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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
- IEC-61000-4-2 ESD
  30kV(Air), 30kV (Contact)

Applications

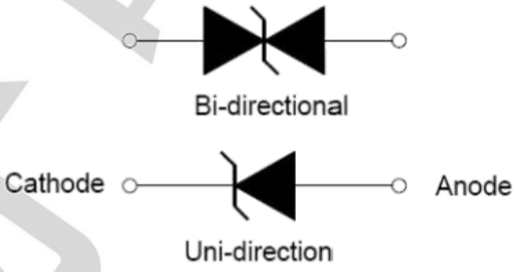
- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Handhelds and notebooks
- Portable instrumentation

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	I_{PPM}	See Table	A
Typical thermal resistance junction to ambient	$R_{\theta JA}$	220	℃/W
Storage & operating temperature range	T_{STG} ,T_J	-55~+150	℃

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

Type		Marking		V_{RMW}	Breakdown Voltage		Test Current	Reverse Leakage	Max. Clamp Voltage	Peak Pulse Current
					V_{BR} @ I_T		I_T	I_R @ V_{RWM}	V_C @ I_{PP}	I_{PP}
					Min	Max				
Uni	Bi	Uni	Bi	V	V	V	mA	μA	V	A
TPSMF5.0A	TPSMF5.0CA	AE	CAE	5	6.4	7	10	400	9.2	21.7
TPSMF6.0A	TPSMF6.0CA	AG	CAG	6	6.67	7.37	10	400	10.3	19.4
TPSMF6.5A	TPSMF6.5CA	AK	CAK	6.5	7.22	7.98	10	250	11.2	17.9
TPSMF7.0A	TPSMF7.0CA	AM	CAM	7	7.78	8.6	10	100	12	16.7
TPSMF7.5A	TPSMF7.5CA	AP	CAP	7.5	8.33	9.21	1	50	12.9	15.5
TPSMF8.0A	TPSMF8.0CA	AR	CAR	8	8.89	9.83	1	25	13.6	14.7
TPSMF8.5A	TPSMF8.5CA	AT	CAT	8.5	9.44	10.4	1	10	14.4	13.9
TPSMF9.0A	TPSMF9.0CA	AV	CAV	9	10	11.1	1	5	15.4	13
TPSMF10A	TPSMF10CA	AX	CAX	10	11.1	12.3	1	2.5	17	11.8
TPSMF11A	TPSMF11CA	AZ	CAZ	11	12.2	13.5	1	2.5	18.2	11
TPSMF12A	TPSMF12CA	BE	CBE	12	13.3	14.7	1	2.5	19.9	10.1
TPSMF13A	TPSMF13CA	BG	CBG	13	14.4	15.9	1	1	21.5	9.3
TPSMF14A	TPSMF14CA	BK	CBK	14	15.6	17.2	1	1	23.2	8.6
TPSMF15A	TPSMF15CA	BM	CBM	15	16.7	18.5	1	1	24.4	8.2
TPSMF16A	TPSMF16CA	BP	CBP	16	17.8	19.7	1	1	26	7.7
TPSMF17A	TPSMF17CA	BR	CBR	17	18.9	20.9	1	1	27.6	7.2
TPSMF18A	TPSMF18CA	BT	CBT	18	20	22.1	1	1	29.2	6.8
TPSMF20A	TPSMF20CA	BV	CBV	20	22.2	24.5	1	1	32.4	6.2
TPSMF22A	TPSMF22CA	BX	CBX	22	24.4	26.9	1	1	35.5	5.6
TPSMF24A	TPSMF24CA	BZ	CBZ	24	26.7	29.5	1	1	38.9	5.1
TPSMF26A	TPSMF26CA	CE	CCE	26	28.9	31.9	1	1	42.1	4.8
TPSMF28A	TPSMF28CA	CG	CCG	28	31.1	34.4	1	1	45.4	4.4
TPSMF30A	TPSMF30CA	CK	CCK	30	33.3	36.8	1	1	48.4	4.1
TPSMF33A	TPSMF33CA	CM	CCM	33	36.7	40.6	1	1	53.3	3.8
TPSMF36A	TPSMF36CA	CP	CCP	36	40	44.2	1	1	58.1	3.4
TPSMF40A	TPSMF40CA	CR	CCR	40	44.4	49.1	1	1	64.5	3.1
TPSMF43A	TPSMF43CA	CT	CCT	43	47.8	52.8	1	1	69.4	2.9
TPSMF45A	TPSMF45CA	CV	CCV	45	50	55.3	1	1	72.7	2.8

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

Type		Marking		V_{RMW}	Breakdown Voltage		Test Current	Reverse Leakage	Max. Clamp Voltage	Peak Pulse Current
					V_{BR} @ I_T		I_T	I_R @ V_{RWM}	V_C @ I_{PP}	I_{PP}
					Min	Max				
Uni	Bi	Uni	Bi	V	V	V	mA	μA	V	A
TPSMF48A	TPSMF48CA	CX	CCX	48	53.3	58.9	1	1	77.4	2.6
TPSMF51A	TPSMF51CA	CZ	CCZ	51	56.7	62.7	1	1	82.4	2.4
TPSMF54A	TPSMF54CA	DE	CDE	54	60	66.3	1	1	87.1	2.3
TPSMF58A	TPSMF58CA	DG	CDG	58	64.4	71.2	1	1	93.6	2.1
TPSMF60A	TPSMF60CA	DK	CDK	60	66.7	73.7	1	1	96.8	1.8
TPSMF64A	TPSMF64CA	DM	CDM	64	71.1	78.6	1	1	103	1.7
TPSMF70A	TPSMF70CA	DP	CDP	70	77.8	86	1	1	113	1.5
TPSMF75A	TPSMF75CA	DR	CDR	75	83.3	92.1	1	1	121	1.4
TPSMF78A	TPSMF78CA	DT	CDT	78	86.7	95.8	1	1	126	1.4
TPSMF85A	TPSMF85CA	DV	CDV	85	94.4	104	1	1	137	1.3
TPSMF90A	TPSMF90CA	DX	CDX	90	100	111	1	1	146	1.2
TPSMF100A	TPSMF100CA	DZ	CDZ	100	111	123	1	1	162	1.1
TPSMF110A	TPSMF110CA	EE	CEE	110	122	135	1	1	177	1
TPSMF120A	TPSMF120CA	EG	CEG	120	133	147	1	1	193	0.9
TPSMF130A	TPSMF130CA	EK	CEK	130	144	159	1	1	209	0.8
TPSMF150A	TPSMF150CA	EM	CEM	150	167	185	1	1	243	0.7
TPSMF160A	TPSMF160CA	EP	CEP	160	178	197	1	1	259	0.7
TPSMF170A	TPSMF170CA	ER	CER	170	189	209	1	1	275	0.6
TPSMF180A	TPSMF180CA	ET	CET	180	201	222	1	1	292	0.5
TPSMF190A	TPSMF190CA	EV	CEV	190	211	232	1	1	308	0.5
TPSMF200A	TPSMF200CA	EX	CEX	200	224	247	1	1	324	0.5
TPSMF220A	TPSMF220CA	E22	CE22	220	246	272	1	1	356	0.5
TPSMF250A	TPSMF250CA	E25	CE25	250	279	309	1	1	405	0.5
TPSMF300A	TPSMF300CA	E30	CE30	300	335	371	1	1	486	0.45
TPSMF350A	TPSMF350CA	E35	CE35	350	391	432	1	1	567	0.4

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

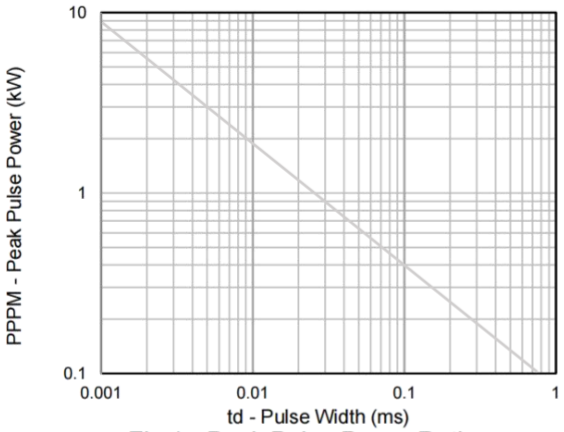


Fig.1 - Peak Pulse Power Rating

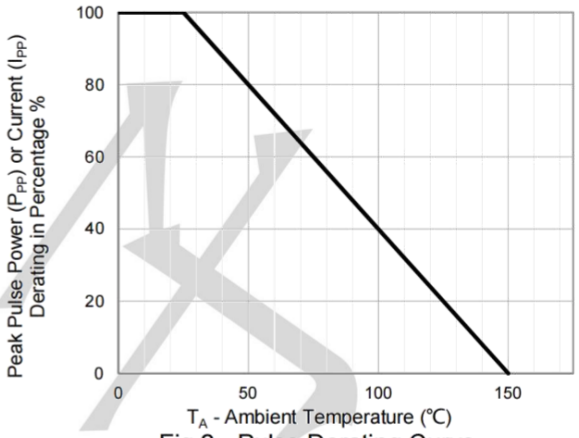


Fig.2 - Pulse Derating Curve

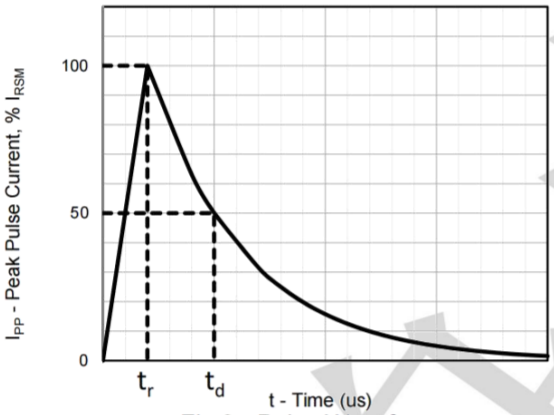


Fig.3 - Pulse Waveform

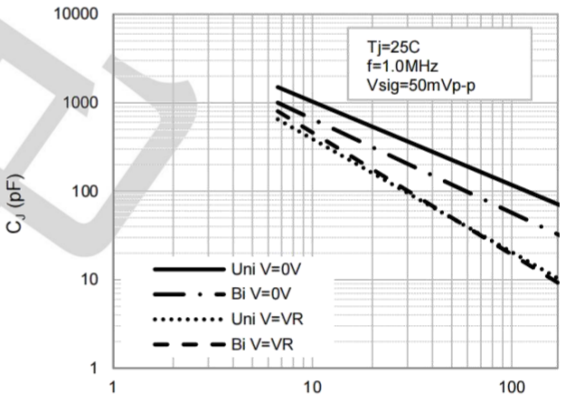


Fig.4 - Typical Junction Capacitance

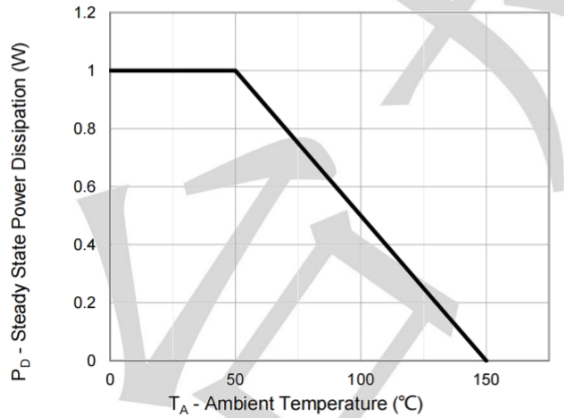


Fig.5 - Steady State Power Dissipation Derating Curve

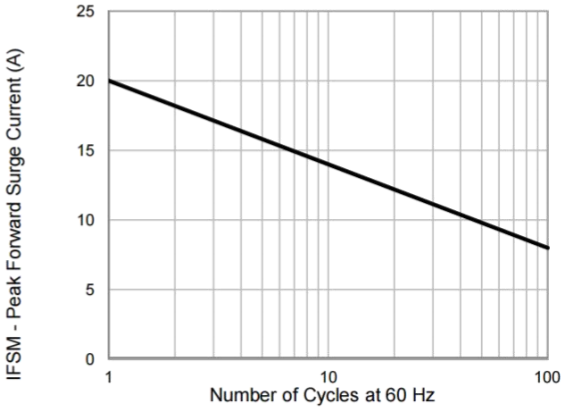
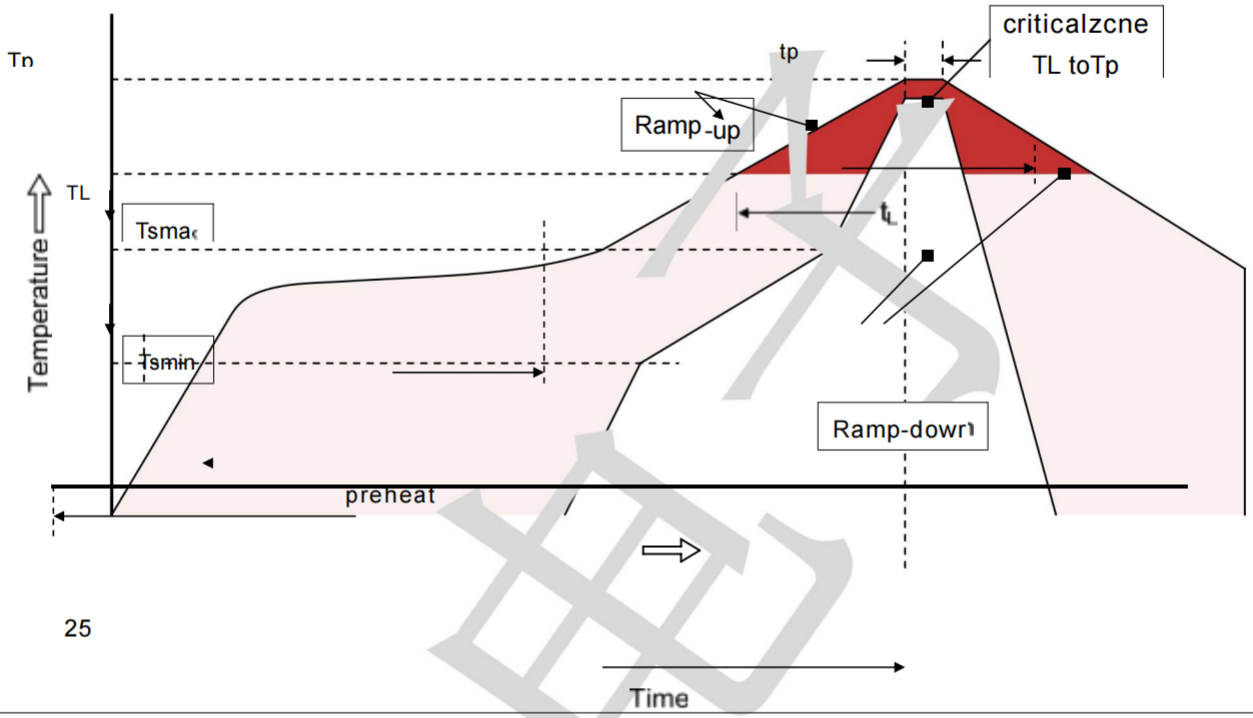


Fig.6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

Recommended Soldering Conditions

Reflow Soldering

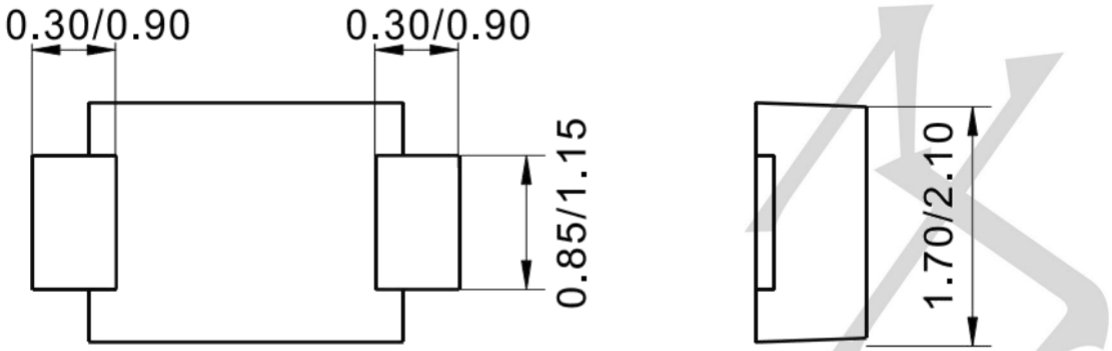


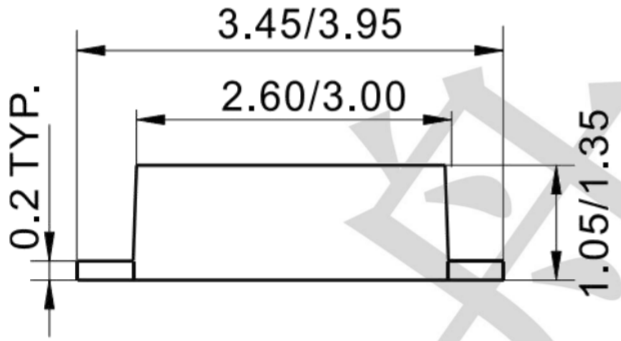
Recommended Conditions

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)