Features

- For surface mounted applications in order to optimize board space
- Pb-free plated
- Peak Power is 240W@1ms
- ESD Rating of Class X (> 15 kV) (IEC6100-4-2)
- Response Time is Typically<1 ns
- Low profile package
- Typical IR less than 1μA above 10V
- Low inductance
- Excellent clamping capability
- AEC-Q101

Applications

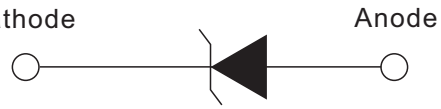
- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

Mechanical Characteristics

- **Case:** JEDEC SOD-123FL. Molded plastic over glass passivated junction
- **Terminal:** Solderable per MIL-STD-750, Method 2026
- **Polarity:** Color band denoted positive end (cathode) except Bidirectional

Functional Diagram

Bi-directional



Uni-directional

Maximum Ratings And Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified.

RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000μs waveform	P_{PPM}	Minimum 240	Watts
Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load,(JEDEC Method) (Note2,3)	I_{FSM}	20	Amps
Operating junction and Storage Temperature Range	T_J , T_{STG}	−55 to +150	℃

Notes :

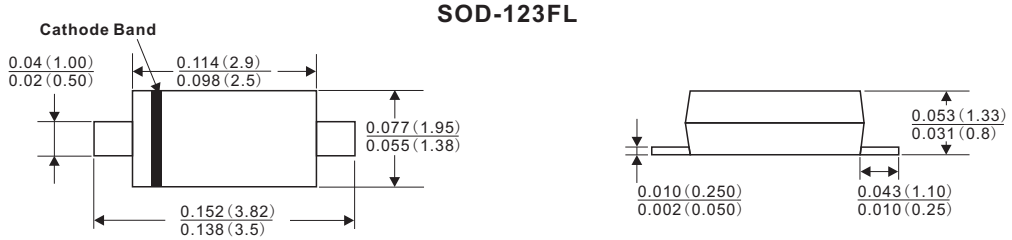
1.Non-repetitive current pulse , per Fig. 3 and derated above TA = 25℃ per Fig. 2 .

2.Mounted on 5.0mm x 5.0mm (0.03mm thick) Copper Pads to each terminal

3.8.3ms single half sine-wave , or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Dimensions (SOD-123FL)

SOD-123FL



Dimensions in inches and(millimeters)

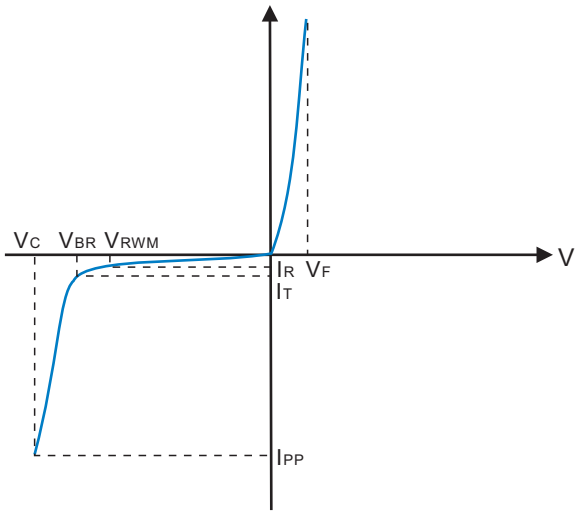
Electrical Characteristics

TSA Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @IT		Test Current	Maximum Clamping Voltage @Ipp	Peak Pulse Current	Reverse Leakage @VRWM
UNI-Polar	BI-Polar	UNI	BI	VRWM(V)	VBR(V)Min.	VBR(V)Max.	IT(mA)	Vc(V)	Ipp(A)	IR(μA)
TSA6.0U	TSA6.0B	AG	WG	6.0	6.67	7.37	10	10.3	23.3	100
TSA8.0U	TSA8.0B	AR	WR	8.0	8.89	9.83	1	13.6	17.7	50
TSA12U	TSA12B	BE	XE	12.0	13.30	14.70	1	19.9	12.1	1
TSA15U	TSA15B	BM	XM	15.0	16.70	18.50	1	24.4	9.8	1
TSA16U	TSA16B	BP	XP	16.0	17.80	19.70	1	26.0	9.2	1
TSA20U	TSA20B	BV	XV	20.0	22.22	24.50	1	32.4	7.4	1
TSA22U	TSA22B	BX	XY	22.0	24.40	26.90	1	35.5	6.8	1
TSA26U	TSA26B	CE	YE	26.0	28.90	31.90	1	42.1	5.7	1
TSA28U	TSA28B	CG	YG	28.0	31.10	34.40	1	45.4	5.3	1
TSA30U	TSA30B	CK	YK	30.0	33.30	36.80	1	48.4	5.0	1
TSA33U	TSA33B	CM	YM	33.0	36.70	40.60	1	53.3	4.5	1
TSA36U	TSA36B	CP	YP	36.0	40.00	44.20	1	58.1	4.1	1
TSA40U	TSA40B	CR	YR	40.0	44.40	49.10	1	64.5	3.7	1
TSA58U	TSA58B	RG	ZG	58.0	64.40	71.20	1	93.6	2.6	1
TSA60U	TSA60B	RK	ZK	60.0	66.70	73.70	1	96.8	2.5	1
TSA150U	TSA150B	SM	VM	150.0	167.00	185.00	1	243.0	1.0	1
TSA170U	TSA170B	SR	VR	170.0	189.00	209.00	1	275.0	0.9	1

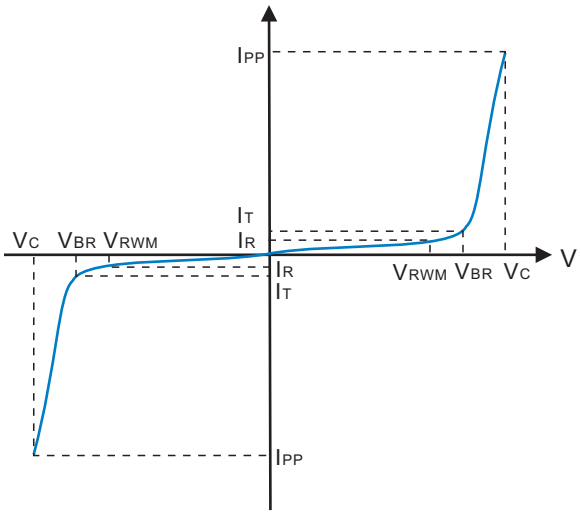
For bidirectional type having Vrwm of 10 volts and less, the IR limit is double.
For parts with A, the VBR is ±5%

I-V Curve Characteristics

Uni-directional



Bi-directional



Characteristic Curves (TA=25 ℃ unless otherwise noted)

Fig.1 Peak Pulse Power Rating Curve

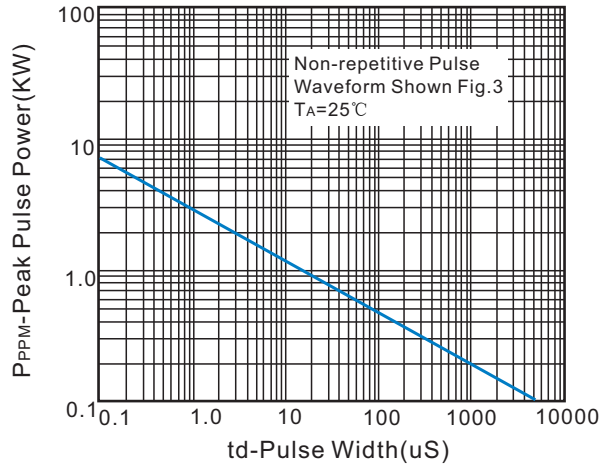


Fig.2 Pulse Derating Curve

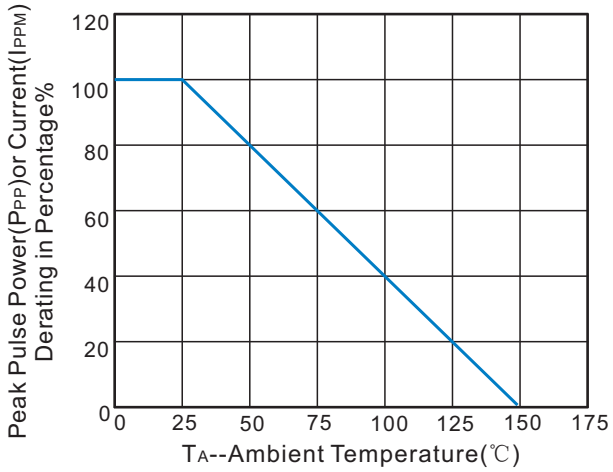


Fig.3 Pulse Waverform

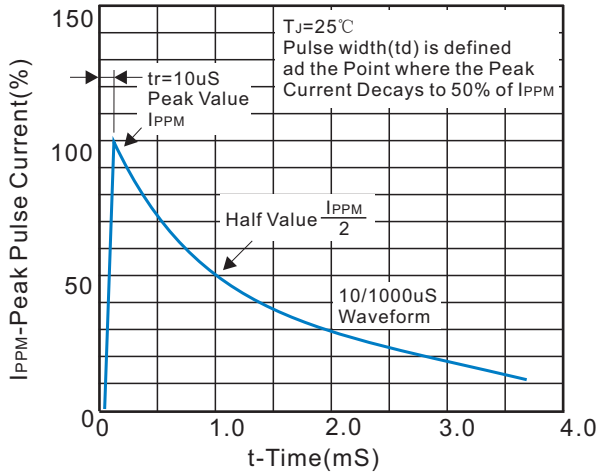
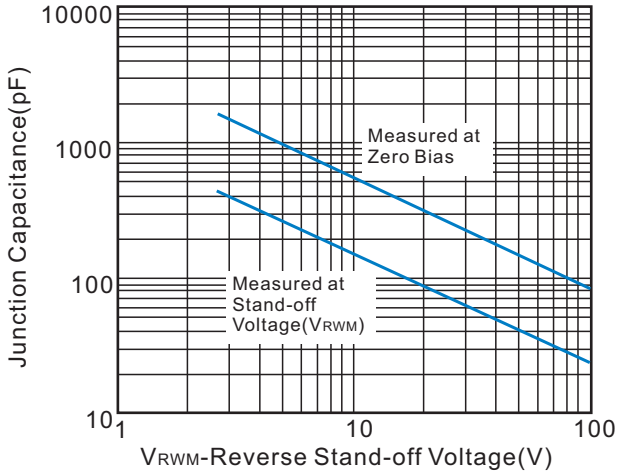
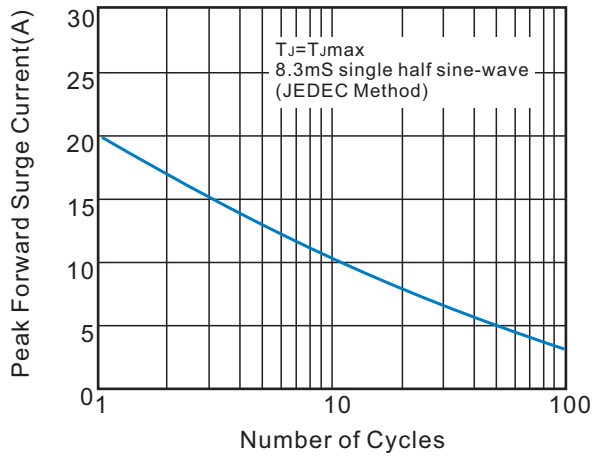


Fig.4 Typical Junction Capacitance



Ratings And Characteristic Curves

Fig.5 Maximum Non-Repetitive Peak Forward Surge Current

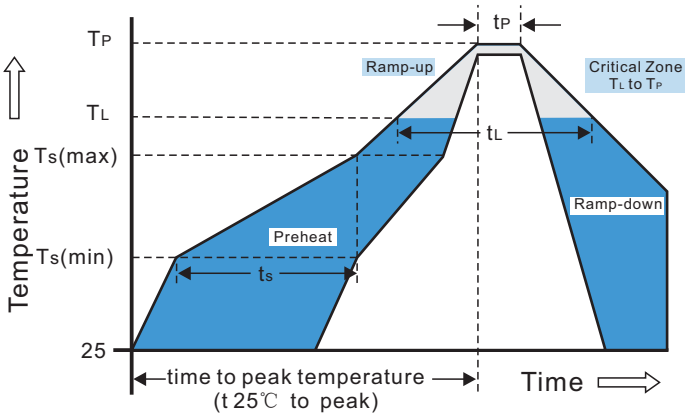


Recommended Soldering Conditions

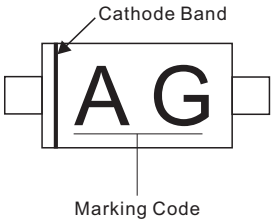
Recommended Conditions

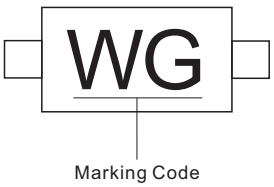
Re"ow Condition		Pb-Free assembly (see Fig.1)
Pre Heat	-Temperature Min($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time(Min to Max)(t_s)	60-180secs
Average ramp up rate (Liquidus Temp(T_L) to peak)		3℃/sec.Max.
$T_{s(max)}$ to T_L -Ramp-up Rate		3℃/sec.Max.
Re"ow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150secs
Peak Temp(T_P)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp(t_P)		30 secs.Max.
Ramp-down Rate		6℃/sec.Max.
Time 25℃ to Peak Temp(T_P)		8 min.Max.
Do not exceed		+260℃

Reflow Soldering



Marking Code





Packing Options And Reel Specification-SOD-123FL

Symbol	Ea Per Reel	REEL DIA (mm)	Industry Standard
TSA***	3000	178	EIA RS-481