SMB10J-Q1 Series

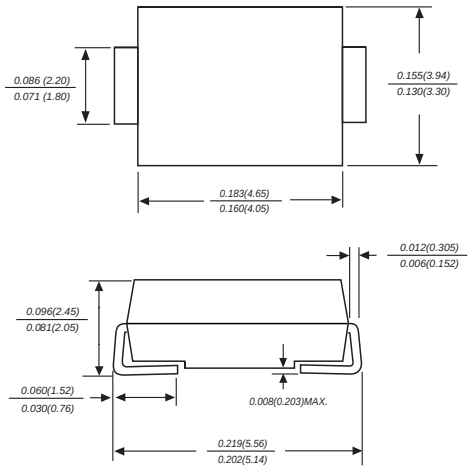
1000 W Surface Mount Transient Voltage Suppressors- 5.0V-85V

Features

- 1000W peak pulse power capability with a 10/1000 μs waveform, repetition rate (duty cycle): 0.01%.
- Low profile surface mounted application in order to optimize board space.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirments.
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

Package outline

SMB/DO-214AA



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AA /SMB
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

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

PARAMETER	CONDITIONS	Symbol	Value	UNIT
Peak Power Dissipation	with a 10/1000 μs waveform, Note 1, 2 & Fig. 1	P_{PPM}	1000	W
Peak Pulse current	with a 10/1000 μs waveform	I_{PPM}	See Table 1	A
Steady State Power Dissipation	at T_L=75°C, Note 2	$P_{M(AV)}$	5.0	W
Peak Forward Surge Current	8.3ms Single Half Sine-Wave, Note 3	I_{FSM}	100	A
Maximum Instantaneours Forward Voltage	at 50A For Uni-Directional Types Only, Note 4	V_F	3.5/5.0	V
Typical Thermal resistance	Junction to case Junction to ambient	$R_{\theta JC}$ $R_{\theta JA}$	30 50	°C/W
Operating junction temperature range		T_J	-55 ~ +150	°C
Storage temperature range		T_{STG}	-55 ~ +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 0.2"x0.2" (5.0x5.0 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.

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

Part No. (Uni)	Part No. (Bi)	Reverse Stand-off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}		Maximum Reverse Leakage Current	Marking Code	
		V_{RWM}	$V_{BR\ Min}$	$V_{BR\ Max}$	I_T	V_C	I_{PP}	I_R@V_{RWM}		
		Volts	Volts	Volts	mA	Volts	A	μA	UNI	BI
SMB10J 5.0A-Q1	SMB10J 5.0CA-Q1	5.0	6.40	7.00	10	9.2	108.7	800	10KE	10AE
SMB10J 6.0A-Q1	SMB10J 6.0CA-Q1	6.0	6.67	7.37	10	10.3	97.1	800	10KG	10AG
SMB10J 6.5A-Q1	SMB10J 6.5CA-Q1	6.5	7.22	7.98	10	11.2	89.3	500	10KK	10AK
SMB10J 7.0A-Q1	SMB10J 7.0CA-Q1	7.0	7.78	8.60	10	12.0	83.3	200	10KM	10AM
SMB10J 7.5A-Q1	SMB10J 7.5CA-Q1	7.5	8.33	9.21	1.0	12.9	77.5	100	10KP	10AP
SMB10J 8.0A-Q1	SMB10J 8.0CA-Q1	8.0	8.89	9.83	1.0	13.6	73.5	50	10KR	10AR
SMB10J 8.5A-Q1	SMB10J 8.5CA-Q1	8.5	9.44	10.4	1.0	14.4	69.4	20	10KT	10AT
SMB10J 9.0A-Q1	SMB10J 9.0CA-Q1	9.0	10.0	11.1	1.0	15.4	64.9	10	10KV	10AV
SMB10J 10A-Q1	SMB10J 10CA-Q1	10	11.1	12.3	1.0	17.0	58.8	5	10KX	10AX
SMB10J 11A-Q1	SMB10J 11CA-Q1	11	12.2	13.5	1.0	18.2	54.9	5	10KZ	10AZ
SMB10J 12A-Q1	SMB10J 12CA-Q1	12	13.3	14.7	1.0	19.9	50.3	5	10LE	10BE
SMB10J 13A-Q1	SMB10J 13CA-Q1	13	14.4	15.9	1.0	21.5	46.5	5	10LG	10BG
SMB10J 14A-Q1	SMB10J 14CA-Q1	14	15.6	17.2	1.0	23.2	43.1	5	10LK	10BK
SMB10J 15A-Q1	SMB10J 15CA-Q1	15	16.7	18.5	1.0	24.4	41.0	5	10LM	10BM
SMB10J 16A-Q1	SMB10J 16CA-Q1	16	17.8	19.7	1.0	26.0	38.5	5	10LP	10BP
SMB10J 17A-Q1	SMB10J 17CA-Q1	17	18.9	20.9	1.0	27.6	36.2	5	10LR	10BR
SMB10J 18A-Q1	SMB10J 18CA-Q1	18	20.0	22.1	1.0	29.2	34.2	5	10LT	10BT
SMB10J 20A-Q1	SMB10J 20CA-Q1	20	22.2	24.5	1.0	32.4	30.9	5	10LV	10BV
SMB10J 22A-Q1	SMB10J 22CA-Q1	22	24.4	26.9	1.0	35.5	28.2	5	10LX	10BX
SMB10J 24A-Q1	SMB10J 24CA-Q1	24	26.7	29.5	1.0	38.9	25.7	5	10LZ	10BZ
SMB10J 26A-Q1	SMB10J 26CA-Q1	26	28.9	31.9	1.0	42.1	23.8	5	10ME	10CE
SMB10J 28A-Q1	SMB10J 28CA-Q1	28	31.1	34.4	1.0	45.4	22.0	5	10MG	10CG
SMB10J 30A-Q1	SMB10J 30CA-Q1	30	33.3	36.8	1.0	48.4	20.7	5	10MK	10CK
SMB10J 33A-Q1	SMB10J 33CA-Q1	33	36.7	40.6	1.0	53.3	18.8	5	10MM	10CM
SMB10J 36A-Q1	SMB10J 36CA-Q1	36	40.0	44.2	1.0	58.1	17.2	5	10MP	10CP
SMB10J 40A-Q1	SMB10J 40CA-Q1	40	44.4	49.1	1.0	64.5	15.5	5	10MR	10CR
SMB10J 43A-Q1	SMB10J 43CA-Q1	43	47.8	52.8	1.0	69.4	14.4	5	10MT	10CT
SMB10J 45A-Q1	SMB10J 45CA-Q1	45	50.0	55.3	1.0	72.7	13.7	5	10MV	10CV
SMB10J 48A-Q1	SMB10J 48CA-Q1	48	53.3	58.9	1.0	77.4	12.9	5	10MX	10CX
SMB10J 51A-Q1	SMB10J 51CA-Q1	51	56.7	62.7	1.0	82.4	12.1	5	10MZ	10CZ
SMB10J 54A-Q1	SMB10J 54CA-Q1	54	60.0	66.3	1.0	87.1	11.4	5	10NE	10DE
SMB10J 58A-Q1	SMB10J 58CA-Q1	58	64.4	71.2	1.0	93.6	10.6	5	10NG	10DG
SMB10J 60A-Q1	SMB10J 60CA-Q1	60	66.7	73.7	1.0	96.8	10.3	5	10NK	10DK
SMB10J 64A-Q1	SMB10J 64CA-Q1	64	71.1	78.6	1.0	103.0	9.7	5	10NM	10DM
SMB10J 70A-Q1	SMB10J 70CA-Q1	70	77.8	86.0	1.0	113.0	8.8	5	10NP	10DP
SMB10J 75A-Q1	SMB10J 75CA-Q1	75	83.3	92.1	1.0	121.0	8.2	5	10NR	10DR
SMB10J 78A-Q1	SMB10J 78CA-Q1	78	86.7	95.8	1.0	126.0	7.9	5	10NT	10DT
SMB10J 85A-Q1	SMB10J 85CA-Q1	85	94.4	104	1.0	137.0	7.2	5	10NV	10DV

Note 1. V_{BR} measured after I_T applied for 300us, I_T=square wave pulse or equivalent
2. Surge current waveform per Fig. 2
3. For bi-directional types having V_{RWM} of 10 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

Rating and characteristic curves

Fig.3 - Pulse Waveform

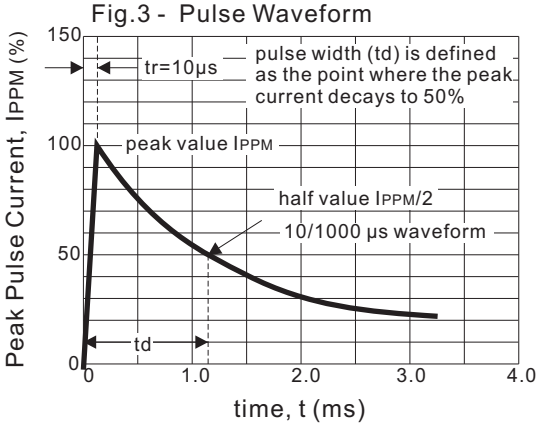


Fig.4 - Typical Junction Capacitance

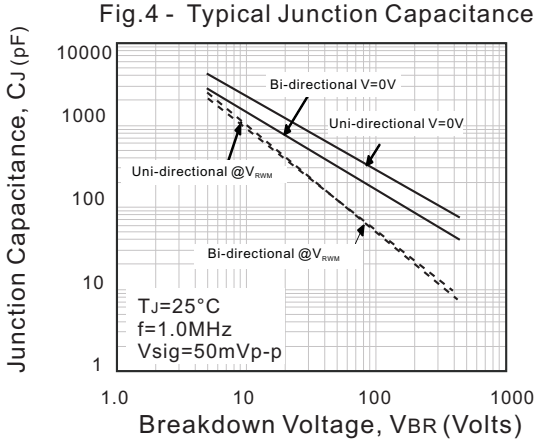


Fig.5 - Steady State Power Derating Curve

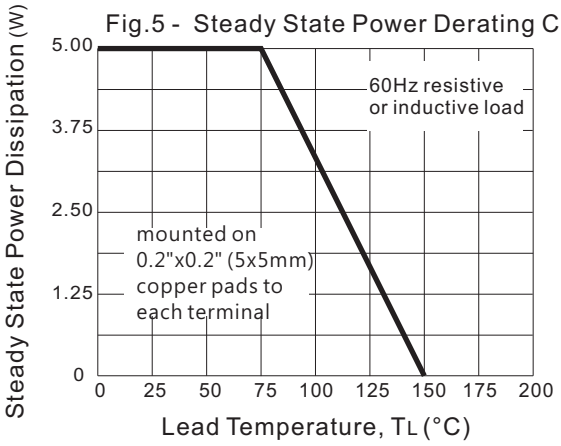
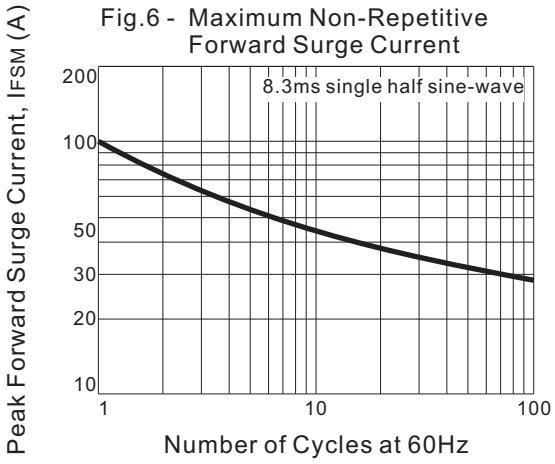


Fig.6 - Maximum Non-Repetitive Forward Surge Current



uni-directional devices only

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

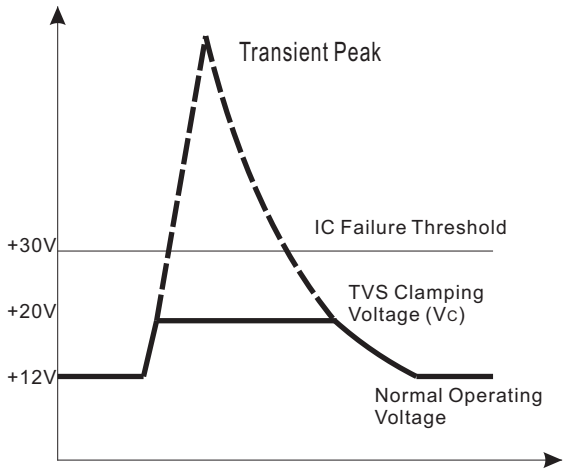
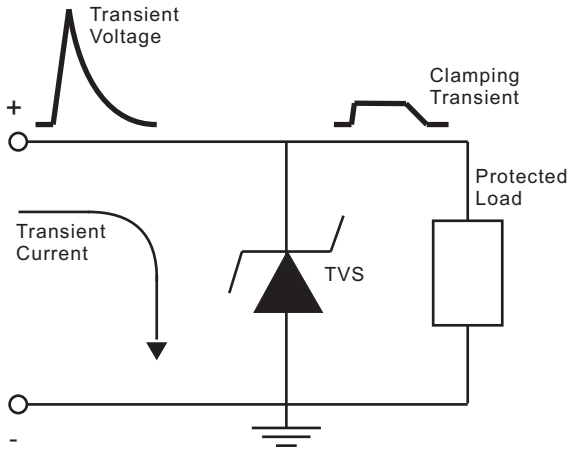


Fig. 8 - Transient current is divered to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level



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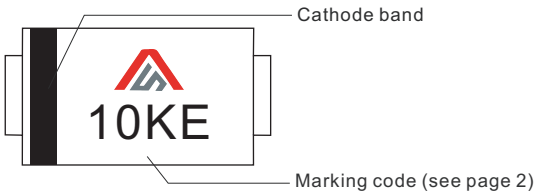
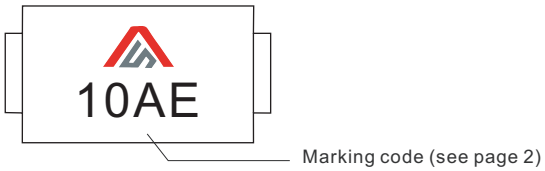
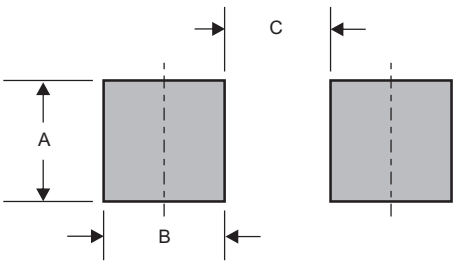
Pinning information

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

Marking

Type number	Example
Uni-Directional	
Bi-Directional	

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMB	0.078 (2.00)	0.059 (1.50)	0.110 (2.80)