

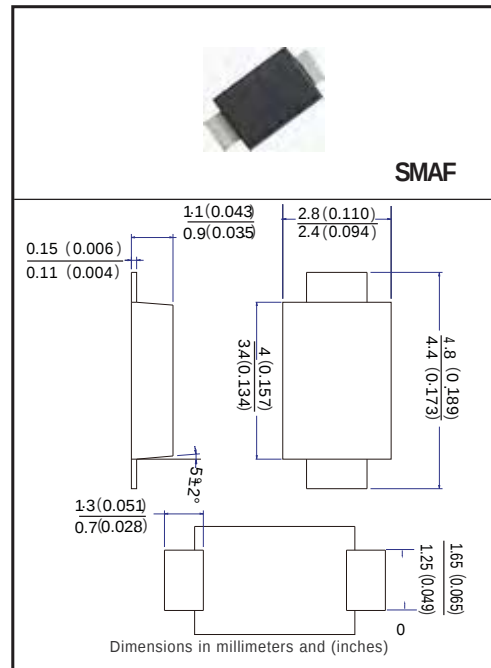
**SURFACE MOUNT GPP
TRANSIENT VOLTAGE SUPPRESSOR
400 WATT PEAK POWER 1.0 WATTS STEADY STATE**

FEATURES

- * Plastic package has underwriters laboratory
- * Glass passivated chip construction
- * 400 watt surge capability at 1ms
- * Excellent clamping capability
- * Low zener impedance
- * Fast response time

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified.
Single phase, half wave, 60 Hz, resistive or inductive load,
For capacitive load, derate current by 20%.



MAXIMUM RATINGS (@ TA=25 °C unless otherwise noted)

RATINGS	SYMBOL	VALUE	UNITS
Peak Power Dissipation at TA = 25°C, TP = 1mS (Note 1)	PPPM	Minimum 400	W
Peak Pulse Current with a 10/1000uS waveform (Note 1, Fig.3)	IPPM	SEE TABLE 1	A
Steady State Power Dissipation at TL = 75 °C lead length	PM(AV)	1.0	W
Peak Forward Surge Current, 8.3ms single half sine wave- superimposed on rated load (JEDEC METHOD) (Note 2)	IFSM	40	A
Typical Current Squared Time	I ² t	6.64	A ² /Sec
Maximum Instantaneous Forward Voltage @25A for unidirectional only (Note 4)	VF	3.5/6.5	V
Operating and Storage Temperature Range	TJ, TSTG	-55 to +150	°C

- NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above TA = 25°C per Fig.2.
2. Measured on 8.3mS single half Sine-Wave or equivalent wave, duty cycle = 4 pulses per minute maximum.
3. "Fully ROHS compliant", "100% Sn plating (Pb-free)".
4. VF = 3.5V max. for devices of V(BR) ≤ 200V and VF = 6.5V max. for devices of V(BR) ≥ 200V.

2017-04
REV: A

RATING AND CHARACTERISTIC CURVES (P4FMAF6.8 THRU P4FMAF400CA)

FIG. 1 - PEAK PULSE POWER RATING CURVE

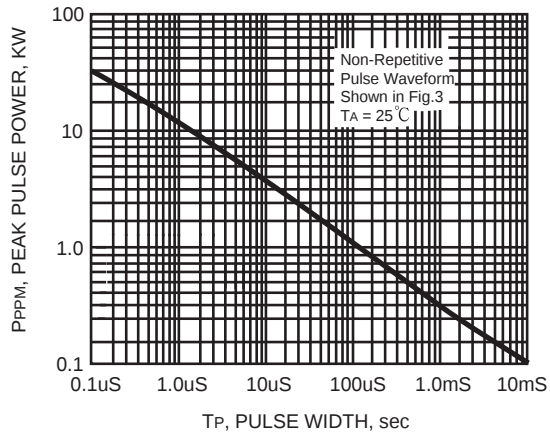


FIG. 2 - PULSE DERATING CURVE

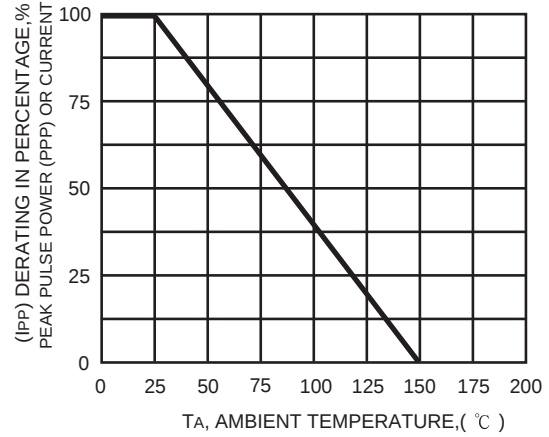


FIG. 3 - PULSE WAVEFORM

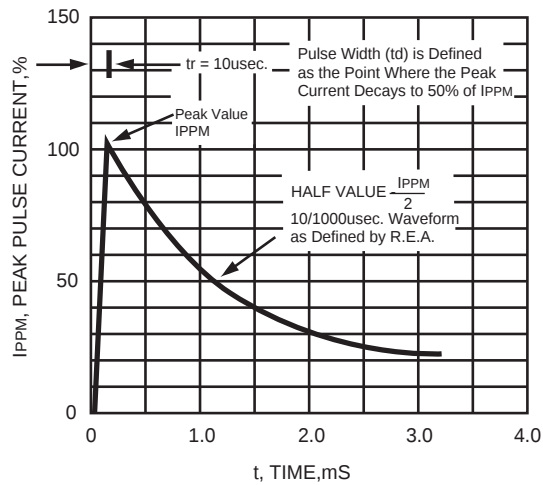
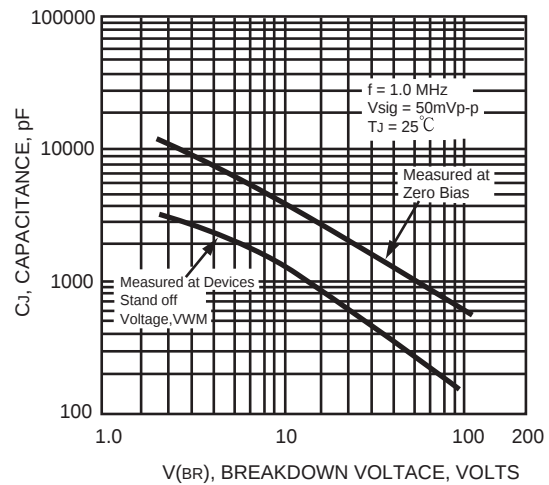


FIG. 4 - TYPICAL JUNCTION CAPACITANCE



RATING AND CHARACTERISTIC CURVES (P4FMAF6.8 THRU P4FMAF400CA)

FIG. 5 - STEADY STATE POWER DERATING CURVE

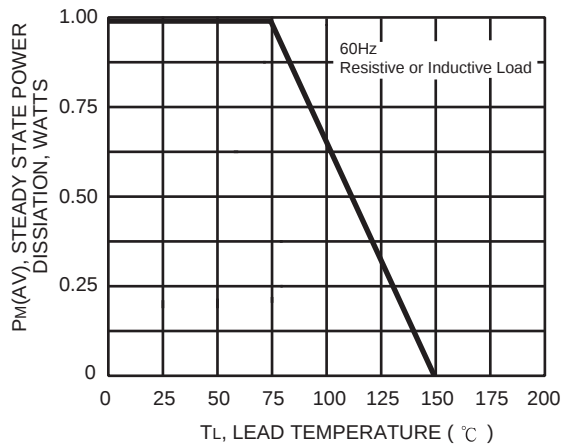


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL

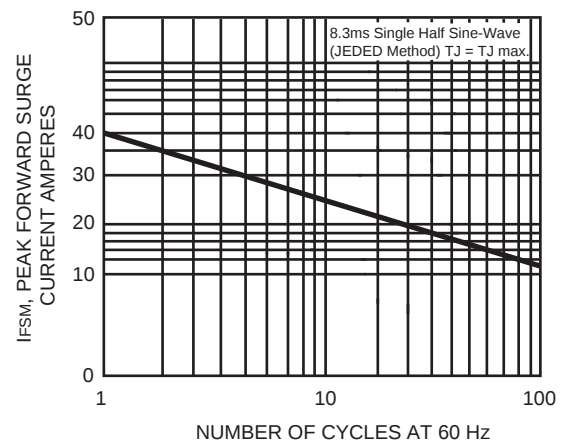
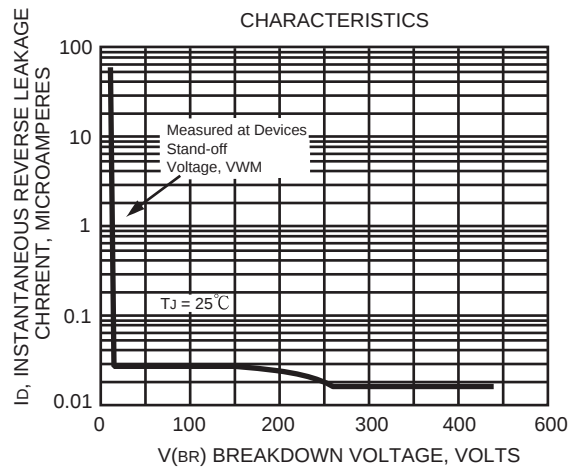


FIG. 7 - TYPICAL REVERSE LEAKAGE CHARACTERISTICS



TRANSIENT VOLTAGE SUPPRESSORS

400W SERIES TVS DIODES / SMAF (CASE 2) 400W

TYPE	Breakdown Voltage			Reverse Stand off Voltage V _{WM} (Volts)	Maximum Reverse Leakage at V _{WM} I _D (uA)	Maximum Peak Pulse Current I _{PPM} (Amps)	Maximum Clamping Voltage at I _{PPM} V _C (Volts)
	V _{BR} (Volts)		@I _T (mA)				
	MIN.	MAX.					
P4FMAF6.8	6.12	7.48	10	5.50	1000	37	10.8
P4FMAF6.8A	6.45	7.14	10	5.80	1000	38.1	10.5
P4FMAF7.5	6.75	8.25	10	6.05	500	34.2	11.7
P4FMAF7.5A	7.13	7.88	10	6.40	500	35.4	11.3
P4FMAF8.2	7.38	9.02	10	6.63	200	32	12.5
P4FMAF8.2A	7.79	8.61	10	7.02	200	33.1	12.1
P4FMAF9.1	8.19	10.0	1.0	7.37	50	29	13.8
P4FMAF9.1A	8.65	9.55	1.0	7.78	50	29.9	13.4
P4FMAF10	9.00	11.0	1.0	8.10	10	26.7	15.0
P4FMAF10A	9.50	10.5	1.0	8.55	10	27.6	14.5
P4FMAF11	9.90	12.1	1.0	8.92	5.0	24.7	16.2
P4FMAF11A	10.5	11.6	1.0	9.40	5.0	25.6	15.6
P4FMAF12	10.8	13.2	1.0	9.72	5.0	23.1	17.3
P4FMAF12A	11.4	12.6	1.0	10.2	5.0	24	16.7
P4FMAF13	11.7	14.3	1.0	10.5	5.0	21.1	19.0
P4FMAF13A	12.4	13.7	1.0	11.1	5.0	22	18.2
P4FMAF15	13.5	16.3	1.0	12.1	5.0	18.2	22.0
P4FMAF15A	14.3	15.8	1.0	12.8	5.0	18.9	21.2
P4FMAF16	14.4	17.6	1.0	12.9	5.0	17	23.5
P4FMAF16A	15.2	16.8	1.0	13.6	5.0	17.8	22.5
P4FMAF18	16.2	19.8	1.0	14.5	5.0	15.1	26.5
P4FMAF18A	17.1	18.9	1.0	15.3	5.0	15.9	25.2
P4FMAF20	18.0	22.0	1.0	16.2	5.0	13.7	29.1
P4FMAF20A	19.0	21.0	1.0	17.1	5.0	14.4	27.7
P4FMAF22	19.8	24.2	1.0	17.8	5.0	12.5	31.9
P4FMAF22A	20.9	23.1	1.0	18.8	5.0	13.1	30.6
P4FMAF24	21.6	26.4	1.0	19.4	5.0	11.5	34.7
P4FMAF24A	22.8	25.2	1.0	20.5	5.0	12	33.2
P4FMAF27	24.3	29.7	1.0	21.8	5.0	10.2	39.1
P4FMAF27A	25.7	28.4	1.0	23.1	5.0	10.7	37.5
P4FMAF30	27.0	33.0	1.0	24.3	5.0	9.2	43.5
P4FMAF30A	28.5	31.5	1.0	25.6	5.0	9.7	41.4
P4FMAF33	29.7	36.3	1.0	26.8	5.0	8.4	47.7
P4FMAF33A	31.4	34.7	1.0	28.2	5.0	8.8	45.7
P4FMAF36	32.4	39.6	1.0	29.1	5.0	7.7	52.0
P4FMAF36A	34.2	37.8	1.0	30.8	5.0	8	49.9
P4FMAF39	35.1	42.9	1.0	31.6	5.0	7.1	56.4
P4FMAF39A	37.1	41.0	1.0	33.3	5.0	7.4	53.9
P4FMAF43	38.7	47.3	1.0	34.8	5.0	6.5	61.9
P4FMAF43A	40.9	45.2	1.0	36.8	5.0	6.7	59.3
P4FMAF47	42.3	51.7	1.0	38.1	5.0	5.9	67.8
P4FMAF47A	44.7	49.4	1.0	40.2	5.0	6.2	64.8
P4FMAF51	45.9	56.1	1.0	41.3	5.0	5.4	73.5
P4FMAF51A	48.5	53.6	1.0	43.6	5.0	5.7	70.1
P4FMAF56	50.4	61.6	1.0	45.4	5.0	5.0	80.5
P4FMAF56A	53.2	58.8	1.0	47.8	5.0	5.2	77.0

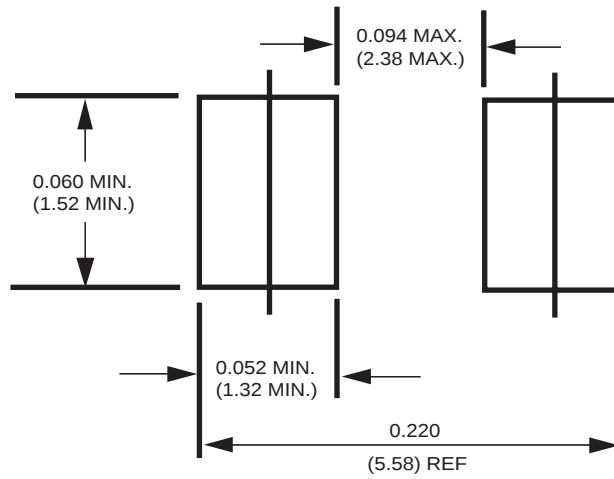
TRANSIENT VOLTAGE SUPPRESSORS

400W SERIES TVS DIODES / SMAF (CASE 2) 400W

TYPE	Breakdown Voltage			Reverse Stand off Voltage V _{WM} (Volts)	Maximum Reverse Leakage at V _{WM} I _D (uA)	Maximum Peak Pulse Current I _{PPM} (Amps)	Maximum Clamping Voltage at I _{PPM} V _C (Volts)
	V _{BR} (Volts)		@I _T (mA)				
	MIN.	MAX.					
P4FMAF62	55.8	68.2	1.0	50.2	5.0	4.7	89.0
P4FMAF62A	58.9	65.1	1.0	53.0	5.0	5.0	85.0
P4FMAF68	61.2	74.8	1.0	55.1	5.0	4.2	98.0
P4FMAF68A	64.6	71.4	1.0	58.1	5.0	4.5	92.0
P4FMAF75	67.5	82.5	1.0	60.7	5.0	3.8	108
P4FMAF75A	71.3	78.8	1.0	64.1	5.0	4.0	103
P4FMAF82	73.8	90.2	1.0	66.4	5.0	3.5	118
P4FMAF82A	77.9	86.1	1.0	70.1	5.0	3.7	113
P4FMAF91	81.9	100	1.0	73.7	5.0	3.2	131
P4FMAF91A	86.5	95.5	1.0	77.8	5.0	3.3	125
*P4FMAF100	90.0	110	1.0	81.0	5.0	2.1	144
*P4FMAF100A	95.0	105	1.0	85.5	5.0	2.2	137
*P4FMAF110	99.0	121	1.0	89.2	5.0	1.9	158
*P4FMAF110A	105	116	1.0	94.0	5.0	2.0	152
*P4FMAF120	108	132	1.0	97.2	5.0	1.7	173
*P4FMAF120A	114	126	1.0	102	5.0	1.8	165
*P4FMAF130	117	143	1.0	105	5.0	1.6	187
*P4FMAF130A	124	137	1.0	111	5.0	1.7	179
*P4FMAF150	135	165	1.0	121	5.0	1.4	215
*P4FMAF150A	143	158	1.0	128	5.0	1.4	207
*P4FMAF160	144	176	1.0	130	5.0	1.3	230
*P4FMAF160A	152	168	1.0	136	5.0	1.4	219
*P4FMAF170	153	187	1.0	138	5.0	1.2	244
*P4FMAF170A	162	179	1.0	145	5.0	1.3	234
*P4FMAF180	162	198	1.0	146	5.0	1.2	258
*P4FMAF180A	171	189	1.0	154	5.0	1.2	246
*P4FMAF200	180	220	1.0	162	5.0	1.0	287
*P4FMAF200A	190	210	1.0	171	5.0	1.1	274
*P4FMAF220	198	242	1.0	175	5.0	0.9	344
*P4FMAF220A	209	231	1.0	185	5.0	0.9	328
*P4FMAF250	225	275	1.0	202	5.0	0.83	360
*P4FMAF250A	237	263	1.0	214	5.0	0.87	344
*P4FMAF300	270	330	1.0	243	5.0	0.70	430
*P4FMAF300A	285	315	1.0	256	5.0	0.73	414
*P4FMAF350	315	385	1.0	284	5.0	0.60	504
*P4FMAF350A	332	368	1.0	300	5.0	0.62	482
*P4FMAF400	360	440	1.0	324	5.0	0.53	574
*P4FMAF400A	380	420	1.0	342	5.0	0.55	548

- Notes :
1. V_{BR} measured after I_T applied for 300ms. I_T = square pulse or equivalent.
 2. For bidirectional use C or CA suffixs for all types (ex. P4FMAF6.8C,P4FMAF400CA) electrical characteristics apply in both directions.
 3. For bidirectional types having V_{WM} of 10 volts and less, the I_D limit is doubled.
 4. Mark"*" reverse power rating are 300w .

Mounting Pad Layout

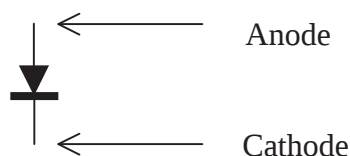


Dimensions in inches and (millimeters)



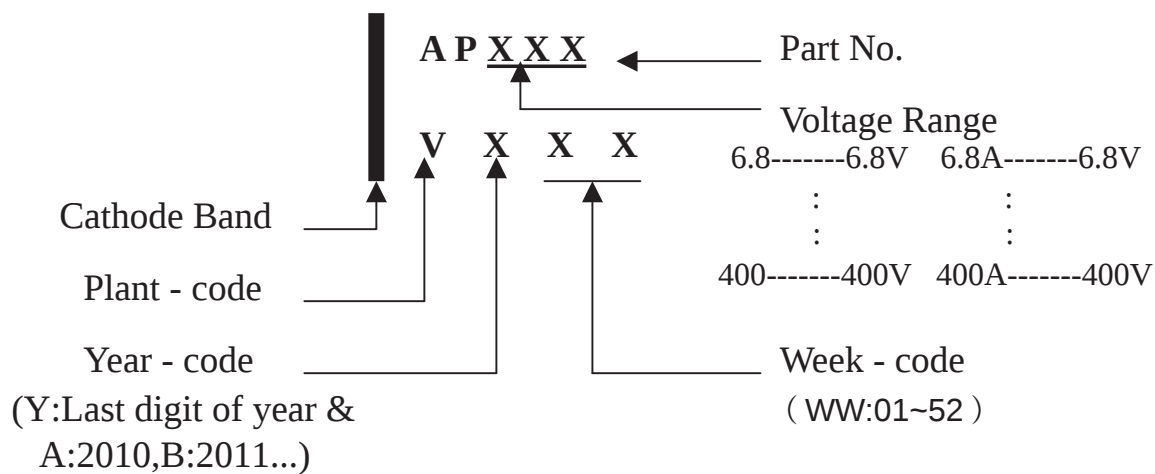
Attachment information about P4FMAFXXX

1. Internal Circuit

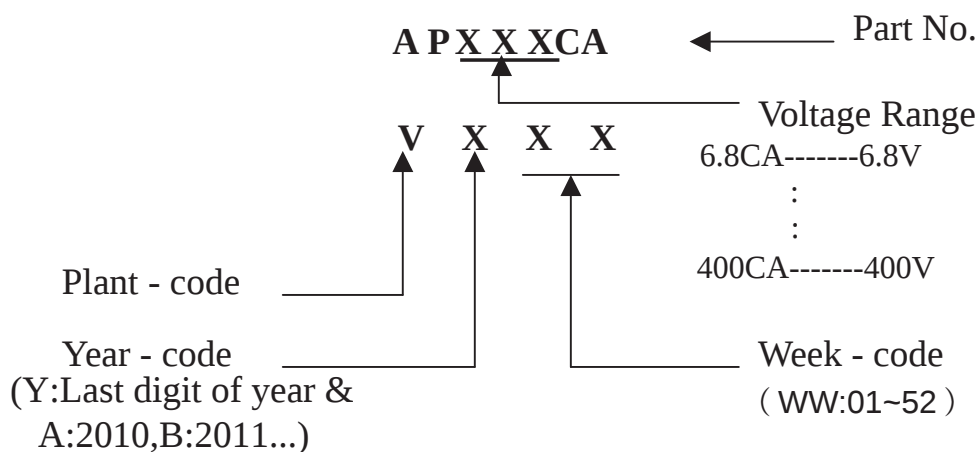


2. Marking on the body

1). P4FMAFXX/P4FMAFXXA



2). P4FMAFXXCA



PACKAGING OF DIODE AND BRIDGE RECTIFIERS

REEL PACK

PACKAGE	PACKING CODE	EA PER REEL	EA PER INNER BOX	COMPONENT SPACE (mm)	TAPE SPACE (mm)	REEL DIA (mm)	CARTON SIZE (mm)	EA PER CARTON	GROSS WEIGHT(Kg)
SMAF	-T	3,000	12,000	---	---	178	390*205*310	96,000	---
SMAF	-W	10,000	20,000	---	---	330	360*355*360	160,000	---

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