

# SMF5.0A - SMF170A

# ZENER OVERVOLTAGE TRANSIENT SUPPRESSOR

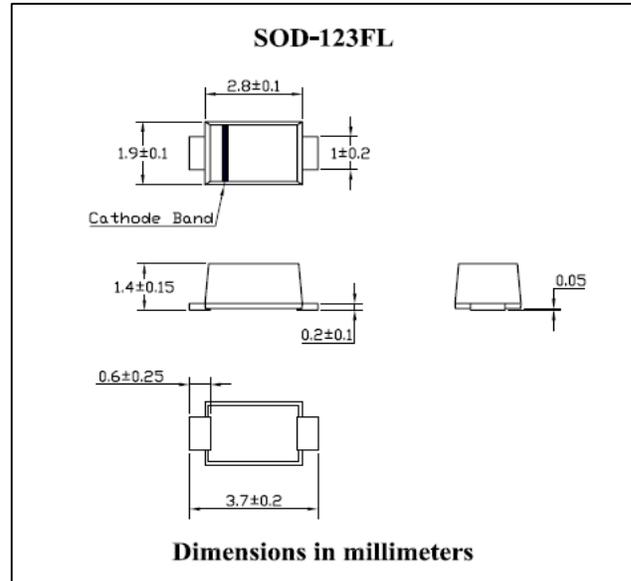
**Stand-off Voltage : 5 to 170 V**  
**Peak Power : 200 W**

### FEATURES :

- \* Stand-off voltage ; 5 - 170 Volts
- \* Peak Power ; - 200 Watts @ 1 ms (SMF5.0A - SMF58A)  
 - 175 Watts @ 1 ms (SMF60A - SMF170A)
- \* Maximum clamp voltage @ Peak pulse current
- \* Low leakage
- \* **Pb / RoHS Free**

### MECHANICAL DATA :

- \* Case: JEDEC SOD-123FL, molded plastic over passivated chip
- \* Terminals: Solder Plated, solderable per MIL-STD-750, Method 2026
- \* Polarity: Color band denotes cathode end
- \* Mounting position : Any
- \* Weight: 0.006 ounces, 0.02 gram



### MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit	
Maximum $P_{PK}$ Dissipation (PW - 10/1000 $\mu$ s) (Note 1)	$P_{PK}$	SMF60A - SMF170A	175	W
		SMF5.0A - SMF58A	200	W
Maximum $P_{PK}$ Dissipation @ $T_a = 25\text{ }^\circ\text{C}$ (PW - 8/10 $\mu$ s) (Note 2)	$P_{PK}$	1000	W	
DC Power Dissipation @ $T_a = 25\text{ }^\circ\text{C}$ (Note 3)	$P_D$	385	mW	
Derate above 25 °C		4.0	mW/°C	
Thermal Resistance, Junction to Ambient (Note 3)	$R_{\theta JA}$	325	°C/W	
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C	

#### Notes :

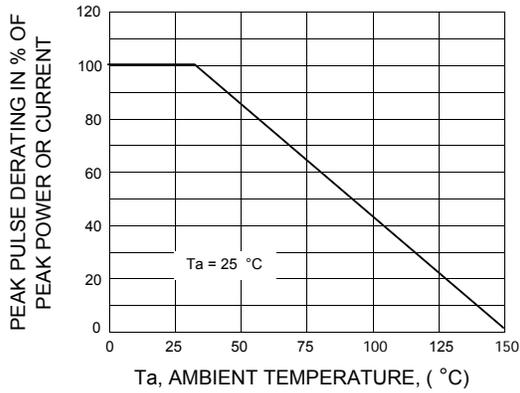
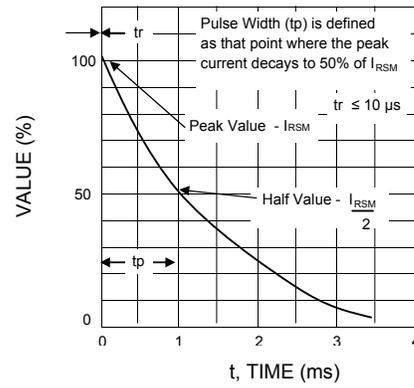
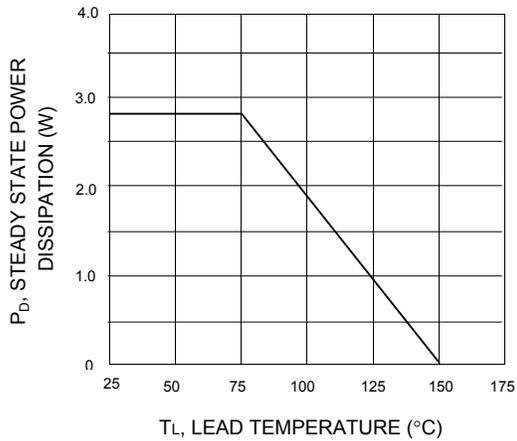
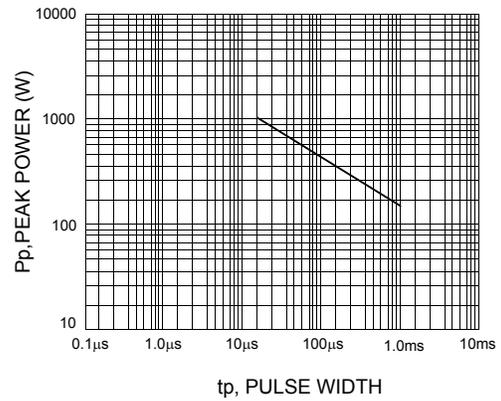
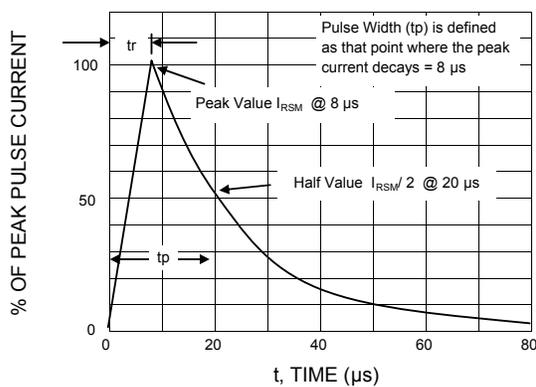
- (1) Non-repetitive current pulse at  $T_a = 25\text{ }^\circ\text{C}$ , per waveform of Fig. 2.
- (2) Non-repetitive current pulse at  $T_a = 25\text{ }^\circ\text{C}$ , per waveform of Fig. 5.
- (3) Mounted with recommended minimum pad size, DC board FR-4.

## ELECTRICAL CHARACTERISTICS (T<sub>L</sub> = 30 °C unless otherwise noted, V<sub>F</sub> = 1.25 Volts @ 200 mA)

Type No.	Working Peak Reverse Voltage <sup>(1)</sup>	Breakdown Voltage @ I <sub>T</sub>			Test Current	Max. Reverse Leakage Current	Max. Clamping Voltage at I <sub>PP</sub>	Max. Reverse Peak Pulse Current <sup>(3)</sup>
	V <sub>RWM</sub>	V <sub>BR</sub> @ I <sub>T</sub>			I <sub>T</sub>	I <sub>R</sub> @ V <sub>RWM</sub>	V <sub>C</sub>	I <sub>PP</sub>
	(V)	Min	Nom	Max.	(mA)	(μA)	(V)	(mA)
SMF5.0A	5.0	6.40	6.70	7.00	10	400	9.2	21.7
SMF6.0A	6.0	6.67	7.02	7.37	10	400	10.3	19.4
SMF6.5A	6.5	7.22	7.60	7.98	10	250	11.2	17.9
SMF7.0A	7.0	7.78	8.20	8.60	10	100	12.0	16.7
SMF7.5A	7.5	8.33	8.77	9.21	1.0	50	12.9	15.5
SMF8.0A	8.0	8.89	9.36	9.83	1.0	25	13.6	14.7
SMF8.5A	8.5	9.44	9.92	10.4	1.0	10	14.4	13.9
SMF9.0A	9.0	10.0	10.55	11.1	1.0	5.0	15.4	13.0
SMF10A	10	11.1	11.70	12.3	1.0	2.5	17.0	11.8
SMF11A	11	12.2	12.85	13.5	1.0	2.5	18.2	11.0
SMF12A	12	13.3	14.00	14.7	1.0	2.5	19.9	10.1
SMF13A	13	14.4	15.15	15.9	1.0	1.0	21.5	9.3
SMF14A	14	15.6	16.40	17.2	1.0	1.0	23.2	8.6
SMF15A	15	16.7	17.60	18.5	1.0	1.0	24.4	8.2
SMF16A	16	17.8	18.75	19.7	1.0	1.0	26.0	7.7
SMF17A	17	18.9	19.90	20.9	1.0	1.0	27.6	7.2
SMF18A	18	20.0	21.00	22.1	1.0	1.0	29.2	6.8
SMF20A	20	22.2	23.35	24.5	1.0	1.0	32.4	6.2
SMF22A	22	24.4	25.60	26.9	1.0	1.0	35.5	5.6
SMF24A	24	26.7	28.10	29.5	1.0	1.0	38.9	5.1
SMF26A	26	28.9	30.40	31.9	1.0	1.0	42.1	4.8
SMF28A	28	31.1	32.80	34.4	1.0	1.0	45.4	4.4
SMF30A	30	33.3	35.10	36.8	1.0	1.0	48.4	4.1
SMF33A	33	36.7	38.70	40.6	1.0	1.0	53.3	3.8
SMF36A	36	40.0	42.10	44.2	1.0	1.0	58.1	3.4
SMF40A	40	44.4	46.80	49.1	1.0	1.0	64.5	3.1
SMF43A	43	47.8	50.30	52.8	1.0	1.0	69.4	2.9
SMF45A	45	50.0	52.65	55.3	1.0	1.0	72.7	2.8
SMF48A	48	53.3	56.10	58.9	1.0	1.0	77.4	2.6
SMF51A	51	56.7	59.70	62.7	1.0	1.0	82.4	2.4
SMF54A	54	60.0	63.15	66.3	1.0	1.0	87.1	2.3
SMF58A	58	64.4	67.80	71.2	1.0	1.0	93.6	2.1
SMF60A	60	66.7	70.20	73.7	1.0	1.0	96.8	1.8
SMF64A	64	71.1	74.85	78.6	1.0	1.0	103	1.7
SMF70A	70	77.8	81.90	86.0	1.0	1.0	113	1.5
SMF75A	75	83.3	87.70	92.1	1.0	1.0	121	1.4
SMF78A	78	86.7	91.25	95.8	1.0	1.0	126	1.4
SMF85A	85	94.4	99.20	104	1.0	1.0	137	1.3
SMF90A	90	100	105.50	111	1.0	1.0	146	1.2
SMF100A	100	111	117.00	123	1.0	1.0	162	1.1
SMF110A	110	122	128.50	135	1.0	1.0	177	1.0
SMF120A	120	133	140.00	147	1.0	1.0	193	0.9
SMF130A	130	144	151.50	159	1.0	1.0	209	0.8
SMF150A	150	167	176.00	185	1.0	1.0	243	0.7
SMF160A	160	178	187.50	197	1.0	1.0	259	0.7
SMF170A	170	189	199.00	209	1.0	1.0	275	0.6

### Notes :

- (1) A transient suppressor is normally selected according to the Working Peak Reverse Voltage (V<sub>RWM</sub>) which should be equal to or greater than the DC or continuous peak operating voltage level.
- (2) V<sub>BR</sub> measured at pulse test current I<sub>T</sub> at ambient temperature of 25 °C.
- (3) Surge current waveform per Fig. 2 and derate per Fig. 5.

**RATING AND CHARACTERISTIC CURVES ( SMF5.0A - SMF170A )**
**FIG.1 - PULSE DERATING CURVE**

**FIG.2 - 10 x 1000 μs PULSE WAVEFORM**

**FIG.3 - STEADY STATE POWER DERATING**

**FIG.4 - PULSE RATING CURVE**

**FIG.5 - 8 x 20 μs PULSE WAVEFORM**

**FIG. 6 - CAPACITANCE VS. WORKING PEAK REVERSE VOLTAGE**
