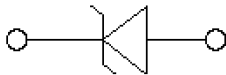
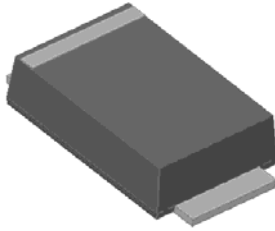
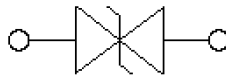
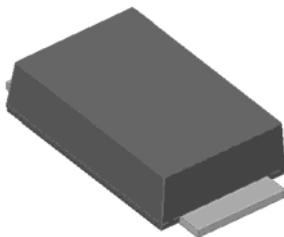


Surface Mount Transient Voltage Suppressor Diodes

Uni-directional



Bi-directional



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 μ s waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- ESD protection of data lines in accordance with IEC 61000-4-2, 30kV(Air),30kV (Contact)
- Part no. with suffix "Q" means AEC-Q101 qualified

Typical Applications

For use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, automotive, and telecommunication.

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 ($T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Max
Peak power dissipation, with a 10/1000us waveform ^{(1) (2)} (FIG.1)	P_{PPM}	W	600
Peak pulse current, with a 10/1000us waveform ⁽¹⁾	I_{PPM}	A	See Next Table
Power dissipation, on infinite heat sink at $T_L=85^\circ\text{C}$	P_D	W	3.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾	I_{FSM}	A	60
Operating junction and storage temperature range	T_J, T_{STG}	$^\circ\text{C}$	-55 to +175

■Electrical Characteristics ($T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @ at 25A for unidirectional only	V_F	V	3.5



SMA6F SERIES-Q

■ Thermal Characteristics (T_a=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	R _{θJL}	°C/W	junction to lead	30
	R _{θJA}	°C/W	junction to ambient	150

Notes:

- (1) Non-repetitive current pulse, per FIG. 3 and derated above T_A = 25°C per FIG.2.
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal

■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

Part Number		Breakdown Voltage V _{BR} @I _T			Maximum Reverse Leakage I _R @ V _{RWM} (μA)	Working Peak Reverse Voltage V _{RWM} (V)	Maximum Reverse Surge Current I _{PP} ⁽⁴⁾ (A)	Maximum Clamping Voltage V _c @ I _{PP} (V)
(Uni)	(Bi)	Min(V)	Max (V)	I _T ⁽³⁾ (mA)				
SMA6F5.0AQ	SMA6F5.0CAQ	6.40	7.07	10	800	5.0	65.22	9.2
SMA6F6.0AQ	SMA6F6.0CAQ	6.67	7.37	10	800	6.0	58.25	10.3
SMA6F6.5AQ	SMA6F6.5CAQ	7.22	7.98	10	500	6.5	53.57	11.2
SMA6F7.0AQ	SMA6F7.0CAQ	7.78	8.60	10	200	7.0	50.00	12.0
SMA6F7.5AQ	SMA6F7.5CAQ	8.33	9.21	1	100	7.5	46.51	12.9
SMA6F8.0AQ	SMA6F8.0CAQ	8.89	9.83	1	50	8.0	44.12	13.6
SMA6F8.5AQ	SMA6F8.5CAQ	9.44	10.40	1	10	8.5	41.67	14.4
SMA6F9.0AQ	SMA6F9.0CAQ	10.00	11.10	1	5	9.0	38.96	15.4
SMA6F10AQ	SMA6F10CAQ	11.10	12.30	1	5	10.0	35.29	17.0
SMA6F11AQ	SMA6F11CAQ	12.20	13.50	1	5	11.0	32.97	18.2
SMA6F12AQ	SMA6F12CAQ	13.30	14.70	1	5	12.0	30.15	19.9
SMA6F13AQ	SMA6F13CAQ	14.40	15.90	1	1	13.0	27.91	21.5
SMA6F14AQ	SMA6F14CAQ	15.60	17.20	1	1	14.0	25.86	23.2
SMA6F15AQ	SMA6F15CAQ	16.70	18.50	1	1	15.0	24.59	24.4
SMA6F16AQ	SMA6F16CAQ	17.80	19.70	1	1	16.0	23.08	26.0
SMA6F17AQ	SMA6F17CAQ	18.90	20.90	1	1	17.0	21.74	27.6
SMA6F18AQ	SMA6F18CAQ	20.00	22.10	1	1	18.0	20.55	29.2
SMA6F19AQ	SMA6F19CAQ	21.10	23.30	1	1	19.0	19.49	30.8
SMA6F20AQ	SMA6F20CAQ	22.20	24.50	1	1	20.0	18.52	32.4
SMA6F22AQ	SMA6F22CAQ	24.40	26.90	1	1	22.0	16.90	35.5
SMA6F24AQ	SMA6F24CAQ	26.70	29.50	1	1	24.0	15.42	38.9



SMA6F SERIES-Q

■Electrical Characteristics (T_a=25℃ Unless otherwise specified)

Part Number		Breakdown Voltage V _{BR} @I _T			Maximum Reverse Leakage I _R @ V _{RWM} (μA)	Working Peak Reverse Voltage V _{RWM} (V)	Maximum Reverse Surge Current I _{PP} ⁽⁴⁾ (A)	Maximum Clamping Voltage V _c @ I _{PP} (V)
(Uni)	(Bi)	Min(V)	Max (V)	I _T ⁽³⁾ (mA)				
SMA6F26AQ	SMA6F26CAQ	28.90	31.90	1	1	26.0	14.25	42.1
SMA6F28AQ	SMA6F28CAQ	31.10	34.40	1	1	28.0	13.22	45.4
SMA6F30AQ	SMA6F30CAQ	33.30	36.80	1	1	30.0	12.40	48.4
SMA6F33AQ	SMA6F33CAQ	36.70	40.60	1	1	33.0	11.26	53.3
SMA6F36AQ	SMA6F36CAQ	40.00	44.20	1	1	36.0	10.33	58.1
SMA6F40AQ	SMA6F40CAQ	44.40	49.10	1	1	40.0	9.30	64.5
SMA6F43AQ	SMA6F43CAQ	47.80	52.80	1	1	43.0	8.65	69.4
SMA6F45AQ	SMA6F45CAQ	50.00	55.30	1	1	45.0	8.25	72.7
SMA6F48AQ	SMA6F48CAQ	53.30	58.90	1	1	48.0	7.75	77.4
SMA6F51AQ	SMA6F51CAQ	56.70	62.70	1	1	51.0	7.28	82.4
SMA6F54AQ	SMA6F54CAQ	60.00	66.30	1	1	54.0	6.89	87.1
SMA6F58AQ	SMA6F58CAQ	64.40	71.20	1	1	58.0	6.41	93.6
SMA6F60AQ	SMA6F60CAQ	66.70	73.70	1	1	60.0	6.20	96.8
SMA6F64AQ	SMA6F64CAQ	71.10	78.60	1	1	64.0	5.83	103.0
SMA6F70AQ	SMA6F70CAQ	77.80	86.00	1	1	70.0	5.31	113.0
SMA6F75AQ	SMA6F75CAQ	83.30	92.10	1	1	75.0	4.96	121.0
SMA6F78AQ	SMA6F78CAQ	86.70	95.80	1	1	78.0	4.76	126.0
SMA6F80AQ	SMA6F80CAQ	88.80	97.60	1	1	80.0	4.63	129.6
SMA6F85AQ	SMA6F85CAQ	94.40	104.00	1	1	85.0	4.38	137.0
SMA6F90AQ	/	100.00	111.00	1	1	90.0	4.11	146.0
SMA6F100AQ	/	111.00	123.00	1	1	100.0	3.70	162.0

Notes:

(3) Pulse test: t_p≤50ms.

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



SMA6F SERIES-Q

■ Characteristics (Typical)

FIG1: Peak Pulse Power Rating Curve

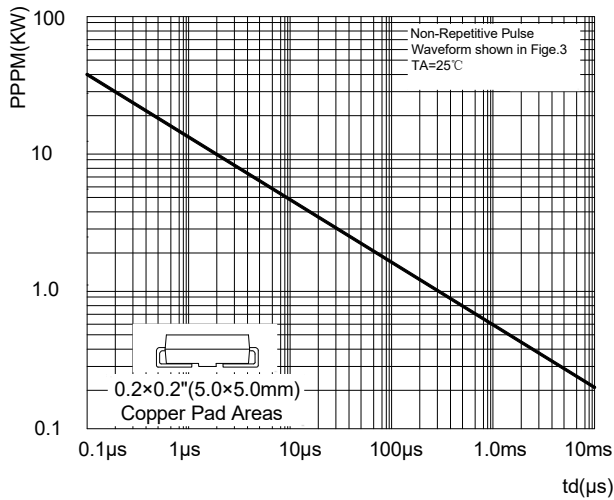


FIG2: Pulse Power or Current vs. Initial Junction Temperature

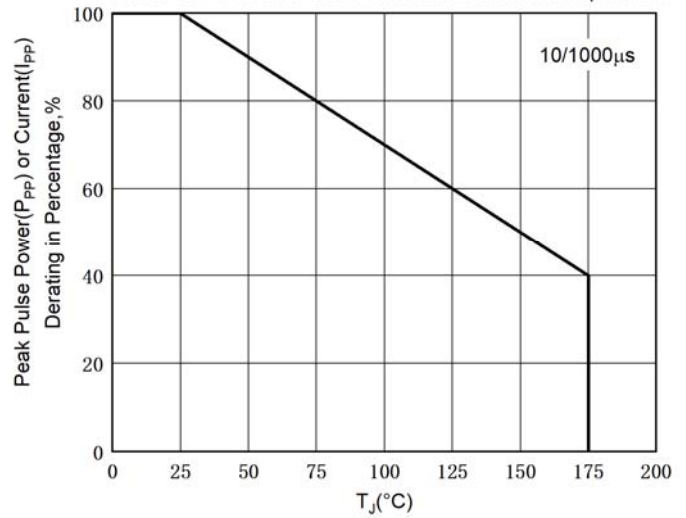


FIG3: Pulse Waveform

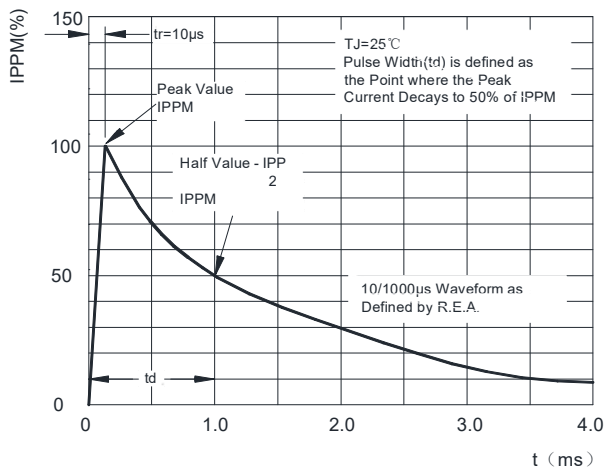


FIG4: Typical Transient Thermal Impedance

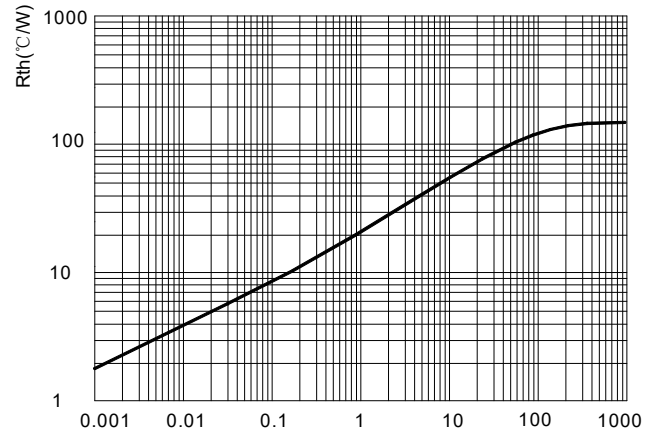


FIG5: Maximum Non-Repetitive Surge Current

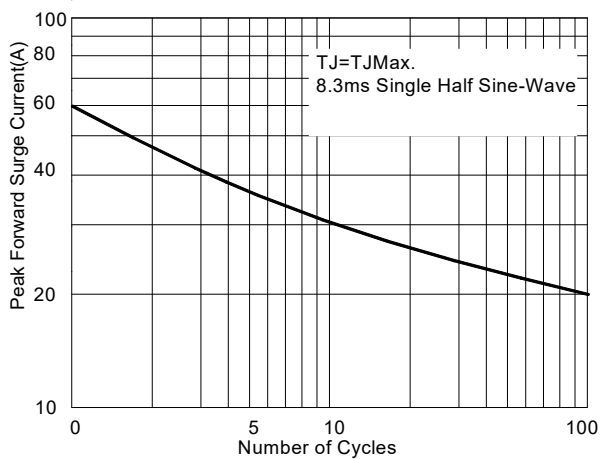
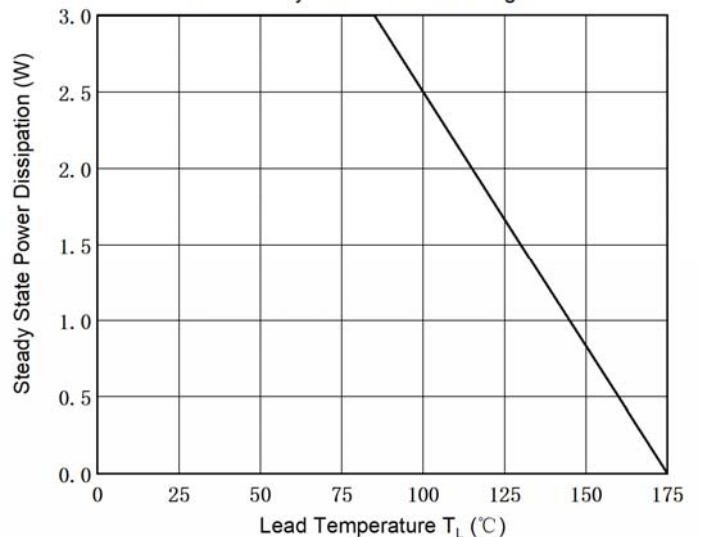


FIG6: Steady State Power Derating Curve



■ Ordering Information (Example)

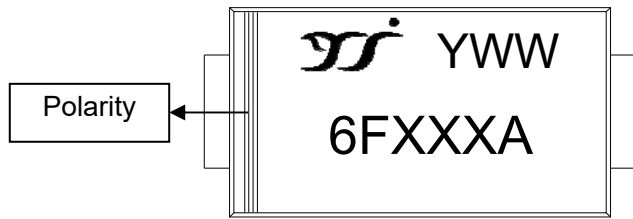
PREFERRED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMA6F SERIES	F1	Approximate 0.034	3000	24000	96000	7" reel



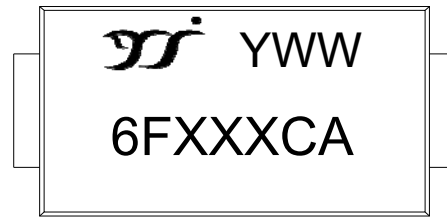
SMA6F SERIES-Q

■ Marking Information

Uni-directional



Bi-directional



Note:

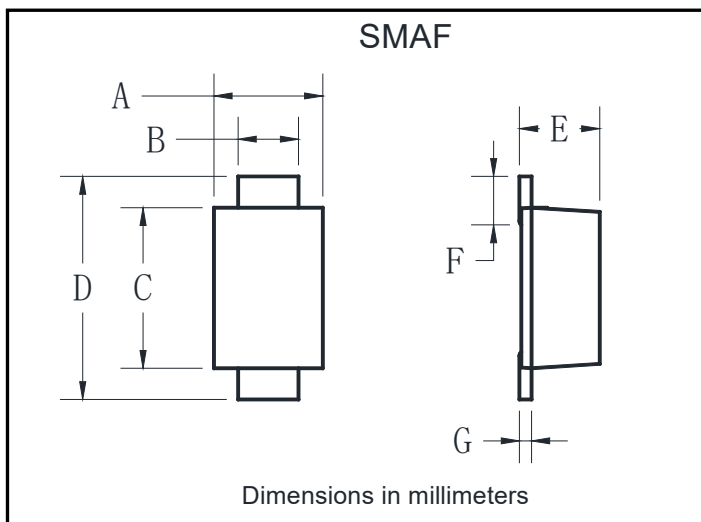
1. All marking is at middle of the product body
2. All marking is in laser printing
3. XXX is marking code, like 40A\40CA marking code is 40
4. Body color: Black
5. YWW is date code, "Y" is year. "WW" is week.

For instance:

The 17th week of 2021, date code is 117

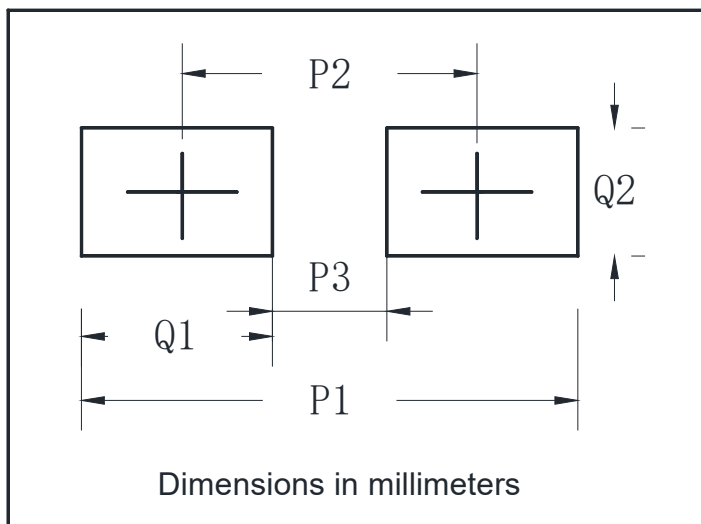
The 17th week of 2022, date code is 217

■ Outline Dimensions



SMAF		
Dim	Min	Max
A	2.40	2.80
B	1.35	1.45
C	3.40	3.60
D	4.40	4.80
E	1.05	1.25
F	0.50	1.00
G	0.16	0.25

■ Suggested Pad Layout



SMAF	
Dim	Millimeters
P1	6.50
P2	4.00
P3	1.50
Q1	2.50
Q2	1.70



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