HFZT

P6SMB6.8~P6SMB440CA

TRANSIENT VOLTAGE SUPPRESSOR

BREAKDOWN VOLTAGE: 6.8 --- 440 V
PEAK PULSE POWER: 600 W

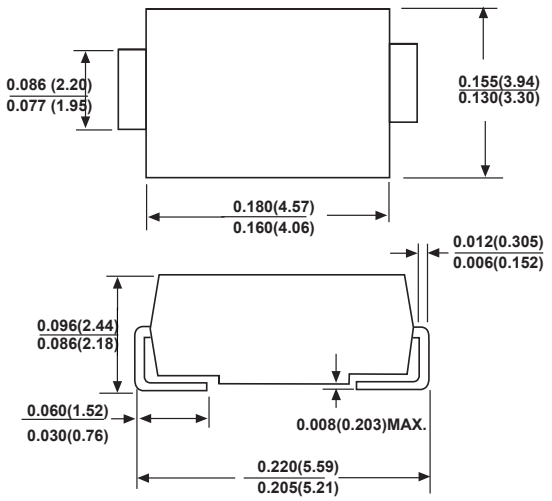
Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in Unidirectional and Bidirectional
- 600 W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020C, LF max peak of 260 °C Solder Dip 260 °C, 10 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

Mechanical Data

- Package: DO-214AA(SMB)Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D
- Polarity: Color band denotes cathode end

SMB



Dimensions in inches and (millimeters)

DEVICES FOR BIDIRECTIONAL APPLICATIONS

For bi-directional use C or CA suffix for types P6SMB6.8hru types P6SMB440A (e.g. P6SMB6.8CA,P6SMB440CA).
Electrical characteristics apply in both directions.

MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Power Dissipation (Note 1.) @T_L = 25°C, Pulse Width = 1 ms	P_{PK}	600	W
Forward Surge Current (Note 2.) @T_A = 25°C	I_{FSM}	100	A
Power Dissipation On Infinite Heatsink, @T_A = 50°C	$P_{M(AV)}$	5.0	W
Thermal Resistance Junction To Ambient Air (Note 3.)	$R_{\theta JA}$	100	°C/W
Thermal Resistance Junction To Leads	$R_{\theta JL}$	20	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

1） 10 X 1000 us, non–repetitive

2）1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum

3）Mounted on minimum recommended pad layout

RATINGS AND CHARACTERISTIC CURVES

Electrical Specification (T_A=25°C unless otherwise specified)

PartNumber		Marking		Reverse Stand off Voltage VR (Volts)	Breakdown Voltage VBR (Volts) @ IT			Maximum Clamping Voltage VC @ IPP (Volts)	Maximum Peak Pulse Current IPP (A)	Maximum Reverse Leakage IR @ VR (μA)
Uni	Bi	Uni	Bi		MIN	MAX	(mA)			
P6SMB6.8	P6SMB6.8C	6V8	6V8C	5.50	6.12	7.48	10.0	10.8	56.0	1000
P6SMB6.8A	P6SMB6.8CA	6V8A	6V8CA	5.80	6.45	7.14	0.0	10.5	57.0	1000
P6SMB7.5	P6SMB7.5C	7V5	7V5C	6.05	6.75	8.25	0.0	11.7	51.0	500
P6SMB7.5A	P6SMB7.5CA	7V5A	7V5CA	6.40	7.13	7.88	10.0	11.3	53.0	500
P6SMB8.2	P6SMB8.2C	8V2	8V2C	6.63	7.38	9.02	0.0	12.5	48.0	200
P6SMB8.2A	P6SMB8.2CA	8V2A	8V2CA	7.02	7.79	8.61	0.0	12.1	50.0	200
P6SMB9.1	P6SMB9.1C	9V1	9V1C	7.37	8.19	0.00	1.0	13.8	44.0	50
P6SMB9.1A	P6SMB9.1CA	9V1A	9V1CA	7.78	8.65	9.55	1.0	13.4	45.0	50
P6SMB10	P6SMB10C	10	10C	8.10	9.00	11.00	1.0	15.0	40.0	10
P6SMB10A	P6SMB10CA	10A	10CA	8.55	9.50	10.50	1.0	14.5	41.0	10
P6SMB11	P6SMB11C	11	11C	9.37	9.90	12.10	1.0	16.2	37.0	5.0
P6SMB11A	P6SMB11CA	11A	11CA	9.87	10.50	11.60	1.0	15.6	38.0	5.0
P6SMB12	P6SMB12C	12	12C	10.21	10.80	13.20	1.0	17.3	35.0	5.0
P6SMB12A	P6SMB12CA	12A	12CA	10.71	11.40	12.60	1.0	16.7	36.0	5.0
P6SMB13	P6SMB13C	13	13C	11.03	11.70	14.30	1.0	19.0	32.0	5.0
P6SMB13A	P6SMB13CA	13A	13CA	11.66	12.40	13.70	1.0	18.2	33.0	5.0
P6SMB15	P6SMB15C	15	15C	12.71	13.50	16.50	1.0	22.0	27.0	5.0
P6SMB15A	P6SMB15CA	15A	15CA	13.44	14.30	15.80	1.0	21.2	28.0	5.0
P6SMB16	P6SMB16C	16	16C	13.55	14.40	17.60	1.0	23.5	26.0	5.0
P6SMB16A	P6SMB16CA	16A	16CA	14.28	15.20	16.80	1.0	22.5	27.0	5.0
P6SMB18	P6SMB18C	18	18C	15.23	16.20	19.80	1.0	26.5	23.0	5.0
P6SMB18A	P6SMB18CA	18A	18CA	16.07	17.10	18.90	1.0	25.2	24.0	5.0
P6SMB20	P6SMB20C	20	20C	17.01	18.00	22.00	1.0	29.1	21.0	5.0
P6SMB20A	P6SMB20CA	20A	20CA	17.96	19.00	21.00	1.0	27.7	22.0	5.0
P6SMB22	P6SMB22C	22	22C	18.69	19.80	24.20	1.0	31.9	19.0	5.0
P6SMB22A	P6SMB22CA	22A	22CA	19.74	20.90	23.10	1.0	30.6	20.0	5.0
P6SMB24	P6SMB24C	24	24C	20.37	21.60	26.40	1.0	34.7	17.0	5.0

Electrical Specification (T_A=25°C unless otherwise specified)

P6SMB24A	P6SMB24CA	24A	24CA	21.53	22.80	25.20	1.0	33.2	18.0	5.0
P6SMB27	P6SMB27C	27	27C	22.89	24.30	29.70	1.0	39.1	15.0	5.0
P6SMB27A	P6SMB27CA	27A	27CA	24.26	25.70	28.40	1.0	37.5	16.0	5.0
P6SMB30	P6SMB30C	30	30C	25.52	27.00	33.00	1.0	43.5	14.0	5.0
P6SMB30A	P6SMB30CA	30A	30CA	26.88	28.50	31.50	1.0	41.4	14.4	5.0
P6SMB33	P6SMB33C	33	33C	28.14	29.70	36.30	1.0	47.7	12.6	5.0
P6SMB33A	P6SMB33CA	33A	33CA	29.61	31.40	34.70	1.0	45.7	13.2	5.0
P6SMB36	P6SMB36C	36	36C	30.56	32.40	39.60	1.0	52.0	11.6	5.0
P6SMB36A	P6SMB36CA	36A	36CA	32.34	34.20	37.80	1.0	49.9	12.0	5.0
P6SMB39	P6SMB39C	39	39C	33.18	35.10	42.90	1.0	56.4	10.5	5.0
P6SMB39A	P6SMB39CA	39A	39CA	34.97	37.10	41.00	1.0	53.9	11.2	5.0
P6SMB43	P6SMB43C	43	43C	36.54	38.70	47.30	1.0	61.9	9.6	5.0
P6SMB43A	P6SMB43CA	43A	43CA	38.64	40.90	45.20	1.0	59.3	10.1	5.0
P6SMB47	P6SMB47C	47	47C	40.01	42.30	51.70	1.0	67.8	8.9	5.0
P6SMB47A	P6SMB47CA	47A	47CA	42.21	44.70	49.40	1.0	64.8	9.3	5.0
P6SMB51	P6SMB51C	51	51C	43.37	45.90	56.10	1.0	73.5	8.2	5.0
P6SMB51A	P6SMB51CA	51A	51CA	45.78	48.50	53.60	1.0	70.1	8.6	5.0
P6SMB56	P6SMB56C	56	56C	47.67	50.4	61.6	1.0	80.5	7.40	5.0
P6SMB56A	P6SMB56CA	56A	56CA	50.19	53.2	58.8	1.0	77.0	7.80	5.0
P6SMB62	P6SMB62C	62	62C	52.71	55.8	68.2	1.0	89.0	6.80	5.0
P6SMB62A	P6SMB62CA	62A	62CA	55.65	58.9	65.1	1.0	85.0	7.10	5.0
P6SMB68	P6SMB68C	68	68C	57.86	61.2	74.8	1.0	98.0	6.10	5.0
P6SMB68A	P6SMB68CA	68A	68CA	61.01	64.6	71.4	1.0	92.0	6.50	5.0
P6SMB75	P6SMB75C	75	75C	63.74	67.5	82.5	1.0	108.0	5.50	5.0
P6SMB75A	P6SMB75CA	75A	75CA	67.31	71.3	78.8	1.0	103.0	5.80	5.0
P6SMB82	P6SMB82C	82	82C	69.72	73.8	90.2	1.0	118.0	5.10	5.0
P6SMB82A	P6SMB82CA	82A	82CA	73.61	77.9	86.1	1.0	113.0	5.30	5.0
P6SMB91	P6SMB91C	91	91C	77.39	81.9	100.0	1.0	131.0	4.50	5.0
P6SMB91A	P6SMB91CA	91A	91CA	81.69	86.5	95.5	1.0	125.0	4.80	5.0
P6SMB100	P6SMB100C	100	100C	85.05	90.0	110.0	1.0	144.0	4.20	5.0
P6SMB100A	P6SMB100CA	100A	100CA	89.78	95.0	105.0	1.0	137.0	4.40	5.0
P6SMB110	P6SMB110C	110	110C	93.66	99.0	121.0	1.0	158.0	3.80	5.0

Electrical Specification (T_A=25°C unless otherwise specified)

P6SMB110A	P6SMB110CA	110A	110CA	98.70	105.0	116.0	1.0	152.0	4.00	5.0
P6SMB120	P6SMB120C	120	120C	102.06	108.0	132.0	1.0	173.0	3.50	5.0
P6SMB120A	P6SMB120CA	120A	120CA	107.10	114.0	126.0	1.0	165.0	3.60	5.0
P6SMB130	P6SMB130C	130	130C	110.25	117.0	143.0	1.0	187.0	3.20	5.0
P6SMB130A	P6SMB130CA	130A	130CA	116.55	124.0	137.0	1.0	179.0	3.30	5.0
P6SMB150	P6SMB150C	150	150C	127.05	135.0	165.0	1.0	215.0	2.80	5.0
P6SMB150A	P6SMB150CA	150A	150CA	134.40	143.0	158.0	1.0	207.0	2.90	5.0
P6SMB160	P6SMB160C	160	160C	136.50	144.0	176.0	1.0	230.0	2.60	5.0
P6SMB160A	P6SMB160CA	160A	160CA	142.80	152.0	168.0	1.0	219.0	2.70	5.0
P6SMB170	P6SMB170C	170	170C	144.90	153.0	187.0	1.0	244.0	2.50	5.0
P6SMB170A	P6SMB170CA	170A	170CA	152.25	162.0	179.0	1.0	234.0	2.60	5.0
P6SMB180	P6SMB180C	180	180C	153.30	162.0	198.0	1.0	258.0	2.30	5.0
P6SMB180A	P6SMB180CA	180A	180CA	161.70	171.0	189.0	1.0	246.0	2.40	5.0
P6SMB200	P6SMB200C	200	200C	170.10	180.0	220.0	1.0	287.0	2.10	5.0
P6SMB200A	P6SMB200CA	200A	200CA	179.55	190.0	210.0	1.0	274.0	2.20	5.0
P6SMB220	P6SMB220C	220	220C	183.75	198.0	242.0	1.0	344.0	1.75	5.0
P6SMB220A	P6SMB220CA	220A	220CA	194.25	209.0	231.0	1.0	328.0	1.83	5.0
P6SMB250	P6SMB250C	250	250C	212.10	225.0	275.0	1.0	360.0	1.67	5.0
P6SMB250A	P6SMB250CA	250A	250CA	224.70	237.0	263.0	1.0	344.0	1.75	5.0
P6SMB300	P6SMB300C	300	300C	255.15	270.0	330.0	1.0	430.0	1.40	5.0
P6SMB300A	P6SMB300CA	300A	300CA	268.80	285.0	315.0	1.0	414.0	1.45	5.0
P6SMB350	P6SMB350C	350	350C	298.20	315.0	385.0	1.0	504.0	1.20	5.0
P6SMB350A	P6SMB350CA	350A	350CA	315.00	332.0	368.0	1.0	482.0	1.25	5.0
P6SMB400	P6SMB400C	400	400C	340.20	360.0	440.0	1.0	574.0	1.05	5.0
P6SMB400A	P6SMB400CA	400A	400CA	359.10	380.0	420.0	1.0	548.0	1.10	5.0
P6SMB440	P6SMB440C	440	440C	373.80	396.0	484.0	1.0	631.0	0.95	5.0
P6SMB440A	P6SMB440CA	440A	440CA	394.80	418.0	462.0	1.0	602.0	1.00	5.0

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

1. A transient suppressor is normally selected according to the working peak reverse voltage (VRWM), which should be equal to or greater than the DC or continuous peak operating voltage level.
2. VBR measured at pulse test current IT at an ambient temperature of 25°C.
3. Surge current waveform per Figure 1 and derate per Figure 3.

RATINGS AND CHARACTERISTIC CURVES

Typical Characteristics

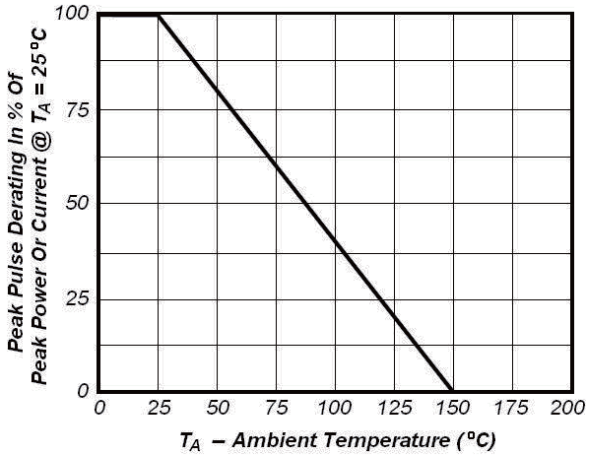


Fig1. Pulse Dearting Curve

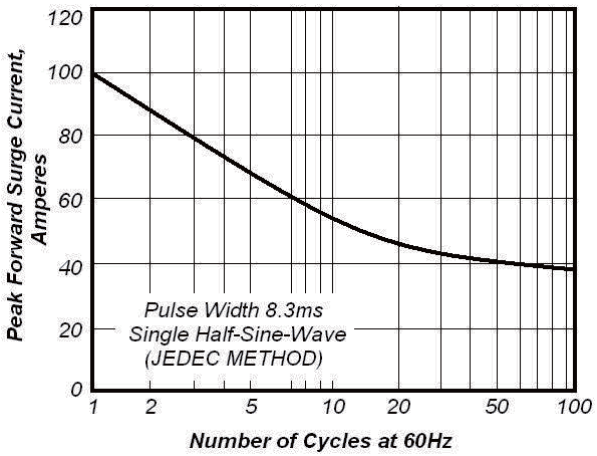


Fig2. Maximum Non-Repetitive Peak Forward Surge Current

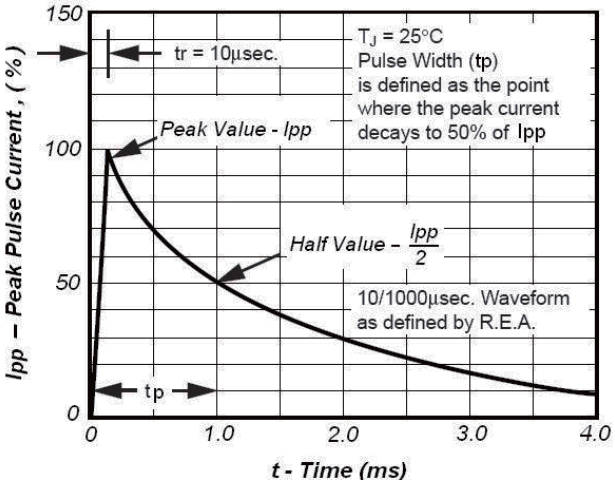


Fig3. Pulse Waveform

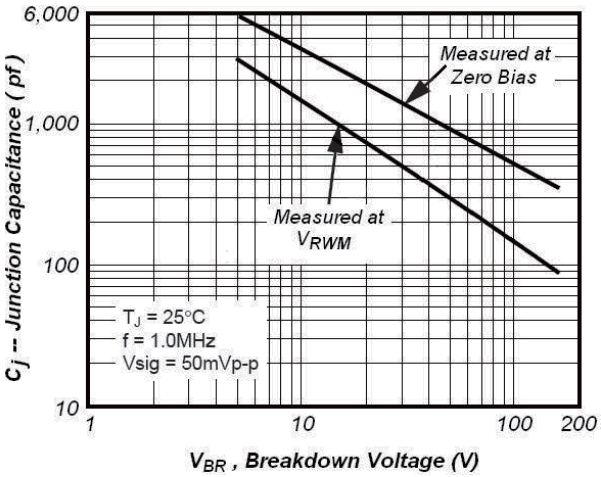


Fig4. Typical Junction Capacitance

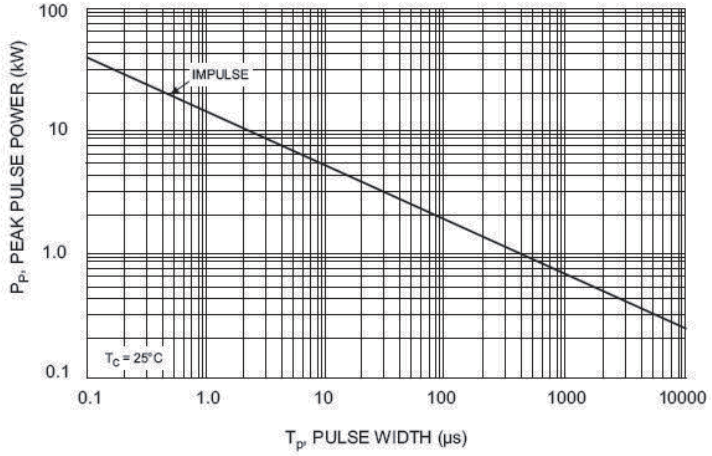


Fig5. Peak Pulse Power Rating curve

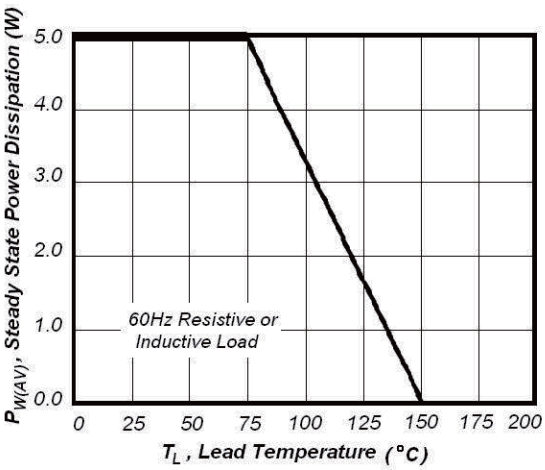


Fig6. Steady State Power