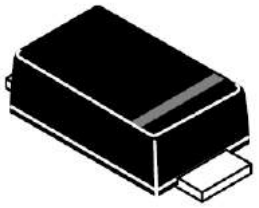
MMF Series

200W Surface Mount Transient Voltage Suppressors

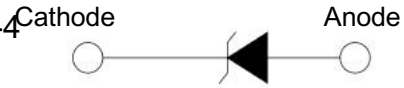


SOD-123FL

Features

- Peak power dissipation 200W @10 x 1000 us Pulse
- Low profile package.
- Excellent clamping capability.
- Glass passivated junction.
- Fast response time: typically less than 1ns from 0 Volts to BV min
- Typical I_R less than 1uA when V_{BR} min above 15V.
- IEC 61000-4-2 ESD 30KV(Air), 30KV(Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2
- EFT protection of data lines in accordance with IEC 61000-4-4
- Halogen free and RoHS compliant
- Lead-free finish

Bi-directional



Uni-directional

Mechanical Characteristics

- CASE: SOD-123FL Molded Plastic over glass passivated junction.
- Mounting Position: Any
- Polarity: by cathode band denotes uni-directional device, none cathode band denotes bi-directional device.
- Terminal: Solder plated

Maximum Ratings and Characteristics @ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000 us Waveform (Note 1 FIG.1)	P_{PPM}	Min 200	W
Peak Pulse Current of on 10/1000us Waveform (Note 1, FIG.3)	I_{PPM}	See Table 1	A
Power Dissipation on infinite Heatsink at T_A=25°C	P_D	1	W
Operating Junction Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25°C per Fig.2.

MMF Series

Electrical Specification @ Tamb 25°C

Type		Marking		Reverse Stand-off Volatage	Breakdown Volatge Min. @IT	Breakdown Voltage Max. @ IT	Test Current	Maximum Clamping Voltage	Peak Pulse Current	Reverse Leakage @VRWM
Uni	Bi	Uni	Bi	V_{RWM}(V)	$V_{BR\ MIN}$(V)	$V_{BR\ MAX}$(V)	I_T (mA)	V_C(V)@IPP	I_{PP}(A)	I_R(uA)
MMF5.0A	MMF5.0CA	5.0A	5.0CA	5	6.4	7	10	9.2	21.7	100
MMF6.0A	MMF6.0CA	6.0A	6.0CA	6	6.67	7.37	10	10.3	19.4	100
MMF6.5A	MMF6.5CA	6.5A	6.5CA	6.5	7.22	7.98	10	11.2	17.9	50
MMF7.0A	MMF7.0CA	7.0A	7.0CA	7	7.78	8.6	10	12	16.7	30
MMF7.5A	MMF7.5CA	7.5A	7.5CA	7.5	8.33	9.21	1	12.9	15.5	30
MMF8.0A	MMF8.0CA	8.0A	8.0CA	8	8.89	9.83	1	13.6	14.7	10
MMF8.5A	MMF8.5CA	8.5A	8.5CA	8.5	9.44	10.4	1	14.4	13.9	5
MMF9.0A	MMF9.0CA	9.0A	9.0CA	9	10	11.1	1	15.4	13.0	3
MMF10A	MMF10CA	10A	10CA	10	11.1	12.3	1	17	11.8	1
MMF11A	MMF11CA	11A	11CA	11	12.2	13.5	1	18.2	11.0	1
MMF12A	MMF12CA	12A	12CA	12	13.3	14.7	1	19.9	10.1	1
MMF13A	MMF13CA	13A	13CA	13	14.4	15.9	1	21.5	9.3	1
MMF14A	MMF14CA	14A	14CA	14	15.6	17.2	1	23.2	8.6	1
MMF15A	MMF15CA	15A	15CA	15	16.7	18.5	1	24.4	8.2	1
MMF16A	MMF16CA	16A	16CA	16	17.8	19.7	1	26	7.7	1
MMF17A	MMF17CA	17A	17CA	17	18.9	20.9	1	27.6	7.2	1
MMF18A	MMF18CA	18A	18CA	18	20	22.1	1	29.2	6.8	1
MMF20A	MMF20CA	20A	20CA	20	22.2	24.5	1	32.4	6.2	1
MMF22A	MMF22CA	22A	22CA	22	24.4	26.9	1	35.5	5.6	1
MMF24A	MMF24CA	24A	24CA	24	26.7	29.5	1	38.9	5.1	1
MMF26A	MMF26CA	26A	26CA	26	28.9	31.9	1	42.1	4.8	1
MMF28A	MMF28CA	28A	28CA	28	31.1	34.4	1	45.4	4.4	1
MMF30A	MMF30CA	30A	30CA	30	33.3	36.8	1	48.4	4.1	1
MMF33A	MMF33CA	33A	33CA	33	36.7	40.6	1	53.3	3.8	1
MMF36A	MMF36CA	36A	36CA	36	40	44.2	1	58.1	3.4	1
MMF40A	MMF40CA	40A	40CA	40	44.4	49.1	1	64.5	3.1	1
MMF43A	MMF43CA	43A	43CA	43	47.8	52.8	1	69.4	2.9	1
MMF45A	MMF45CA	45A	45CA	45	50	55.3	1	72.7	2.8	1
MMF48A	MMF48CA	48A	48CA	48	53.3	58,90	1	77.4	2.6	1
MMF51A	MMF51CA	51A	51CA	51	56.7	62.7	1	82.4	2.4	1
MMF54A	MMF54CA	54A	54CA	54	60	66.3	1	87.1	2.3	1
MMF58A	MMF58CA	58A	58CA	58	64.4	71.2	1	93.6	2.1	1
MMF60A	MMF60CA	60A	60CA	60	66.7	73.7	1	96.8	2.1	1
MMF64A	MMF64CA	64A	64CA	64	71.1	78.6	1	103	1.9	1
MMF70A	MMF70CA	70A	70CA	70	77.8	86	1	113	1.8	1
MMF75A	MMF75CA	75A	75CA	75	83.3	92.1	1	121	1.7	1

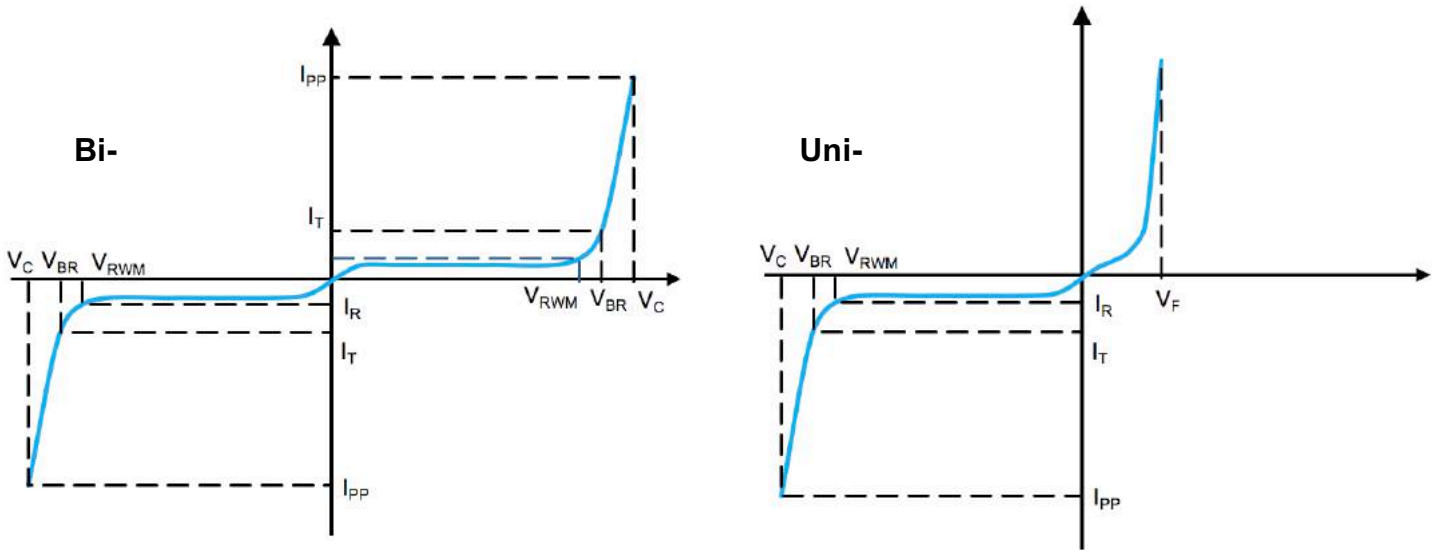
※ For Bi-directional type having V_{RWM} of 10 Volts and less, the I_R limit is double

MMF Series

Type		Marking		Reverse Stand-off Volatage	Breakdown Volatge Min. @IT	Breakdown Voltage Max. @ IT	Test Current	Maximum Clamping Voltage	Peak Pulse Current	Reverse Leakage @VRWM
Uni	Bi	Uni	Bi	V_{RWM}(V)	$V_{BR\ MIN}$(V)	$V_{BR\ MAX}$(V)	I_T (mA)	V_C(V)@IPP	I_{PP}(A)	I_R(uA)
MMF78A	MMF78CA	78A	78CA	78	86.7	95.8	1	126	1.6	1
MMF85A	MMF85CA	85A	85CA	85	94.4	104	1	137	1.5	1
MMF90A	MMF90CA	90A	90CA	90	100	111	1	146	1.4	1
MMF100A	MMF100CA	100	100C	100	111	123	1	162	1.2	1
MMF110A	MMF110CA	110	110C	110	122	135	1	177	1.1	1
MMF120A	MMF120CA	120	120C	120	133	147	1	193	1.0	1
MMF130A	MMF130CA	130	130C	130	144	159	1	209	1.0	1
MMF150A	MMF150CA	150	150C	150	167	185	1	243	0.8	1
MMF160A	MMF160CA	160	160C	160	178	197	1	259	0.8	1
MMF170A	MMF170CA	170	170C	170	189	209	1	275	0.7	1
MMF180A	MMF180CA	180	180C	180	198	222	1	292	0.7	1
MMF190A	MMF190CA	190	190C	190	209	233	1	308	0.6	1

※ For Bi-directional type having V_{RWM} of 10 Volts and less, the I_R limit is double

I-V Curve Characteristics



P_{PPM} **Peak Pulse Power Dissipation** - Max power dissipation

V_{RWM} **Reverse Stand-off Voltage** - Maximum voltage that can be applied to TVS without operation

V_{BR} **Breakdown Voltage** – Maximum voltage that flows though the TVS at a specified current (I_T)

V_C **Clamping Voltage** – Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R **Reverse Leakage Current** – Current measured at V_R

V_F **Forward Voltage Drop for Uni-directional**

Ratings and Characteristic Curves (T_A=25°C unless otherwise noted) MMF Series

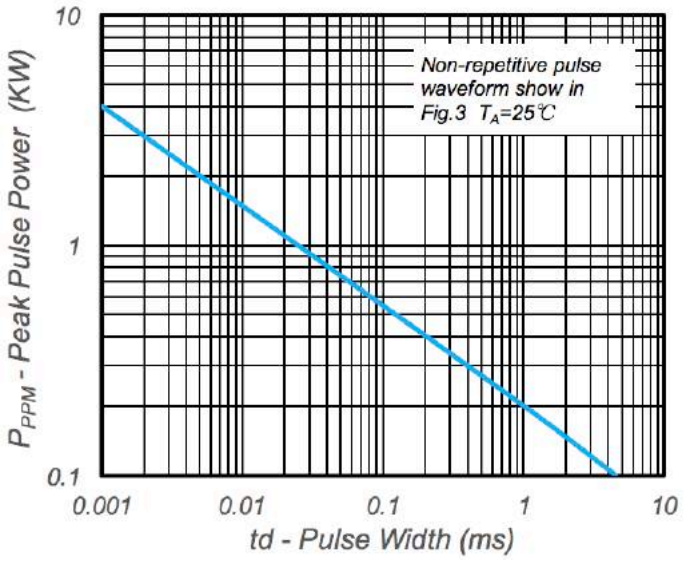


Fig.1 Peak Pulse Power Rating

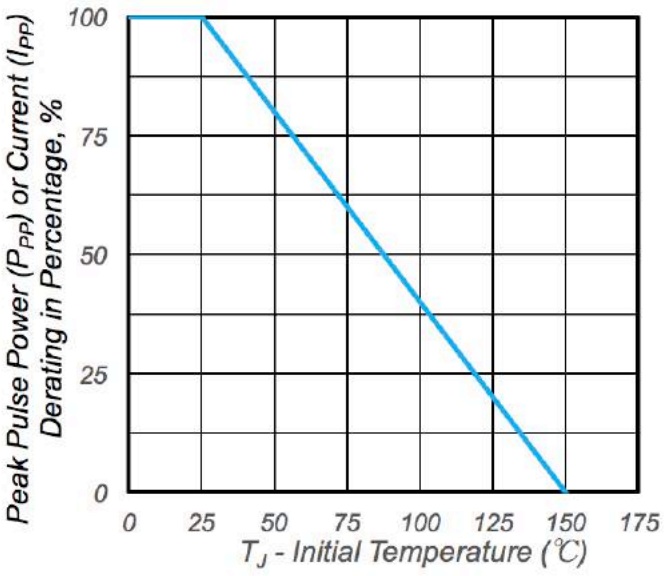


Fig.2 Pulse Derating Cure

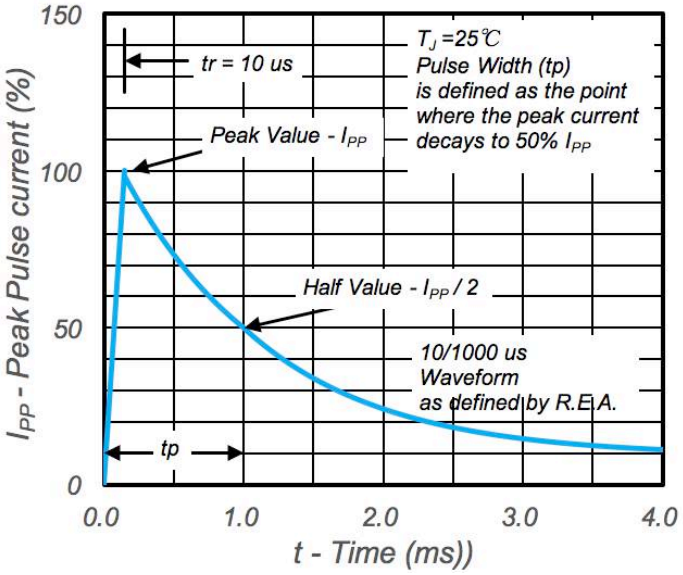


Fig.3 Pulse Waveform

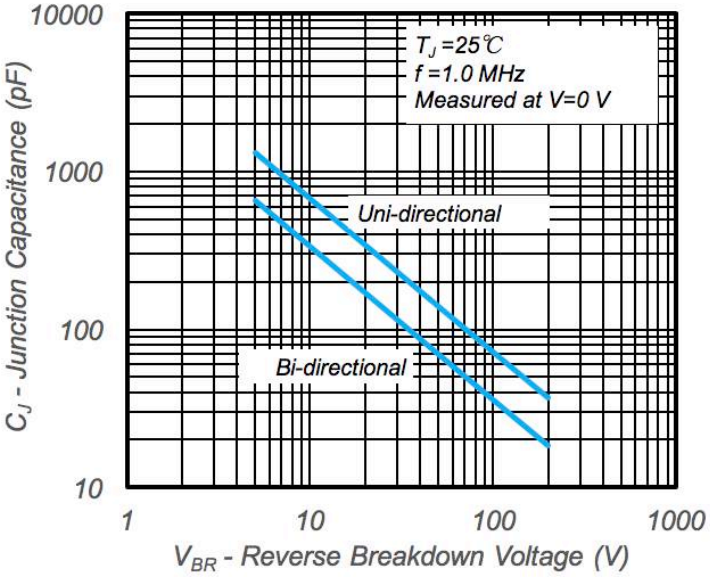
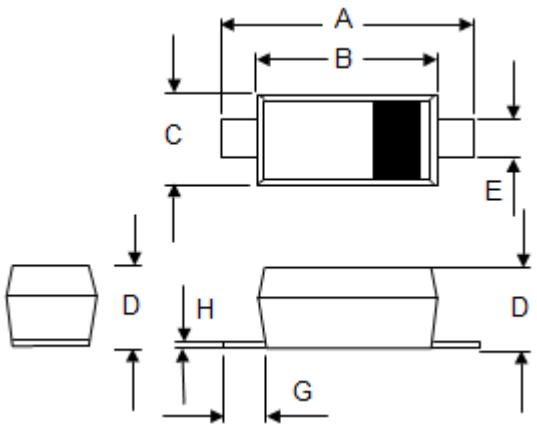


Fig.4 Typical Junction Capacitance

Package Outline Dimensions and Pad Layouts

MMF Series

SOD-123FL



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	3.40	3.95	0.142	0.155
B	2.50	2.90	0.098	0.114
C	1.40	1.95	0.055	0.077
D	0.90	1.35	0.035	0.053
E	0.50	1.10	0.020	0.043
G	0.25	------	0.010	----
H	------	0.20	----	0.008