



Features

- 600 watts Peak Pulse Power (10/1000 μ s)
- Response Time is Typically < 1 ns
- Excellent Clamping Capability
- Glass Passivated Junction

Applications

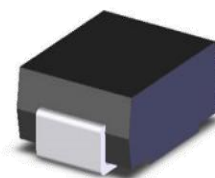
- Power lines
- Automotive and Telecommunication
- Computers & Consumer Electronics
- Industrial Electronics

VP6SMBxxCA Series ----- SURFACE MOUNT TVS Diodes

General Information

VIC offers Transient Voltage Suppressor Diodes for surge and ESD protection applications, in compact chip package DO-214AA (SMB) size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 5 V up to 440 V and Breakdown Voltage up to 450 V.

Typical fast response times are less than 1.0 picoseconds for unidirectional devices and less than 5.0 picoseconds for bidirectional devices from 0 V to Minimum Breakdown Voltage.



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Peak Power Dissipation At $T_j = 25^\circ\text{C}$, $T_p=1\text{ms}$	P_{PK}	600	W
Peak Forward Surge Current 8.3ms single half sine-wave super	I_{FSM}	100	A
Maximum Operating temperature	T_{OPER}	-55 to +155	$^\circ\text{C}$
Maximum Storage temperature	T_{STG}	-55 to +175	$^\circ\text{C}$
Maximum lead temperature for soldering during 10s	T_L	260	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	V_{RWM}	I_L	$V_{BR}@I_T$		I_T	V_C	I_{PP}
Uni-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
VP6SMB5.0CA	5	100	6.4	7	10	9.2	65.2
VP6SMB6.0CA	6	100	6.67	7.37	10	10.3	58.3
VP6SMB6.5CA	6.5	50	7.22	7.98	10	11.2	53.6
VP6SMB7.0CA	7	50	7.78	8.6	10	12	50
VP6SMB7.5CA	7.5	50	8.33	9.21	1	12.9	46.5



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Uni-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
VP6SMB8.0CA	8	20	8.89	9.83	1	13.6	44.1
VP6SMB8.5CA	8.5	10	9.44	10.4	1	14.4	41.7
VP6SMB9.0CA	9	5	10	11.1	1	15.4	39
VP6SMB10CA	10	2	11.1	12.3	1	17	35.3
VP6SMB11CA	11	1	12.2	13.5	1	18.2	33
VP6SMB12CA	12	1	13.3	14.7	1	19.9	30.2
VP6SMB13CA	13	1	14.4	15.9	1	21.5	27.9
VP6SMB14CA	14	1	15.6	17.2	1	23.2	25.9
VP6SMB15CA	15	1	16.7	18.5	1	24.4	24.6
VP6SMB16CA	16	1	17.8	19.7	1	26	23.1
VP6SMB17CA	17	1	18.9	20.9	1	27.6	21.8
VP6SMB18CA	18	1	20	22.1	1	29.2	20.6
VP6SMB20CA	20	1	22.2	24.5	1	32.4	18.6
VP6SMB22CA	22	1	24.4	26.9	1	35.5	16.9
VP6SMB24CA	24	1	26.7	29.5	1	38.9	15.4
VP6SMB26CA	26	1	28.9	31.9	1	42.1	14.3
VP6SMB28CA	28	1	31.1	34.4	1	45.4	13.2
VP6SMB30CA	30	1	33.3	36.8	1	48.4	12.4
VP6SMB33CA	33	1	36.7	40.6	1	53.3	11.3
VP6SMB36CA	36	1	40	44.2	1	58.1	10.4



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Uni-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
VP6SMB40CA	40	1	44.4	49.1	1	64.5	9.3
VP6SMB43CA	43	1	47.8	52.8	1	69.4	8.7
VP6SMB45CA	45	1	50	55.3	1	72.7	8.3
VP6SMB48CA	48	1	53.3	58.9	1	77.4	7.8
VP6SMB51CA	51	1	56.7	62.7	1	82.4	7.3
VP6SMB54CA	54	1	60	66.3	1	87.1	6.9
VP6SMB58CA	58	1	64.4	71.2	1	93.6	6.4
VP6SMB60CA	60	1	66.7	73.7	1	96.8	6.2
VP6SMB64CA	64	1	71.1	78.6	1	103	5.8
VP6SMB70CA	70	1	77.8	86	1	113	5.3
VP6SMB75CA	75	1	83.3	92.1	1	121	5
VP6SMB78CA	78	1	86.7	95.8	1	126	4.8
VP6SMB85CA	85	1	94.4	104	1	137	4.4
VP6SMB90CA	90	1	100	111	1	146	4.1
VP6SMB100CA	100	1	111	123	1	162	3.7
VP6SMB110CA	110	1	122	135	1	177	3.4
VP6SMB120CA	120	1	133	147	1	193	3.1
VP6SMB130CA	130	1	144	159	1	209	2.9
VP6SMB150CA	150	1	167	185	1	243	2.5
VP6SMB160CA	160	1	178	197	1	259	2.3

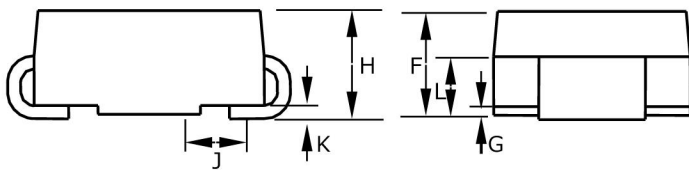
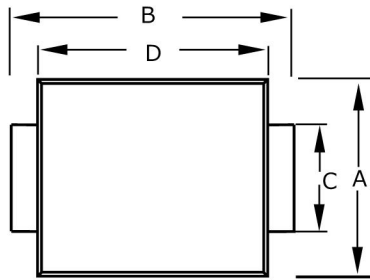


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Parameter	V_{RWM}	I_L	$V_{BR}@I_T$		I_T	V_C	I_{PP}
Uni-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
VP6SMB170CA	170	1	189	209	1	275	2.2
VP6SMB180CA	180	1	201	222	1	292	2.1
VP6SMB190CA	190	1	211	234	1	307	2
VP6SMB200CA	200	1	224	247	1	324	1.9
VP6SMB210CA	210	1	233	258	1	337	1.8
VP6SMB220CA	220	1	246	272	1	356	1.7
VP6SMB250CA	250	1	279	309	1	405	1.5
VP6SMB300CA	300	1	335	371	1	486	1.3
VP6SMB350CA	350	1	391	432	1	567	1.1
VP6SMB400CA	400	1	447	494	1	648	0.9
VP6SMB440CA	440	1	492	543	1	713	0.8

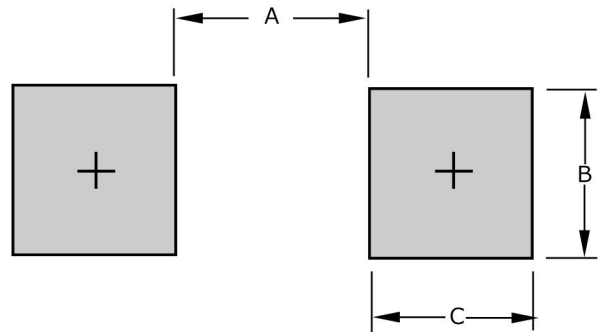
Product Dimensions



Dimension	SMB (DO-214AA)
A	$\frac{3.40-3.94}{(0.134-0.155)}$
B	$\frac{5.21-5.59}{(0.205-0.220)}$
C	$\frac{1.90-2.11}{(0.075-0.083)}$
D	$\frac{4.22-4.70}{(0.166-0.185)}$
E	$\frac{0.91-1.42}{(0.036-0.056)}$
F	$\frac{1.85-2.10}{(0.073-0.087)}$
G	$\frac{0.05-0.20}{(0.002-0.008)}$
H	$\frac{1.95-2.40}{(0.077-0.094)}$
J	$\frac{1.09-1.35}{(0.043-0.053)}$
K	$\frac{0.20-0.35}{(0.008-0.014)}$
L	$\frac{0.99-1.24}{(0.039-0.049)}$

DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

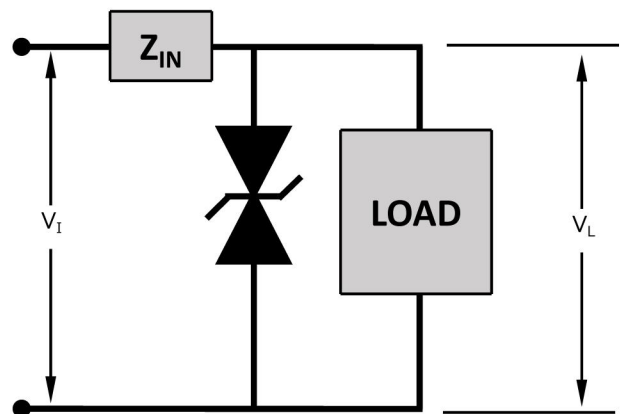
Recommended PCB Footprint



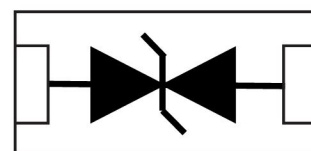
Dimension	SMB (DO-214AA)
A	$\frac{1.8}{(0.071)}$
B	$\frac{2.3}{(0.090)}$
C	$\frac{2.5}{(0.098)}$

DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

Typical Protection Circuit



Block Diagram



Bi-directional

Performance Graphs

Figure 1: Peak Pulse Power Rating Curve

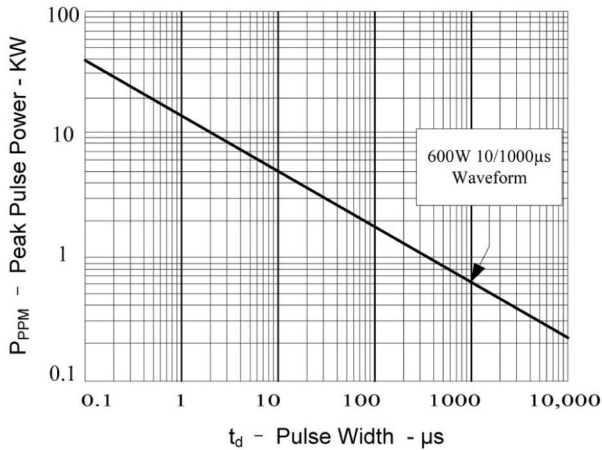


Figure 2: Pulse Derating Curve

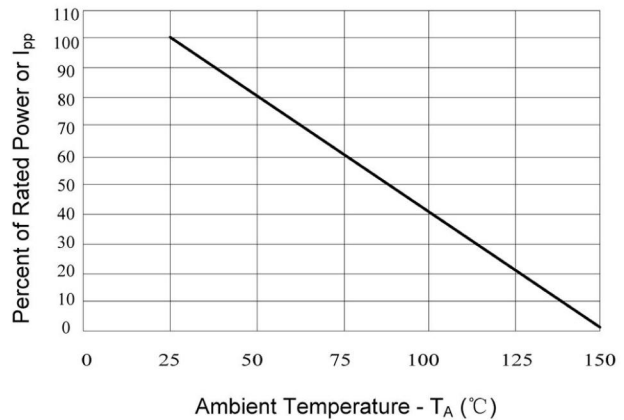


Figure 3: Pulse Waveform

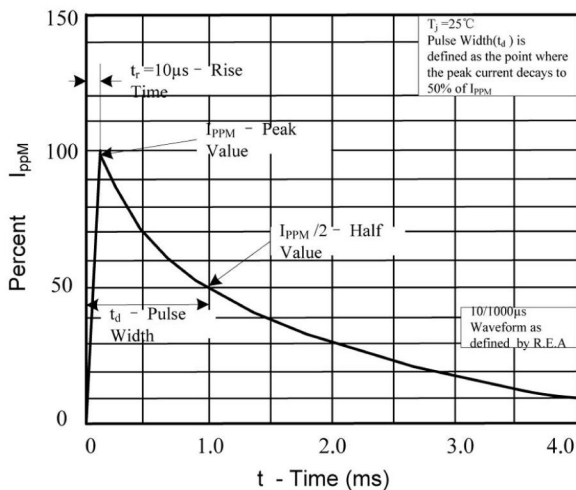


Figure 4: Typical Junction Capacitance

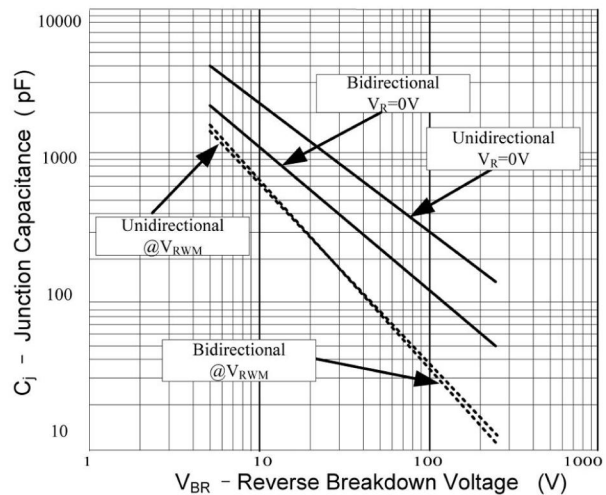


Figure 5: Steady State Power Dissipation Derating Curve

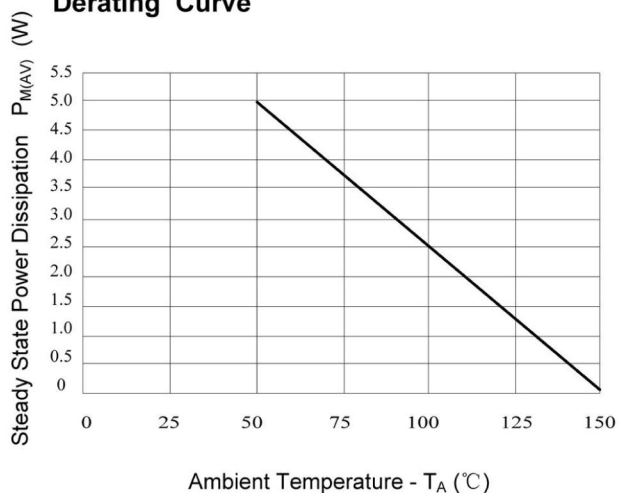
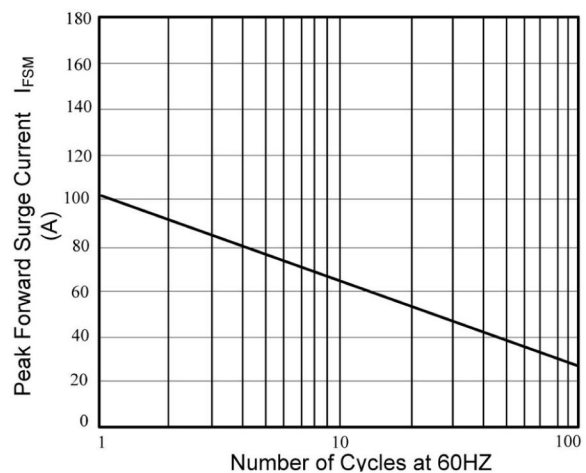
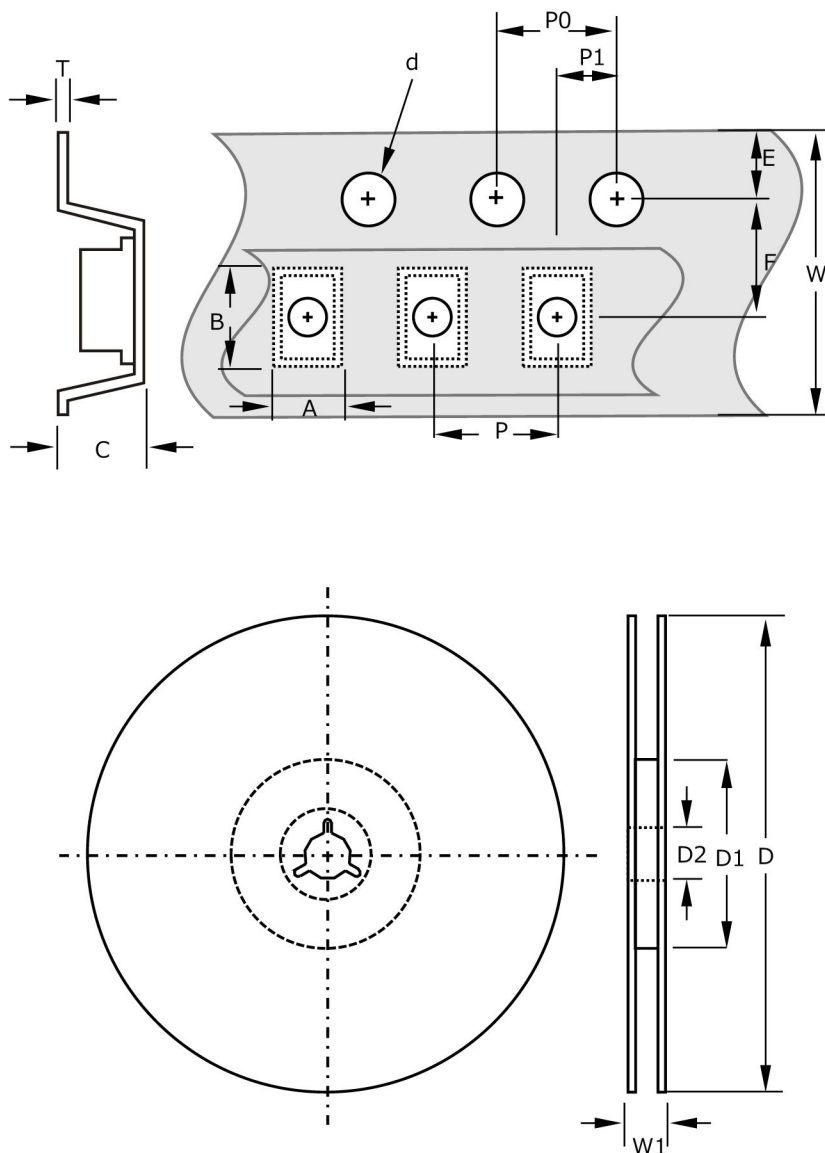


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional



Packaging Information

Symbol	SMB (DO-214AA)
A	$\frac{3.67 \pm 0.05}{(0.144 \pm 0.002)}$
B	$\frac{5.60 \pm 0.05}{(0.220 \pm 0.002)}$
C	$\frac{2.57 \pm 0.20}{(0.101 \pm 0.008)}$
d	$\frac{1.50 \pm 0.10}{(0.061 \pm 0.004)}$
D	$\frac{330}{(12.992)}$
D1	$\frac{50.0}{(1.969)}$
D2	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
F	$\frac{5.50 \pm 0.05}{(0.217 \pm 0.002)}$
P	$\frac{8.00 \pm 0.10}{(0.315 \pm 0.004)}$
P0	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
P1	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
T	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$
W	$\frac{12.00 \pm 0.30}{(0.472 \pm 0.012)}$
W1	$\frac{18.4}{(0.724)}$



DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

Quantity of products in the taping package

- (1) Standard quantity : 3000 pcs/Reel for the Series.
- (2) Shipping quantity is a multiple of standard quantity.
- (3) For additional information, please contact your local Sales Representative.