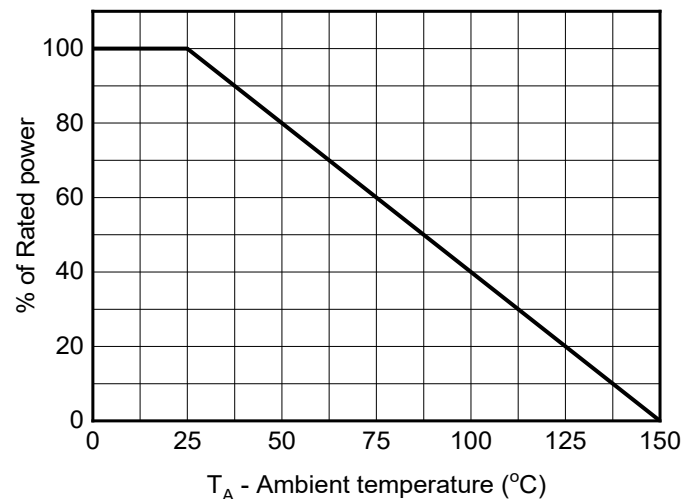


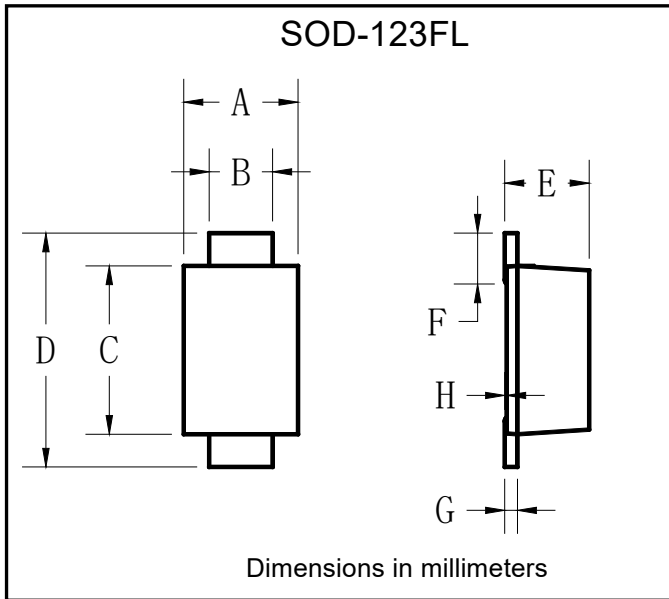
Fig.6 Power derating vs. Ambient temperature





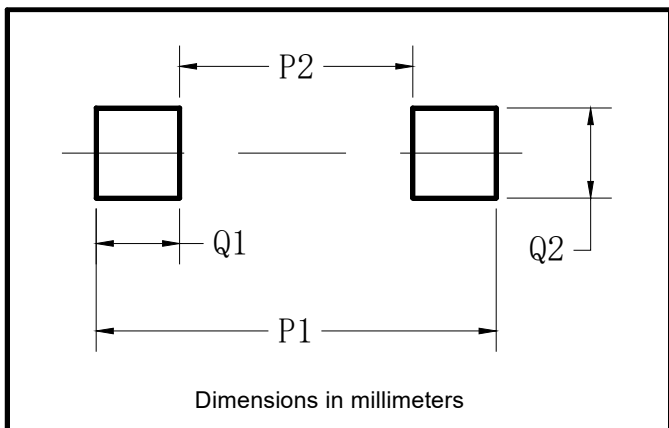
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■Outline Dimensions



SOD-123FL		
Dim	Min	Max
A	1.60	1.90
B	0.90	1.10
C	2.55	2.85
D	3.60	3.90
E	1.00	1.20
F	0.40	0.90
G	0.10	0.25
H	0.02	0.05

■Recommend land pattern (Unit:mm)



SOD-123FL	
Dim	Millimeters
P1	3.90
P2	1.90
Q1	1.00
Q2	1.50

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.



ESDXXF1 SERIES

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