SMA6J-Q1 Series

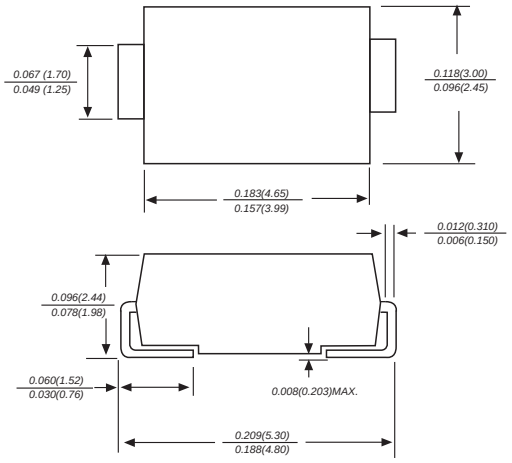
600W Surface Mount Transient Voltage Suppressors- 5.0V- 120V

Features

- 600W peak pulse power capability with a 10/1000 μs waveform, repetition rate (duty cycle): 0.01%.
- Low profile surface mounted application in order to optimize board space.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirments.
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

Package outline

SMA/DO-214AC



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AC
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

Maximum ratings (AT T_A=25°C 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	I_{PPM}	See Table 1	A
Steady State Power Dissipation	at T_L=75°C, Note 2	$P_{M(AV)}$	3.0	W
Peak Forward Surge Current	8.3ms Single Half Sine-Wave, Note 3	I_{FSM}	50	A
Operating temperature range		T_J	-55 ~ +150	°C
Storage temperature range		T_{STG}	-55 ~ +150	°C

Note 1. Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 2
2. Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per Fig 5
3. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum

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

Part No. Uni (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
SMA6J5.0A(CA)-Q1	5.0	6.40	7.00	10	9.2	65.2	800	6KE	6AE
SMA6J6.0A(CA)-Q1	6.0	6.67	7.37	10	10.3	58.3	800	6KG	6AG
SMA6J6.5A(CA)-Q1	6.5	7.22	7.98	10	11.2	53.6	500	6KK	6AK
SMA6J7.0A(CA)-Q1	7.0	7.78	8.60	10	12.0	50.0	200	6KM	6AM
SMA6J7.5A(CA)-Q1	7.5	8.33	9.21	1.0	12.9	46.5	100	6KP	6AP
SMA6J8.0A(CA)-Q1	8.0	8.89	9.83	1.0	13.6	44.1	50	6KR	6AR
SMA6J8.5A(CA)-Q1	8.5	9.44	10.4	1.0	14.4	41.7	20	6KT	6AT
SMA6J9.0A(CA)-Q1	9.0	10.0	11.1	1.0	15.4	39.0	10	6KV	6AV
SMA6J10A(CA)-Q1	10	11.1	12.3	1.0	17.0	35.3	5	6KX	6AX
SMA6J11A(CA)-Q1	11	12.2	13.5	1.0	18.2	33.0	5	6KZ	6AZ
SMA6J12A(CA)-Q1	12	13.3	14.7	1.0	19.9	30.2	5	6LE	6BE
SMA6J13A(CA)-Q1	13	14.4	15.9	1.0	21.5	27.9	5	6LG	6BG
SMA6J14A(CA)-Q1	14	15.6	17.2	1.0	23.2	25.9	5	6LK	6BK
SMA6J15A(CA)-Q1	15	16.7	18.5	1.0	24.4	24.6	5	6LM	6BM
SMA6J16A(CA)-Q1	16	17.8	19.7	1.0	26.0	23.0	5	6LP	6BP
SMA6J17A(CA)-Q1	17	18.9	20.9	1.0	27.6	21.7	5	6LR	6BR
SMA6J18A(CA)-Q1	18	20.0	22.1	1.0	29.2	20.5	5	6LT	6BT
SMA6J20A(CA)-Q1	20	22.2	24.5	1.0	32.4	18.5	5	6LV	6BV
SMA6J22A(CA)-Q1	22	24.4	26.9	1.0	35.5	16.9	5	6LX	6BX
SMA6J24A(CA)-Q1	24	26.7	29.5	1.0	38.9	15.4	5	6LZ	6BZ
SMA6J26A(CA)-Q1	26	28.9	31.9	1.0	42.1	14.3	5	6ME	6CE
SMA6J28A(CA)-Q1	28	31.1	34.4	1.0	45.4	13.2	5	6MG	6CG
SMA6J30A(CA)-Q1	30	33.3	36.8	1.0	48.4	12.4	5	6MK	6CK
SMA6J33A(CA)-Q1	33	36.7	40.6	1.0	53.3	11.3	5	6MM	6CM
SMA6J36A(CA)-Q1	36	40.0	44.2	1.0	58.1	10.3	5	6MP	6CP
SMA6J40A(CA)-Q1	40	44.4	49.1	1.0	64.5	9.3	5	6MR	6CR
SMA6J43A(CA)-Q1	43	47.8	52.8	1.0	69.4	8.6	5	6MT	6CT
SMA6J45A(CA)-Q1	45	50.0	55.3	1.0	72.7	8.3	5	6MV	6CV
SMA6J48A(CA)-Q1	48	53.3	58.9	1.0	77.4	7.8	5	6MX	6CX
SMA6J51A(CA)-Q1	51	56.7	62.7	1.0	82.4	7.3	5	6MZ	6CZ
SMA6J54A(CA)-Q1	54	60.0	66.3	1.0	87.1	6.9	5	6NE	6DE
SMA6J58A(CA)-Q1	58	64.4	71.2	1.0	93.6	6.4	5	6NG	6DG
SMA6J60A(CA)-Q1	60	66.7	73.7	1.0	96.8	6.2	5	6NK	6DK
SMA6J64A(CA)-Q1	64	71.1	78.6	1.0	103.0	5.8	5	6NM	6DM
SMA6J70A(CA)-Q1	70	77.8	86.0	1.0	113.0	5.3	5	6NP	6DP
SMA6J75A(CA)-Q1	75	83.3	92.1	1.0	121.0	5.0	5	6NR	6DR
SMA6J78A(CA)-Q1	78	86.7	95.8	1.0	126.0	4.8	5	6NT	6DT
SMA6J85A(CA)-Q1	85	94.4	104	1.0	137.0	4.4	5	6NV	6DV

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	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
SMA6J100A(CA)-Q1	100.0	111.0	123.0	1	162.0	3.7	1	NZ	DZ
SMA6J110A(CA)-Q1	110.0	122.0	135.0	1	177.0	3.4	1	PE	EE
SMA6J120A(CA)-Q1	120.0	133.0	147.0	1	193.0	3.1	1	PG	EG

Note 1. V_{BR} measured after I_T applied for 300us, I_T=square wave pulse or equivalent
2. Surge current waveform per Fig. 3 and derated per Fig. 2
3. For bi-directional types having V_{RWM} of 10 volts and less, the I_R limit is doubled
4. Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices, no suffix denotes 10% tolerance devices.
5. All terms and symbols are consistent with ANS/IEEE C62.35
6. Transient Voltage Suppressors (TVS) are devices used to protect vulnerable circuits from electrical overstress such as that caused by electrostatic discharge, inductive load switching and induced lightning. Within the TVS, damaging voltage spikes are limited by clamping or avalanche action of a rugged silicon pn junction which reduces the amplitude of the transient to a nondestructive level. See Fig. 7 & Fig. 8

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Rating and characteristic curves

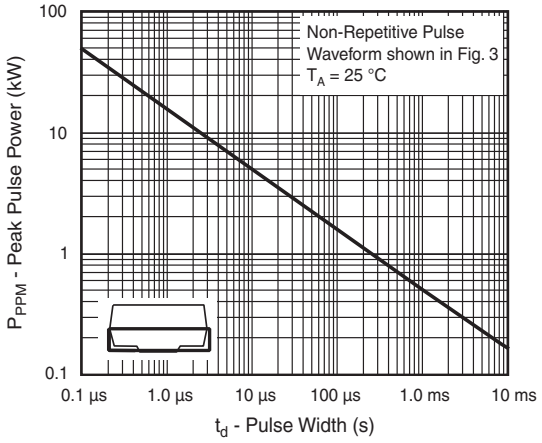

Fig. 1 - Peak Pulse Power Rating Curve

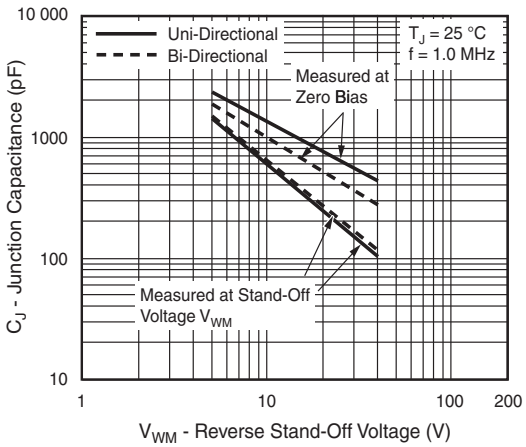

Fig. 4 - Typical Junction Capacitance

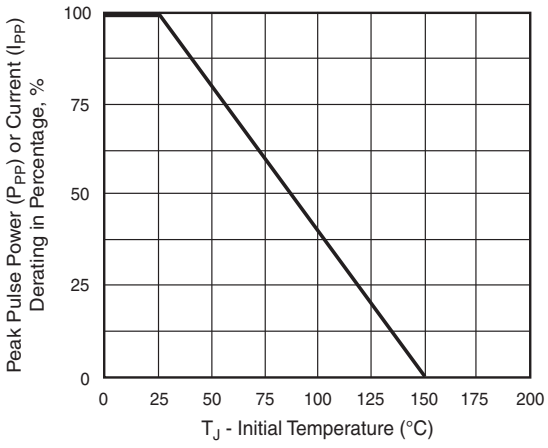

Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

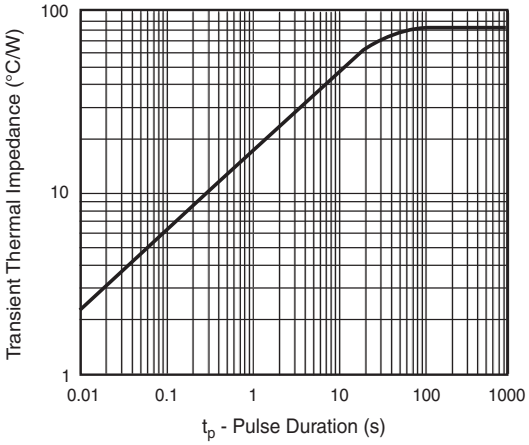

Fig. 5 - Typical Transient Thermal Impedance

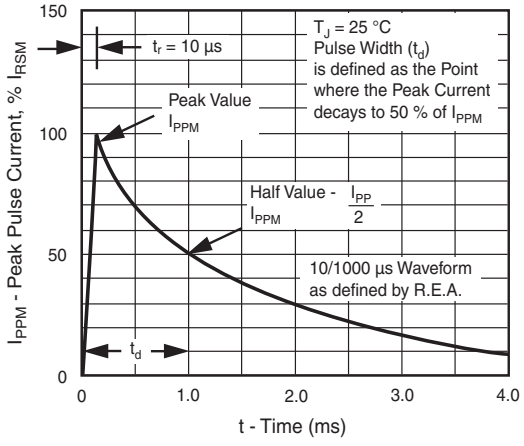

Fig. 3 - Pulse Waveform

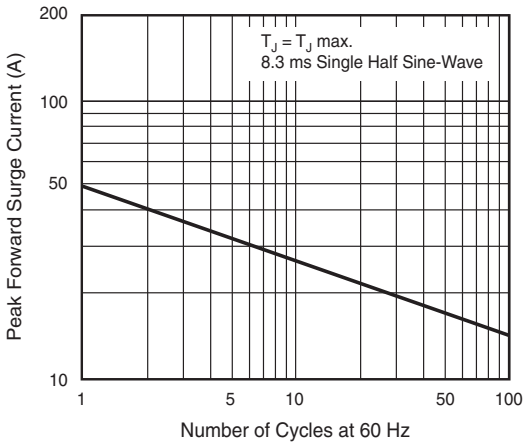

Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Use Only

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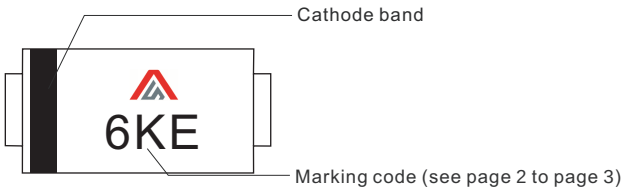
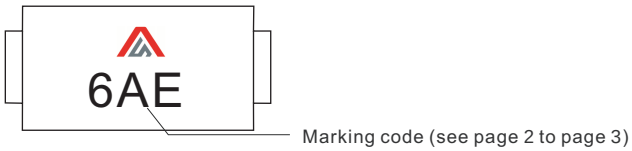
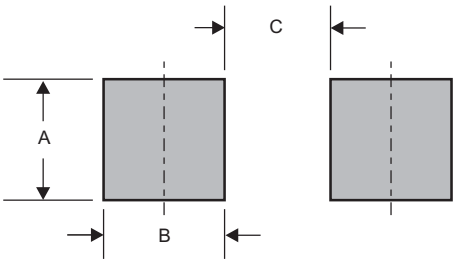
Pinning information

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
SMA	0.063 (1.60)	0.059 (1.50)	0.110 (2.80)