

# Formosa MS

**P6SMBJ5.0  
THRU  
P6SMBJ170A**

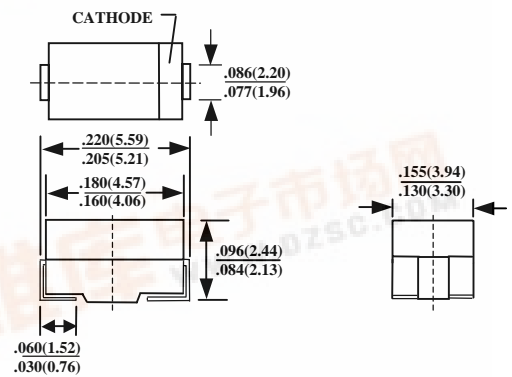
## 600W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

### FEATURES

- OPTIMIZED FOR LAN PROTECTION APPLICATION
- IDEAL FOR ESD PROTECTION OF DATA LINES IN ACCORDANCE WITH IEC 1000-4-2(IEC801-2)
- IDEAL FOR EFT PROTECTION OF DATA LINE IN ACCORDANCE WITH IEC 1000-4-4(IEC801-4)
- EXCELLENT CLAMPING CAPABILITY
- LOW INCREMENTAL SURGE RESISTANCE
- FAST RESPONSE TIME:TYPICALLY LESS THAN 1.0 ps FROM 0 VOLTS TO V(BR) MIN
- 600 W PEAK PULSE POWER CAPABILITY WITH A 10/1000  $\mu$ S WAVEFORM , REPETITION RATE (DUTY CYCLE) : 0.01%
- TYPICAL  $I_D$  LESS THAN 1 $\mu$ A ABOVE 10V
- HIGH TEMPERATURE SOLDERING GUARANTEED:250 $^{\circ}$ C/10 SECONDS AT TERMINAL

### MECHANICAL DATA

- CASE : MOLDED PLASTIC
- TERMINALS : SOLDER PLATED
- POLARITY : INDICATED BY CATHODE BAND
- WEIGHT : 0.093 GRAMS



CASE : DO-214AA(SMB)  
DIMENSIONS IN INCHES AND (MILLIMETERS)

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS RATINGS AT 25 $^{\circ}$ C AMBIENT TEMPERATURE UNLESS OTHERWISE SPECIFIED

RATINGS	SYMBOL	VALUE	UNITS
PEAK PULSE POWER DISSIPATION ON 10/1000 $\mu$ S WAVEFORM (NOTE 1, FIG. 1)	$P_{PPM}$	MINIMUM 600	WATTS
PEAK PULSE CURRENT OF ON 10/1000 $\mu$ S WAVEFORM (NOTE 1,FIG. 3)	$I_{PPM}$	SEE TABLE 1	A
STEADY STATE POWER DISSIPATION AT $T_L=75^{\circ}$ C (NOTE 2)	$P_{M(AV)}$	1.0	WATTS
PEAK FORWARD SURGE CURRENT, 8.3ms SINGLE HALF SINE-WAVE SUPERIMPOSED ON RATED LOAD, UNIDIRECTIONAL ONLY(NOTE 2)	$I_{FSM}$	100	A
MAXIMUM INSTANTANEOUS FORWARD VOLTAGE AT 25.0A FOR UNIDIRECTIONAL ONLY (NOTE 3 & 4)	VF	SEE NOTE 4	V
OPERATING JUNCTION AND STORAGE TEMPERATURE RANGE	$T_J, T_{STG}$	- 55 TO + 150	$^{\circ}$ C

- NOTE :
- 1.NON-REPETTITIVE CURRENT PULSE, PER FIG.3 AND DERATED ABOVE  $T_A=25^{\circ}$ C PER FIG 2.
  2. MOUNTED ON 5mm<sup>2</sup> COPPER PADS TO EACH TERMINAL
  3. MEASURED ON 8.3mS SINGLE HALF SINE-WAVE OR EQUIVALENT SQUARE WAVE, DUTY CYCLE = 4 PULSES PER MINUTE MAXIMUM
  4. VF=3.5V ON P6SMBJ5.0 THRU P6SMBJ90 DEVICES AND VF=5.0V ON P6SMBJ100 THRU P6SMBJ170

DEVICE	DEVICE MARKING CODE		WORKING PEAK REVERSE VOLTAGE V <sub>RWM</sub> (VOLTS) @IT (mA)	BREAKDOWN VOLTAGE V <sub>(BR)</sub> (VOLTS) at I <sub>T</sub>		TEST CURRENT I <sub>T</sub> (mA)	MAXIMUM Clamping VOLTAGE AT I <sub>PPM</sub> VC(Volts) (Note 5)	MAX PEAK PULSE SURGE CURRENT I <sub>PPM</sub> (NOTE 5) (Amps)	MAXIMUM REVERSE LEAKAGE AT V <sub>WM</sub> I <sub>D</sub> (μA)
	UNI	BI		MIN	MAX				
P6SMBJ5.0	KD	AD	5.0	6.40	7.82	10	9.6	62.5	800
P6SMBJ5.0A	KE	AE	5.0	6.40	7.07	10	9.2	65.2	800
P6SMBJ6.0	KF	AF	6.0	6.67	8.15	10	11.4	52.6	800
P6SMBJ6.0A	KG	AG	6.0	6.67	7.37	10	10.3	58.3	800
P6SMBJ6.5	KH	AH	6.5	7.22	8.82	10	12.3	48.8	500
P6SMBJ6.5A	KK	AK	6.5	7.22	7.98	10	11.2	53.6	500
P6SMBJ7.0	KL	AL	7.0	7.78	9.51	10	13.3	45.1	200
P6SMBJ7.0A	KM	AM	7.0	7.78	8.60	10	12.0	50.0	200
P6SMBJ7.5	KN	AN	7.5	8.33	10.2	1.0	14.3	42.0	100
P6SMBJ7.5A	KP	AP	7.5	8.33	9.21	1.0	12.9	46.5	100
P6SMBJ8.0	KQ	AQ	8.0	8.89	10.9	1.0	15.0	40.0	50.0
P6SMBJ8.0A	KR	AR	8.0	8.89	9.83	1.0	13.6	44.1	50.0
P6SMBJ8.5	KS	AS	8.5	9.44	11.5	1.0	15.9	37.7	10.0
P6SMBJ8.5A	KT	AT	8.5	9.44	10.4	1.0	14.4	41.7	10.0
P6SMBJ9.0	KU	AU	9.0	10.0	12.2	1.0	16.9	35.5	5.0
P6SMBJ9.0A	KV	AV	9.0	10.0	11.1	1.0	15.4	39.0	5.0
P6SMBJ10	KW	AW	10.0	11.1	13.6	1.0	18.8	31.9	5.0
P6SMBJ10A	KX	AX	10.0	11.1	12.3	1.0	17.0	35.3	5.0
P6SMBJ11	KY	AY	11.0	12.2	14.9	1.0	20.1	29.9	5.0
P6SMBJ11A	KZ	AZ	11.0	12.2	13.5	1.0	18.2	33.0	5.0
P6SMBJ12	LD	BD	12.0	13.3	16.3	1.0	22.0	27.3	5.0
P6SMBJ12A	LE	BE	12.0	13.3	14.7	1.0	19.9	30.2	5.0
P6SMBJ13	LF	BF	13.0	14.4	17.6	1.0	23.8	25.2	5.0
P6SMBJ13A	LG	BG	13.0	14.4	15.9	1.0	21.5	27.9	5.0
P6SMBJ14	LH	BH	14.0	15.6	19.1	1.0	25.8	23.3	5.0
P6SMBJ14A	LK	BK	14.0	15.6	17.2	1.0	23.2	25.9	5.0
P6SMBJ15	LL	BL	15.0	16.7	20.4	1.0	26.9	22.3	5.0
P6SMBJ15A	LM	BM	15.0	16.7	18.5	1.0	24.4	24.6	5.0
P6SMBJ16	LN	BN	16.0	17.8	21.8	1.0	28.8	20.8	5.0
P6SMBJ16A	LP	BP	16.0	17.8	19.7	1.0	26.0	23.1	5.0
P6SMBJ17	LQ	BQ	17.0	18.9	23.1	1.0	30.5	19.7	5.0
P6SMBJ17A	LR	BR	17.0	18.9	20.9	1.0	27.6	21.7	5.0
P6SMBJ18	LS	BS	18.0	20.0	24.4	1.0	32.2	18.6	5.0
P6SMBJ18A	LT	BT	18.0	20.0	22.1	1.0	29.2	20.5	5.0
P6SMBJ20	LU	BU	20.0	22.2	27.1	1.0	35.8	16.8	5.0
P6SMBJ20A	LV	BV	20.0	22.2	24.5	1.0	32.4	18.5	5.0
P6SMBJ22	LW	BW	22.0	24.4	29.8	1.0	39.4	15.2	5.0
P6SMBJ22A	LX	BX	22.0	24.4	26.9	1.0	35.5	16.9	5.0
P6SMBJ24	LY	BY	24.0	26.7	32.6	1.0	43.0	14.0	5.0
P6SMBJ24A	LZ	BZ	24.0	26.7	29.5	1.0	38.9	15.4	5.0
P6SMBJ26	MD	CD	26.0	28.9	35.3	1.0	46.6	12.9	5.0
P6SMBJ26A	ME	CE	26.0	28.9	31.9	1.0	42.1	14.3	5.0
P6SMBJ28	MF	CF	28.0	31.1	38.0	1.0	50.0	12.0	5.0
P6SMBJ28A	MG	CG	28.0	31.1	34.4	1.0	45.4	13.2	5.0
P6SMBJ30	MH	CH	30.0	33.3	40.7	1.0	53.5	11.2	5.0
P6SMBJ30A	MK	CK	30.0	33.3	36.8	1.0	48.4	12.4	5.0
P6SMBJ33	ML	CL	33.0	36.7	44.9	1.0	59.0	10.2	5.0
P6SMBJ33A	MM	CM	33.0	36.7	40.6	1.0	53.3	11.3	5.0
P6SMBJ36	MN	CN	36.0	40.0	48.9	1.0	64.3	9.3	5.0
P6SMBJ36A	MP	CP	36.0	40.0	44.2	1.0	58.1	10.3	5.0
P6SMBJ40	MQ	CQ	40.0	44.4	54.3	1.0	71.4	8.4	5.0
P6SMBJ40A	MR	CR	40.0	44.4	49.1	1.0	64.5	9.3	5.0
P6SMBJ43	MS	CS	43.0	47.8	58.4	1.0	76.7	7.8	5.0
P6SMBJ43A	MT	CT	43.0	47.8	52.8	1.0	69.4	8.6	5.0
P6SMBJ45	MU	CU	45.0	50.0	61.1	1.0	80.3	7.5	5.0
P6SMBJ45A	MV	CV	45	50.0	55.3	1.0	72.7	8.3	5.0
P6SMBJ48	MW	CW	48	53.3	65.1	1.0	85.5	7.0	5.0
P6SMBJ48A	MX	CX	48	53.3	58.9	1.0	77.4	7.8	5.0

DEVICE	DEVICE MARKING CODE		WORKING PEAK REVERSE VOLTAGE $V_{RWM}$ (VOLTS ) @IT (mA)	BREAKDOWN VOLTAGE $V_{(BR)}$ (VOLTS) at $I_T$		TEST CURRENT $I_T$ (mA)	MAXIMUM Clamping VOLTAGE AT $I_{PPM}$ VC(Volts) (Note 5)	MAX PEAK PULSE SURGE CURRENT $I_{PPM}$ (NOTE 5) (Amps)	MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu$ A)
	UNI	BI		MIN	MAX				
P6SMBJ51	MY	CY	51	56.7	69.3	1.0	91.1	6.6	5.0
P6SMBJ51A	MZ	CZ	51	56.7	62.7	1.0	82.4	7.3	5.0
P6SMBJ54	ND	DD	54	60.0	73.3	1.0	96.3	6.2	5.0
P6SMBJ54A	NE	DE	54	60.0	66.3	1.0	87.1	6.9	5.0
P6SMBJ58	NF	DF	58	64.4	78.7	1.0	103.0	5.8	5.0
P6SMBJ58A	NG	DG	58	64.4	71.2	1.0	93.6	6.4	5.0
P6SMBJ60	NH	DH	60	66.7	81.5	1.0	107.0	5.6	5.0
P6SMBJ60A	NK	DK	60	66.7	73.7	1.0	96.8	6.2	5.0
P6SMBJ64	NL	DL	64	71.1	86.9	1.0	114.0	5.3	5.0
P6SMBJ64A	NM	DM	64	71.1	78.6	1.0	103.0	5.8	5.0
P6SMBJ70	NN	DN	70	77.8	95.1	1.0	125.0	4.8	5.0
P6SMBJ70A	NP	DP	70	77.8	86.0	1.0	113.0	5.3	5.0
P6SMBJ75	NQ	DQ	75	83.3	102.0	1.0	134.0	4.5	5.0
P6SMBJ75A	NR	DR	75	83.3	92.1	1.0	121.0	5.0	5.0
P6SMBJ78	NS	DS	78	86.7	106.0	1.0	139.0	4.3	5.0
P6SMBJ78A	NT	DT	78	86.7	95.8	1.0	126.0	4.8	5.0
P6SMBJ85	NU	DU	85	94.4	115.0	1.0	151.0	4.0	5.0
P6SMBJ85A	NV	DV	85	94.4	104.0	1.0	137.0	4.4	5.0
P6SMBJ90	NW	DW	90	100	122.0	1.0	160.0	3.8	5.0
P6SMBJ90A	NX	DX	90	100	111.0	1.0	146.0	4.1	5.0
P6SMBJ100	NY	DY	100	111	136.0	1.0	179.0	3.4	5.0
P6SMBJ100A	NZ	DZ	100	111	123.0	1.0	162.0	3.7	5.0
P6SMBJ110	PD	ED	110	122	149.0	1.0	196.0	3.1	5.0
P6SMBJ110A	PE	EE	110	122	135.0	1.0	177.0	3.4	5.0
P6SMBJ120	PF	EF	120	133	163.0	1.0	214.0	2.8	5.0
P6SMBJ120A	PG	EG	120	133	147.0	1.0	193.0	3.1	5.0
P6SMBJ130	PH	EH	130	144	176.0	1.0	231.0	2.6	5.0
P6SMBJ130A	PK	EK	130	144	159.0	1.0	209.0	2.9	5.0
P6SMBJ150	PL	EL	150	167	204.0	1.0	268.0	2.2	5.0
P6SMBJ150A	PM	EM	150	167	185.0	1.0	243.0	2.5	5.0
P6SMBJ160	PN	EN	160	178	218.0	1.0	287.0	2.1	5.0
P6SMBJ160A	PP	EP	160	178	197.0	1.0	259.0	2.3	5.0
P6SMBJ170	PQ	EQ	170	189	231.0	1.0	304.0	2.0	5.0
P6SMBJ170A	PR	ER	170	189	209.0	1.0	275.0	2.2	5.0

- NOTE :
1.  $V_F=3.5V$  on P6SMBJ5.0 thru 90 devices and  $V_F=5.0V$  on P6SMBJ100 thru 170 devices at  $I_F=25A$  on  $\frac{1}{2}$  Square or Equivalent Sine Wave.  $PW = 8.3ms$  , Duty Cycle = 4 Pulses per Minute Maximum
  2. For Bipolar types with  $V_R$  of 10 volts and under , the IR limit is doubled
  3. Mounted on  $5.0mm^2$  copper pads to each terminal.
  4. For Bidirectional use C suffix for 10% tolerance , CA suffix for 5% tolerance

# RATINGS AND CHARACTERISTIC CURVES P6SMBJ5.0 THRU P6SMBJ170A

FIG. 1 - PEAK PULSE POWER RATING CURVE

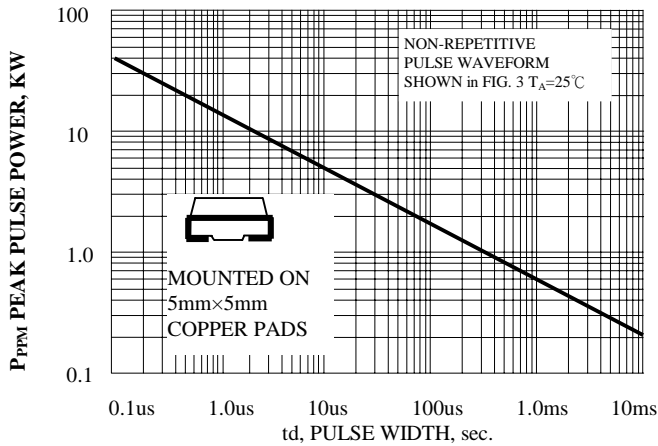


FIG. 2 - PULSE DERATING CURVE

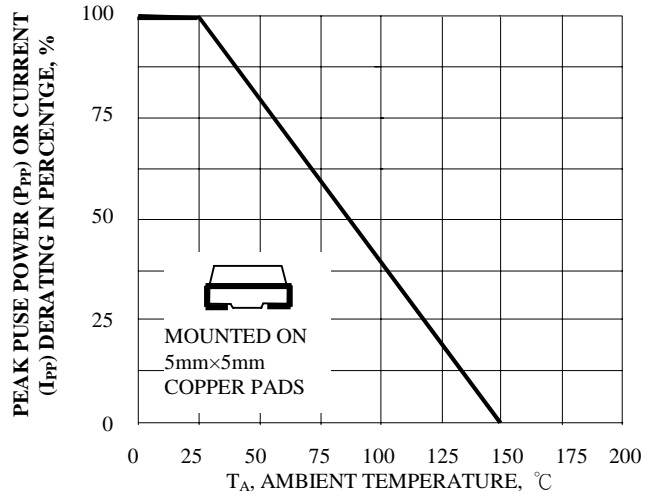


FIG.3 - PULSE WAVEFORM

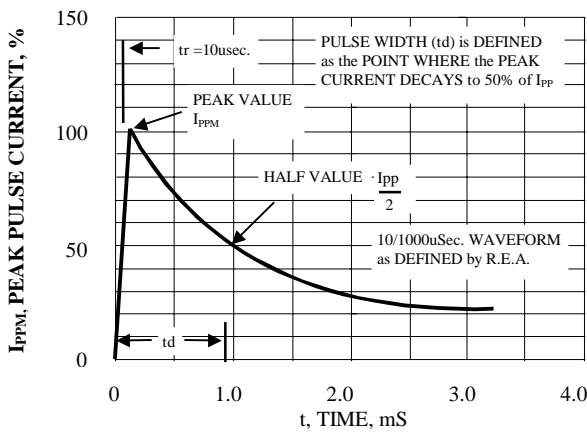


FIG. 4 - TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

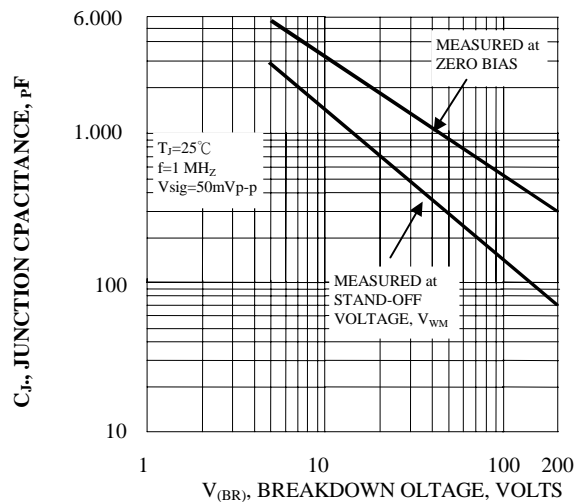


FIG. 5 - TYPICAL JUNCTION CAPACITANCE BIDIRECTIONAL

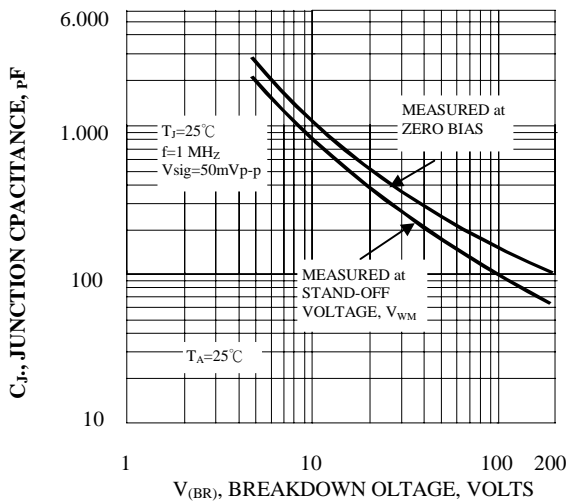


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL

