FEATURES

- **400 Watts Peak Pulse Power per Line (tp = 10/1000μs)**
- **Low Inductance**
- **Excellent Clamp ng Capability**
- **Unidirectional & Bidirectional Configurations**
- **Low Leakage Current: < 1μA (Typical)**
- **Fast Response Time**
- **Available in Multiple Voltages**
- **RoHS Compliant**

VOLTAGE RANGE

5.0 to 100 Volts

400 Watts Peak Power

MECHANICAL DATA

- **Case: JEDEC SOD-123FL**
- **Terminals: Solder plated, solderable per MIL-STD-750 Method 202**
- **Polarity: For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation**



- "GK" represents the brand name
- "XXX" represents the periodic code
- "YYY" represents the product type marking

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25℃ ambient temperature uniess otherwies specified.
Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

PARAMETER	SYMBOL	UNIT	Conditions	Max
Peak power dissipation(1) (2) (Fig.1)	P_{PPM}	W	with a 10/1000us waveform	400
Peak pulse current(1)	I_{PPM}	A	with a 10/1000us waveform	(See Next Table)
Power dissipation, on infinite heat sink	P_D	W	TL=75℃	1.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (3)	I_{FSM}	A		30
Operating junction and storage temperature range	T_J,T_{STG}	℃		-55 to +150
Thermal resistance	$R_{\theta JL}$	℃/W	Between junction and lead	40
	$R_{\theta JA}$		Between junction and Ambient	180

Notes:

(1). Non repetitive current pulse，per Fig2 and derated above TA=25℃ per Fig3.

(2). T_L=30℃ unless otherwise noted , V_F ≤1.25V@200mA.

(3). Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(4).Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

DEVICES FOR BIDIRECTIONAL APPLICATIONS

- 1. For bi-directional use C suffix for Types .
- 2. Electrical characteristics apply in both directions.

RATING AND CHARACTERISTIC CURVES

FIG.1-PEAK PULSE POWER DERATING CURVE

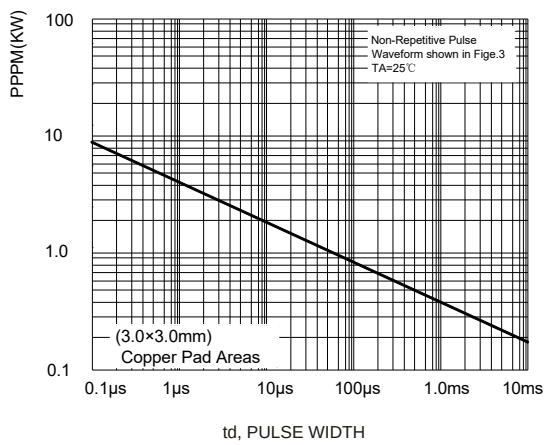


FIG.2-PULSE DERATING CURVE

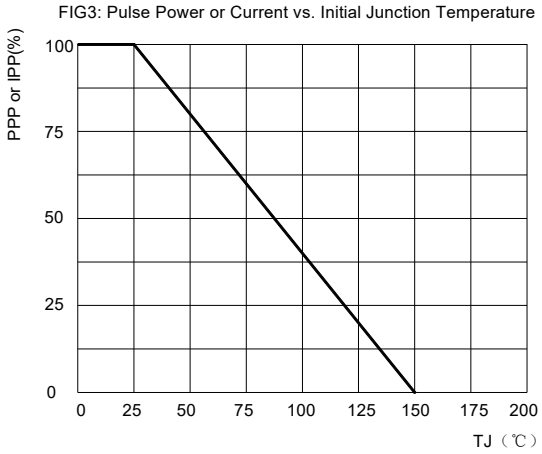


FIG.3-PULSE WAVE FORM

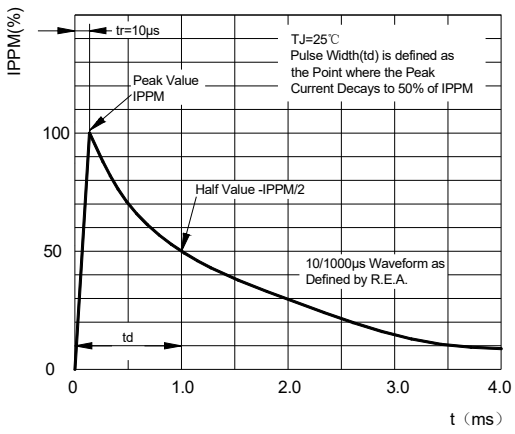
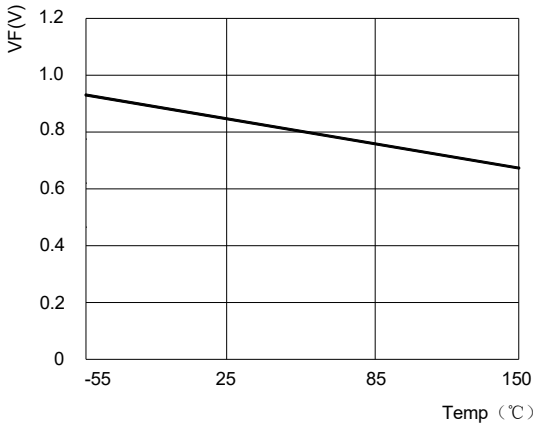


FIG4: Forward Voltage Curve

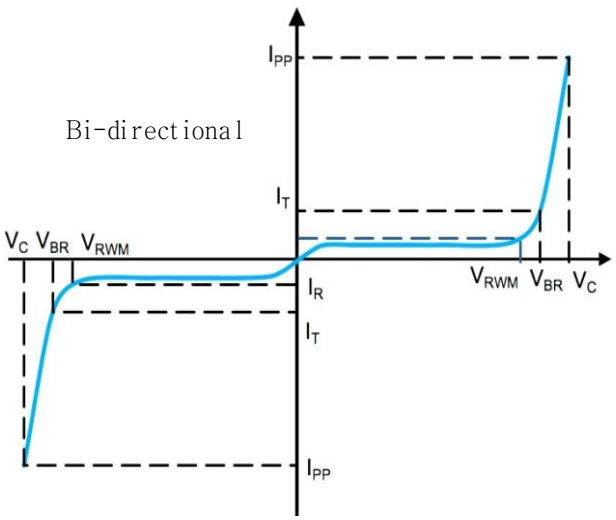


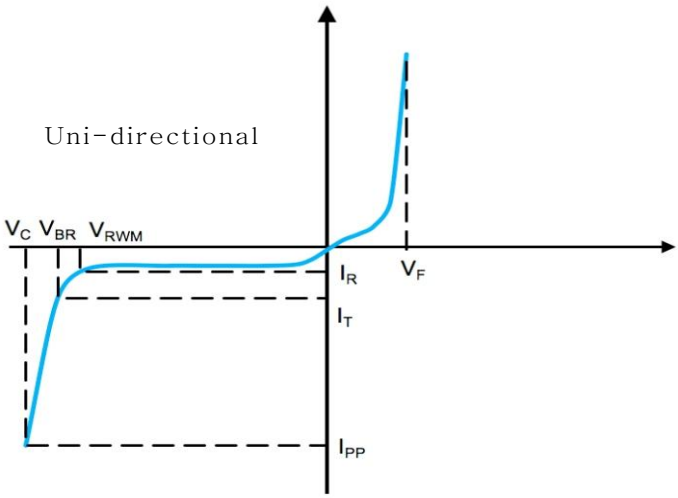
Part Number		Marking		Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
Uni	Bi	Uni	Bi	Min(V)	Max (V)	I_T(1)(mA)				
F4TVS10A	F4TVS10CA	F10A	F10CA	11.10	12.30	1	2.5	10.0	23.52	17.0
F4TVS11A	F4TVS11CA	F11A	F11CA	12.20	13.50	1	2.5	11.0	21.98	18.2
F4TVS12A	F4TVS12CA	F12A	F12CA	13.30	14.70	1	2.5	12.0	20.1	19.9
F4TVS13A	F4TVS13CA	F13A	F13CA	14.40	15.90	1	1.0	13.0	18.6	20.0
F4TVS14A	F4TVS14CA	F14A	F14CA	15.60	17.20	1	1.0	14.0	17.24	23.2
F4TVS15A	F4TVS15CA	F15A	F15CA	16.70	18.50	1	1.0	15.0	16.4	24.4
F4TVS17A	F4TVS17CA	F17A	F17CA	18.90	20.90	1	1.0	17.0	14.5	27.6
F4TVS18A	F4TVS18CA	F18A	F18CA	20.00	22.10	1	1.0	18.0	13.7	29.2
F4TVS20A	F4TVS20CA	F20A	F20CA	22.20	24.50	1	1.0	20.0	12.34	32.4
F4TVS24A	F4TVS24CA	F24A	F24CA	26.70	29.50	1	1.0	24.0	10.28	38.9
F4TVS26A	F4TVS26CA	F26A	F26CA	28.90	31.90	1	1.0	26.0	9.5	42.1
F4TVS28A	F4TVS28CA	F28A	F28CA	31.10	34.40	1	1.0	28.0	8.82	45.4

Part Number		Marking		Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
Uni	Bi	Uni	Bi	Min(V)	Max (V)	I_T(1)(mA)				
F4TVS30A	F4TVS30CA	F30A	F30CA	33.30	36.80	1	1.0	30.0	8.26	48.4
F4TVS33A	F4TVS33CA	F33A	F33CA	36.70	40.60	1	1.0	33.0	7.5	53.3
F4TVS36A	F4TVS36CA	F36A	F36CA	40.00	44.20	1	1.0	36.0	6.88	58.1
F4TVS40A	F4TVS40CA	F40A	F40CA	44.40	49.10	1	1.0	40.0	6.2	64.5
F4TVS43A	F4TVS43CA	F43A	F43CA	47.80	52.80	1	1.0	43.0	5.76	69.4
F4TVS45A	F4TVS45CA	F45A	F45CA	50.00	55.30	1	1.0	45.0	5.5	72.7
F4TVS48A	/	F48A	/	53.30	58.90	1	1.0	48.0	5.16	77.4
F4TVS51A	/	F51A	/	56.70	62.70	1	1.0	51.0	4.86	82.4
F4TVS54A	/	F54A	/	60.00	66.30	1	1.0	54.0	4.6	87.1
F4TVS60A	/	F60A	/	66.70	73.70	1	1.0	60.0	4.14	96.8
F4TVS64A	/	F64A	/	71.10	78.60	1	1.0	64.0	3.88	103.0
F4TVS70A	/	F70A	/	77.80	86.00	1	1.0	70.0	3.54	113.0
F4TVS75A	/	F75A	/	83.30	92.10	1	1.0	75.0	3.3	121.0
F4TVS80A	/	F80A	/	88.80	97.60	1	1.0	80.0	3.1	129.0
F4TVS85A	/	F85A	/	94.40	104.00	1	1.0	85.0	2.92	137.0
F4TVS90A	/	F90A	/	100.00	111.00	1	1.0	90.0	2.74	146.0
F4TVS100A	/	F100A	/	111.00	123.00	1	1.0	100.0	2.46	162.0

Notes:
(1) t_p≤50ms Pulse test: t_p≤50ms.

I-V Curve Characteristics



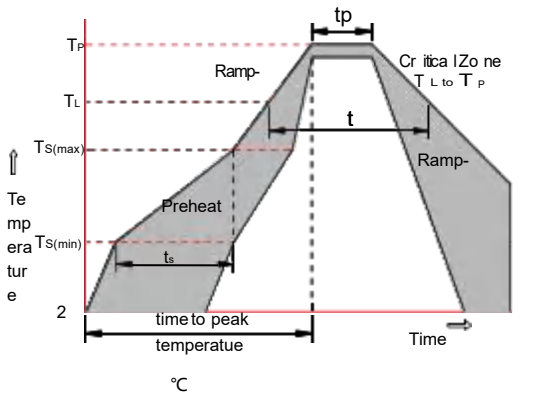


P_{PPM}	Peak Pulse Power Dissipation - Max power dissipation
V_{RWM}	Reverse Stand-off Voltage - Maximum voltage that can be applied to TVS without operation
V_{BR}	Breakdown Voltage – Maximum voltage that flows though the TVS at a specified current (I_T)
V_C	Clamping Voltage – Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)
I_R	Reverse Leakage Current – Current measured at V_R
V_F	Forward Voltage Drop for Uni-directional

Soldering parameters

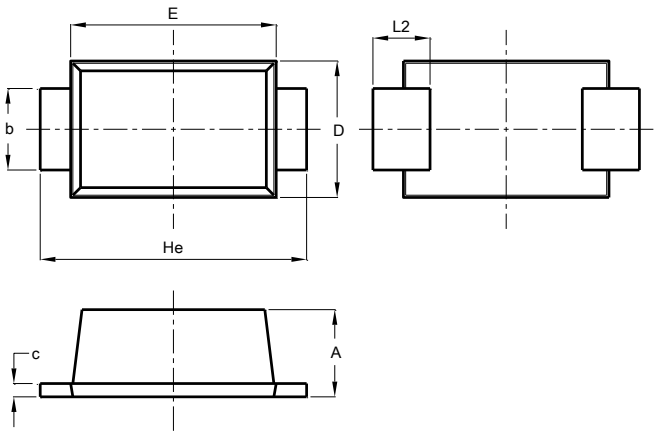
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
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℃

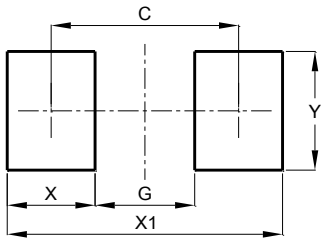
FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

SOD123FL



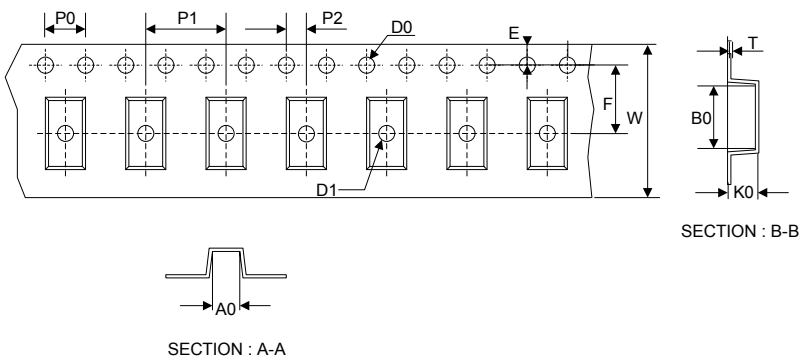


SOD123FL		
Dim	**Min**	**Max**
A	1.00	1.20
b	0.80	1.10
c	0.12	0.20
D	1.75	1.95
E	2.60	2.90
He	3.55	3.80
L2	0.50	0.85
All Dimensions in mm		

Dimensions	Value (in mm)
C	3.25
G	2.00
X	1.25
X1	4.50
Y	1.50

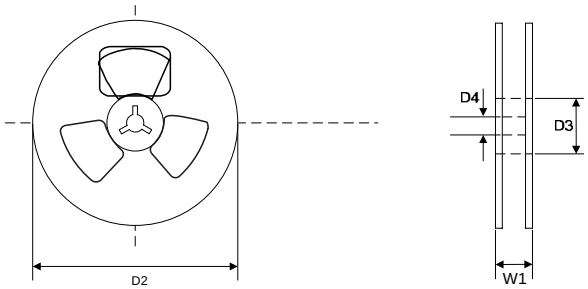
Tape & rell specification

Tape



Symbol	Dimension (mm)
P0	4.00±0.20
P1	4.00±0.20
P2	2.00±0.20
D0	1.55±0.15
D1	1.00±0.20
E	1.75±0.20
F	3.50±0.25
W	8.00±0.20
A0	1.85±0.20
B0	3.95±0.20
K0	1.30±0.20
T	0.21±0.10

7” Reel



D2	178.0±5.0
D3	55.0Min.
D4	10.0±2.5
W1	11.5±2.5
Quantity: 3000PCS	