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TPSMF Series

200W Surface Mount Transient Voltage Suppressors

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Features

- Peak power disspation
  200W@10 x 1000 us Pluse
- Low incremental surge resistance
- Excellent clamping capability
- Fast response time
- Low leakage current
- Halogen free and RoHS compliant

Applications

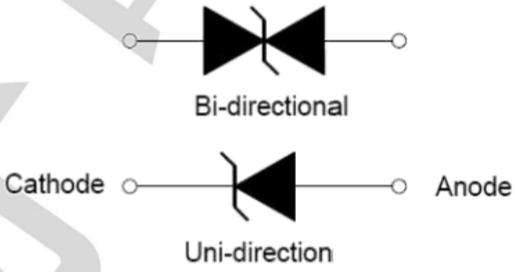
- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Handhelds and notebooks
- Portable instrumentation

Mechanical Characteristics

- SOD-123FL surface mount package

Dimensions and Pin Configuration

SOD-123FL



Pin Configuration

Maximum Ratings& Thermal Characteristics

(Tamb=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak pulse power (tp=10/1000μs waveform)	P_{PPM}	200	W
Steady state power dissipation at T_A=50℃	$P_{M(AV)}$	1	W
Peak Pulse Current of on 10/1000us Waveform	IPPM	See Table	A
Typical thermal resistance junction to ambient	$R_{\theta JA}$	220	℃/W
Storage & operating temperature range	T_{STG} ,T_J	-55~+150	℃

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Electrical Characteristics (TA=25°C unless otherwise specified)

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (V)	Breakdown Voltage V_{BR} @ I_T (V)		Test Current I_T (mA)	Maximum Clamping Voltage V_C@ I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximun Reverse Leakage I_R @ V_R (μA)
			Min	Max				
TPSMF5.0A	TPSMF5.0CA	5	6.4	7	10	9.2	21.7	400
TPSMF6.0A	TPSMF6.0CA	6	6.67	7.37	10	10.3	19.4	400
TPSMF6.5A	TPSMF6.5CA	6.5	7.22	7.98	10	11.2	17.9	250
TPSMF7.0A	TPSMF7.0CA	7	7.78	8.6	10	12	16.7	100
TPSMF7.5A	TPSMF7.5CA	7.5	8.33	9.21	1	12.9	15.5	50
TPSMF8.0A	TPSMF8.0CA	8	8.89	9.83	1	13.6	14.7	25
TPSMF8.5A	TPSMF8.5CA	8.5	9.44	10.4	1	14.4	13.9	10
TPSMF9.0A	TPSMF9.0CA	9	10	11.1	1	15.4	13	5
TPSMF10A	TPSMF10CA	10	11.1	12.3	1	17	11.8	2.5
TPSMF11A	TPSMF11CA	11	12.2	13.5	1	18.2	11	2.5
TPSMF12A	TPSMF12CA	12	13.3	14.7	1	19.9	10.1	2.5
TPSMF13A	TPSMF13CA	13	14.4	15.9	1	21.5	9.3	1
TPSMF14A	TPSMF14CA	14	15.6	17.2	1	23.2	8.6	1
TPSMF15A	TPSMF15CA	15	16.7	18.5	1	24.4	8.2	1
TPSMF16A	TPSMF16CA	16	17.8	19.7	1	26	7.7	1
TPSMF17A	TPSMF17CA	17	18.9	20.9	1	27.6	7.2	1
TPSMF18A	TPSMF18CA	18	20	22.1	1	29.2	6.8	1
TPSMF20A	TPSMF20CA	20	22.2	24.5	1	32.4	6.2	1
TPSMF22A	TPSMF22CA	22	24.4	26.9	1	35.5	5.6	1
TPSMF24A	TPSMF24CA	24	26.7	29.5	1	38.9	5.1	1
TPSMF26A	TPSMF26CA	26	28.9	31.9	1	42.1	4.8	1
TPSMF28A	TPSMF28CA	28	31.1	34.4	1	45.4	4.4	1
TPSMF30A	TPSMF30CA	30	33.3	36.8	1	48.4	4.1	1
TPSMF33A	TPSMF33CA	33	36.7	40.6	1	53.3	3.8	1
TPSMF36A	TPSMF36CA	36	40	44.2	1	58.1	3.4	1
TPSMF40A	TPSMF40CA	40	44.4	49.1	1	64.5	3.1	1
TPSMF43A	TPSMF43CA	43	47.8	52.8	1	69.4	2.9	1
TPSMF45A	TPSMF45CA	45	50	55.3	1	72.7	2.8	1
TPSMF48A	TPSMF48CA	48	53.3	58.9	1	77.4	2.6	1
TPSMF51A	TPSMF51CA	51	56.7	62.7	1	82.4	2.4	1
TPSMF54A	TPSMF54CA	54	60	66.3	1	87.1	2.3	1

Electrical Characteristics (TA=25°C unless otherwise specified)

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (V)	Breakdown Voltage V_{BR} @ I_T (V)		Test Current I_T (mA)	Maximum Clamping Voltage V_C@ I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximun Reverse Leakage I_R @ V_R (μA)
			Min	Max				
TPSMF58A	TPSMF58CA	58	64.4	71.2	1	93.6	2.1	1
TPSMF60A	TPSMF60CA	60	66.7	73.7	1	96.8	1.8	1
TPSMF64A	TPSMF64CA	64	71.1	78.6	1	103	1.7	1
TPSMF70A	TPSMF70CA	70	77.8	86	1	113	1.5	1
TPSMF75A	TPSMF75CA	75	83.3	92.1	1	121	1.4	1
TPSMF78A	TPSMF78CA	78	86.7	95.8	1	126	1.4	1
TPSMF85A	TPSMF85CA	85	94.4	104	1	137	1.3	1
TPSMF90A	TPSMF90CA	90	100	111	1	146	1.2	1
TPSMF100A	TPSMF100CA	100	111	123	1	162	1.1	1
TPSMF110A	TPSMF110CA	110	122	135	1	177	1	1
TPSMF120A	TPSMF120CA	120	133	147	1	193	0.9	1
TPSMF130A	TPSMF130CA	130	144	159	1	209	0.8	1
TPSMF150A	TPSMF150CA	150	167	185	1	243	0.7	1
TPSMF160A	TPSMF160CA	160	178	197	1	259	0.7	1
TPSMF170A	TPSMF170CA	170	189	209	1	275	0.6	1
TPSMF58A	TPSMF58CA	58	64.4	71.2	1	93.6	2.1	1
TPSMF60A	TPSMF60CA	60	66.7	73.7	1	96.8	1.8	1
TPSMF64A	TPSMF64CA	64	71.1	78.6	1	103	1.7	1
TPSMF70A	TPSMF70CA	70	77.8	86	1	113	1.5	1
TPSMF75A	TPSMF75CA	75	83.3	92.1	1	121	1.4	1
TPSMF78A	TPSMF78CA	78	86.7	95.8	1	126	1.4	1
TPSMF85A	TPSMF85CA	85	94.4	104	1	137	1.3	1
TPSMF90A	TPSMF90CA	90	100	111	1	146	1.2	1
TPSMF100A	TPSMF100CA	100	111	123	1	162	1.1	1
TPSMF110A	TPSMF110CA	110	122	135	1	177	1	1
TPSMF120A	TPSMF120CA	120	133	147	1	193	0.9	1
TPSMF130A	TPSMF130CA	130	144	159	1	209	0.8	1
TPSMF150A	TPSMF150CA	150	167	185	1	243	0.7	1
TPSMF160A	TPSMF160CA	160	178	197	1	259	0.7	1
TPSMF170A	TPSMF170CA	170	189	209	1	275	0.6	1

For bi-directional type having Vrwm of 10 Volts and less, the IR limit is double.

For parts without A, the VBR is +10%.

Typical Characteristics Curves

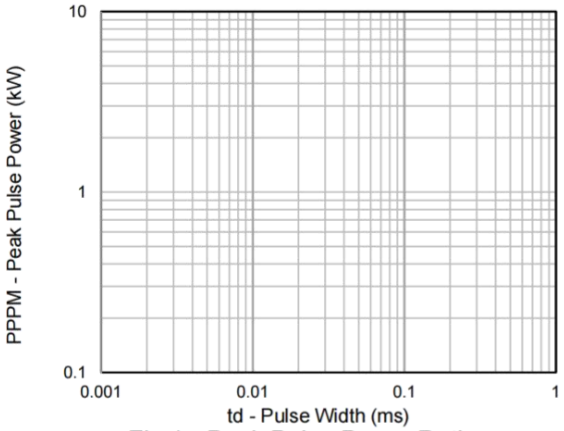


Fig.1 - Peak Pulse Power Rating

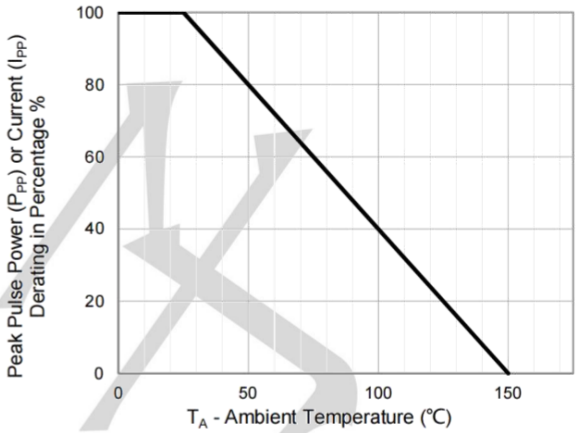


Fig.2 - Pulse Derating Curve

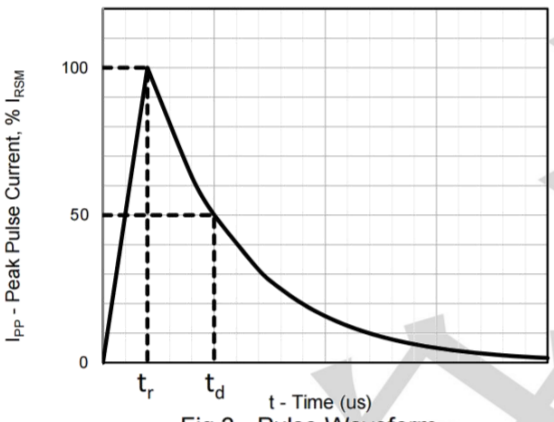


Fig.3 - Pulse Waveform

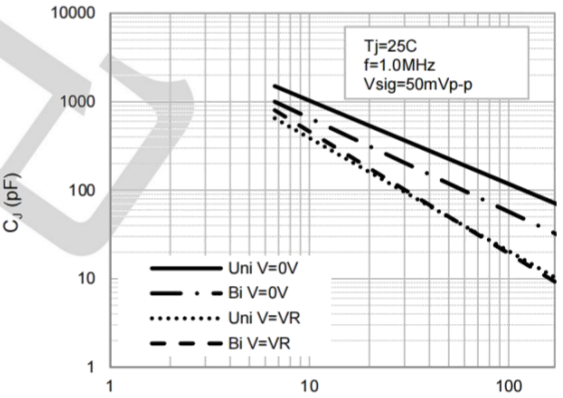


Fig.4 - Typical Junction Capacitance

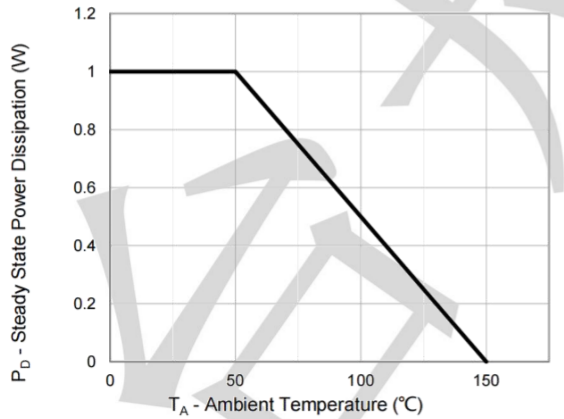


Fig.5 - Steady State Power Dissipation Derating Curve

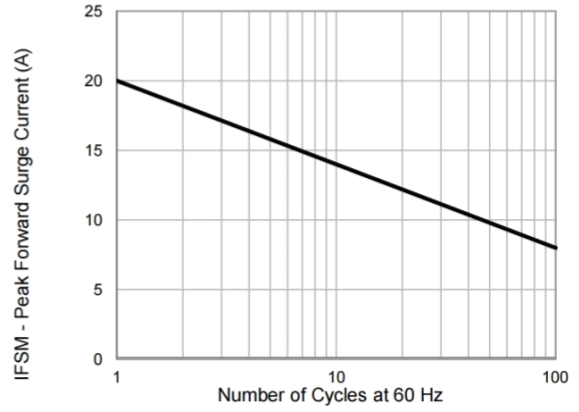
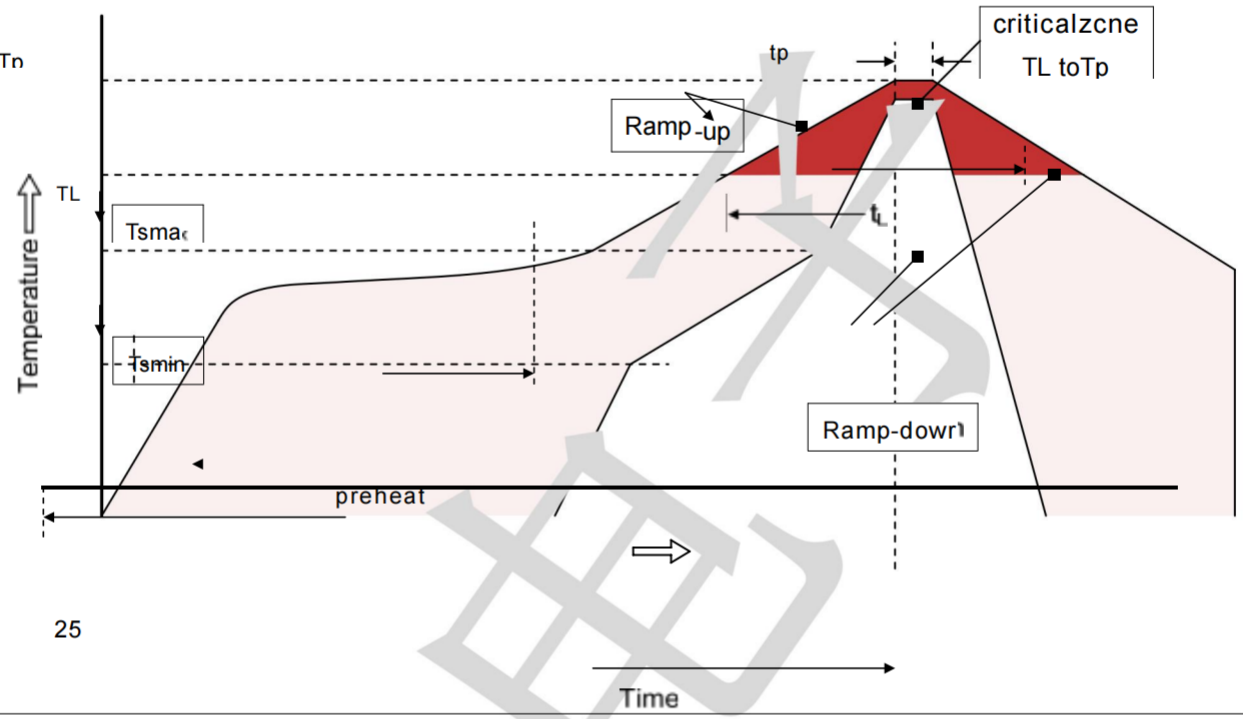


Fig.6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

Recommended Soldering Conditions

Reflow Soldering

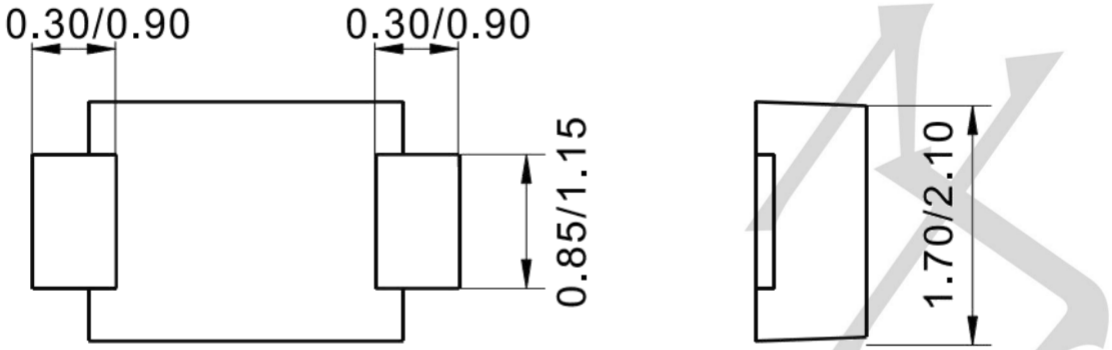


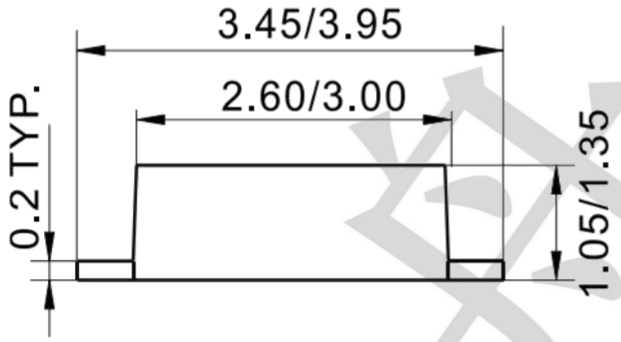
Recommended Conditions

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 (minto max) (ts)	 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.

Package Outline Dimensions (unit: mm)

SOD-123FL





Mounting Pad Layout (unit: mm)