Surface mount transient voltage suppressor power 400 watts

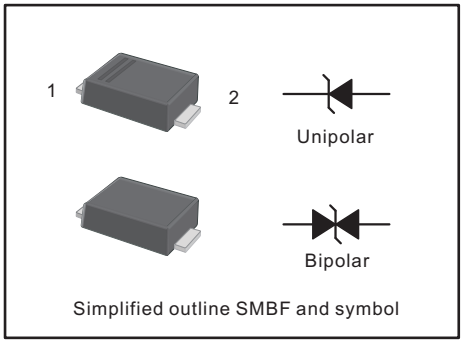
Stand-Off Voltage： 5V~220V

FEATURES

- For surface mounted applications in order to optimize board space.
- Low profile package
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Flammability

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode



Simplified outline SMBF and symbol

MECHANICAL DATA

- Case: SMAF
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 27mg 0.00095oz

Maximum Ratings and Electrical characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on T_A=25°C (Note 1,2,4, Fig1)	P_{PPM}	400	W
Peak Forward Surge Current (Note 3,Fig 4)	I_{FSM} (UNI)	40	A
Peak Pulse Current on 10/1000 us waveform (Note 1, Fig 3)	I_{PPM}	see Table 1	A
ESD Voltage per IEC6100-4-2 Contact Air	V_{ESD1} V_{ESD2}	±30 ±30	kV
Typical Thermal Resistance Junction to Ambient(Note 2)	$R_{\theta JA}$	70	°C/W
Operating Junction Temperature and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	°C

NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above T_A = 25°C per Fig. 2.
2. Mounted on 5mm^2 copper pads to each terminal.
3. Peak Forward Surge Current : 8.3ms single half sine-wave Superimposed on rated load (JEDEC method).
4. Peak pulse power waveform is 10/1000μS.

Characteristics at Ta = 25°C

Table 1

Type		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage		Max. Clamp Voltage	Peak Pulse Current	Package SMAF	
			V_{BR} @ I_T		I_T	I_R @ V_{RWM}		V_C @ I_{PP}	I_{PP}	Device Marking Ccode	
		V_{RMW}	Min	Max		UNI	BI				
UNI	BI	V	V	V	mA	μA	μA	V	A	UNI	BI
P4SMAFJ5.0	P4SMAFJ5.0C	5	6.4	7.55	10	800	1600	9.6	41.6	5.0V	5.0C
P4SMAFJ5.0A	P4SMAFJ5.0CA	5	6.4	7.25	10	800	1600	9.2	43.5	5.0A	5.0D
P4SMAFJ6.0	P4SMAFJ6.0C	6	6.67	8.45	10	800	1600	11.4	35.1	6.0V	6.0C
P4SMAFJ6.0A	P4SMAFJ6.0CA	6	6.67	7.67	10	800	1600	10.3	38.8	6.0A	6.0D
P4SMAFJ6.5	P4SMAFJ6.5C	6.5	7.22	9.14	10	500	1000	12.3	32.5	6.5V	6.5C
P4SMAFJ6.5A	P4SMAFJ6.5CA	6.5	7.22	8.3	10	500	1000	11.2	35.7	6.5A	6.5D
P4SMAFJ7.0	P4SMAFJ7.0C	7	7.78	9.86	10	200	400	13.3	30.1	7.0V	7.0C
P4SMAFJ7.0A	P4SMAFJ7.0CA	7	7.78	8.95	10	200	400	12	33.3	7.0A	7.0D
P4SMAFJ7.5	P4SMAFJ7.5C	7.5	8.33	10.67	1	100	200	14.3	28	7.5V	7.5C
P4SMAFJ7.5A	P4SMAFJ7.5CA	7.5	8.33	9.58	1	100	200	12.9	31	7.5A	7.5D
P4SMAFJ8.0	P4SMAFJ8.0C	8	8.89	11.3	1	50	100	15	26.5	8.0V	8.0C
P4SMAFJ8.0A	P4SMAFJ8.0CA	8	8.89	10.23	1	50	100	13.6	29.4	8.0A	8.0D
P4SMAFJ8.5	P4SMAFJ8.5C	8.5	9.44	11.92	1	10	20	15.9	25.1	8.5V	8.5C
P4SMAFJ8.5A	P4SMAFJ8.5CA	8.5	9.44	10.82	1	10	20	14.4	27.7	8.5A	8.5D
P4SMAFJ9.0	P4SMAFJ9.0C	9	10	12.6	1	5	5	16.9	23.6	9.0V	9.0C
P4SMAFJ9.0A	P4SMAFJ9.0CA	9	10	11.5	1	5	5	15.4	26	9.0A	9.0D
P4SMAFJ10	P4SMAFJ10C	10	11.1	14.1	1	5	5	18.8	21.2	10V	10C
P4SMAFJ10A	P4SMAFJ10CA	10	11.1	12.8	1	5	5	17	23.5	10A	10D
P4SMAFJ11	P4SMAFJ11C	11	12.2	15.4	1	1	1	20.1	20	11V	11C
P4SMAFJ11A	P4SMAFJ11CA	11	12.2	14	1	1	1	18.2	22	11A	11D
P4SMAFJ12	P4SMAFJ12C	12	13.3	16.9	1	1	1	22	18.1	12V	12C
P4SMAFJ12A	P4SMAFJ12CA	12	13.3	15.3	1	1	1	19.9	20.1	12A	12D
P4SMAFJ13	P4SMAFJ13C	13	14.4	18.2	1	1	1	23.8	16.8	13V	13C
P4SMAFJ13A	P4SMAFJ13CA	13	14.4	16.5	1	1	1	21.5	18.6	13A	13D
P4SMAFJ14	P4SMAFJ14C	14	15.6	19.8	1	1	1	25.8	15.5	14V	14C
P4SMAFJ14A	P4SMAFJ14CA	14	15.6	17.9	1	1	1	23.2	17.2	14A	14D
P4SMAFJ15	P4SMAFJ15C	15	16.7	21.1	1	1	1	26.9	14.8	15V	15C
P4SMAFJ15A	P4SMAFJ15CA	15	16.7	19.2	1	1	1	24.4	16.4	15A	15D
P4SMAFJ16	P4SMAFJ16C	16	17.8	22.6	1	1	1	28.8	13.8	16V	16C
P4SMAFJ16A	P4SMAFJ16CA	16	17.8	20.5	1	1	1	26	15.3	16A	16D
P4SMAFJ17	P4SMAFJ17C	17	18.9	23.9	1	1	1	30.5	13.1	17V	17C
P4SMAFJ17A	P4SMAFJ17CA	17	18.9	21.7	1	1	1	27.6	14.5	17A	17D
P4SMAFJ18	P4SMAFJ18C	18	20	25.3	1	1	1	32.2	12.4	18V	18C
P4SMAFJ18A	P4SMAFJ18CA	18	20	23.3	1	1	1	29.2	13.7	18A	18D
P4SMAFJ20	P4SMAFJ20C	20	22.2	28.1	1	1	1	35.8	11.1	20V	20C
P4SMAFJ20A	P4SMAFJ20CA	20	22.2	25.5	1	1	1	32.4	12.3	20A	20D
P4SMAFJ22	P4SMAFJ22C	22	24.4	30.9	1	1	1	39.4	10.1	22V	22C
P4SMAFJ22A	P4SMAFJ22CA	22	24.4	28	1	1	1	35.5	11.2	22A	22D
P4SMAFJ24	P4SMAFJ24C	24	26.7	33.8	1	1	1	43	9.3	24V	24C
P4SMAFJ24A	P4SMAFJ24CA	24	26.7	30.7	1	1	1	38.9	10.3	24A	24D
P4SMAFJ26	P4SMAFJ26C	26	28.9	36.6	1	1	1	46.6	8.6	26V	26C
P4SMAFJ26A	P4SMAFJ26CA	26	28.9	33.2	1	1	1	42.1	9.5	26A	26D
P4SMAFJ28	P4SMAFJ28C	28	31.1	39.4	1	1	1	50	8	28V	28C
P4SMAFJ28A	P4SMAFJ28CA	28	31.1	35.8	1	1	1	45.4	8.8	28A	28D
P4SMAFJ30	P4SMAFJ30C	30	33.3	42.2	1	1	1	53.5	7.5	30V	30C
P4SMAFJ30A	P4SMAFJ30CA	30	33.3	38.3	1	1	1	48.4	8.3	30A	30D
P4SMAFJ33	P4SMAFJ33C	33	36.7	46.5	1	1	1	59	6.8	33V	33C
P4SMAFJ33A	P4SMAFJ33CA	33	36.7	42.2	1	1	1	53.3	7.5	33A	33D
P4SMAFJ36	P4SMAFJ36C	36	40	50.7	1	1	1	64.3	6.2	36V	36C
P4SMAFJ36A	P4SMAFJ36CA	36	40	46	1	1	1	58.1	6.9	36A	36D
P4SMAFJ40	P4SMAFJ40C	40	44.4	56.3	1	1	1	71.4	5.6	40V	40C
P4SMAFJ40A	P4SMAFJ40A	40	44.4	51.1	1	1	1	64.5	6.2	40A	40D
P4SMAFJ43	P4SMAFJ43C	43	47.8	60.5	1	1	1	76.7	5.2	43V	43C
P4SMAFJ43A	P4SMAFJ43CA	43	47.8	54.9	1	1	1	69.4	5.7	43A	43D
P4SMAFJ45	P4SMAFJ45C	45	50	63.3	1	1	1	80.3	5	45V	45C

Characteristics at Ta = 25°C

Table 1

Type		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage		Max. Clamp Voltage	Peak Pulse Current	Package SMAF	
			V_{BR} @ I_T		I_T	I_R @ V_{RWM}		V_C @ I_{PP}	I_{PP}	Device Marking Ccode	
		V_{RMW}	Min	Max		UNI	BI				
UNI	BI	V	V	V	mA	μA	μA	V	A	UNI	BI
P4SMAFJ45A	P4SMAFJ45CA	45	50	57.5	1	5	5	72.7	5.5	45A	45D
P4SMAFJ48	P4SMAFJ48C	48	53.3	67.5	1	5	5	85.5	4.7	48V	48C
P4SMAFJ48A	P4SMAFJ48CA	48	53.3	61.3	1	5	5	77.4	5.2	48A	48D
P4SMAFJ51	P4SMAFJ51C	51	56.7	71.8	1	5	5	91.1	4.4	51V	51C
P4SMAFJ51A	P4SMAFJ51CA	51	56.7	65.2	1	5	5	82.4	4.9	51A	51D
P4SMAFJ54	P4SMAFJ54C	54	60	76	1	5	5	96.3	4.2	54V	54C
P4SMAFJ54A	P4SMAFJ54CA	54	60	69	1	5	5	87.1	4.6	54A	54D
P4SMAFJ58	P4SMAFJ58C	58	64.4	81.6	1	5	5	103	3.9	58V	58C
P4SMAFJ58A	P4SMAFJ58CA	58	64.4	74.1	1	5	5	93.6	4.3	58A	58D
P4SMAFJ60	P4SMAFJ60C	60	66.7	84.5	1	5	5	107	3.7	60V	60C
P4SMAFJ60A	P4SMAFJ60CA	60	66.7	76.7	1	5	5	96.8	4.1	60A	60D
P4SMAFJ64	P4SMAFJ64C	64	71.1	90.1	1	5	5	114	3.5	64V	64C
P4SMAFJ64A	P4SMAFJ64CA	64	71.1	81.8	1	5	5	103	3.9	64A	64D
P4SMAFJ70	P4SMAFJ70C	70	77.8	98.6	1	5	5	125	3.2	70V	70C
P4SMAFJ70A	P4SMAFJ70CA	70	77.8	89.5	1	5	5	113	3.5	70A	70D
P4SMAFJ75	P4SMAFJ75C	75	83.3	105.7	1	5	5	134	3	75V	75C
P4SMAFJ75A	P4SMAFJ75CA	75	83.3	95.8	1	5	5	121	3.3	75A	75D
P4SMAFJ78	P4SMAFJ78C	78	86.7	109.8	1	5	5	139	2.9	78V	78C
P4SMAFJ78A	P4SMAFJ78CA	78	86.7	99.7	1	5	5	126	3.2	78A	78D
P4SMAFJ85	P4SMAFJ85C	85	94.4	119.2	1	5	5	151	2.6	85V	85C
P4SMAFJ85A	P4SMAFJ85CA	85	94.4	108.2	1	5	5	137	2.9	85A	85D
P4SMAFJ90	P4SMAFJ90C	90	100	126.5	1	5	5	160	2.5	90V	90C
P4SMAFJ90A	P4SMAFJ90CA	90	100	115.5	1	5	5	146	2.7	90A	90D
P4SMAFJ100	P4SMAFJ100C	100	111	141	1	5	5	179	2.2	100V	100C
P4SMAFJ100A	P4SMAFJ100CA	100	111	128	1	5	5	162	2.5	100A	100D
P4SMAFJ110	P4SMAFJ110C	110	122	154.5	1	5	5	196	2	110V	110C
P4SMAFJ110A	P4SMAFJ110CA	110	122	140.5	1	5	5	177	2.3	110A	110D
P4SMAFJ120	P4SMAFJ120C	120	133	169	1	5	5	214	1.9	120V	120C
P4SMAFJ120A	P4SMAFJ120CA	120	133	153	1	5	5	193	2	120A	120D
P4SMAFJ130	P4SMAFJ130C	130	144	182.5	1	5	5	231	1.7	130V	130C
P4SMAFJ130A	P4SMAFJ130CA	130	144	165.5	1	5	5	209	1.9	130A	130D
P4SMAFJ150	P4SMAFJ150C	150	167	211.5	1	5	5	268	1.5	150V	150C
P4SMAFJ150A	P4SMAFJ150CA	150	167	192.5	1	5	5	243	1.6	150A	150D
P4SMAFJ160	P4SMAFJ160C	160	178	226	1	5	5	287	1.4	160V	160C
P4SMAFJ160A	P4SMAFJ160CA	160	178	205	1	5	5	259	1.5	160A	160D
P4SMAFJ170	P4SMAFJ170C	170	189	239.5	1	5	5	304	1.3	170V	170C
P4SMAFJ170A	P4SMAFJ170CA	170	189	217.5	1	5	5	275	1.4	170A	170D
P4SMAFJ180	P4SMAFJ180C	180	198	253.8	1	5	5	322	1.2	180V	180C
P4SMAFJ180A	P4SMAFJ180CA	180	198	230.4	1	5	5	292	1.3	180A	180D
P4SMAFJ190	P4SMAFJ190C	190	209	267.9	1	5	5	340	1.2	190V	190C
P4SMAFJ190A	P4SMAFJ190CA	190	209	243.2	1	5	5	308	1.3	190A	190D
P4SMAFJ200	P4SMAFJ200C	200	220	282	1	5	5	358	1.1	200V	200C
P4SMAFJ200A	P4SMAFJ200CA	200	220	256	1	5	5	324	1.2	200A	200D
P4SMAFJ210	P4SMAFJ210C	210	231	296.1	1	5	5	376	1.1	210V	210C
P4SMAFJ210A	P4SMAFJ210CA	210	231	268.8	1	5	5	340	1.2	210A	210D
P4SMAFJ220	P4SMAFJ220C	220	242	310.2	1	5	5	394	1	220V	220C
P4SMAFJ220A	P4SMAFJ220CA	220	242	281.6	1	5	5	356	1.1	220A	220D

Fig.1 Peak Pulse Power Rating Curve

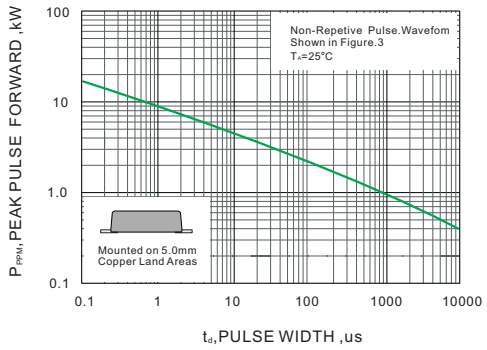


Fig.2 Forward Current Derating Curve

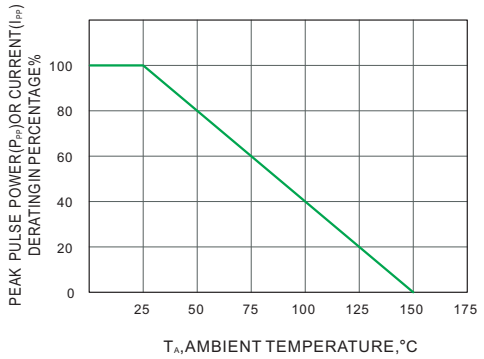


Fig.3 Pulse Waveform

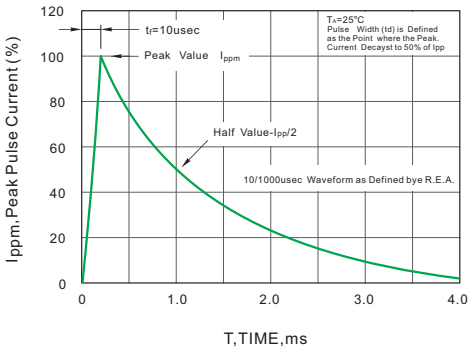
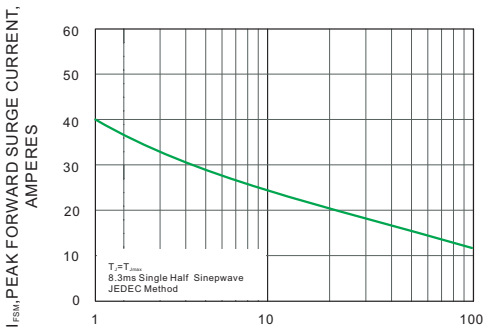
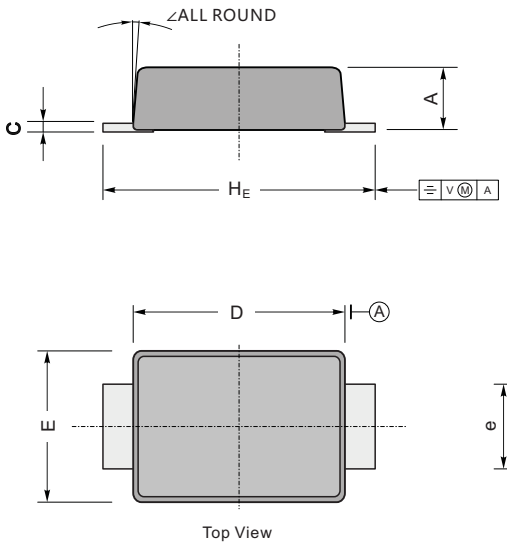


Fig.4 Maximum Non-Repetitive Peak Forward Surge Current



PACKAGE OUTLINE

Plastic surface mounted package; 2 leads SMAF



UNIT		A	C	D	E	e	g	H_E	∠
mm	max	1.1	0.20	3.7	2.7	1.6	1.2	4.9	7°
	min	0.9	0.12	3.3	2.4	1.3	0.8	4.4	
mil	max	43	7.9	146	106	63	47	193	
	min	35	4.7	130	94	51	31	173	

The recommended mounting pad size

