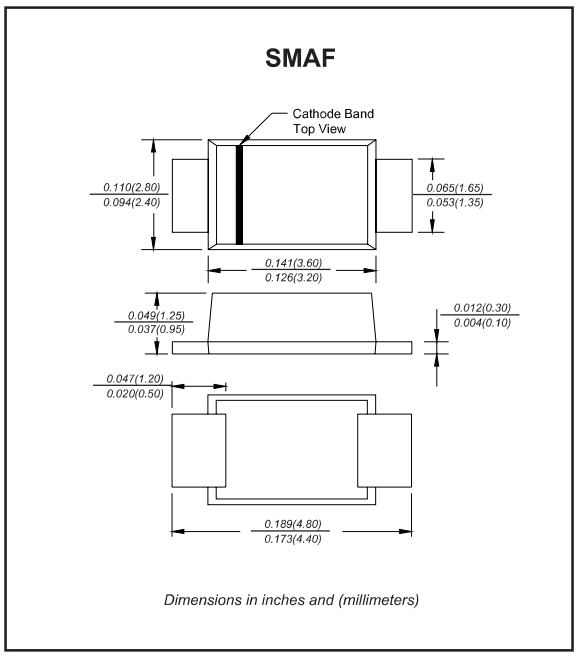
SMA6F-Q1 Series

600W Surface Mount Transient Voltage Suppressors- 5.0V - 130V

Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 600 W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- Compliant to Halogen-free
- Suffix “-Q1” for AEC-Q101

Package outline



Dimensions in inches and (millimeters)

Mechanical data

- **Package** : SMAF
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals** : Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

Maximum ratings (AT T_A=25℃ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	Value	UNIT
Peak Power Dissipation	with a 10/1000 μs waveform, Note 1, 2 & Fig. 1	P_{PPM}	600	W
Peak Pulse current	with a 10/1000 μs waveform, Note 1	I_{PPM}	See Table 1	A
Power Dissipation	on infinite heat sink at T_L=75°C	P_D	3.0	W
Peak Forward Surge Current	8.3ms Single Half Sine-Wave, Note 2	I_{FSM}	60	A
Maximum Instantaneours Forward Voltage	at 25A For Uni-Directional Types Only	V_F	3.5	V
ESD according to IEC61000-4-2 air discharge		V_{ESD}	±30	KV
ESD according to IEC61000-4-2 contact discharge			±30	
Thermal resistance(Typical)	junction to ambient	$R_{\theta JA}$	120	℃/W
Operating temperature range		T_J	-55 ~ +150	°C
Storage temperature range		T_{STG}	-55 ~ +150	°C

Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A= 25℃ per Fig.2.

(2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal

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Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No. (Uni)	Part No. (Bi)	Reverse Stand-off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}		Maximum Reverse Leakage Current	Marking Code	
		V_{RWM}	$V_{BR\ Min}$	$V_{BR\ Max}$	I_T	V_C	I_{PP}	I_R@V_{RWM}		
		Volts	Volts	Volts	mA	Volts	A	μA	UNI	BI
SMA6F5.0A-Q1	/	5.0	6.40	7.07	10	9.2	65.22	800	6F5.0A	/
SMA6F6.0A-Q1	/	6.0	6.67	7.37	10	10.3	58.25	800	6F6.0A	/
SMA6F6.5A-Q1	/	6.5	7.22	7.98	10	11.2	53.57	500	6F6.5A	/
SMA6F7.0A-Q1	/	7.0	7.78	8.60	10	12.0	50.00	200	6F7.0A	/
SMA6F7.5A-Q1	/	7.5	8.33	9.21	1.0	12.9	46.51	100	6F7.5A	/
SMA6F8.0A-Q1	/	8.0	8.89	9.83	1.0	13.6	44.12	50	6F8.0A	/
SMA6F8.5A-Q1	/	8.5	9.44	10.4	1.0	14.4	41.67	10	6F8.5A	/
SMA6F9.0A-Q1	/	9.0	10.0	11.1	1.0	15.4	38.96	5	6F9.0A	/
SMA6F10A-Q1	/	10	11.1	12.3	1.0	17.0	35.29	5	6F10A	/
SMA6F11A-Q1	SMA6F11CA-Q1	11	12.2	13.5	1.0	18.2	32.97	5	6F11A	6F11CA
SMA6F12A-Q1	SMA6F12CA-Q1	12	13.3	14.7	1.0	19.9	30.15	5	6F12A	6F12CA
SMA6F13A-Q1	SMA6F13CA-Q1	13	14.4	15.9	1.0	21.5	27.91	1	6F13A	6F13CA
SMA6F14A-Q1	SMA6F14CA-Q1	14	15.6	17.2	1.0	23.2	25.86	1	6F14A	6F14CA
SMA6F15A-Q1	SMA6F15CA-Q1	15	16.7	18.5	1.0	24.4	24.59	1	6F15A	6F15CA
SMA6F16A-Q1	SMA6F16CA-Q1	16	17.8	19.7	1.0	26.0	23.08	1	6F16A	6F16CA
SMA6F17A-Q1	SMA6F17CA-Q1	17	18.9	20.9	1.0	27.6	21.74	1	6F17A	6F17CA
SMA6F18A-Q1	SMA6F18CA-Q1	18	20.0	22.1	1.0	29.2	20.55	1	6F18A	6F18CA
SMA6F19A-Q1	SMA6F19CA-Q1	19	21.1	23.3	1.0	30.8	19.49	1	6F19A	6F19CA
SMA6F20A-Q1	SMA6F20CA-Q1	20	22.2	24.5	1.0	32.4	18.52	1	6F20A	6F20CA
SMA6F22A-Q1	SMA6F22CA-Q1	22	24.4	26.9	1.0	35.5	16.90	1	6F22A	6F22CA
SMA6F24A-Q1	SMA6F24CA-Q1	24	26.7	29.5	1.0	38.9	15.42	1	6F24A	6F24CA
SMA6F26A-Q1	SMA6F26CA-Q1	26	28.9	31.9	1.0	42.1	14.25	1	6F26A	6F26CA
SMA6F28A-Q1	SMA6F28CA-Q1	28	31.1	34.4	1.0	45.4	13.22	1	6F28A	6F28CA
SMA6F30A-Q1	SMA6F30CA-Q1	30	33.3	36.8	1.0	48.4	12.40	1	6F30A	6F30CA
SMA6F33A-Q1	SMA6F33CA-Q1	33	36.7	40.6	1.0	53.3	11.26	1	6F33A	6F33CA
SMA6F36A-Q1	SMA6F36CA-Q1	36	40.0	44.2	1.0	58.1	10.33	1	6F36A	6F36CA
SMA6F40A-Q1	SMA6F40CA-Q1	40	44.4	49.1	1.0	64.5	9.30	1	6F40A	6F40CA
SMA6F43A-Q1	SMA6F43CA-Q1	43	47.8	52.8	1.0	69.4	8.65	1	6F43A	6F43CA
SMA6F45A-Q1	SMA6F45CA-Q1	45	50.0	55.3	1.0	72.7	8.25	1	6F45A	6F45CA
SMA6F48A-Q1	SMA6F48CA-Q1	48	53.3	58.9	1.0	77.4	7.75	1	6F48A	6F48CA
SMA6F51A-Q1	SMA6F51CA-Q1	51	56.7	62.7	1.0	82.4	7.28	1	6F51A	6F51CA
SMA6F54A-Q1	SMA6F54CA-Q1	54	60.0	66.3	1.0	87.1	6.89	1	6F54A	6F54CA
SMA6F58A-Q1	SMA6F58CA-Q1	58	64.4	71.2	1.0	93.6	6.41	1	6F58A	6F58CA
SMA6F60A-Q1	SMA6F60CA-Q1	60	66.7	73.7	1.0	96.8	6.20	1	6F60A	6F60CA
SMA6F64A-Q1	SMA6F64CA-Q1	64	71.1	78.6	1.0	103.0	5.83	1	6F64A	6F64CA
SMA6F70A-Q1	SMA6F70CA-Q1	70	77.8	86.0	1.0	113.0	5.31	1	6F70A	6F70CA
SMA6F75A-Q1	SMA6F75CA-Q1	75	83.3	92.1	1.0	121.0	4.96	1	6F75A	6F75CA
SMA6F78A-Q1	SMA6F78CA-Q1	78	86.7	95.8	1.0	126.0	4.76	1	6F78A	6F78CA
SMA6F80A-Q1	SMA6F80CA-Q1	80	88.8	97.6	1.0	129.6	4.63	1	6F80A	6F80CA
SMA6F85A-Q1	SMA6F85CA-Q1	85	94.4	104	1.0	137.0	4.38	1	6F85A	6F85CA

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Part No. (Uni)	Part No. (Bi)	Reverse Stand-off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}		Maximum Reverse Leakage Current	Marking Code	
		V_{RWM}	$V_{BR\ Min}$	$V_{BR\ Max}$	I_T	V_C	I_{PP}	$I_R@V_{RWM}$		
		Volts	Volts	Volts	mA	Volts	A	μA	UNI	BI
SMA6F90A-Q1	/	90	100	111	1.0	146.0	4.11	1	6F90A	/
SMA6F100A-Q1	/	100	111	123	1.0	162.0	3.70	1	6F100A	/
SMA6F110A-Q1	/	110	122	135	1.0	177.0	3.39	1	6F110A	/
SMA6F120A-Q1	/	120	133	147	1.0	193.0	3.11	1	6F120A	/
SMA6F130A-Q1	/	130	144	159	1.0	209.0	2.87	1	6F130A	/

Notes:

(3) Pulse test: t_p≤50ms

(4) Surge current waveform per Fig. 3 and derated per Fig.2.

Rating and characteristic curves

FIG1:Peak Pulse Power Rating Curve

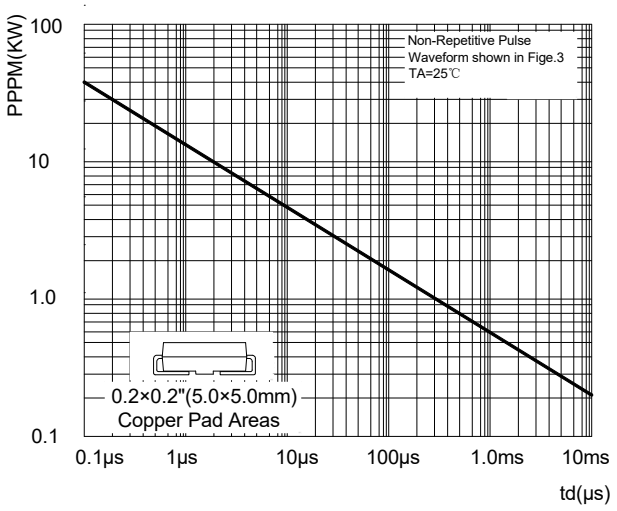


FIG2: Pulse Power or Current vs. Initial Junction Temperature

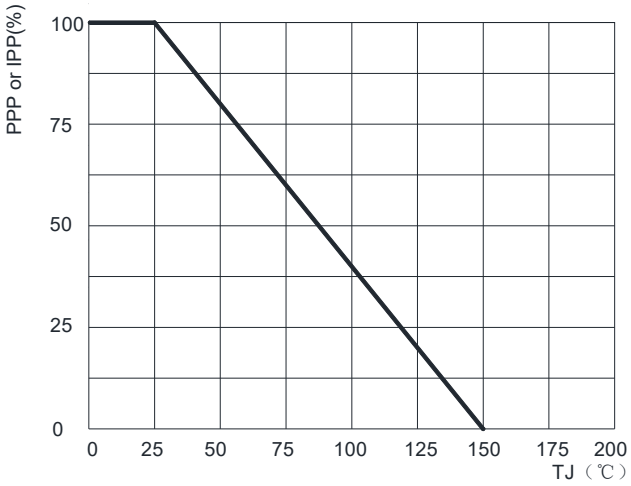


FIG3: Pulse Waveform

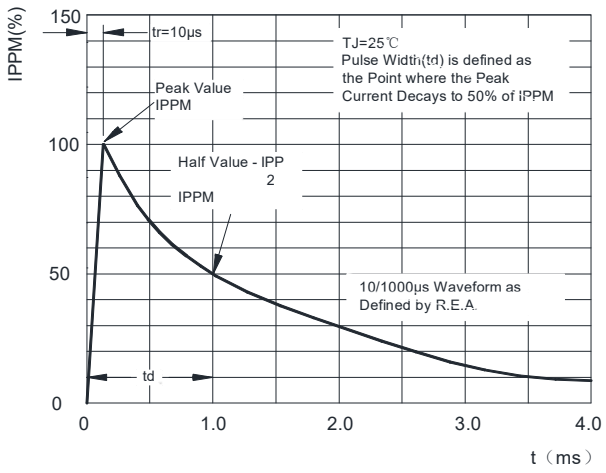


FIG4:Typical Transient Thermal Impedance

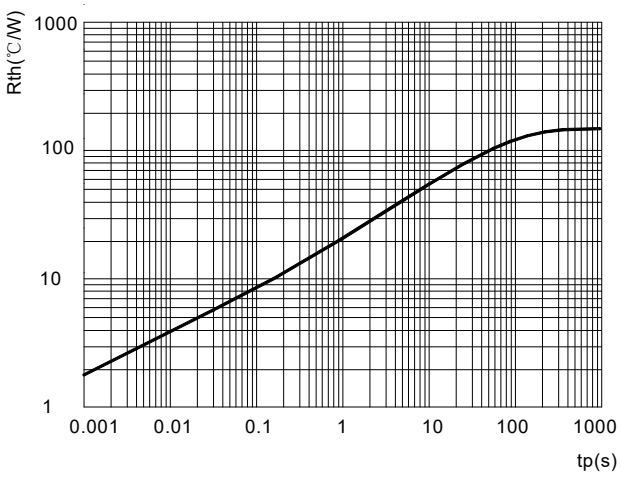


FIG5: Maximum Non-Repetitive Surge Current

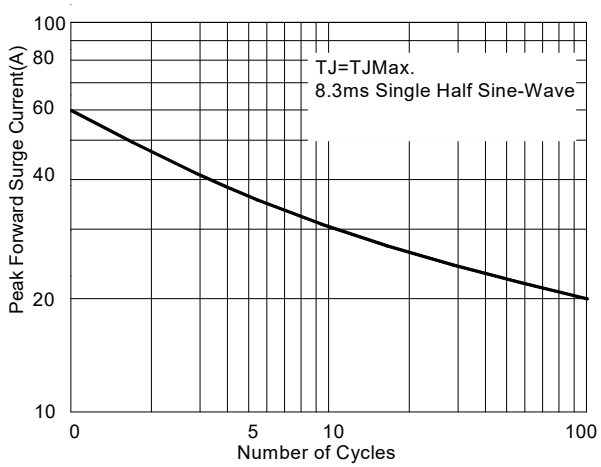
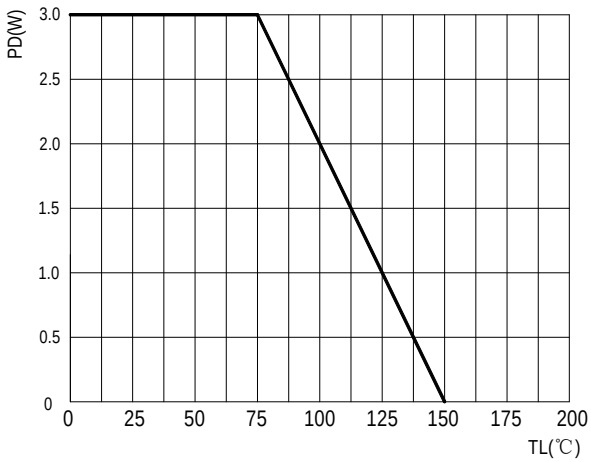


FIG6:Steady State Power Dissipation



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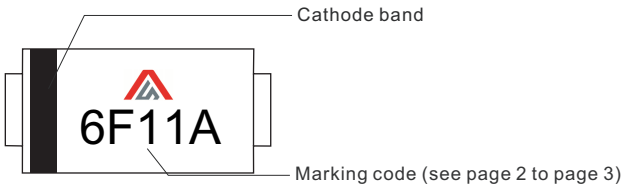
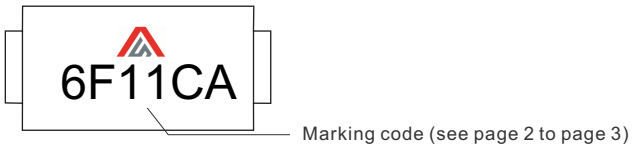
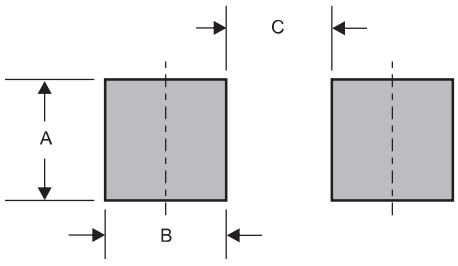
Pinning information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

Marking

Type number	Example
Uni-Directional	
Bi-Directional	

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMAF	0.110 (2.80)	0.063 (1.60)	0.087 (2.20)