



# THE DATASHEET OF SMF51A-TP



**Features**

- Uni and Bi-directional Type Available (Suffix "C" means Bi-directional)
- Surface Mount
- Low Clamping Voltage
- Small, High Thermal Efficiency
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note1) ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

- Operating Junction Temperature Range: -65°C to +175°C
- Storage Temperature Range: -65°C to +175°C
- Typical Thermal Resistance: 26°C/W Junction to Lead
- Typical Thermal Resistance: 300°C/W Junction to Ambient

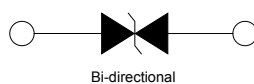
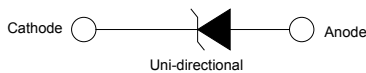
**Electrical Characteristics @ 25°C Unless Otherwise Specified**

Peak Pulse Power Dissipation with a 10/1000µs Waveform	P <sub>PP</sub>	200W	-
ESD Voltage(HBM)	V <sub>ESD</sub>	>16KV	-
Peak forward surge current, 8.3 ms single half sine-wave	I <sub>FSM</sub>	30A	-

Note:

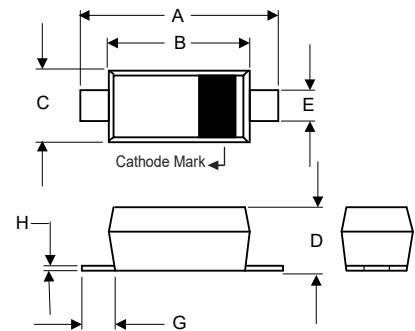
1. High Temperature Solder Exemption Applied, see EU Directive Annex 7a.

Pin Configuration:



**200 Watt TVS  
5.0 to 170 Volts**

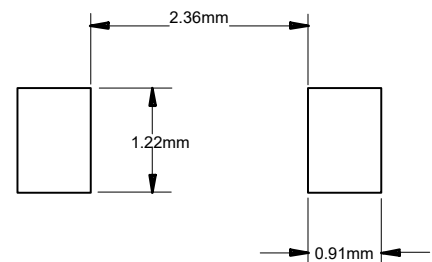
**SOD-123FL**



**DIMENSIONS**

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.130	0.152	3.30	3.85	
B	0.100	0.122	2.55	3.10	
C	0.055	0.075	1.40	1.90	
D	0.035	0.053	0.90	1.35	
E	0.020	0.041	0.50	1.05	
G	0.010	----	0.25	----	
H	----	0.010	----	0.25	

**SUGGESTED SOLDER PAD LAYOUT**



## Electrical Characteristics @ 25°C Unless Otherwise Specified

MCC Part Number	Reverse Stand-Off Voltage	Breakdown Voltage $V_{BR}(V)$		Test Current	Max. Clamping Voltage @ $I_{PP}$	Max. Peak Pulse Current	Max. Reverse Leakage Current @ $V_{WM}$	Marking Code
	$V_{WM}(V)$	Min	Max	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_D(\mu A)$	
SMF5.0A	5.0	6.4	7.0	10	9.2	21.7	400	5.0A/KE
SMF6.0A	6.0	6.67	7.37	10	10.3	19.4	400	6.0A/KG
SMF6.5A	6.5	7.22	7.98	10	11.2	17.9	250	6.5A/KK
SMF7.0A	7.0	7.78	8.6	10	12	16.7	100	7.0A/KM
SMF7.5A	7.5	8.33	9.21	1.0	12.9	15.5	50	7.5A/KP
SMF8.0A	8.0	8.89	9.83	1.0	13.6	14.7	25	8.0A/KR
SMF8.5A	8.5	9.44	10.4	1.0	14.4	13.9	10	8.5A/KT
SMF9.0A	9.0	10	11.1	1.0	15.4	13	5.0	9.0A/KV
SMF10A	10	11.1	12.3	1.0	17	11.8	2.5	10A/KX
SMF11A	11	12.2	13.5	1.0	18.2	11	2.5	11A/KZ
SMF12A	12	13.3	14.7	1.0	19.9	10.1	2.5	12A/LE
SMF13A	13	14.4	15.9	1.0	21.5	9.3	1.0	13A/LG
SMF14A	14	15.6	17.2	1.0	23.2	8.6	1.0	14A/LK
SMF15A	15	16.7	18.5	1.0	24.4	8.2	1.0	15A/LM
SMF16A	16	17.8	19.7	1.0	26	7.7	1.0	16A/LP
SMF17A	17	18.9	20.9	1.0	27.6	7.2	1.0	17A/LR
SMF18A	18	20	22.1	1.0	29.2	6.8	1.0	18A/LT
SMF20A	20	22.2	24.5	1.0	32.4	6.2	1.0	20A/LV
SMF22A	22	24.4	26.9	1.0	35.5	5.6	1.0	22A/LX
SMF24A	24	26.7	29.5	1.0	38.9	5.1	1.0	24A/LZ
SMF26A	26	28.9	31.9	1.0	42.1	4.8	1.0	26A/ME
SMF28A	28	31.1	34.4	1.0	45.4	4.4	1.0	28A/MG
SMF30A	30	33.3	36.8	1.0	48.4	4.1	1.0	30A/MK
SMF33A	33	36.7	40.6	1.0	53.3	3.8	1.0	33A/MM
SMF36A	36	40	44.2	1.0	58.1	3.4	1.0	36A/MP
SMF40A	40	44.4	49.1	1.0	64.5	3.1	1.0	40A/MR
SMF43A	43	47.8	52.8	1.0	69.4	2.9	1.0	43A/MT
SMF45A	45	50	55.3	1.0	72.7	2.8	1.0	45A/MV
SMF48A	48	53.3	58.9	1.0	77.4	2.6	1.0	48A/MX
SMF51A	51	56.7	62.7	1.0	82.4	2.4	1.0	51A/MZ
SMF54A	54	60	66.3	1.0	87.1	2.3	1.0	54A/NE
SMF58A	58	64.4	71.2	1.0	93.6	2.1	1.0	58A/NG
SMF60A	60	66.7	73.7	1.0	96.8	1.8	1.0	60A/NK
SMF64A	64	71.1	78.6	1.0	103	1.7	1.0	64A/NM
SMF70A	70	77.8	86	1.0	113	1.5	1.0	70A/NP
SMF75A	75	83.3	92.1	1.0	121	1.4	1.0	75A/NR
SMF78A	78	86.7	95.8	1.0	126	1.4	1.0	78A/NT
SMF85A	85	94.4	104	1.0	137	1.3	1.0	85A/NV
SMF90A	90	100	111	1.0	146	1.2	1.0	90A/NX
SMF100A	100	111	123	1.0	162	1.1	1.0	100/NZ
SMF110A	110	122	135	1.0	177	1.0	1.0	110/PE
SMF120A	120	133	147	1.0	193	0.9	1.0	120/PG
SMF130A	130	144	159	1.0	209	0.8	1.0	130/PK
SMF150A	150	167	185	1.0	243	0.7	1.0	150/PM
SMF160A	160	178	197	1.0	259	0.7	1.0	160/PP
SMF170A	170	189	209	1.0	275	0.6	1.0	170/PR

**Electrical Characteristics @ 25°C Unless Otherwise Specified**

MCC Part Number	Reverse Stand-Off Voltage	Breakdown Voltage $V_{BR}(V)$		Test Current	Max. Clamping Voltage @ $I_{PP}$	Max. Peak Pulse Current	Max. Reverse Leakage Current @ $V_{WM}$	Marking Code
	$V_{WM}(V)$	Min	Max	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_D(\mu A)$	
SMF5.0CA	5.0	6.4	7.0	10	9.2	21.7	400	5.0CA/AE
SMF6.0CA	6.0	6.67	7.37	10	10.3	19.4	400	6.0CA/AG
SMF6.5CA	6.5	7.22	7.98	10	11.2	17.9	250	6.5CA/AK
SMF7.0CA	7.0	7.78	8.6	10	12	16.7	100	7.0CA/AM
SMF7.5CA	7.5	8.33	9.21	1.0	12.9	15.5	50	7.5CA/AP
SMF8.0CA	8.0	8.89	9.83	1.0	13.6	14.7	25	8.0CA/AR
SMF8.5CA	8.5	9.44	10.4	1.0	14.4	13.9	10	8.5CA/AT
SMF9.0CA	9.0	10	11.1	1.0	15.4	13	5.0	9.0CA/AV
SMF10CA	10	11.1	12.3	1.0	17	11.8	2.5	10CA/AX
SMF11CA	11	12.2	13.5	1.0	18.2	11	2.5	11CA/AZ
SMF12CA	12	13.3	14.7	1.0	19.9	10.1	2.5	12CA/BE
SMF13CA	13	14.4	15.9	1.0	21.5	9.3	1.0	13CA/BG
SMF14CA	14	15.6	17.2	1.0	23.2	8.6	1.0	14CA/BK
SMF15CA	15	16.7	18.5	1.0	24.4	8.2	1.0	15CA/BM
SMF16CA	16	17.8	19.7	1.0	26	7.7	1.0	16CA/BP
SMF17CA	17	18.9	20.9	1.0	27.6	7.2	1.0	17CA/BR
SMF18CA	18	20	22.1	1.0	29.2	6.8	1.0	18CA/BT
SMF20CA	20	22.2	24.5	1.0	32.4	6.2	1.0	20CA/BV
SMF22CA	22	24.4	26.9	1.0	35.5	5.6	1.0	22CA/BX
SMF24CA	24	26.7	29.5	1.0	38.9	5.1	1.0	24CA/BZ
SMF26CA	26	28.9	31.9	1.0	42.1	4.8	1.0	26CA/CE
SMF28CA	28	31.1	34.4	1.0	45.4	4.4	1.0	28CA/CG
SMF30CA	30	33.3	36.8	1.0	48.4	4.1	1.0	30CA/CK
SMF33CA	33	36.7	40.6	1.0	53.3	3.8	1.0	33CA/CM
SMF36CA	36	40	44.2	1.0	58.1	3.4	1.0	36CA/CP
SMF40CA	40	44.4	49.1	1.0	64.5	3.1	1.0	40CA/CR
SMF43CA	43	47.8	52.8	1.0	69.4	2.9	1.0	43CA/CT
SMF45CA	45	50	55.3	1.0	72.7	2.8	1.0	45CA/CV
SMF48CA	48	53.3	58.9	1.0	77.4	2.6	1.0	48CA/CX
SMF51CA	51	56.7	62.7	1.0	82.4	2.4	1.0	51CA/CZ
SMF54CA	54	60	66.3	1.0	87.1	2.3	1.0	54CA/DE
SMF58CA	58	64.4	71.2	1.0	93.6	2.1	1.0	58CA/DG
SMF60CA	60	66.7	73.7	1.0	96.8	1.8	1.0	60CA/DK
SMF64CA	64	71.1	78.6	1.0	103	1.7	1.0	64CA/DM
SMF70CA	70	77.8	86	1.0	113	1.5	1.0	70CA/DP
SMF75CA	75	83.3	92.1	1.0	121	1.4	1.0	75CA/DR
SMF78CA	78	86.7	95.8	1.0	126	1.4	1.0	78CA/DT
SMF85CA	85	94.4	104	1.0	137	1.3	1.0	85CA/DV
SMF90CA	90	100	111	1.0	146	1.2	1.0	90CA/DX
SMF100CA	100	111	123	1.0	162	1.1	1.0	100C/DZ
SMF110CA	110	122	135	1.0	177	1.0	1.0	110C/EE
SMF120CA	120	133	147	1.0	193	0.9	1.0	120C/EG
SMF130CA	130	144	159	1.0	209	0.8	1.0	130C/EK
SMF150CA	150	167	185	1.0	243	0.7	1.0	150C/EM
SMF160CA	160	178	197	1.0	259	0.7	1.0	160C/EP
SMF170CA	170	189	209	1.0	275	0.6	1.0	170C/ER

Curve Characteristics

Fig. 1 - Peak Pulse Power Rating Curve



Fig. 2 - Typical Junction Capacitance



Fig. 3 - Pulse Waveform



Fig. 4 - Pulse Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:2.5Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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