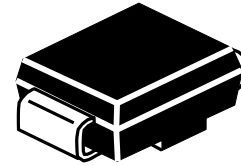


Transient Voltage Suppression Diodes Surface Mount – 5000W

Descriptions

Transient Voltage Suppressors (TVS) are semiconductor devices designed to provide protection against over voltage transients. When over voltage events occur, the silicon TVS activates from an very high impedance status to a very low impedance status by operating in the avalanche mode and uses a large junction area to absorb large transient currents in a fast response time, protecting voltage sensitive electronics equipment from damaging.

Boarden supplies unipolar and bipolar TVS devices with axial and SMD packages, with maximum working voltage 5V to 550V, maximum power dissipation from 200W-5000W.



**SMC
(JEDEC DO-214AB)**

Features

- Glass passivated chip junction in SMC Package
- 5000W peak pulse power @10/1000 μ s
- Typical I_R less than 5 μ A above 13V
- Low incremental surge resistance
- Excellent clamping capability
- Typical failure mode is short from over-specified voltage/current
- Fast response time: typically less than 1.0ps from 0V to BV min
- EFT protection of data lines in accordance with IEC 61000-4-4
- UL94V-0 Flammability Rating
- Halogen free and RoHS compliant

Applications

- Telecom and Network
- Industrial Products
- Business Machines
- Vehicles Electronics
- Power Adapter
- Consumer Products
- Security Protection

Maximum Ratings and Thermal Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000 μ s Test Waveform	P _{PPM}	5000	W
Steady State Power Dissipation on Infinite Heat Sink at T _L =75°C	P _D	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional Only ⁽¹⁾	I _{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only ⁽²⁾	V _F	5.0	V
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 175	°C
Typical Thermal Resistance Junction to Lead	R _{uJL}	15	°C/W
Typical Thermal Resistance Junction to Ambient	R _{uJA}	75	°C/W

Notes:

1) Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.

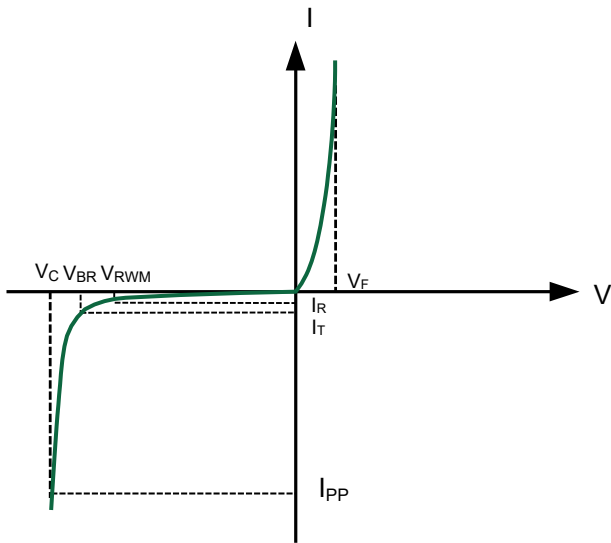
2) V_F<3.5V for devices of V_{BR}≤200V and V_F<5.0V for devices of V_{BR}≥201V.

Electrical Characteristics (TA=25°C unless otherwise noted)

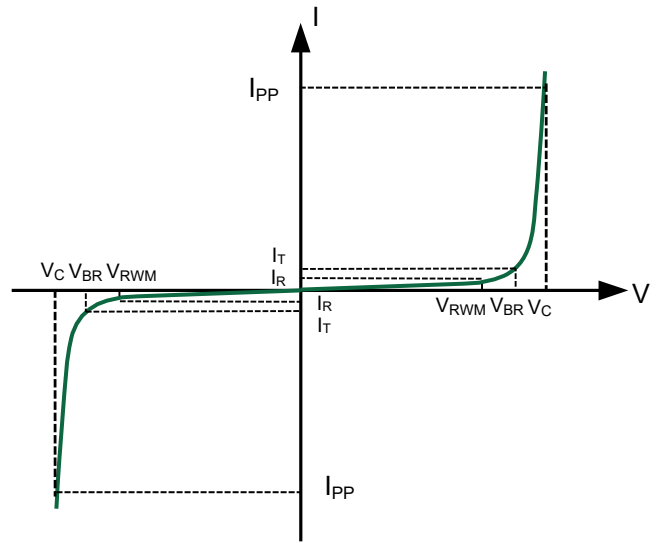
Type Number		V _{RMW}	I _R @V _{RMW}	V _{BR} @I _T (V)			I _T	V _C @I _{PP}	I _{PP} MAX
Uni	Bi	(V)	(μA)	Min	Nom	Max	(mA)	(V)	(A)
5.0SMDJ5.0A	5.0SMDJ5.0CA	5.0	800	6.40	6.70	7.00	10	9.2	543.5
5.0SMDJ6.0A	5.0SMDJ6.0CA	6.0	800	6.67	7.02	7.37	10	10.3	485.4
5.0SMDJ6.5A	5.0SMDJ6.5CA	6.5	500	7.22	7.60	7.98	10	11.2	446.4
5.0SMDJ7.0A	5.0SMDJ7.0CA	7.0	200	7.78	8.19	8.60	10	12.0	416.7
5.0SMDJ7.5A	5.0SMDJ7.5CA	7.5	100	8.33	8.77	9.21	1	12.9	387.6
5.0SMDJ8.0A	5.0SMDJ8.0CA	8.0	50	8.89	9.36	9.83	1	13.6	367.6
5.0SMDJ8.5A	5.0SMDJ8.5CA	8.5	20	9.44	9.92	10.4	1	14.4	347.2
5.0SMDJ9.0A	5.0SMDJ9.0CA	9.0	10	10.0	10.60	11.1	1	15.4	324.7
5.0SMDJ10A	5.0SMDJ10CA	10	5	11.1	11.7	12.3	1	17.0	294.1
5.0SMDJ11A	5.0SMDJ11CA	11	5	12.2	12.9	13.5	1	18.2	274.7
5.0SMDJ12A	5.0SMDJ12CA	12	5	13.3	14.0	14.7	1	19.9	251.3
5.0SMDJ13A	5.0SMDJ13CA	13	5	14.4	15.2	15.9	1	21.5	232.6
5.0SMDJ14A	5.0SMDJ14CA	14	5	15.6	16.4	17.2	1	23.2	215.5
5.0SMDJ15A	5.0SMDJ15CA	15	5	16.7	17.6	18.5	1	24.4	204.9
5.0SMDJ16A	5.0SMDJ16CA	16	5	17.8	18.8	19.7	1	26.0	192.3
5.0SMDJ17A	5.0SMDJ17CA	17	5	18.9	19.9	20.9	1	27.6	181.2
5.0SMDJ18A	5.0SMDJ18CA	18	5	20.0	21.1	22.1	1	29.2	171.2
5.0SMDJ20A	5.0SMDJ20CA	20	5	22.2	23.4	24.5	1	32.4	154.3
5.0SMDJ22A	5.0SMDJ22CA	22	5	24.4	25.7	26.9	1	35.5	140.8
5.0SMDJ24A	5.0SMDJ24CA	24	5	26.7	28.1	29.5	1	38.9	128.5
5.0SMDJ26A	5.0SMDJ26CA	26	5	28.9	30.4	31.9	1	42.1	118.8
5.0SMDJ28A	5.0SMDJ28CA	28	5	31.1	32.8	34.4	1	45.4	110.1
5.0SMDJ30A	5.0SMDJ30CA	30	5	33.3	35.1	36.8	1	48.4	103.3
5.0SMDJ33A	5.0SMDJ33CA	33	5	36.7	38.7	40.6	1	53.3	93.8
5.0SMDJ36A	5.0SMDJ36CA	36	5	40.0	42.1	44.2	1	58.1	86.1
5.0SMDJ40A	5.0SMDJ40CA	40	5	44.4	46.8	49.1	1	64.5	77.5
5.0SMDJ43A	5.0SMDJ43CA	43	5	47.8	50.3	52.8	1	69.4	72.0
5.0SMDJ45A	5.0SMDJ45CA	45	5	50.0	52.7	55.3	1	72.7	68.8
5.0SMDJ48A	5.0SMDJ48CA	48	5	53.3	56.1	58.9	1	77.4	64.6
5.0SMDJ51A	5.0SMDJ51CA	51	5	56.7	59.7	62.7	1	82.4	60.7
5.0SMDJ54A	5.0SMDJ54CA	54	5	60.0	63.2	66.3	1	87.1	57.4
5.0SMDJ58A	5.0SMDJ58CA	58	5	64.4	67.8	71.2	1	93.6	53.4
5.0SMDJ60A	5.0SMDJ60CA	60	5	66.7	70.2	73.7	1	96.8	51.7
5.0SMDJ64A	5.0SMDJ64CA	64	5	71.1	74.9	78.6	1	103.0	48.5
5.0SMDJ70A	5.0SMDJ70CA	70	5	77.8	81.9	86.0	1	113.0	44.2
5.0SMDJ75A	5.0SMDJ75CA	75	5	83.3	87.7	92.1	1	121.0	41.3
5.0SMDJ78A	5.0SMDJ78CA	78	5	86.7	91.3	95.8	1	126.0	39.7
5.0SMDJ85A	5.0SMDJ85CA	85	5	94.4	99.2	104	1	137.0	36.5
5.0SMDJ90A	5.0SMDJ90CA	90	5	100	105.5	111	1	146.0	34.2
5.0SMDJ100A	5.0SMDJ100CA	100	5	111	117.0	123	1	162.0	30.9
5.0SMDJ110A	5.0SMDJ110CA	110	5	122	128.5	135	1	177.0	28.2
5.0SMDJ120A	5.0SMDJ120CA	120	5	133	140.0	147	1	193.0	25.9
5.0SMDJ130A	5.0SMDJ130CA	130	5	144	151.5	159	1	209.0	23.9
5.0SMDJ150A	5.0SMDJ150CA	150	5	167	176.0	185	1	243.0	20.6
5.0SMDJ160A	5.0SMDJ160CA	160	5	178	187.5	197	1	259.0	19.3
5.0SMDJ170A	5.0SMDJ170CA	170	5	189	199.0	209	1	275.0	18.2
5.0SMDJ180A	5.0SMDJ180CA	180	5	201	211.5	222	1	290.0	17.2
5.0SMDJ200A	5.0SMDJ200CA	200	5	224	235.5	247	1	322.0	15.5
5.0SMDJ210A	5.0SMDJ210CA	210	5	233	251.0	269	1	339.0	14.7
5.0SMDJ220A	5.0SMDJ220CA	220	5	246	259.0	272	1	355.0	14.1

For bidirectional type having V_{RMW} of 10 volts and less, the I_R limit is double.

I-V Curve Characteristics



Uni-Directional TVS



Bi-Directional TVS

VRWM - Reverse Stand-Off Voltage - Working Peak Reverse Voltage

VBR - Breakdown Voltage - Maximum current that flows through the TVS at a specified test current (I_T)

IT - Test Current - Test Current

Vc - Clamping Voltage - Peak voltage measured across the suppressor at a specified I_{ppm} (peak impulse current)

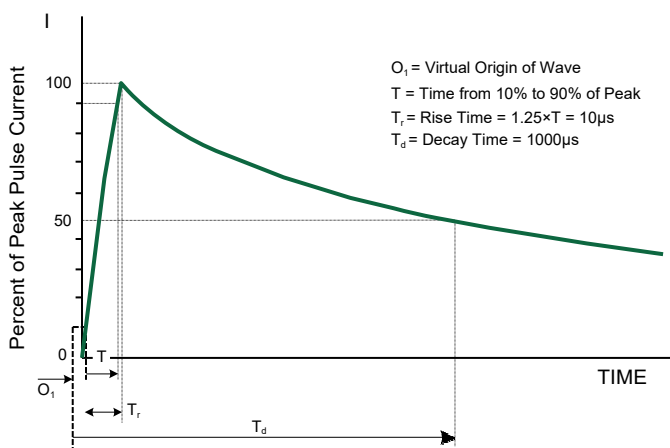
IPP - Peak Pulse Current - Maximum Reverse Peak Pulse Current

PP - Peak Pulse Power Dissipation - Max power dissipation

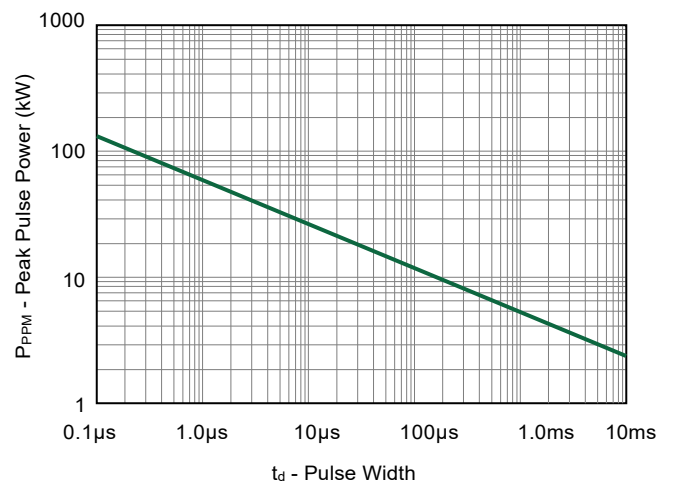
IR - Reverse Leakage Current - Current measured at V_{RWM}

VF - Forward Voltage - Drop for Uni-directional

Ratings and Characteristic Curves ($T_A=25^\circ C$ unless otherwise noted)

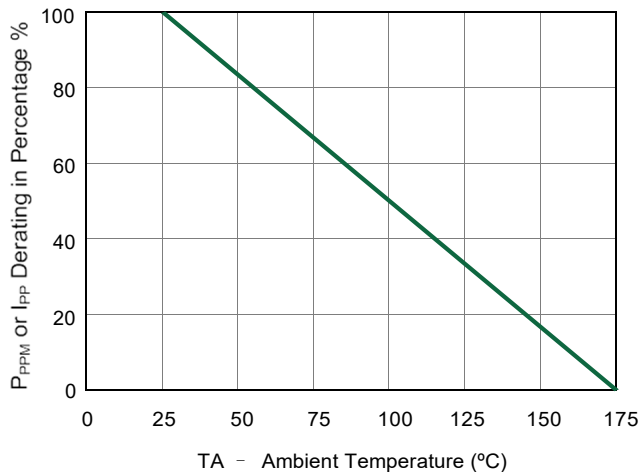


Pulse Waveform- 10/1000µs

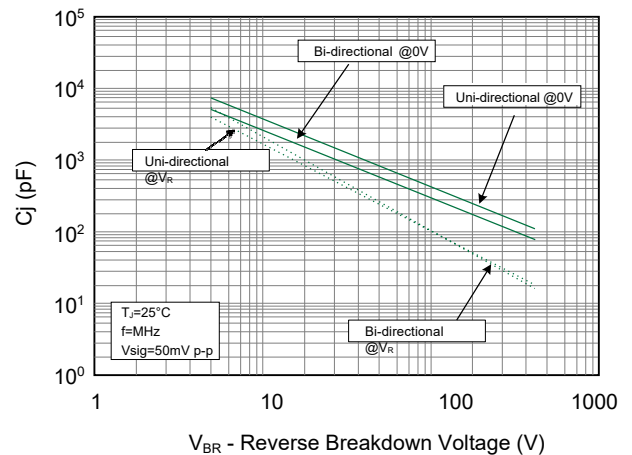


Peak Pulse Power Rating Curve

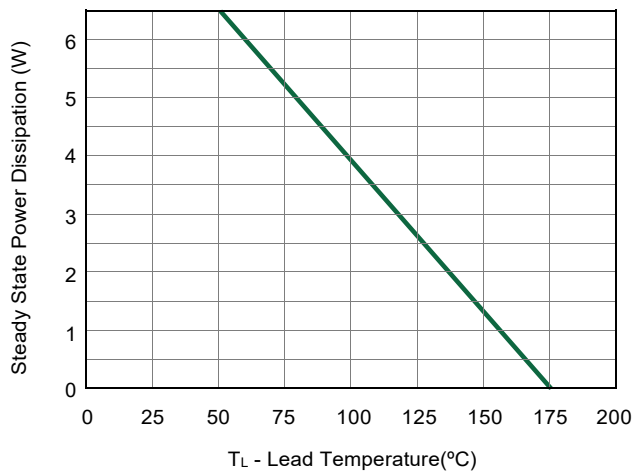
Ratings and Characteristic Curves (TA=25°C unless otherwise noted)



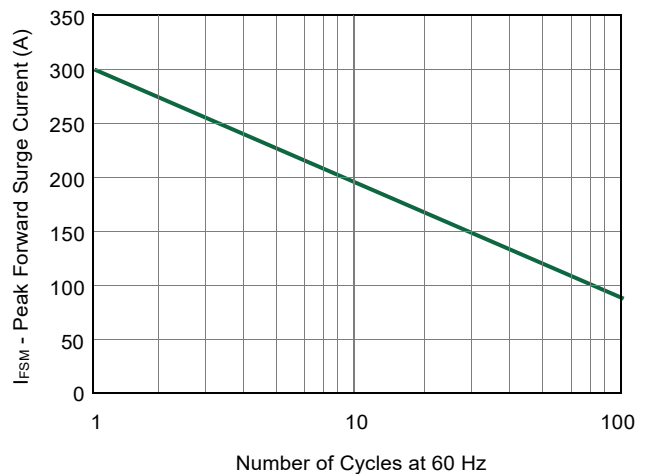
Pulse Derating Curve



Typical Junction Capacitance



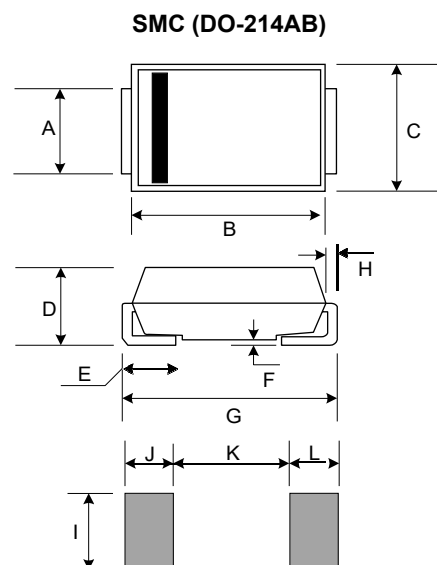
Steady State Power Derating Curve



Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

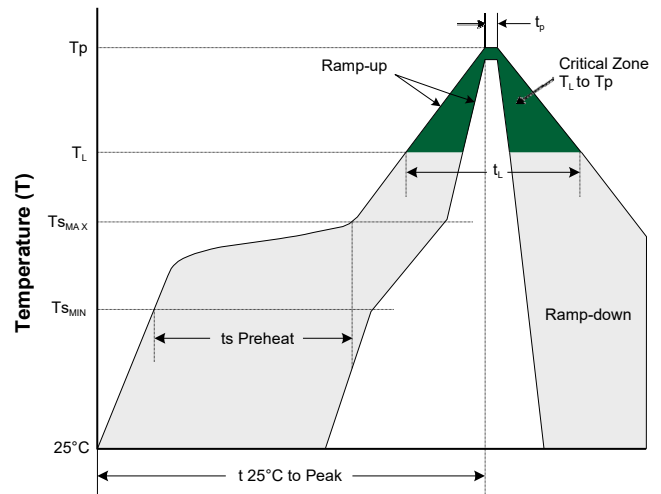
Product Dimensions

Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.108	0.128	2.750	3.250
B	0.260	0.291	6.600	7.400
C	0.220	0.246	5.590	6.250
D	0.078	0.116	1.980	2.950
E	0.030	0.060	0.760	1.520
F	-	0.008	-	0.203
G	0.303	0.323	7.700	8.200
H	0.006	0.012	0.152	0.305
I	0.129	-	3.300	-
J	0.094	-	2.400	-
K	-	0.165	-	4.200
L	0.094	-	2.400	-

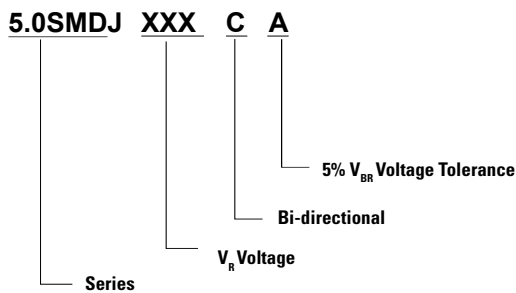


Soldering Parameters

Profile Feature	Lead-Free Assembly
Average Ramp-up Rate ($T_{S_{MAX}}$ to T_p) Average Ramp-down Rate (T_p to T_L)	3°C/second max. 6°C/second max.
Preheat • Temperature Min ($T_{S_{MIN}}$) • Temperature Max ($T_{S_{MAX}}$) • Time (t_s Preheat)	150°C 200°C 60-180 seconds
Time maintained above: • Temperature (T_L) • Time (t_L)	217°C 60-150 seconds
Peak/Classification Temperature • Temperature (T_p)	260 ^{+0/-5} °C
Time within 5°C of actual Peak Time (t_p)	20-40 seconds
Time 25°C to peak Temperature	8 minutes max
Do not exceed	260 °C



Part Numbering System



Order Information

Device	Package	Quantity	Tape
5.0SMDJ series	SMC/DO-214AB	500	7" Reel
5.0SMDJ series	SMC/DO-214AB	3000	13" Reel