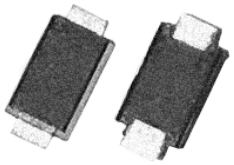
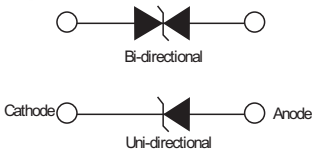
Transient Voltage Suppressors (TVS) Data Sheet

Features

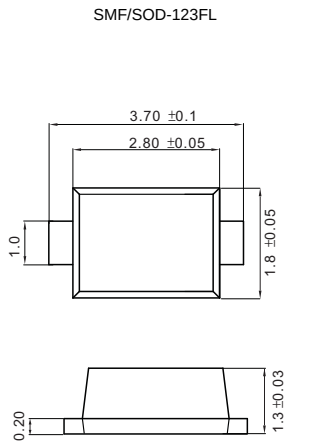


- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOD-123FL surface mount package
- Protects one I/O line
- Peak power dissipation of 1000W under 8/20μs waveform
- Working voltage: 5V~170V
- Low leakage current
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270℃
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020

Functional Diagram



Dimensions



Applications

- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Portable devices
- Portable instrumentation
- Handhelds and notebooks
- Digital cameras

Maximum Ratings and Characteristics

Rating	Symbol	Value	Unit
Peak pulse power (tp=10/1000μs waveform)	P_{PP}	200	W
Peak pulse power (tp=8/20μs waveform)	P_{PP}	1000	W
ESD voltage (Contact discharge)	V_{ESD}	±8	kV
ESD voltage (Air discharge)		±15	
Storage & operating temperature range	T_{STG} ,T_J	-55~+150	℃

Electrical Characteristics (T_A=25℃)

Part Number (Uni)	Part Number (Bi)	Marking		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@ I_T		Test Current I_T (MA)	Maximum Clamping Voltage V_C @I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @V_R (μA)
		UNI	BI		MIN	MAX				
SMF5.0A	SMF5.0CA	5A	5C	5	6.4	7	10	9.2	21.7	400
SMF6.0A	SMF6.0CA	6A	6C	6	6.67	7.37	10	10.3	19.4	400
SMF6.5A	SMF6.5CA	6A5	6C5	6.5	7.22	7.98	10	11.2	17.9	250
SMF7.0A	SMF7.0CA	7A	7C	7	7.78	8.6	10	12	16.7	100
SMF7.5A	SMF7.5CA	7A5	7C5	7.5	8.33	9.21	1	12.9	15.5	50
SMF8.0A	SMF8.0CA	8A	8C	8	8.89	9.83	1	13.6	14.7	25
SMF8.5A	SMF8.5CA	8A5	8C5	8.5	9.44	10.4	1	14.4	13.9	10
SMF9.0A	SMF9.0CA	9A	9C	9	10	11.1	1	15.4	13.0	5
SMF10A	SMF10CA	10A	10C	10	11.1	12.3	1	17	11.8	2.5
SMF11A	SMF11CA	11A	11C	11	12.2	13.5	1	18.2	11.0	2.5
SMF12A	SMF12CA	12A	12C	12	13.3	14.7	1	19.9	10.1	2.5
SMF13A	SMF13CA	13A	13C	13	14.4	15.9	1	21.5	9.3	1
SMF14A	SMF14CA	14A	14C	14	15.6	17.2	1	23.2	8.6	1
SMF15A	SMF15CA	15A	15C	15	16.7	18.5	1	24.4	8.2	1
SMF16A	SMF16CA	16A	16C	16	17.8	19.7	1	26	7.7	1
SMF17A	SMF17CA	17A	17C	17	18.9	20.9	1	27.6	7.2	1
SMF18A	SMF18CA	18A	18C	18	20	22.1	1	29.2	6.8	1
SMF20A	SMF20CA	20A	20C	20	22.2	24.5	1	32.4	6.2	1
SMF22A	SMF22CA	22A	22C	22	24.4	26.9	1	35.5	5.6	1
SMF24A	SMF24CA	24A	24C	24	26.7	29.5	1	38.9	5.1	1
SMF26A	SMF26CA	26A	26C	26	28.9	31.9	1	42.1	4.8	1
SMF28A	SMF28CA	28A	28C	28	31.1	34.4	1	45.4	4.4	1
SMF30A	SMF30CA	30A	30C	30	33.3	36.8	1	48.4	4.1	1
SMF33A	SMF33CA	33A	33C	33	36.7	40.6	1	53.3	3.8	1
SMF36A	SMF36CA	36A	36C	36	40	44.2	1	58.1	3.4	1
SMF40A	SMF40CA	40A	40C	40	44.4	49.1	1	64.5	3.1	1
SMF43A	SMF43CA	43A	43C	43	47.8	52.8	1	69.4	2.9	1
SMF45A	SMF45CA	45A	45C	45	50	55.3	1	72.7	2.8	1
SMF48A	SMF48CA	48A	48C	48	53.3	58.9	1	77.4	2.6	1
SMF51A	SMF51CA	51A	51C	51	56.7	62.7	1	82.4	2.4	1
SMF54A	SMF54CA	54A	54C	54	60	66.3	1	87.1	2.3	1
SMF58A	SMF58CA	58A	58C	58	64.4	71.2	1	93.6	2.1	1
SMF60A	SMF60CA	60A	60C	60	66.7	73.7	1	96.8	1.8	1
SMF64A	SMF64CA	64A	64C	64	71.1	78.6	1	103	1.7	1
SMF70A	SMF70CA	70A	70C	70	77.8	86	1	113	1.5	1
SMF75A	SMF75CA	75A	75C	75	83.3	92.1	1	121	1.4	1
SMF78A	SMF78CA	78A	78C	78	86.7	95.8	1	126	1.4	1
SMF85A	SMF85CA	85A	85C	85	94.4	104	1	137	1.3	1
SMF90A	SMF90CA	90A	90C	90	100	111	1	146	1.2	1
SMF100A	SMF100CA	100A	100C	100	111	123	1	162	1.1	1
SMF110A	SMF110CA	110A	110C	110	122	135	1	177	1.0	1
SMF120A	SMF120CA	120A	120C	120	133	147	1	193	0.9	1
SMF130A	SMF130CA	130A	130C	130	144	159	1	209	0.8	1
SMF150A	SMF150CA	150A	150C	150	167	185	1	243	0.7	1
SMF160A	SMF160CA	160A	160C	160	178	197	1	259	0.7	1
SMF170A	SMF170CA	170A	170C	170	189	209	1	275	0.6	1

Ratings and Characteristic Curves (T_A =25℃unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

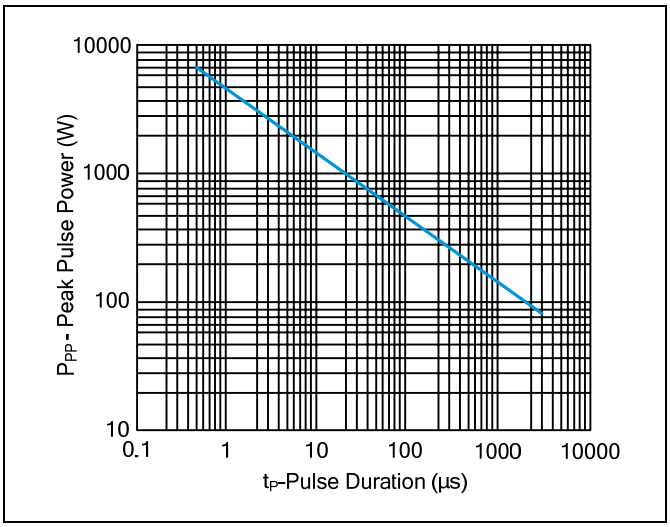


Figure 2. 10/1000μs Pulse Waveforms

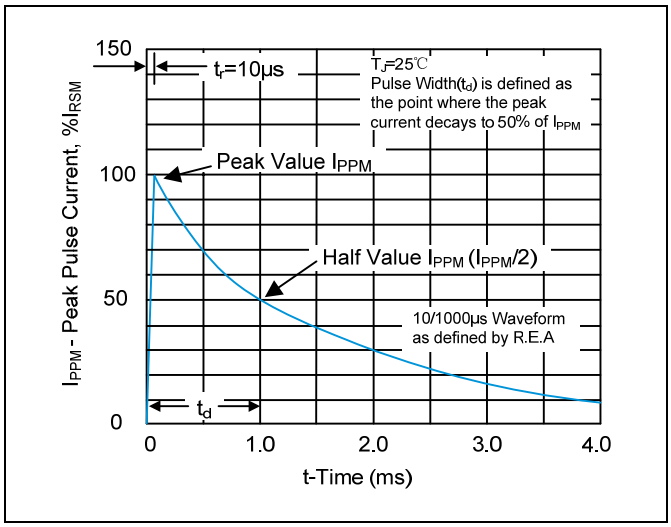


Figure 3. 8/20μs Pulse Waveforms

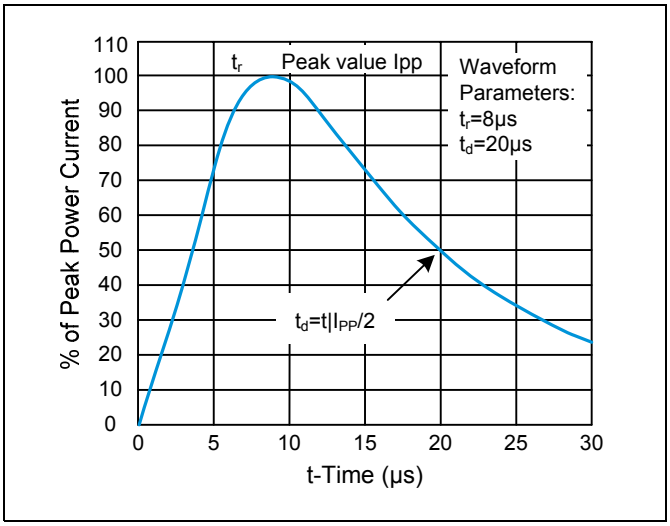


Figure 4. Power Derating Curve

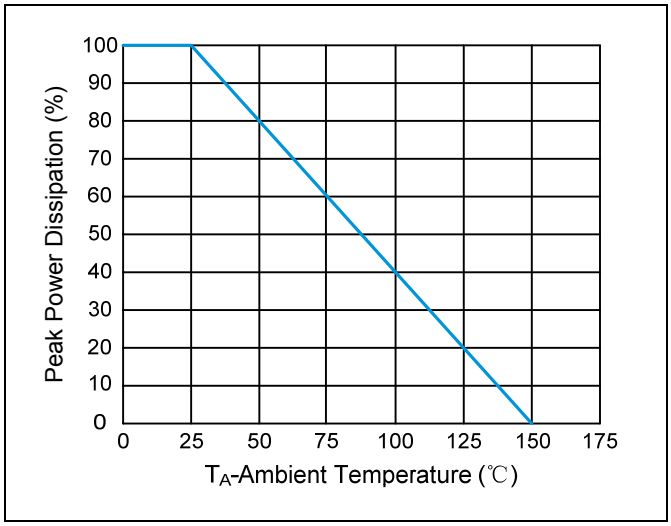
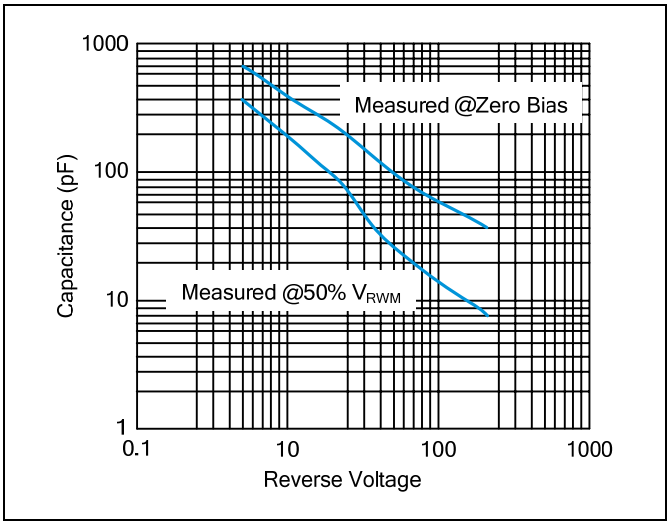
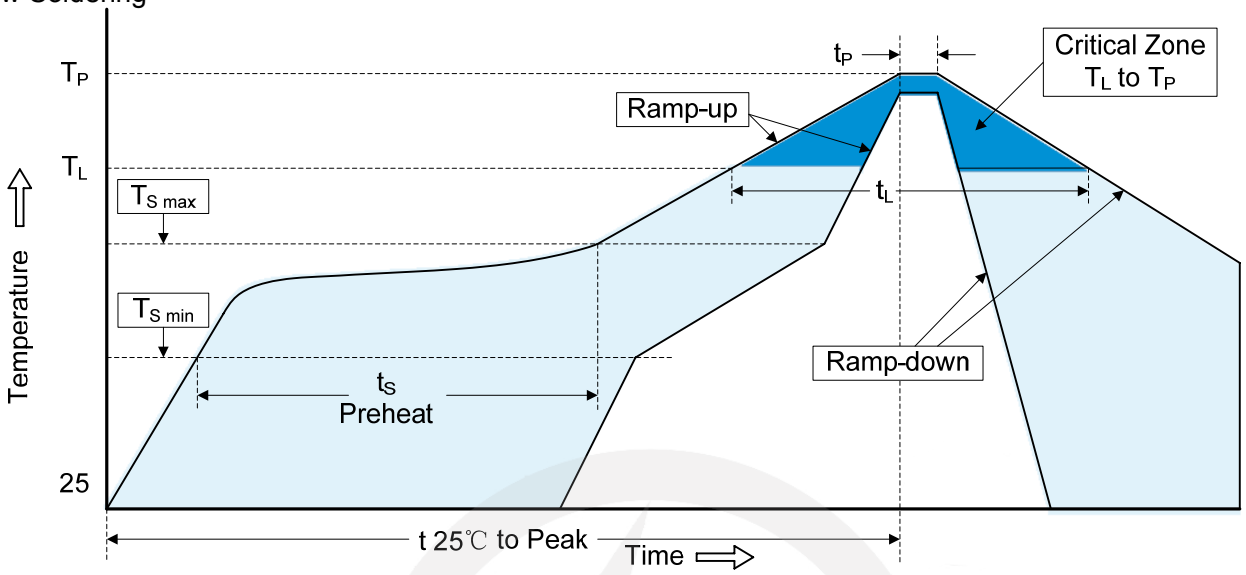


Figure 5. Capacitance vs. Reverse Voltage



Recommended Soldering Conditions

Reflow Soldering

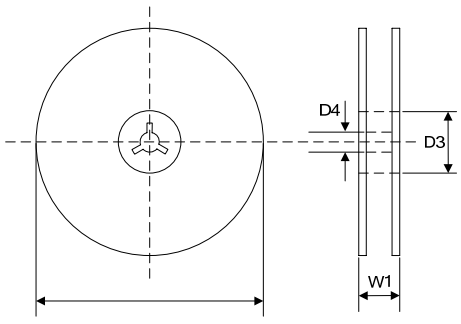


Recommended Conditions

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

Packaging

7” Reel



D2	Φ178.0±2.0
D3	Φ50.0Min.
D4	Φ13.0±0.5
W1	16.0±2.0
Quantity: 3000PCS	