

5000W Surface Mount Transient Voltage Suppressors- 11V - 440V

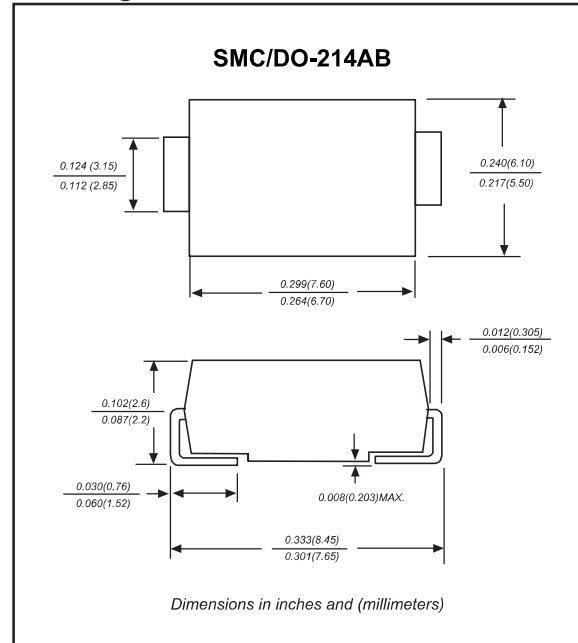
Features

- 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 VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.5.0SMDJ11A-H-Q1.
- Suffix "-Q1" for AEC-Q101.

Mechanical data

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

Package outline



Maximum ratings (AT $T_A=25^\circ\text{C}$ 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
Peak Forward Surge Current	8.3ms Single Half Sine-Wave, Note 3	I_{FSM}	300	A
Operating Temperature range		T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature range		T_{STG}	-55 ~ +150	$^\circ\text{C}$

- Note 1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^\circ\text{C}$ 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. $V_f < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_f < 5.0\text{V}$ for devices of $V_{BR} > 201\text{V}$.

Electrical Specification @ Tamb 25°C

TECHNOLOGIES 5.0SMDJ SERIES		Device Marking Code		Breakdown voltage VBR @ IT			Maximum Reverse Leakage IR(μA) @VRWM	Working Peak Reverse Voltage VRWM (Volts)	Maximum Reverse Surge Current Ipp(A) @10x1000us sinewave	Maximum Clamping Voltage Vc (Volts) @Ipp
Uni-polar	Bi-polar	Uni	Bi	Min (V)	Max (V)	IT (mA)				
5.0SMDJ11-Q1	5.0SMDJ11C-Q1	5PDW	5BDW	12.2	14.9	1	800	11	251.2	20.1
5.0SMDJ11A-Q1	5.0SMDJ11CA-Q1	5PDX	5BDX	12.2	13.5	1	800	11	277.5	18.2
5.0SMDJ12-Q1	5.0SMDJ12C-Q1	5PDY	5BDY	13.3	16.3	1	800	12	229.5	22.0
5.0SMDJ12A-Q1	5.0SMDJ12CA-Q1	5PDZ	5BDZ	13.3	14.7	1	800	12	253.8	19.9
5.0SMDJ13-Q1	5.0SMDJ13C-Q1	5PED	5BED	14.4	17.6	1	500	13	212.2	23.8
5.0SMDJ13A-Q1	5.0SMDJ13CA-Q1	5PEE	5BEE	14.4	15.9	1	500	13	234.9	21.5
5.0SMDJ14-Q1	5.0SMDJ14C-Q1	5PEF	5BEF	15.6	19.1	1	200	14	195.7	25.8
5.0SMDJ14A-Q1	5.0SMDJ14CA-Q1	5PEG	5BEG	15.6	17.2	1	200	14	217.7	23.2
5.0SMDJ15-Q1	5.0SMDJ15C-Q1	5PEH	5BEH	16.7	20.4	1	100	15	187.7	26.9
5.0SMDJ15A-Q1	5.0SMDJ15CA-Q1	5PEK	5BEK	16.7	18.5	1	100	15	207.0	24.4
5.0SMDJ16-Q1	5.0SMDJ16C-Q1	5PEL	5BEL	17.8	21.8	1	50	16	175.3	28.8
5.0SMDJ16A-Q1	5.0SMDJ16CA-Q1	5PEM	5BEM	17.8	19.7	1	50	16	194.2	26.0
5.0SMDJ17-Q1	5.0SMDJ17C-Q1	5PEN	5BEN	18.9	23.1	1	20	17	165.6	30.5
5.0SMDJ17A-Q1	5.0SMDJ17CA-Q1	5PEP	5BEP	18.9	20.9	1	20	17	183.0	27.6
5.0SMDJ18-Q1	5.0SMDJ18C-Q1	5PEQ	5BEQ	20.0	24.4	1	10	18	156.8	32.2
5.0SMDJ18A-Q1	5.0SMDJ18CA-Q1	5PER	5BER	20.0	22.1	1	10	18	172.9	29.2
5.0SMDJ19-Q1	5.0SMDJ19C-Q1	5PES	5BES	21.1	25.8	1	10	19	148.5	34.0
5.0SMDJ19A-Q1	5.0SMDJ19CA-Q1	5PET	5BET	21.1	23.3	1	10	19	164.1	30.8
5.0SMDJ20-Q1	5.0SMDJ20C-Q1	5PEU	5BEU	22.2	27.1	1	5.0	20	141.1	35.8
5.0SMDJ20A-Q1	5.0SMDJ20CA-Q1	5PEV	5BEV	22.2	24.5	1	5.0	20	155.9	32.4
5.0SMDJ22-Q1	5.0SMDJ22C-Q1	5PEW	5BEW	24.4	29.8	1	5.0	22	128.2	39.4
5.0SMDJ22A-Q1	5.0SMDJ22CA-Q1	5PEX	5BEX	24.4	26.9	1	5.0	22	142.3	35.5
5.0SMDJ24-Q1	5.0SMDJ24C-Q1	5PEY	5BEY	26.7	32.6	1	5.0	24	117.4	43.0
5.0SMDJ24A-Q1	5.0SMDJ24CA-Q1	5PEZ	5BEZ	26.7	29.5	1	5.0	24	129.8	38.9
5.0SMDJ26-Q1	5.0SMDJ26C-Q1	5PFD	5BFD	28.9	35.3	1	5.0	26	108.4	46.6
5.0SMDJ26A-Q1	5.0SMDJ26CA-Q1	5PFE	5BFE	28.9	31.9	1	5.0	26	120.0	42.1
5.0SMDJ28-Q1	5.0SMDJ28C-Q1	5PFF	5BFF	31.1	38.0	1	5.0	28	101.0	50.0
5.0SMDJ28A-Q1	5.0SMDJ28CA-Q1	5PFG	5BFG	31.1	34.4	1	5.0	28	111.2	45.4
5.0SMDJ30-Q1	5.0SMDJ30C-Q1	5PFH	5BFH	33.3	40.7	1	5.0	30	94.4	53.5
5.0SMDJ30A-Q1	5.0SMDJ30CA-Q1	5PFK	5BFK	33.3	36.8	1	5.0	30	104.3	48.4
5.0SMDJ33-Q1	5.0SMDJ33C-Q1	5PFL	5BFL	36.7	44.9	1	5.0	33	85.6	59.0
5.0SMDJ33A-Q1	5.0SMDJ33CA-Q1	5PFM	5BFM	36.7	40.6	1	5.0	33	94.7	53.3
5.0SMDJ36-Q1	5.0SMDJ36C-Q1	5PFN	5BFN	40.0	48.9	1	5.0	36	78.5	64.3
5.0SMDJ36A-Q1	5.0SMDJ36CA-Q1	5PFP	5BFP	40.0	44.2	1	5.0	36	86.9	58.1
5.0SMDJ40-Q1	5.0SMDJ40C-Q1	5PFQ	5BFQ	44.4	54.3	1	5.0	40	70.7	71.4
5.0SMDJ40A-Q1	5.0SMDJ40CA-Q1	5PFR	5BFR	44.4	49.1	1	5.0	40	78.3	64.5
5.0SMDJ43-Q1	5.0SMDJ43C-Q1	5PFS	5BFS	47.8	58.4	1	5.0	43	65.8	76.7
5.0SMDJ43A-Q1	5.0SMDJ43CA-Q1	5PFT	5BFT	47.8	52.8	1	5.0	43	72.8	69.4
5.0SMDJ45-Q1	5.0SMDJ45C-Q1	5PFU	5BFU	50.0	61.1	1	5.0	45	62.9	80.3
5.0SMDJ45A-Q1	5.0SMDJ45CA-Q1	5PFV	5BFV	50.0	55.3	1	5.0	45	69.5	72.7
5.0SMDJ48-Q1	5.0SMDJ48C-Q1	5PFW	5BFW	53.3	65.1	1	5.0	48	59.1	85.5
5.0SMDJ48A-Q1	5.0SMDJ48CA-Q1	5PFX	5BFX	53.3	58.9	1	5.0	48	65.2	77.4
5.0SMDJ51-Q1	5.0SMDJ51C-Q1	5PFY	5BFY	56.7	69.3	1	5.0	51	55.4	91.1
5.0SMDJ51A-Q1	5.0SMDJ51CA-Q1	5PFZ	5BFZ	56.7	62.7	1	5.0	51	61.3	82.4
5.0SMDJ54-Q1	5.0SMDJ54C-Q1	5PGD	5BGD	60.0	73.3	1	5.0	54	52.4	96.3
5.0SMDJ54A-Q1	5.0SMDJ54CA-Q1	5RGE	5RGE	60.0	66.3	1	5.0	54	58.0	87.1
5.0SMDJ58-Q1	5.0SMDJ58C-Q1	5PGF	5BGF	64.4	78.7	1	5.0	58	49.0	103
5.0SMDJ58A-Q1	5.0SMDJ58CA-Q1	5PGG	5BGG	64.4	71.2	1	5.0	58	54.0	93.6
5.0SMDJ60-Q1	5.0SMDJ60C-Q1	5PGH	5BGH	66.7	81.5	1	5.0	60	47.2	107
5.0SMDJ60A-Q1	5.0SMDJ60CA-Q1	5PGK	5BGK	66.7	73.7	1	5.0	60	52.2	96.8
5.0SMDJ64-Q1	5.0SMDJ64C-Q1	5PGL	5BGL	71.1	86.9	1	5.0	64	44.3	114
5.0SMDJ64A-Q1	5.0SMDJ64CA-Q1	5PGM	5BGM	71.1	78.6	1	5.0	64	49.0	103
5.0SMDJ70-Q1	5.0SMDJ70C-Q1	5PGN	5BGN	77.8	95.1	1	5.0	70	40.4	125
5.0SMDJ70A-Q1	5.0SMDJ70CA-Q1	5PGP	5BGP	77.8	86.0	1	5.0	70	44.7	113

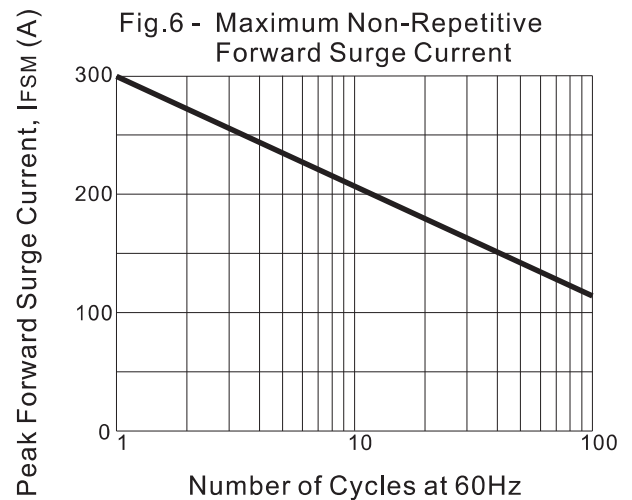
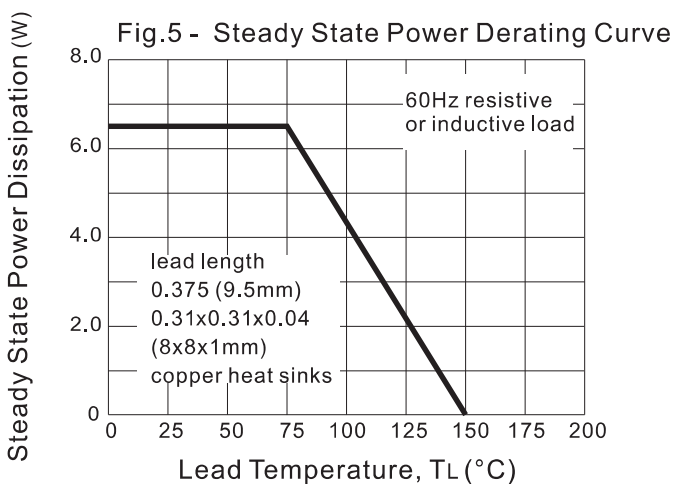
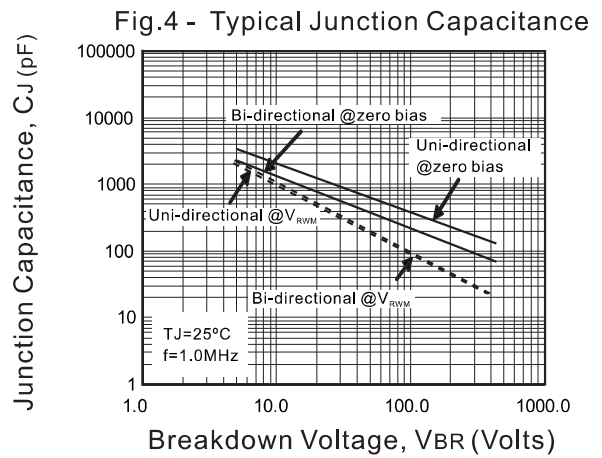
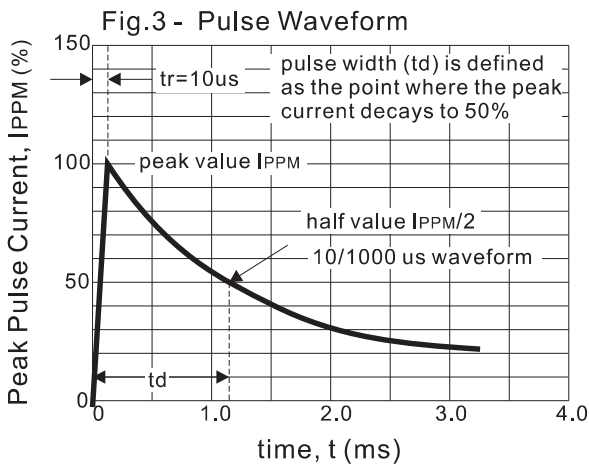
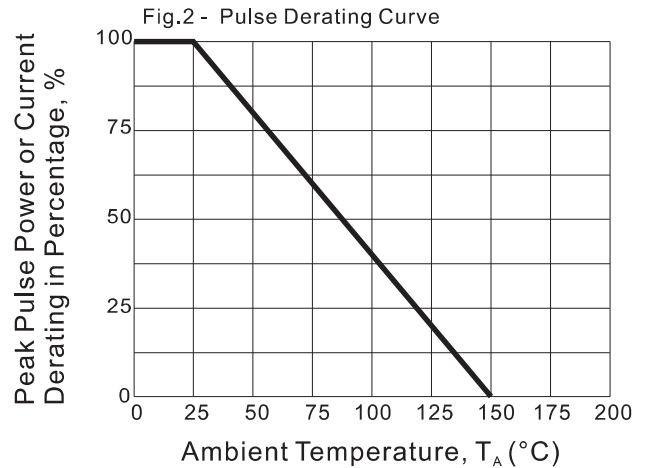
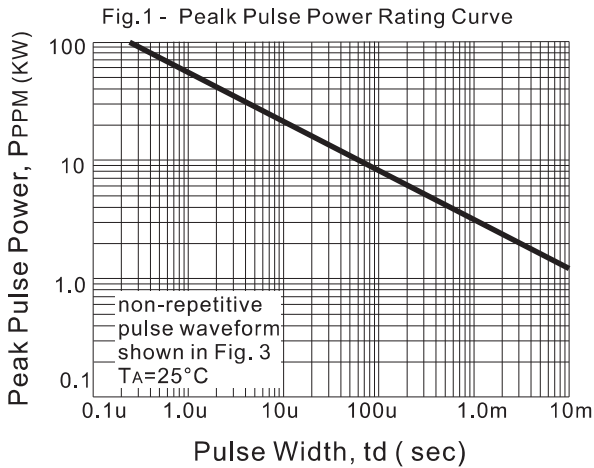
Electrical Specification @ Tamb 25°C

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Uni-polar	Bi-polar	Uni	Bi	Min (V)	Max (V)	IT (mA)				
5.0SMDJ75-Q1	5.0SMDJ75C-Q1	5PGQ	5BGQ	83.3	102	1	5.0	75	37.7	134
5.0SMDJ75A-Q1	5.0SMDJ75CA-Q1	5PGR	5BGR	83.3	92.1	1	5.0	75	41.7	121
5.0SMDJ78-Q1	5.0SMDJ78C-Q1	5PGS	5BGS	86.7	106	1	5.0	78	36.3	139
5.0SMDJ78A-Q1	5.0SMDJ78CA-Q1	5PGT	5BGT	86.7	95.8	1	5.0	78	40.1	126
5.0SMDJ80-Q1	5.0SMDJ80C-Q1	5PGA	5BGA	89.0	109	1	5.0	80	35.3	143
5.0SMDJ80A-Q1	5.0SMDJ80CA-Q1	5PGB	5BGB	88.8	97.6	1	5.0	80	39.0	130
5.0SMDJ85-Q1	5.0SMDJ85C-Q1	5PGU	5BGU	94.4	115	1	5.0	85	33.4	151
5.0SMDJ85A-Q1	5.0SMDJ85CA-Q1	5PGV	5BGV	94.4	104	1	5.0	85	36.9	137
5.0SMDJ90-Q1	5.0SMDJ90C-Q1	5PGW	5BGW	100	122	1	5.0	90	31.6	160
5.0SMDJ90A-Q1	5.0SMDJ90CA-Q1	5PGX	5BGX	100	111	1	5.0	90	34.6	146
5.0SMDJ100-Q1	5.0SMDJ100C-Q1	5PGY	5BGY	111	136	1	5.0	100	28.2	179
5.0SMDJ100A-Q1	5.0SMDJ100CA-Q1	5PGZ	5BGZ	111	123	1	5.0	100	31.2	162
5.0SMDJ110-Q1	5.0SMDJ110C-Q1	5PHD	5BHD	122	149	1	5.0	110	25.8	196
5.0SMDJ110A-Q1	5.0SMDJ110CA-Q1	5PHE	5BHE	122	135	1	5.0	110	28.5	177
5.0SMDJ120-Q1	5.0SMDJ120C-Q1	5PHF	5BHF	133	163	1	5.0	120	23.6	214
5.0SMDJ120A-Q1	5.0SMDJ120CA-Q1	5PHG	5BHG	133	147	1	5.0	120	26.2	193
5.0SMDJ130-Q1	5.0SMDJ130C-Q1	5PHH	5BHH	144	176	1	5.0	130	21.9	231
5.0SMDJ130A-Q1	5.0SMDJ130CA-Q1	5PHK	5BHK	144	159	1	5.0	130	24.2	209
5.0SMDJ140-Q1	5.0SMDJ140C-Q1	5PHA	5BHA	156	190	1	5.0	140	20.2	251
5.0SMDJ140A-Q1	5.0SMDJ140CA-Q1	5PHB	5BHB	155	171	1	5.0	140	22.3	227
5.0SMDJ150-Q1	5.0SMDJ150C-Q1	5PHL	5BHL	167	204	1	5.0	150	18.8	268
5.0SMDJ150A-Q1	5.0SMDJ150CA-Q1	5PHM	5BHM	167	185	1	5.0	150	20.8	243
5.0SMDJ160-Q1	5.0SMDJ160C-Q1	5PHN	5BHN	178	218	1	5.0	160	17.6	287
5.0SMDJ160A-Q1	5.0SMDJ160CA-Q1	5PHP	5BHP	178	197	1	5.0	160	19.5	259
5.0SMDJ170-Q1	5.0SMDJ170C-Q1	5PHQ	5BHQ	189	231	1	5.0	170	16.6	304
5.0SMDJ170A-Q1	5.0SMDJ170CA-Q1	5PHR	5BHR	189	209	1	5.0	170	18.4	275
5.0SMDJ180-Q1	5.0SMDJ180C-Q1	5PHS	5BHS	200	245	1	5.0	180	15.7	322
5.0SMDJ180A-Q1	5.0SMDJ180CA-Q1	5PHT	5BHT	200	220	1	5.0	180	17.3	292
5.0SMDJ190-Q1	5.0SMDJ190C-Q1	5PHU	5BHU	211	258	1	5.0	190	14.8	340
5.0SMDJ190A-Q1	5.0SMDJ190CA-Q1	5PHV	5BHV	211	232	1	5.0	190	16.4	308
5.0SMDJ200A-Q1	5.0SMDJ200CA-Q1	5PHW	5BHW	224	247	1	5.0	200	9.3	324
5.0SMDJ220A-Q1	5.0SMDJ220CA-Q1	5PHX	5BHX	246	272	1	5.0	220	8.4	356
5.0SMDJ250A-Q1	5.0SMDJ250CA-Q1	5PHZ	5BHZ	279	309	1	5.0	250	7.4	405
5.0SMDJ300A-Q1	5.0SMDJ300CA-Q1	5PJE	5BJE	335	371	1	5.0	300	6.2	486
5.0SMDJ350A-Q1	5.0SMDJ350CA-Q1	5PJG	5BJG	391	432	1	5.0	350	5.3	567
5.0SMDJ400A-Q1	5.0SMDJ400CA-Q1	5PJK	5BJK	447	494	1	5.0	400	4.6	648
5.0SMDJ440A-Q1	5.0SMDJ440CA-Q1	5PJM	5BJM	492	543	1	5.0	440	4.2	713

Note:

1. Suffix 'A' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device.
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices.
3. For Bi-Directional devices having VR of 20 volts and under, the IR limit is double .

Rating and characteristic curves (5.0SMDJ-Q1 Series)



Rating and characteristic curves (5.0SMDJ-Q1 Series)

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

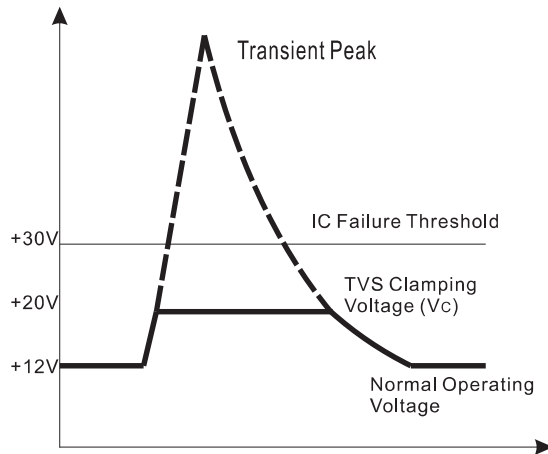
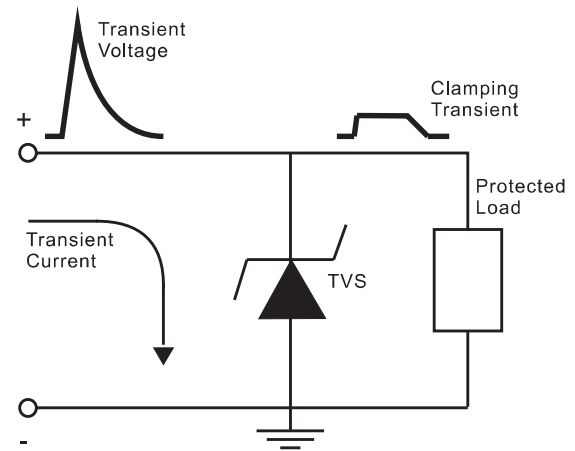
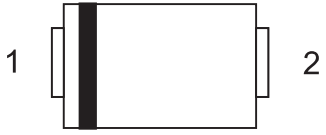

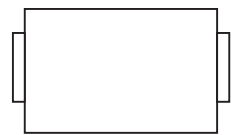





Fig. 8 - Transient current is diverted to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level



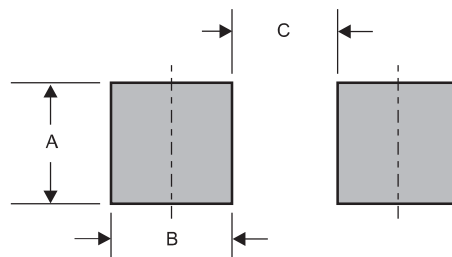
Pinning information

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

Marking

Type number	Example
Uni-Directional	 <p>Cathode band</p> <p>Marking code (see page 2 to page 3)</p>
Bi-Directional	 <p>Marking code (see page 2 to page 3)</p>

Suggested solder pad layout



Dimensions in inches and (millimeters)

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