Features

- 600 watts Peak Pulse Power (10/1000 μs)
- Response Time is Typically < 1 ns
- Excellent Clamping Capability

Applications

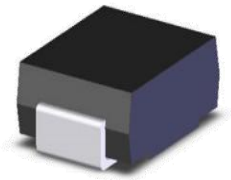
- Power lines
- Automotive and Telecommunication
- Computers &Consumer Electronics
- Industrial Electronics

VP6SMBxxA 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 BreakdownVoltage 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 Tj = 25℃,Tp=1ms	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	℃
Maximum Storage temperature	T_{STG}	-55 to +175	℃
Maximum lead temperature for soldering during 10s	T_L	260	℃

Electrical Characteristics (@ T_A = 25 °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
VP6SMB5.0A	5	100	6.4	7	10	9.2	65.2
VP6SMB6.0A	6	100	6.67	7.37	10	10.3	58.3
VP6SMB6.5A	6.5	50	7.22	7.98	10	11.2	53.6
VP6SMB7.0A	7	50	7.78	8.6	10	12	50
VP6SMB7.5A	7.5	50	8.33	9.21	1	12.9	46.5

Electrical Characteristics (@ T_A = 25 °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
VP6SMB8.0A	8	20	8.89	9.83	1	13.6	44.1
VP6SMB8.5A	8.5	10	9.44	10.4	1	14.4	41.7
VP6SMB9.0A	9	5	10	11.1	1	15.4	39
VP6SMB10A	10	2	11.1	12.3	1	17	35.3
VP6SMB11A	11	1	12.2	13.5	1	18.2	33
VP6SMB12A	12	1	13.3	14.7	1	19.9	30.2
VP6SMB13A	13	1	14.4	15.9	1	21.5	27.9
VP6SMB14A	14	1	15.6	17.2	1	23.2	25.9
VP6SMB15A	15	1	16.7	18.5	1	24.4	24.6
VP6SMB16A	16	1	17.8	19.7	1	26	23.1
VP6SMB17A	17	1	18.9	20.9	1	27.6	21.8
VP6SMB18A	18	1	20	22.1	1	29.2	20.6
VP6SMB20A	20	1	22.2	24.5	1	32.4	18.6
VP6SMB22A	22	1	24.4	26.9	1	35.5	16.9
VP6SMB24A	24	1	26.7	29.5	1	38.9	15.4
VP6SMB26A	26	1	28.9	31.9	1	42.1	14.3
VP6SMB28A	28	1	31.1	34.4	1	45.4	13.2
VP6SMB30A	30	1	33.3	36.8	1	48.4	12.4
VP6SMB33A	33	1	36.7	40.6	1	53.3	11.3
VP6SMB36A	36	1	40	44.2	1	58.1	10.4

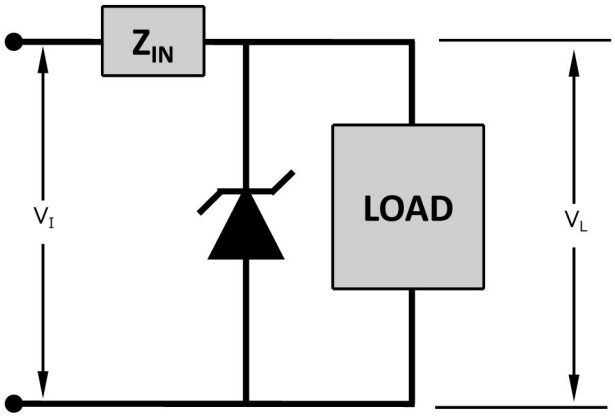
Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

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
VP6SMB40A	40	1	44.4	49.1	1	64.5	9.3
VP6SMB43A	43	1	47.8	52.8	1	69.4	8.7
VP6SMB45A	45	1	50	55.3	1	72.7	8.3
VP6SMB48A	48	1	53.3	58.9	1	77.4	7.8
VP6SMB51A	51	1	56.7	62.7	1	82.4	7.3
VP6SMB54A	54	1	60	66.3	1	87.1	6.9
VP6SMB58A	58	1	64.4	71.2	1	93.6	6.4
VP6SMB60A	60	1	66.7	73.7	1	96.8	6.2
VP6SMB64A	64	1	71.1	78.6	1	103	5.8
VP6SMB70A	70	1	77.8	86	1	113	5.3
VP6SMB75A	75	1	83.3	92.1	1	121	5
VP6SMB78A	78	1	86.7	95.8	1	126	4.8
VP6SMB85A	85	1	94.4	104	1	137	4.4
VP6SMB90A	90	1	100	111	1	146	4.1
VP6SMB100A	100	1	111	123	1	162	3.7
VP6SMB110A	110	1	122	135	1	177	3.4
VP6SMB120A	120	1	133	147	1	193	3.1
VP6SMB130A	130	1	144	159	1	209	2.9
VP6SMB150A	150	1	167	185	1	243	2.5
VP6SMB160A	160	1	178	197	1	259	2.3

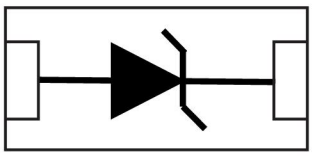
Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

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
VP6SMB170A	170	1	189	209	1	275	2.2
VP6SMB180A	180	1	201	222	1	292	2.1
VP6SMB190A	190	1	211	234	1	307	2
VP6SMB200A	200	1	224	247	1	324	1.9
VP6SMB210A	210	1	233	258	1	337	1.8
VP6SMB220A	220	1	246	272	1	356	1.7
VP6SMB250A	250	1	279	309	1	405	1.5
VP6SMB300A	300	1	335	371	1	486	1.3
VP6SMB350A	350	1	391	432	1	567	1.1
VP6SMB400A	400	1	447	494	1	648	0.9
VP6SMB440A	440	1	492	543	1	713	0.8

Typical Protection Circuit

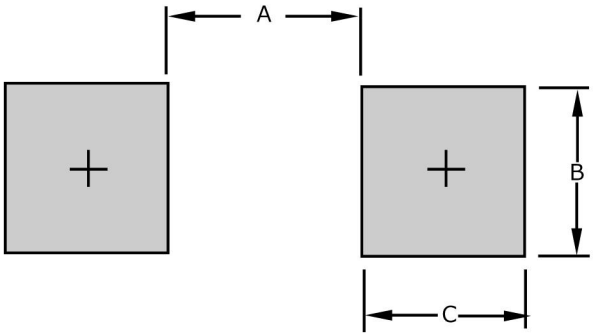


Block Diagram



Uni-directional

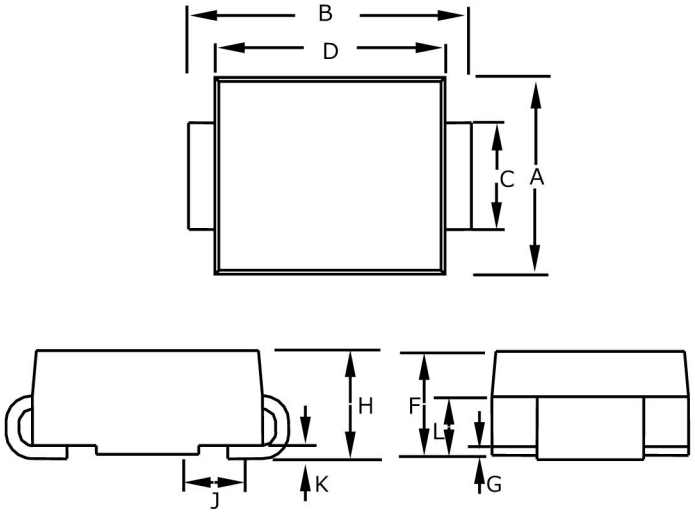
Recommended PCB Footprint



Dimension	SMB （DO-214AA）
A	1.8 (0.071)
B	2.3 (0.090)
C	2.5 (0.098)

DIMENSIONS: MM / (INCHES)

Product Dimensions



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

DIMENSIONS: MM / (INCHES)

Performance Graphs

Figure 1: Peak Pulse Power Rating Curve

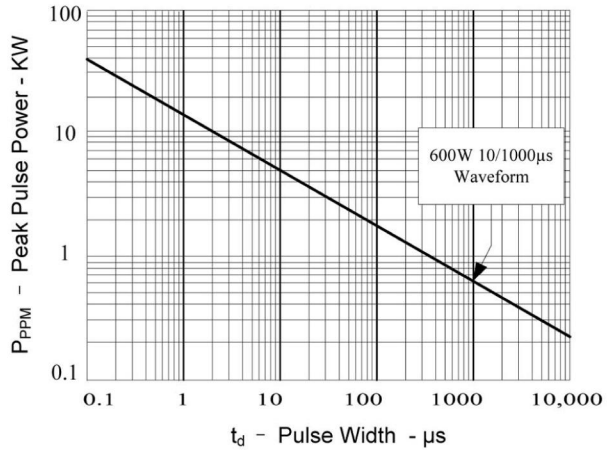


Figure 2: Pulse Derating Curve

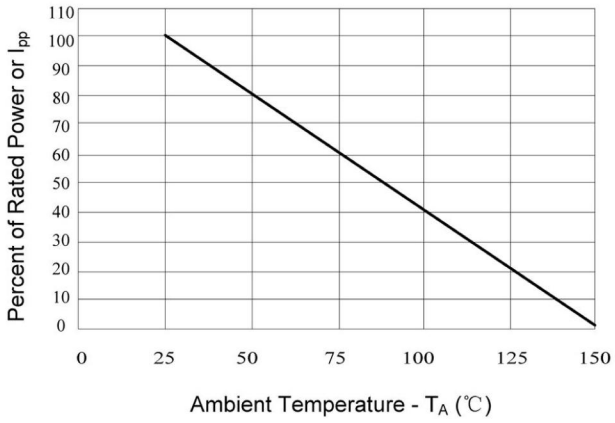


Figure 3: Pulse Waveform

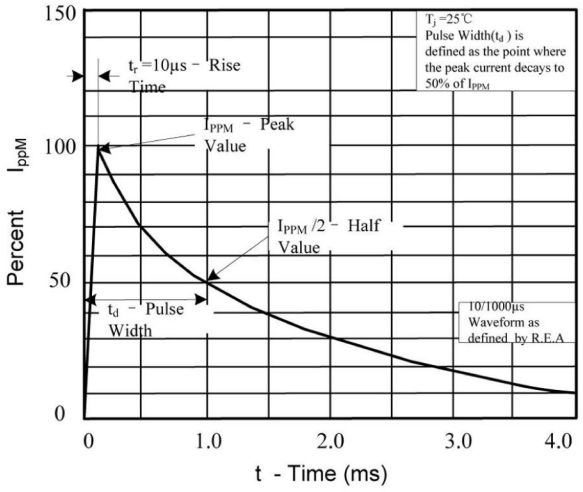


Figure 4: Typical Junction Capacitance

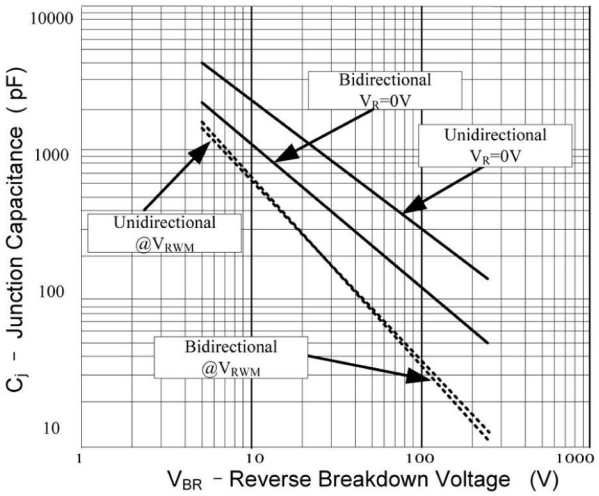


Figure 5: Steady State Power Dissipation Derating Curve

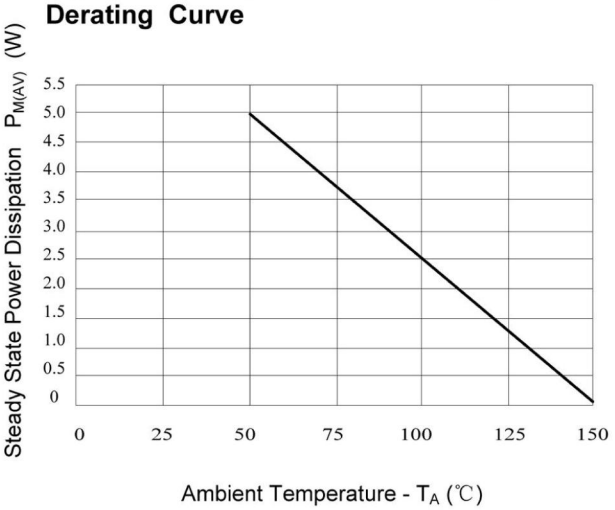
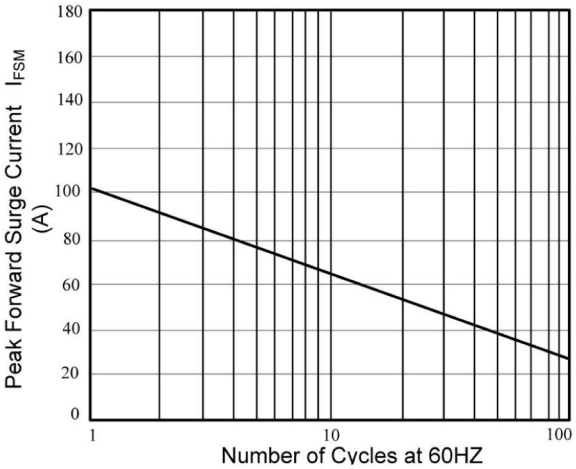
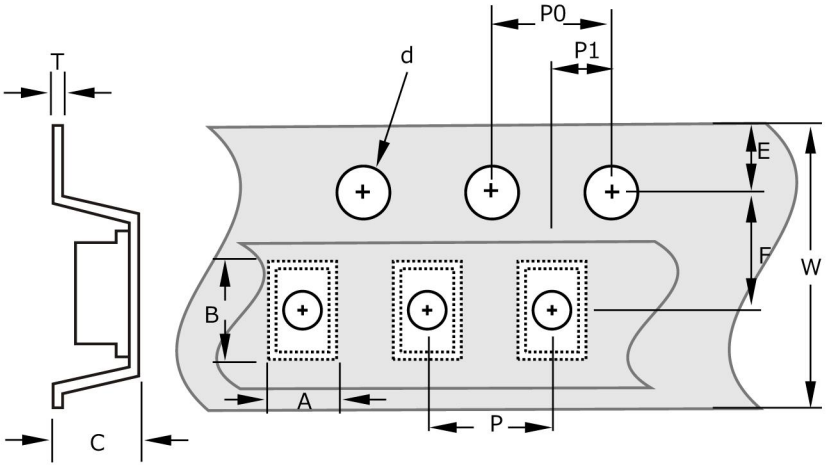


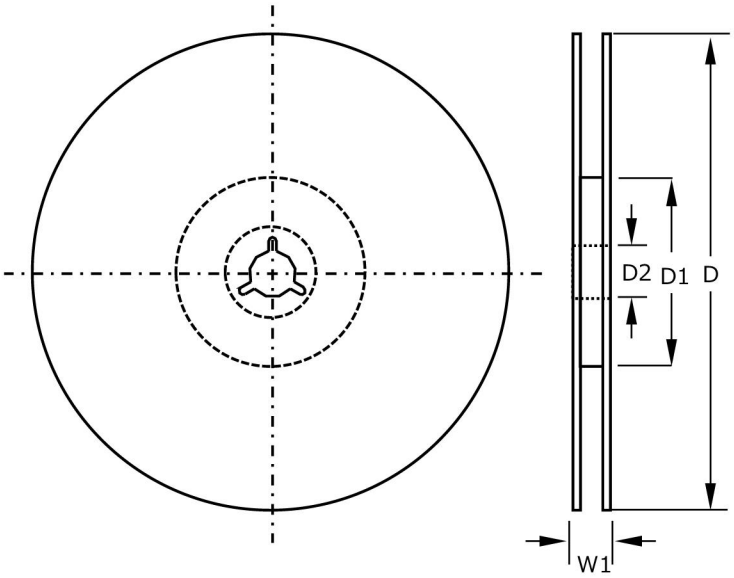
Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional



Packaging Information

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





DIMENSIONS: MM (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.