

Features

- IEC-61000-4-2 ESD 15kV(Air), 8kV (Contact)
- SOD-123FL surface mount package
- Protects one I/O line
- Peak power dissipation of 1000W under 8/20μs waveform
- Low leakage current
- Solid-state silicon avalanche technology
- RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meet MSL level1, per J-STD-020



SOD-123FL

Applications

SJD12 devices are ideal for the protection of I/O interfaces, VCC bus and other vulnerable circuit used in cellular phones, portable devices, business machines, power supplies and other consumer applications.

Maximum Ratings and Characteristics (T_A=25°C)

Rating	Symbol	Value
Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1)	P _{PPM}	200W
Peak pulse power (tp=8/20μs waveform)	P _{PPM}	1000W
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	I _{PPM}	See Table(A)
Steady state power dissipation at T _L =75°C (Fig.5)	P _{M(AV)}	1.0W
Maximum Instantaneous Forward Voltage at 12A for Unidirectional Only	V _F	3.5V
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I _{FSM}	20A
Operating junction and Storage Temperature Ranges	T _J , T _{STG}	-55°C to +150°C
Typical thermal resistance junction to lead	R _{θJL}	100°C/W
Typical thermal resistance junction to ambient	R _{θJA}	220°C/W

Notes:1. Non-repetitive current pulse, per Fig.3 and derating above T_A=25°C per Fig.2.

2. Each terminal is surface Mounted on the 5.0mm×5.0mm (0.03mm thick) copper pads.

3. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Electrical Characteristics (T_A=25°C)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Uni.	Bi.	Uni.	Bi.	V _R (V)	V _{B Min.} (V)	V _{B Max.} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SJD12A05L01-TP	SJD12C05L01-TP	KE	AE	5	6.4	7	10	9.2	21.8	500
SJD12A06L01-TP	SJD12C06L01-TP	KG	AG	6	6.67	7.37	10	10.3	19.4	400
SJD12A6.5L01-TP	SJD12C6.5L01-TP	KK	AK	6.5	7.22	7.98	10	11.2	17.9	350
SJD12A07L01-TP	SJD12C07L01-TP	KM	AM	7	7.78	8.6	10	12.0	16.7	200
SJD12A7.5L01-TP	SJD12C7.5L01-TP	KP	AP	7.5	8.33	9.21	1	12.9	15.5	100
SJD12A08L01-TP	SJD12C08L01-TP	KR	AR	8	8.89	9.83	1	13.6	14.7	50
SJD12A8.5L01-TP	SJD12C8.5L01-TP	KT	AT	8.5	9.44	10.4	1	14.4	13.9	20
SJD12A09L01-TP	SJD12C09L01TP	KV	AV	9	10	11.1	1	15.4	13.0	10
SJD12A10L01-TP	SJD12C10L01-TP	KX	AX	10	11.1	12.3	1	17.0	11.8	5
SJD12A11L01-TP	SJD12C11L01-TP	KZ	AZ	11	12.2	13.5	1	18.2	11.0	3
SJD12A12L01-TP	SJD12C12L01-TP	LE	BE	12	13.3	14.7	1	19.9	10.1	1
SJD12A13L01-TP	SJD12C13L01-TP	LG	BG	13	14.4	15.9	1	21.5	9.3	1
SJD12A14L01-TP	SJD12C14L01-TP	LK	BK	14	15.6	17.2	1	23.2	8.6	1
SJD12A15L01-TP	SJD12C15L01-TP	LM	BM	15	16.7	18.5	1	24.4	8.2	1
SJD12A16L01-TP	SJD12C16L01-TP	LP	BP	16	17.8	19.7	1	26.0	7.7	1
SJD12A17L01-TP	SJD12C17L01-TP	LR	BR	17	18.9	20.9	1	27.6	7.3	1
SJD12A18L01-TP	SJD12C18L01-TP	LT	BT	18	20	22.1	1	29.2	6.9	1
SJD12A20L01-TP	SJD12C20L01-TP	LV	BV	20	22.2	24.5	1	32.4	6.2	1
SJD12A22L01-TP	SJD12C22L01-TP	LX	BX	22	24.4	26.9	1	35.5	5.7	1
SJD12A24L01-TP	SJD12C24L01-TP	LZ	BZ	24	26.7	29.5	1	38.9	5.2	1
SJD12A26L01-TP	SJD12C26L01-TP	ME	CE	26	28.9	31.9	1	42.1	4.8	1
SJD12A28L01-TP	SJD12C28L01-TP	MG	CG	28	31.1	34.4	1	45.4	4.4	1
SJD12A30L01-TP	SJD12C30L01-TP	MK	CK	30	33.3	36.8	1	48.4	4.2	1
SJD12A33L01-TP	SJD12C33L01-TP	MM	CM	33	36.7	40.6	1	53.3	3.8	1
SJD12A36L01-TP	SJD12C36L01-TP	MP	CP	36	40	44.2	1	58.1	3.5	1

Electrical Characteristics (T_A=25°C)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Uni.	Bi.	Uni.	Bi.	V _R (V)	V _{B Min.} (V)	V _{B Max.} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SJD12A40L01-TP	SJD12C40L01-TP	MR	CR	40	44.4	49.1	1	64.5	3.1	1
SJD12A43L01-TP	SJD12C43L01-TP	MT	CT	43	47.8	52.8	1	69.4	2.9	1
SJD12A45L01-TP	SJD12C45L01-TP	MV	CV	45	50	55.3	1	72.7	2.8	1
SJD12A48L01-TP	SJD12C48L01-TP	MX	CX	48	53.3	58.9	1	77.4	2.6	1
SJD12A51L01-TP	SJD12C51L01-TP	MZ	CZ	51	56.7	62.7	1	82.4	2.5	1
SJD12A54L01-TP	SJD12C54L1-TP	NE	DE	54	60	66.3	1	87.1	2.3	1
SJD12A58L01-TP	SJD12C58L01-TP	NG	DG	58	64.4	71.2	1	93.6	2.2	1
SJD12A60L01-TP	SJD12C60L01-TP	NK	DK	60	66.7	73.7	1	96.8	2.1	1
SJD12A64L01-TP	SJD12C64L01-TP	NM	DM	64	71.1	78.6	1	103.0	2.0	1
SJD12A70L01-TP	SJD12C70L01-TP	NP	DP	70	77.8	86	1	113.0	1.8	1
SJD12A75L01-TP	SJD12C75L01-TP	NR	DR	75	83.3	92.1	1	121.0	1.7	1
SJD12A78L01-TP	SJD12C78L01-TP	NT	DT	78	86.7	95.8	1	126.0	1.6	1
SJD12A85L01-TP	SJD12C85L01-TP	NV	DV	85	94.4	104	1	137.0	1.5	1
SJD12A90L01-TP	SJD12C90L01-TP	NX	DX	90	100	111	1	146.0	1.4	1
SJD12A100L01-TP	SJD12C100L01-TP	NZ	DZ	100	111	123	1	162.0	1.3	1
SJD12A110L01-TP	SJD12C110L01-TP	PE	EE	110	122	135	1	177.0	1.2	1
SJD12A120L01TP	SJD12C120L01-TP	PG	EG	120	133	147	1	193.0	1.1	1
SJD12A130L01-TP	SJD12C130L01-TP	PK	EK	130	144	159	1	209.0	1.0	1
SJD12A150L01-TP	SJD12C150L01-TP	PM	EM	150	167	185	1	243.0	0.8	1
SJD12A160L01-TP	SJD12C160L01-TP	PP	EP	160	178	197	1	259.0	0.8	1
SJD12A170L01-TP	SJD12C170L01-TP	PR	ER	170	189	209	1	275.0	0.8	1

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$)

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Figure 1. Peak Pulse Power Rating Curve

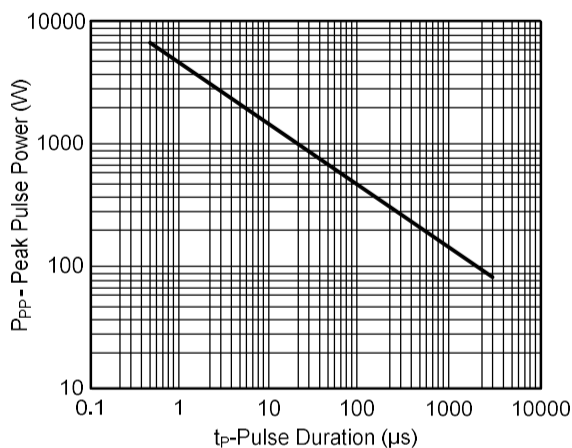


Figure 2. Pulse Derating Curve

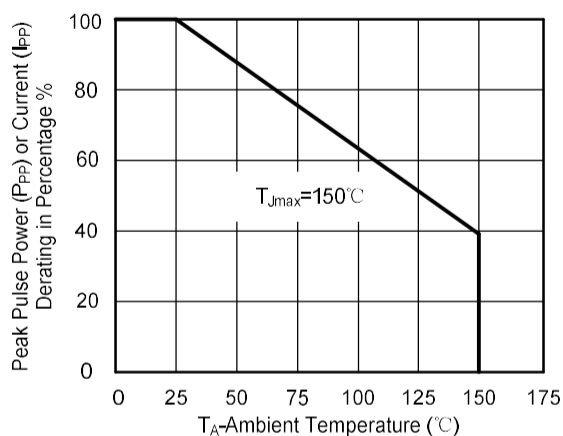


Figure 3. Pulse Waveform

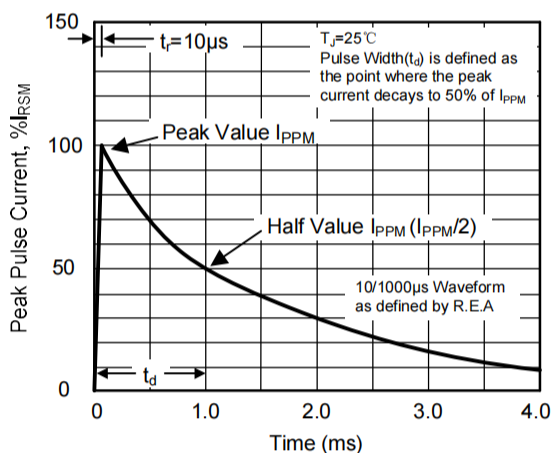


Figure 4. Typical Junction Capacitance

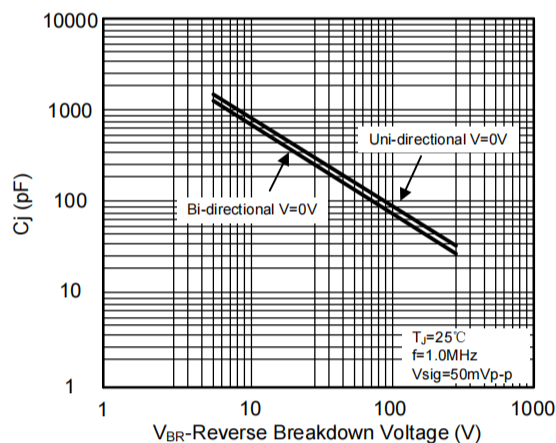


Figure 5. Steady State Power Dissipation Derating Curve

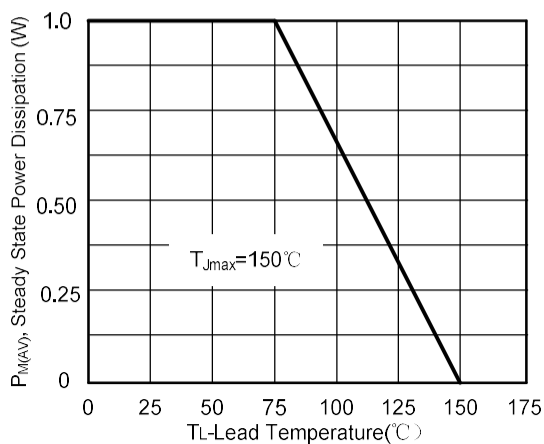
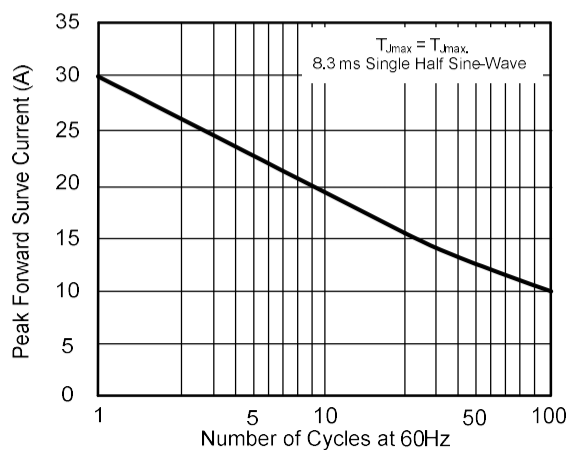
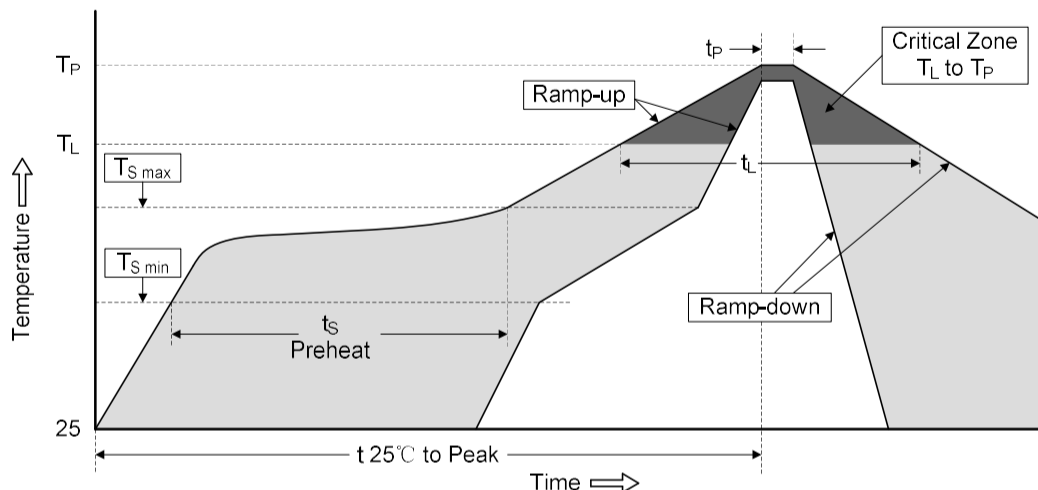


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



Soldering Parameters

Reflow Soldering



Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Dimensions (SOD-123FL)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.50	3.90	0.138	0.154
B	2.60	3.00	0.102	0.118
C	0.75	1.10	0.030	0.043
D	1.60	2.00	0.063	0.079
E	0.80Typ.		0.031Typ.	
H	0.90	1.35	0.035	0.053
h	0.12	0.22	0.005	0.009

