

**Surface Mount  
Uni/Bi-Directional TVS Diodes****Description**

The 4SMF series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

**Features**

- For surface mounted applications
- Low profile package
- 400W Peak pulse power capability at 10/1000μs waveform
- Excellent clamping capability
- Fast response time: typically less than 1.0ps from 0 Volts to VBR min
- High temperature soldering: 260°C/10s

**Mechanical Data**

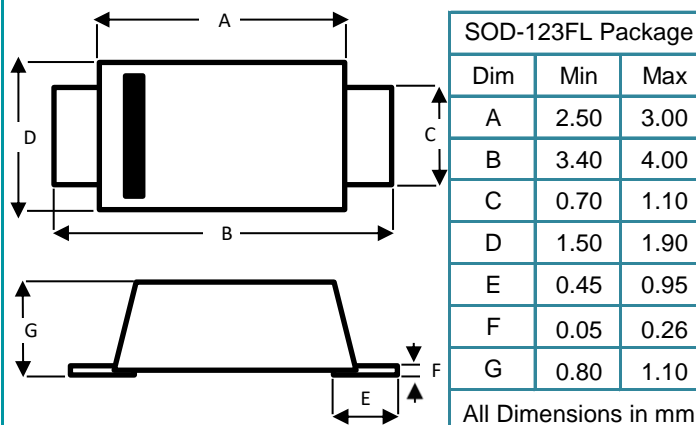
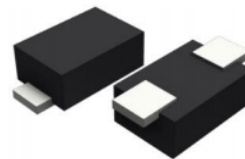
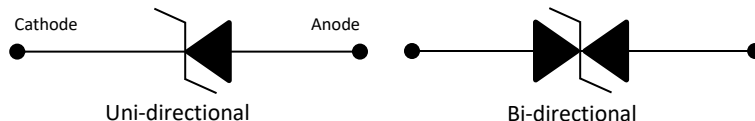
- Case:SOD-123FL package
- Case material: "green" molding compound
- UL flammability classification rating 94V-0
- Polarity : by cathode band denotes uni-directional device, none cathode band denotes bi-directional device
- Weight: 0.017grams

Note: Products with logo  or  are made by HY Electronic (Cayman) Limited

**Applications**

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

**Peak Pulse Power - 400 W**  
**Reverse Stand Off Voltage - 5 to 58 V**

**Package Outline Dimensions****Device Schematic****Ordering Information**

- Package :SOD-123FL
- Reel Size :7 (inches)
- Quantity Per Reel :3Kpcs
- Quantity Per Box :21Kpcs
- Quantity Per Carton :252Kpcs

**Maximum Ratings (@TA = +25°C, unless otherwise specified.)****Absolute Ratings**

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10/1000us Waveform (Note 1)	P <sub>PP</sub>	400	W
Power Dissipation on Infinite Heat Sink at TL=50°C	P <sub>M(AV)</sub>	1	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 2)	I <sub>FSM</sub>	30	A
Operating Temperature Range	T <sub>j</sub>	-55 to +150	° C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	° C

Note:

1. Non-repetitive current pulse, per Fig.4 and derated above T<sub>j</sub>(initial) =25°C per Fig.1
2. For unidirectional units only

Electrical Characteristics (@T<sub>A</sub> = 25°C, unless otherwise specified.)

Part Number		Marking Code		Reverse Working Voltage	Reverse Breakdown Voltage			Reverse Leakage (Max)	Reverse Clamping Voltage (Max)	Peak Pulse Current (Max)
Uni.	Bi.	Uni.	Bi.	V <sub>RWM</sub> (V)	V <sub>B</sub> (V)			I <sub>R</sub> ( $\mu$ A) @V <sub>R</sub>	V <sub>C</sub> (V) @I <sub>PP</sub>	I <sub>PP</sub> (A)
					Min.	Max.	@I <sub>T</sub> (mA)			
4SMF5.0A	4SMF5.0CA	EHE	ETE	5.0	6.40	7.00	10	400	9.2	43.5
4SMF6.0A	4SMF6.0CA	EHG	ETG	6.0	6.67	7.37	10	400	10.3	38.8
4SMF6.5A	4SMF6.5CA	EHK	ETK	6.5	7.22	7.98	10	400	11.2	35.7
4SMF7.0A	4SMF7.0CA	EHM	ETM	7.0	7.78	8.60	10	250	12.0	33.3
4SMF7.5A	4SMF7.5CA	EHP	ETP	7.5	8.33	9.21	10	100	12.9	31.0
4SMF8.0A	4SMF8.0CA	EHR	ETR	8.0	8.89	9.83	1	50	13.6	29.4
4SMF8.5A	4SMF8.5CA	EHT	ETT	8.5	9.44	10.40	1	25	14.4	27.8
4SMF9.0A	4SMF9.0CA	EHV	ETV	9.0	10.0	11.1	1	10	15.4	26.0
4SMF10A	4SMF10CA	EHX	ETX	10	11.1	12.3	1	5	17.0	23.5
4SMF11A	4SMF11CA	EHZ	ETZ	11	12.2	13.5	1	2.5	18.2	22.0
4SMF12A	4SMF12CA	EIE	EUE	12	13.3	14.7	1	2.5	19.9	20.1
4SMF13A	4SMF13CA	EIG	EUG	13	14.4	15.9	1	2.5	21.5	18.6
4SMF14A	4SMF14CA	EIK	EUK	14	15.6	17.2	1	1	23.2	17.2
4SMF15A	4SMF15CA	EIM	EUM	15	16.7	18.5	1	1	24.4	16.4
4SMF16A	4SMF16CA	EIP	EUP	16	17.8	19.7	1	1	26.0	15.4
4SMF17A	4SMF17CA	EIR	EUR	17	18.9	20.9	1	1	27.6	14.5
4SMF18A	4SMF18CA	EIT	EUT	18	20.0	22.1	1	1	29.2	13.7
4SMF20A	4SMF20CA	EIV	EUV	20	22.2	24.5	1	1	32.4	12.3
4SMF22A	4SMF22CA	EIX	EUX	22	24.4	26.9	1	1	35.5	11.3
4SMF24A	4SMF24CA	EIZ	EUZ	24	26.7	29.5	1	1	38.9	10.3
4SMF26A	4SMF26CA	EJE	EVE	26	28.9	31.9	1	1	42.1	9.5
4SMF28A	4SMF28CA	EJG	EVG	28	31.1	34.4	1	1	45.4	8.8
4SMF30A	4SMF30CA	EJK	EVK	30	33.3	36.8	1	1	48.4	8.3
4SMF33A	4SMF33CA	EJM	EVM	33	36.7	40.6	1	1	53.3	7.5
4SMF36A	4SMF36CA	EJP	EVP	36	40.0	44.2	1	1	58.1	6.9
4SMF40A	4SMF40CA	EJR	EVR	40	44.4	49.1	1	1	64.5	6.2
4SMF43A	4SMF43CA	EJT	EVT	43	47.8	52.8	1	1	69.4	5.8
4SMF45A	4SMF45CA	EJV	EVV	45	50.0	55.3	1	1	72.7	5.5
4SMF48A	4SMF48CA	EJX	EVX	48	53.3	58.9	1	1	77.4	5.2
4SMF51A	4SMF51CA	EJZ	EVZ	51	56.7	62.7	1	1	82.4	4.9
4SMF54A	4SMF54CA	ERE	EWE	54	60.0	66.3	1	1	87.1	4.6
4SMF58A	4SMF58CA	ERG	EWG	58	64.4	71.2	1	1	93.6	4.3

## Note:

1. Suffix "A" denotes 5% tolerance device.
2. Add suffix "CA" after part number to specify bi-directional devices.
3. The I<sub>R</sub> limit is double for bi-directional devices.



## Rating and Characteristic Curves

FIG.1 - Peak Pulse Power Derating Curve

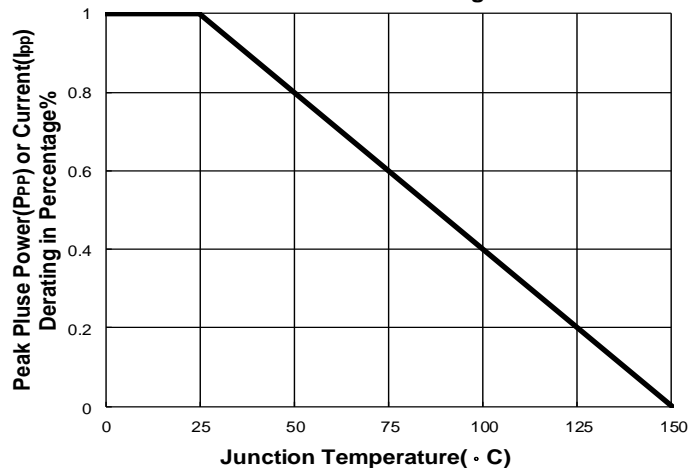


FIG.2 - Steady State Power Derating Curve

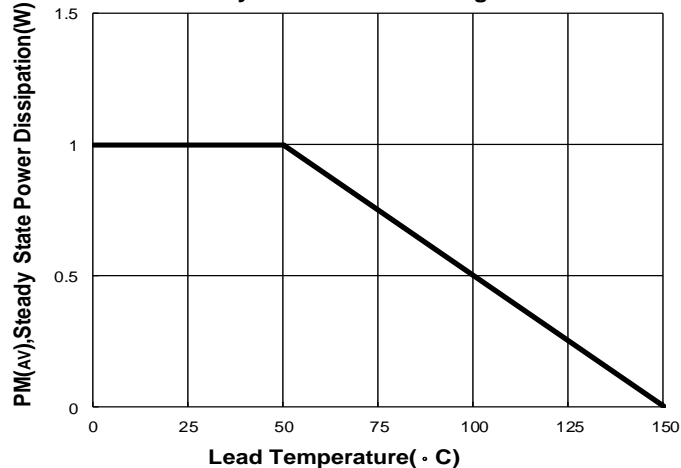


FIG.3 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

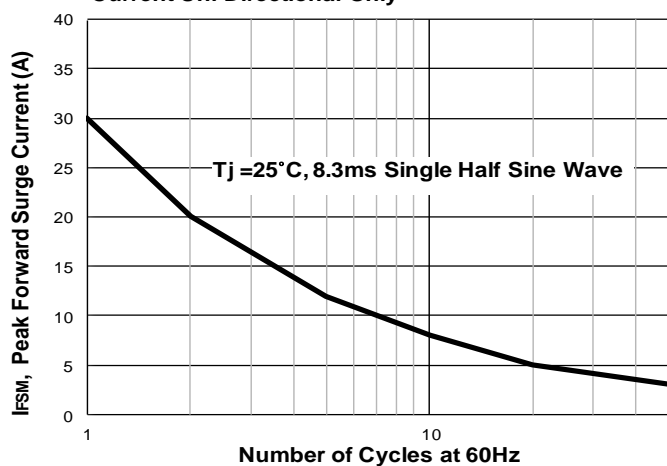


FIG.4 - Pulse Waveform

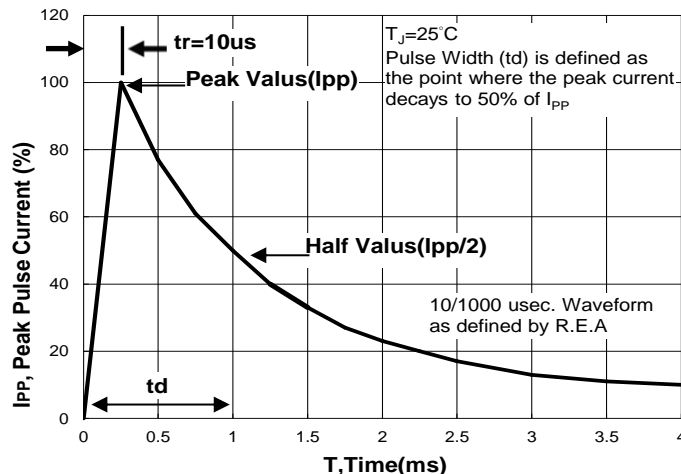


FIG.5 - Typical Junction Capacitance

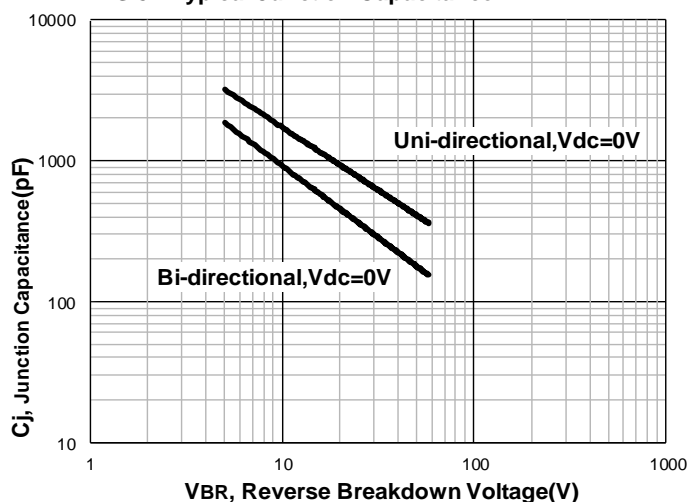
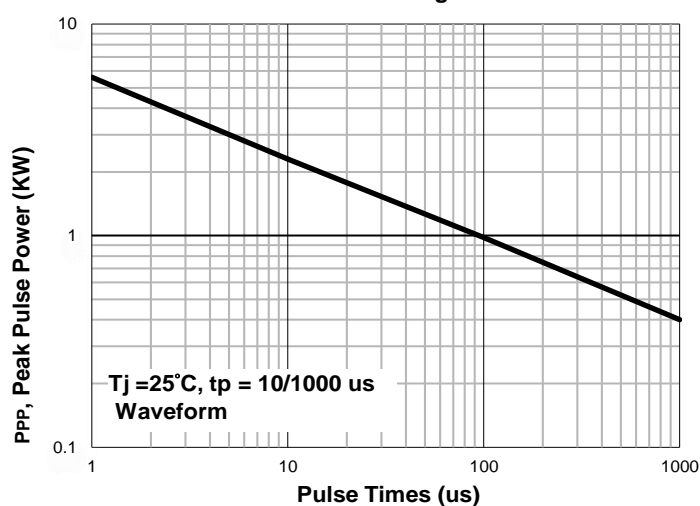


FIG.6 - Peak Pulse Power Rating Curve





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