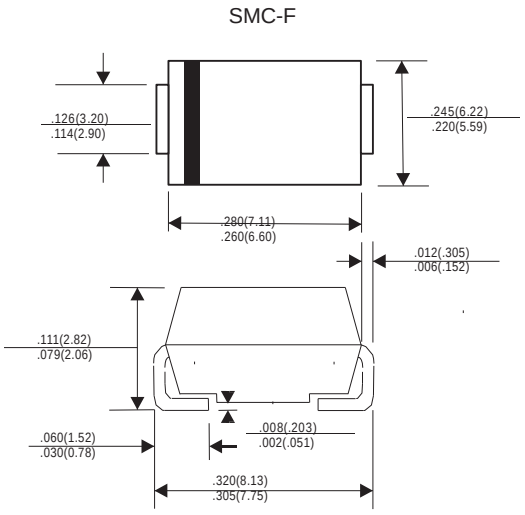
5000W Surface Mount Transient Voltage Suppressors - 11.0V-170V

Features

- 5000W peak pulse power capability with a 10/1000 us waveform, repetition rate (duty cycle): 0.01%.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to V_{BR}, typically less than 1 pS for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirments.
- Suffix "-H" indicates Halogen-free part, ex.5.0SMCJ11A-H.

Package outline



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AB / SMC-F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.23 gram

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	Value	UNIT
Peak power dissipation	with a 10/1000 us waveform, Note 1, 2 & Fig. 1	P_{PPM}	5000	W
Peak pulse current	with a 10/1000 us waveform	I_{PPM}	See Table 1	A
Steady state power dissipation	at T_L=75°C, Note 2	$P_{M(AV)}$	6.5	W
Peak forward surge current	8.3ms single half sine-wave, Note 3	I_{FSM}	300	A
Maximum instantaneours forward voltage	at 100A For uni-directional yypes only	V_F	3.5/5.0	V
Operating junction temperature range		T_J	-55 to +150	°C
Storage temperature range		T_{STG}	-55 to +150	°C

Note 1. Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 2
2. Mounted on copper pad area of 0.31"x0.31" (8.0x8.0 mm) per Fig 5
3. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum
4. V_F<3.5V for V_{BR}< 200V and V_F<5.0V for V_{BR} >201V

Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No. (Bi)	Reverse Stand-off Voltage	Breakdown Voltage @IT		Test Curre	Maximum Clamping		Maximum Reverse Leakage	Marking Code
	V_{RWM}	V_{BR}	$V_{BR\ Max}$	IT	VC	I_{PP}	I_R@V_{RWM}	
	Volts	Volts	Volts	mA	Volts	A	μA	BI
ME5.0SMCJ11CA	11	12.2	13.5	10	18.2	274.7	800	5BEN,5BDX
ME5.0SMCJ12CA	12	13.3	14.7	10	19.9	251.2	800	5BEP,5BDZ
ME5.0SMCJ13CA	13	14.4	15.9	10	21.5	232.5	500	5BEQ,5BEE
ME5.0SMCJ14CA	14	15.6	17.2	10	23.2	215.5	200	5BER,5BEG
ME5.0SMCJ15CA	15	16.7	18.5	1.0	24.4	204.9	100	5BES,5BEK
ME5.0SMCJ16CA	16	17.8	19.7	1.0	26.0	192.9	50	5BET,5BEM
ME5.0SMCJ17CA	17	18.9	20.9	1.0	27.6	181.0	20	5BEU,5BEP
ME5.0SMCJ18CA	18	20.0	22.1	1.0	29.2	171.2	10	5BEV,5BER
ME5.0SMCJ20CA	20	22.2	24.5	1.0	32.4	154.3	5	5BEW,5BEV
ME5.0SMCJ22CA	22	24.4	26.9	1.0	35.5	140.8	5	5BEX
ME5.0SMCJ24CA	24	26.7	29.5	1.0	38.9	128.5	5	5BEZ
ME5.0SMCJ26CA	26	28.9	31.9	1.0	42.1	118.7	5	5BFE
ME5.0SMCJ28CA	28	31.1	34.4	1.0	45.4	110.0	5	5BFG
ME5.0SMCJ30CA	30	33.3	36.8	1.0	48.4	103.0	5	5BFK
ME5.0SMCJ33CA	33	36.7	40.6	1.0	53.3	93.8	5	5BFM
ME5.0SMCJ36CA	36	40.0	44.2	1.0	58.1	86.0	5	5BFP
ME5.0SMCJ40CA	40	44.4	49.1	1.0	64.5	77.5	5	5BFR
ME5.0SMCJ43CA	43	47.8	52.8	1.0	69.4	72.0	5	5BFT
ME5.0SMCJ45CA	45	50.0	55.3	1.0	72.7	68.7	5	5BFV
ME5.0SMCJ48CA	48	53.3	58.9	1.0	77.4	64.5	5	5BFX
ME5.0SMCJ51CA	51	56.7	62.7	1.0	82.4	60.6	5	5BFZ
ME5.0SMCJ54CA	54	60.0	66.3	1.0	87.1	57.4	5	5BGE
ME5.0SMCJ58CA	58	64.4	71.2	1.0	93.6	53.4	5	5BGG
ME5.0SMCJ60CA	60	66.7	73.7	1.0	96.8	51.6	5	5BGK
ME5.0SMCJ64CA	64	71.1	78.6	1.0	103.0	48.5	5	5BGM
ME5.0SMCJ70CA	70	77.8	86.6	1.0	113.0	44.2	5	5BGP
ME5.0SMCJ75CA	75	83.3	92.1	1.0	121.0	41.3	5	5BGR
ME5.0SMCJ78CA	78	86.7	95.8	1.0	126.0	39.6	5	5BGT
ME5.0SMCJ85CA	85	94.4	104	1.0	137.0	36.4	5	5BGV
ME5.0SMCJ90CA	90	100	111	1.0	146.0	34.2	5	5BGX
ME5.0SMCJ100CA	100	111	123	1.0	162.0	30.8	5	5BGZ
ME5.0SMCJ110CA	110	122	135	1.0	177.0	28.2	5	5BHE
ME5.0SMCJ120CA	120	133	147	1.0	193.0	25.9	5	5BHG
ME5.0SMCJ130CA	130	144	159	1.0	209.0	23.9	5	5BHK
ME5.0SMCJ150CA	150	167	185	1.0	243.0	20.5	5	5BHM
ME5.0SMCJ160CA	160	178	197	1.0	259.0	19.3	5	5BHP
ME5.0SMCJ170CA	170	189	209	1.0	275.0	18.1	5	5BHR

Note 1. V_{BR} measured after I_T applied for 300us, I_T=square wave pulse or equivalent
2. Surge current waveform per Fig. 3 and derated per Fig. 2
3. For bi-directional types having V_{RWM} of 20 volts and less, the I_R limit is doubled
4. Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices, no suffix denotes 10% tolerance devices.
5. All terms and symbols are consistent with ANS/IEEE C62.35
6. Transient Voltage Suppressors (TVS) are devices used to protect vulnerable circuits from electrical overstress such as that caused by electrostatic discharge, inductive load switching and induced lightning. Within the TVS, damaging voltage spikes are limited by clamping or avalanche action of a rugged silicon pn junction which reduces the amplitude of the transient to a nondestructive level. See Fig. 7 & Fig. 8

Rating and characteristic curves (5.0SMCJ SERIES

Fig.1 - Pealk Pulse Power Rating Curve

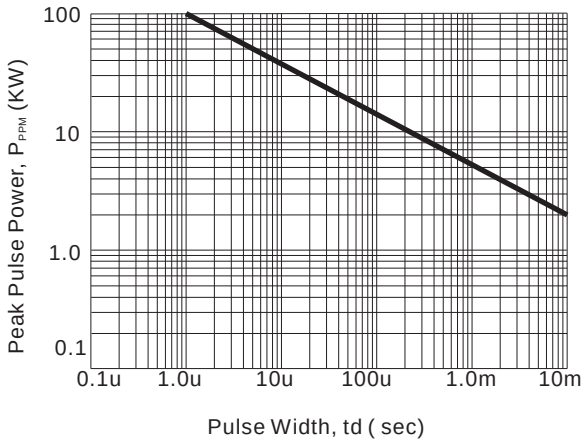


Fig.2 - Pulse Derating Curve

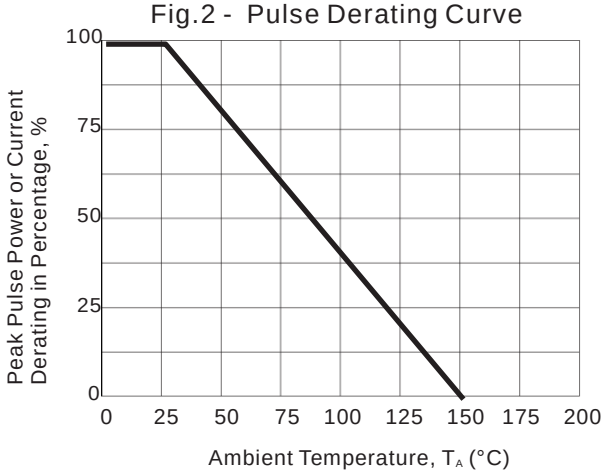


Fig.3 - Pulse Waveform

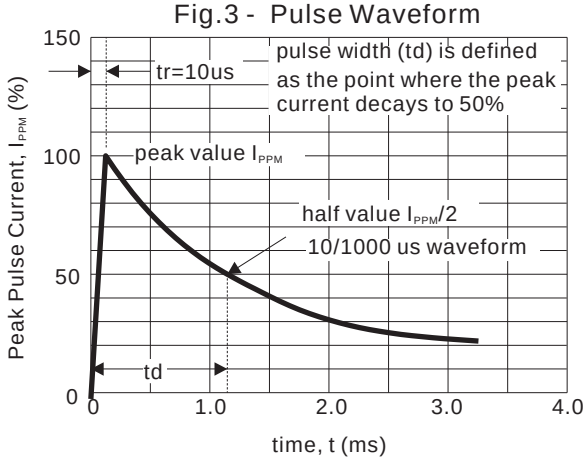
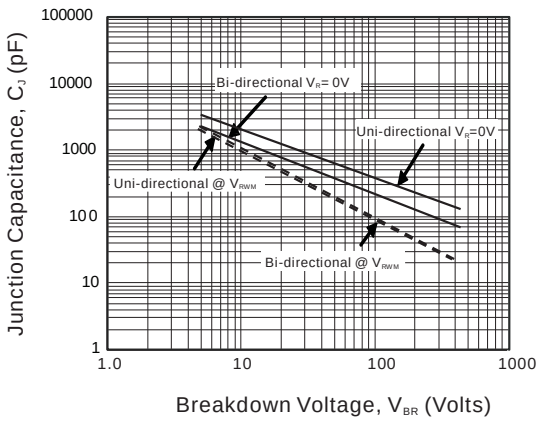


Fig.4 - Typical Junction Capacitance



Rating and characteristic curves (5.0SMCJ SERIES)

Fig.5 - Steady State Power Derating Curve

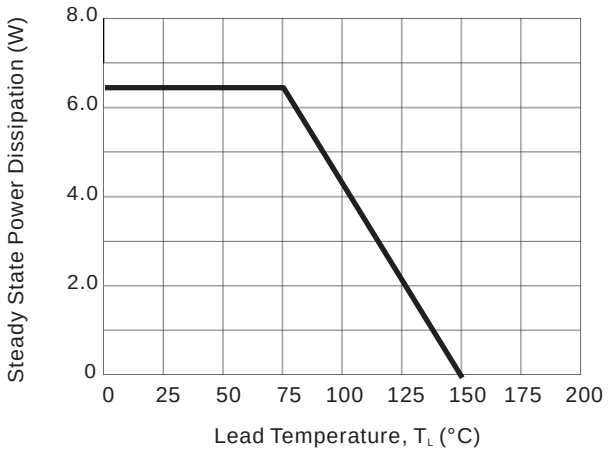


Fig.6 - Maximum Non-Repetitive Forward Surge Current

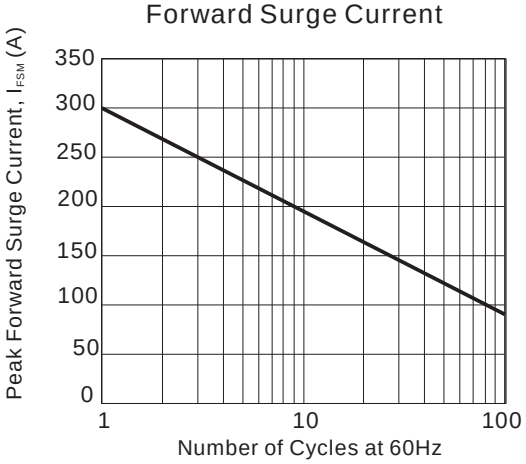


Fig. 7 - Transients of several thousand volts can be clamped to a safe level by the TVS

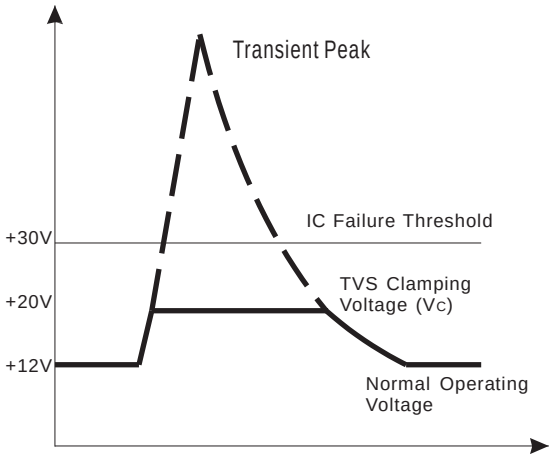
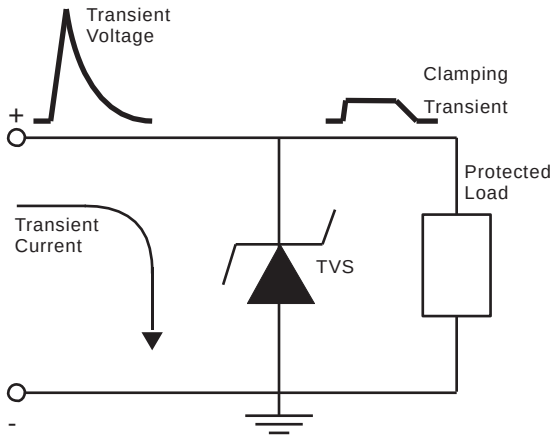


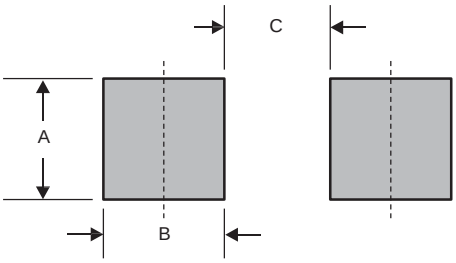
Fig. 8 - Transient current is divered to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level



Pinning information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMC-F	0.132 (3.30)	0.100 (2.50)	0.176(4.40)