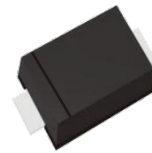


FEATURES

- | Low profile package
- | Ideal for automated placement
- | 400 Watt peak pulse power capability with a 10/1000 μ s waveform
- | For surface mounted applicatons to optimize board space
- | Excellent clamping capability
- | Very fast response time
- | Low incremental surge resistance
- | Meet AEC-Q101 Requirements



SOD-123FL



Bi-directional



Uni-directional

Schematic Symbol

APPLICATIONS

- | Power supply protection
- | Automotive application
- | Industrial application
- | Power management

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbo	Value	Unit
Peak Pulse Power Dissipation on 10/1000us waveform (Note1)	P_{PPM}	400	Watts
Steady State Power Dissipation at $T_L=75^{\circ}\text{C}$	P_D	2.8	Watts

Notes :1.Non-repetitive current pulse, $T_A=25^{\circ}\text{C}$.

2.8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum

THERMAL CONSIDERATIONS

Parameter	Symbol	Value	Unit
Operating junction Temperature	T_J	-55 to +150	$^{\circ}\text{C}$
Storage Temperature Range	T_S	-55 to +150	$^{\circ}\text{C}$
Junction to Ambient on Printed circuit	$R_{\theta JA}$	220	$^{\circ}\text{C/W}$

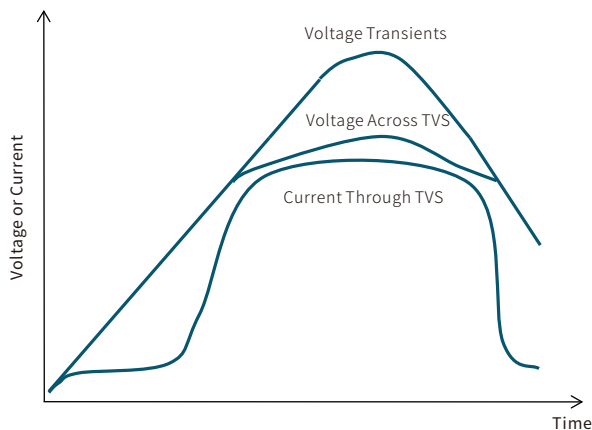
ELECTRICAL CHARACTERISTICS

Part Number		Device Marking Code		Reverse Stand-off Voltage	Breakdown Voltage Min.@I _T	Breakdown Voltage Max.@I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Maximum Peak Pulse Current	Maximum Reverse Leakage @V _{RWM}
Uni-Polar	Bi-Polar	Uni-Polar	Bi-Polar	V _{RWM} (V)	V _{BR} (V)	V _{BR} (V)	I _T (mA)	V _c (V)	I _{PP} (A)	I _R (uA)
TPSMF4L5.0A	TPSMF4L5.0CA	KE	WE	5.0	6.4	7.0	10.0	9.2	43.5	800
TPSMF4L6.0A	TPSMF4L6.0CA	KG	WG	6.0	6.67	7.37	10.0	10.3	38.8	800
TPSMF4L6.5A	TPSMF4L6.5CA	KK	WK	6.5	7.22	7.98	10.0	11.2	35.7	500
TPSMF4L7.0A	TPSMF4L7.0CA	KM	WM	7.0	7.78	8.60	10.0	12.0	33.3	200
TPSMF4L7.5A	TPSMF4L7.5CA	KP	WP	7.5	8.33	9.21	1.0	12.9	31.0	100
TPSMF4L8.0A	TPSMF4L8.0CA	KR	WR	8.0	8.89	9.83	1.0	13.6	29.4	50
TPSMF4L8.5A	TPSMF4L8.5CA	KT	WT	8.5	9.44	10.4	1.0	14.4	27.8	20
TPSMF4L9.0A	TPSMF4L9.0CA	KV	WV	9.0	10.0	11.0	1.0	15.4	26.0	10
TPSMF4L10A	TPSMF4L10CA	KX	WX	10.0	11.0	12.3	1.0	17.0	23.5	5.0
TPSMF4L11A	TPSMF4L11CA	KZ	WZ	11.0	12.2	13.5	1.0	18.2	22.0	1.0
TPSMF4L12A	TPSMF4L12CA	LE	XE	12.0	13.3	14.7	1.0	19.9	20.1	1.0
TPSMF4L13A	TPSMF4L13CA	LG	XG	13.0	14.4	15.9	1.0	21.5	18.6	1.0
TPSMF4L14A	TPSMF4L14CA	LK	XK	14.0	15.6	17.2	1.0	23.2	17.2	1.0
TPSMF4L15A	TPSMF4L15CA	LM	XM	15.0	16.7	18.5	1.0	24.4	16.4	1.0
TPSMF4L16A	TPSMF4L16CA	LP	XP	16.0	17.8	19.7	1.0	26.0	15.4	1.0
TPSMF4L17A	TPSMF4L17CA	LR	XR	17.0	18.9	20.9	1.0	27.6	14.5	1.0
TPSMF4L18A	TPSMF4L18CA	LT	XT	18.0	20.0	22.1	1.0	29.2	13.7	1.0
TPSMF4L20A	TPSMF4L20CA	LV	XV	20.0	22.2	24.5	1.0	32.4	12.3	1.0
TPSMF4L22A	TPSMF4L22CA	LX	XX	22.0	24.4	26.9	1.0	35.5	11.3	1.0
TPSMF4L24A	TPSMF4L24CA	LZ	XZ	24.0	26.7	29.5	1.0	38.9	10.3	1.0
TPSMF4L26A	TPSMF4L26CA	ME	YE	26.0	28.9	31.9	1.0	42.1	9.5	1.0
TPSMF4L28A	TPSMF4L28CA	MG	YG	28.0	31.1	34.4	1.0	45.4	8.8	1.0
TPSMF4L30A	TPSMF4L30CA	MK	YK	30.0	33.3	36.8	1.0	48.4	8.3	1.0
TPSMF4L33A	TPSMF4L33CA	MM	YM	33.0	36.7	40.6	1.0	53.3	7.5	1.0
TPSMF4L36A	TPSMF4L36CA	MP	YP	36.0	40.0	44.2	1.0	58.1	6.9	1.0
TPSMF4L40A	TPSMF4L40CA	MR	YR	40.0	44.4	49.1	1.0	64.5	6.2	1.0
TPSMF4L43A	TPSMF4L43CA	MT	YT	43.0	47.8	52.8	1.0	69.4	5.8	1.0
TPSMF4L45A	TPSMF4L45CA	MV	YV	45.0	50.0	55.3	1.0	72.7	5.5	1.0
TPSMF4L48A	TPSMF4L48CA	MX	YX	48.0	53.3	58.9	1.0	77.4	5.2	1.0
TPSMF4L51A	TPSMF4L51CA	MZ	YZ	51.0	56.7	62.7	1.0	82.4	4.9	1.0
TPSMF4L54A	TPSMF4L54CA	NE	ZE	54.0	60.0	66.3	1.0	87.1	4.6	1.0

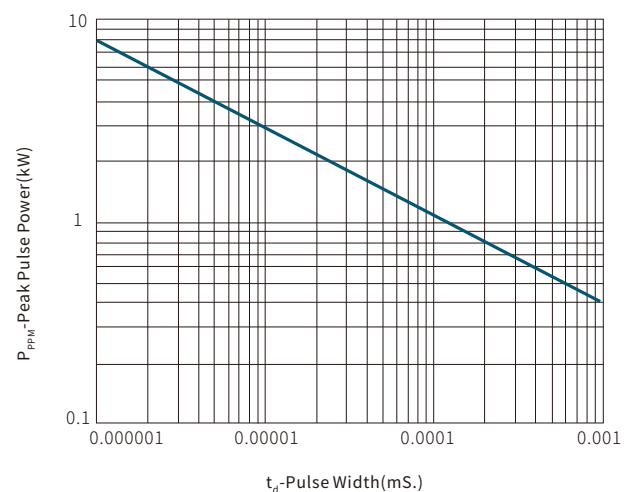
Part Number		Device Marking Code		Reverse Stand-off Voltage	Breakdown Voltage Min.@I _T	Breakdown Voltage Max.@I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Maximum Peak Pulse Current	Maximum Reverse Leakage @V _{RWM}
Uni-Polar	Bi-Polar	Uni-Polar	Bi-Polar	V _{RWM} (V)	V _{BR} (V)	V _{BR} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (uA)
TPSMF4L58A	TPSMF4L58CA	NG	ZG	58.0	64.4	71.2	1.0	93.6	4.3	1.0
TPSMF4L60A	TPSMF4L60CA	NK	ZK	60.0	66.7	73.7	1.0	96.8	4.1	1.0
TPSMF4L64A	TPSMF4L64CA	NM	ZM	64.0	71.1	78.6	1.0	103.0	3.9	1.0
TPSMF4L70A	TPSMF4L70CA	NP	ZP	70.0	77.8	86.0	1.0	113.0	3.5	1.0
TPSMF4L75A	TPSMF4L75CA	NR	ZR	75.0	83.3	92.1	1.0	121.0	3.3	1.0
TPSMF4L78A	TPSMF4L78CA	NT	ZT	78.0	86.7	95.8	1.0	126.0	3.2	1.0
TPSMF4L85A	TPSMF4L85CA	NV	ZV	85.0	94.4	104.0	1.0	137.0	2.9	1.0
TPSMF4L90A	TPSMF4L90CA	NX	ZX	90.0	100.0	111.0	1.0	146.0	2.7	1.0
TPSMF4L100A	TPSMF4L100CA	NZ	ZZ	100.0	111.0	123.0	1.0	162.0	2.5	1.0
TPSMF4L110A	TPSMF4L110CA	PE	VE	110.0	122.0	135.0	1.0	177.0	2.3	1.0
TPSMF4L120A	TPSMF4L120CA	PG	VG	120.0	133.0	147.0	1.0	193.0	2.1	1.0
TPSMF4L130A	TPSMF4L130CA	PK	VK	130.0	144.0	159.0	1.0	209.0	1.9	1.0
TPSMF4L150A	TPSMF4L150CA	PM	VM	150.0	167.0	185.0	1.0	243.0	1.6	1.0
TPSMF4L160A	TPSMF4L160CA	PP	VP	160.0	178.0	197.0	1.0	259.0	1.5	1.0
TPSMF4L170A	TPSMF4L170CA	PR	VR	170.0	189.0	209.0	1.0	275.0	1.5	1.0

CHARACTERISTIC CURVES

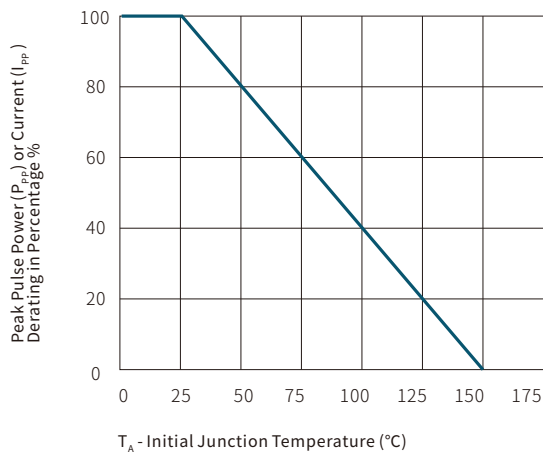
TVS Transients Clamping Waveform



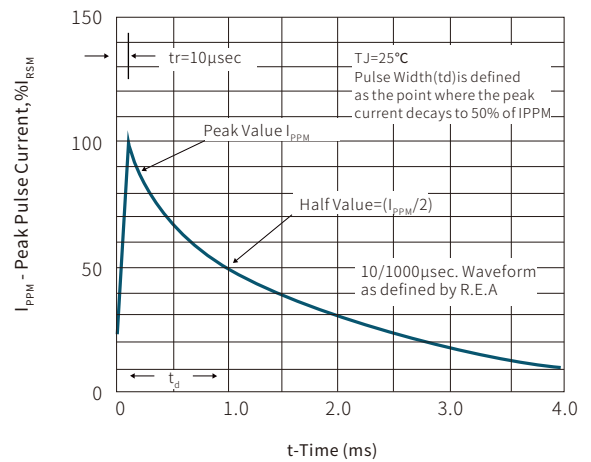
Peak Pulse Power Rating Curve



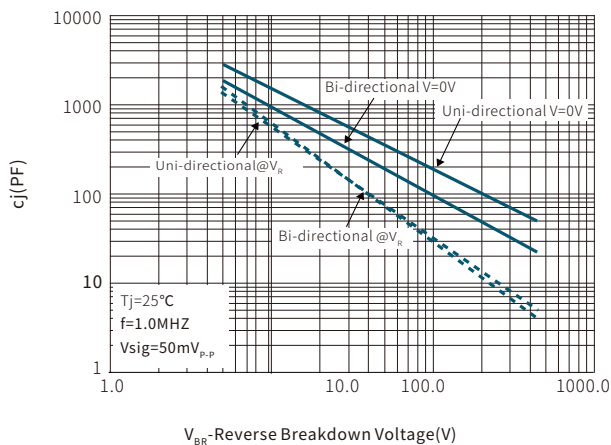
Pulse Derating Curve



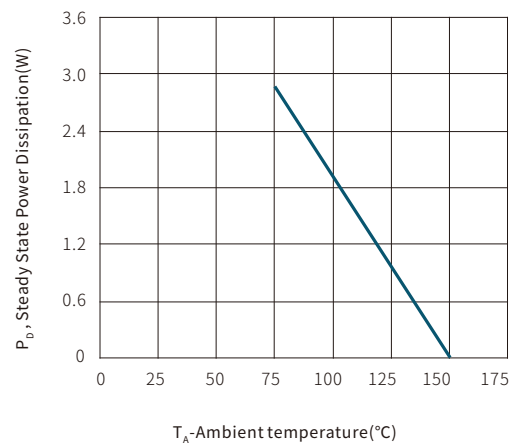
Pulse Waveform



Typical Junction Capacitance

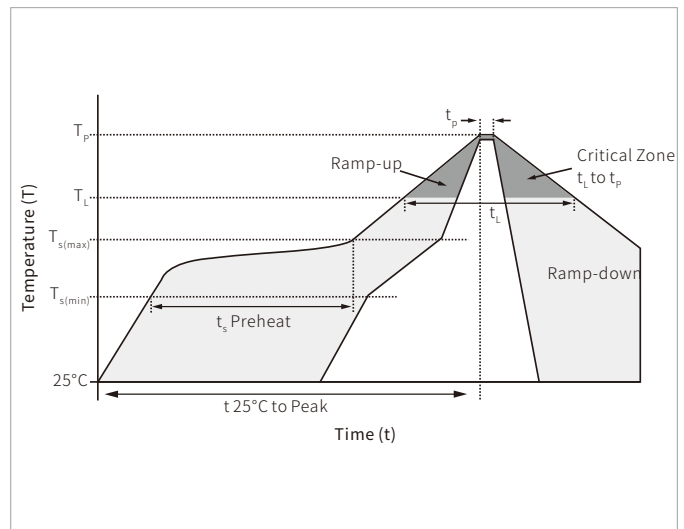


Steady State Power Dissipation Derating Curve

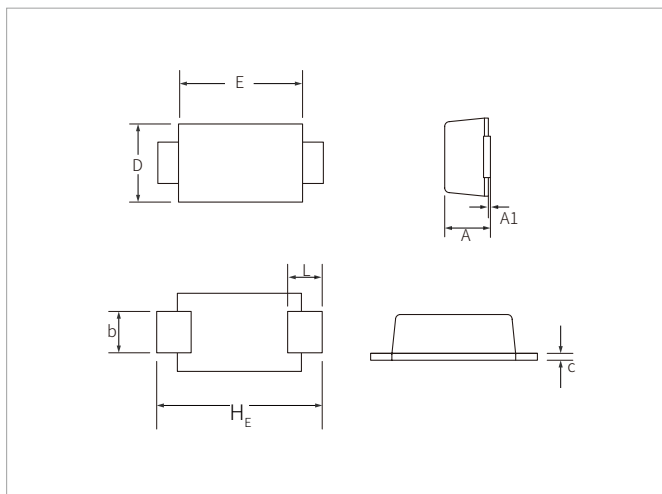


SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

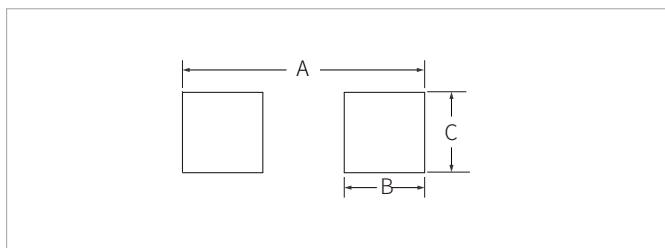


SOD-123FL PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.95	1.45	0.037	0.057
A1	0.00	0.10	0.000	0.004
b	0.70	1.20	0.028	0.047
c	0.05	0.30	0.002	0.012
D	1.50	2.00	0.059	0.079
E	2.50	2.10	0.098	0.122
L	0.35	0.90	0.014	0.035
H _E	3.40	3.90	0.134	0.154

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
A	4.20	0.165
B	2.40	0.036
C	1.22	0.048

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
TPSMF4LxxA/CA	SOD-123FL	3000PCS	7"

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