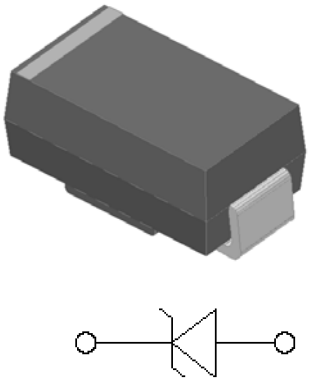
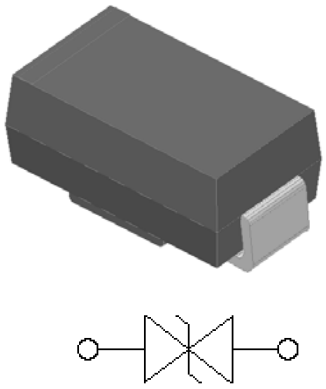
Surface Mount Transient Voltage Suppressor Diodes

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 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS

Typical Applications

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, computer, industrial, telecommunication.

Mechanical Data

- **Package**: DO-214AC (SMA)
  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 (Ta=25℃ 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 TL=75℃	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}	℃	-55 to +150
Electrostatic Discharge（IEC61000-4-2 air discharge）	ESD	KV	±30
Electrostatic Discharge（IEC61000-4-2 contact discharge）			

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

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

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

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	$R_{\theta JL}$	℃/W	junction to lead	30
	$R_{\theta JA}$	℃/W	junction to ambient	120

Notes:

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

(2) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

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

Part Number (Uni)	Part Number (Bi)	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 Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(3)(mA)				
SMA6J5.0A	/	6.40	7.07	10	800	5.0	65.22	9.2
SMA6J6.0A	/	6.67	7.37	10	800	6.0	58.25	10.3
SMA6J6.5A	/	7.22	7.98	10	500	6.5	53.57	11.2
SMA6J7.0A	/	7.78	8.60	10	200	7.0	50.00	12.0
SMA6J7.5A	/	8.33	9.21	1	100	7.5	46.51	12.9
SMA6J8.0A	/	8.89	9.83	1	50	8.0	44.12	13.6
SMA6J8.5A	/	9.44	10.40	1	10	8.5	41.67	14.4
SMA6J9.0A	/	10.00	11.10	1	5	9.0	38.96	15.4
SMA6J10A	/	11.10	12.30	1	5	10.0	35.29	17.0
SMA6J11A	SMA6J11CA	12.20	13.50	1	5	11.0	32.97	18.2
SMA6J12A	SMA6J12CA	13.30	14.70	1	5	12.0	30.15	19.9
SMA6J13A	SMA6J13CA	14.40	15.90	1	1	13.0	27.91	21.5
SMA6J14A	SMA6J14CA	15.60	17.20	1	1	14.0	25.86	23.2
SMA6J15A	SMA6J15CA	16.70	18.50	1	1	15.0	24.59	24.4
SMA6J16A	SMA6J16CA	17.80	19.70	1	1	16.0	23.08	26.0
SMA6J17A	SMA6J17CA	18.90	20.90	1	1	17.0	21.74	27.6
SMA6J18A	SMA6J18CA	20.00	22.10	1	1	18.0	20.55	29.2
SMA6J19A	SMA6J19CA	21.10	23.30	1	1	19.0	19.49	30.8
SMA6J20A	SMA6J20CA	22.20	24.50	1	1	20.0	18.52	32.4
SMA6J22A	SMA6J22CA	24.40	26.90	1	1	22.0	16.90	35.5
SMA6J24A	SMA6J24CA	26.70	29.50	1	1	24.0	15.42	38.9
SMA6J26A	SMA6J26CA	28.90	31.90	1	1	26.0	14.25	42.1

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

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R[6]@ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}[5] (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T[4](mA)				
SMA6J28A	SMA6J28CA	31.10	34.40	1	1	28.0	13.22	45.4
SMA6J30A	SMA6J30CA	33.30	36.80	1	1	30.0	12.40	48.4
SMA6J33A	SMA6J33CA	36.70	40.60	1	1	33.0	11.26	53.3
SMA6J36A	SMA6J36CA	40.00	44.20	1	1	36.0	10.33	58.1
SMA6J40A	SMA6J40CA	44.40	49.10	1	1	40.0	9.30	64.5
SMA6J43A	SMA6J43CA	47.80	52.80	1	1	43.0	8.65	69.4
SMA6J45A	SMA6J45CA	50.00	55.30	1	1	45.0	8.25	72.7
SMA6J48A	SMA6J48CA	53.30	58.90	1	1	48.0	7.75	77.4
SMA6J51A	SMA6J51CA	56.70	62.70	1	1	51.0	7.28	82.4
SMA6J54A	SMA6J54CA	60.00	66.30	1	1	54.0	6.89	87.1
SMA6J58A	SMA6J58CA	64.40	71.20	1	1	58.0	6.41	93.6
SMA6J60A	SMA6J60CA	66.70	73.70	1	1	60.0	6.20	96.8
SMA6J64A	SMA6J64CA	71.10	78.60	1	1	64.0	5.83	103.0
SMA6J70A	SMA6J70CA	77.80	86.00	1	1	70.0	5.31	113.0
SMA6J75A	SMA6J75CA	83.30	92.10	1	1	75.0	4.96	121.0
SMA6J78A	SMA6J78CA	86.70	95.80	1	1	78.0	4.76	126.0
SMA6J80A	SMA6J80CA	88.80	97.60	1	1	80.0	4.63	129.6
SMA6J85A	SMA6J85CA	94.40	104.00	1	1	85.0	4.38	137.0
SMA6J90A	/	100.00	111.00	1	1	90.0	4.11	146.0
SMA6J100A	/	111.00	123.00	1	1	100.0	3.70	162.0
SMA6J110A	/	122.00	135.00	1	1	110.0	3.39	177.0
SMA6J120A	/	133.00	147.00	1	1	120.0	3.11	193.0
SMA6J130A	/	144.00	159.00	1	1	130.0	2.87	209.0

Notes:
(3) Pulse test: t_p≤50ms.
(4) Surge current waveform per Fig. 3 and derated per Fig.2.

■ Characteristics (Typical)

FIG1:Peak Pulse Power Rating Curve

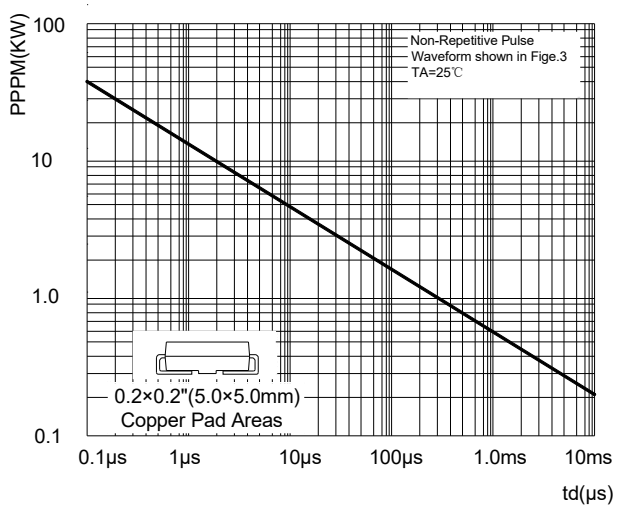
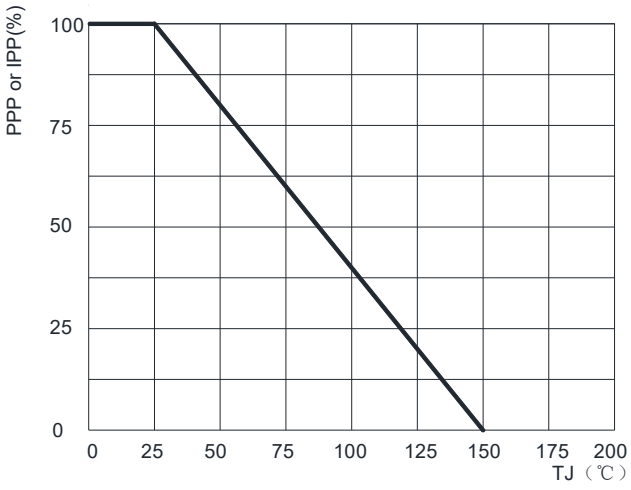


FIG2: Pulse Power or Current vs. Initial Junction Temperature



■ Characteristics (Typical)

FIG3: Pulse Waveform

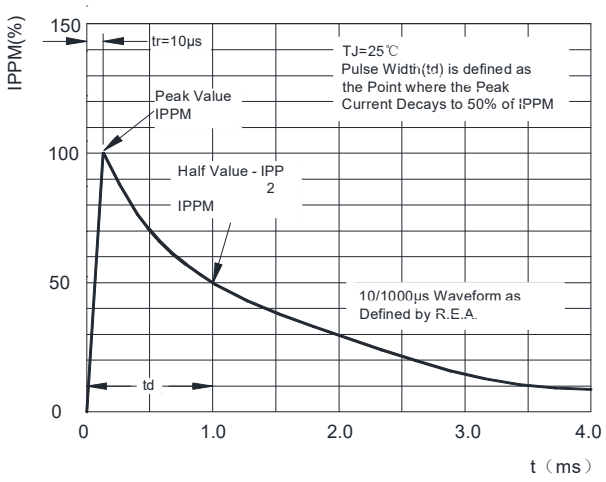


FIG4:Typical Transient Thermal Impedance

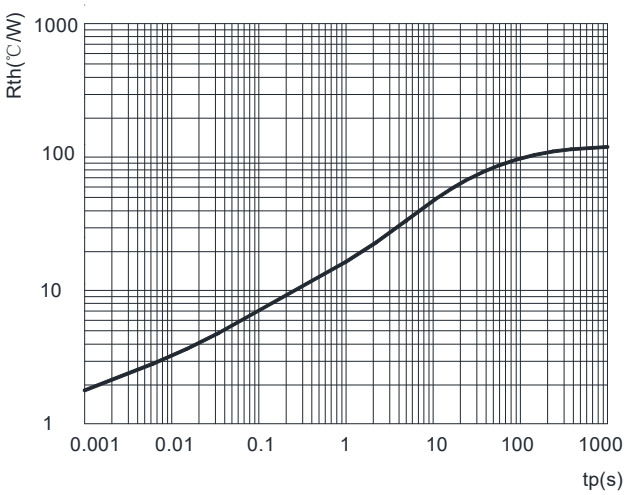


FIG5: Maximum Non-Repetitive Surge Current

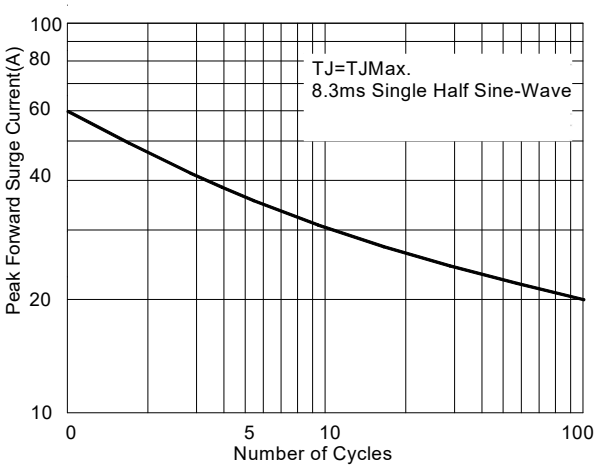
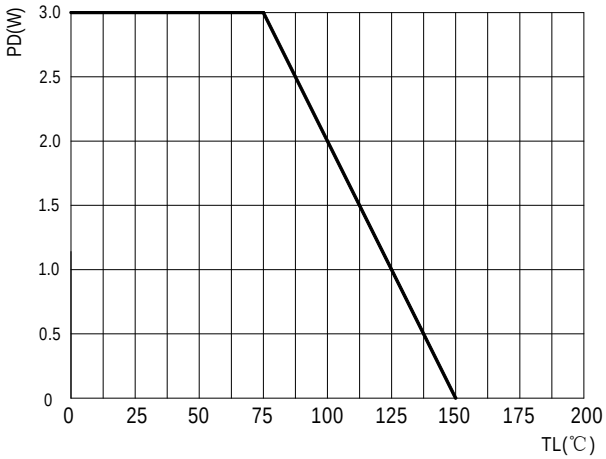


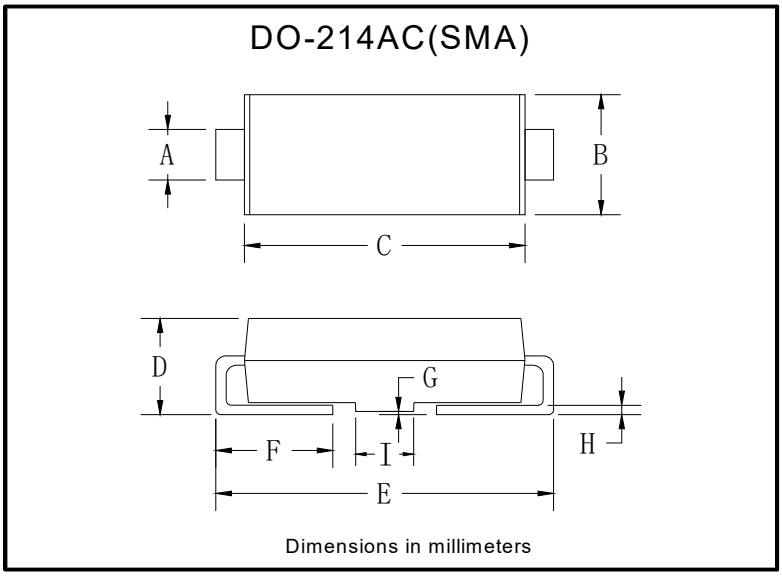
FIG6:Steady State Power Dissipation



■Ordering Information (Example)

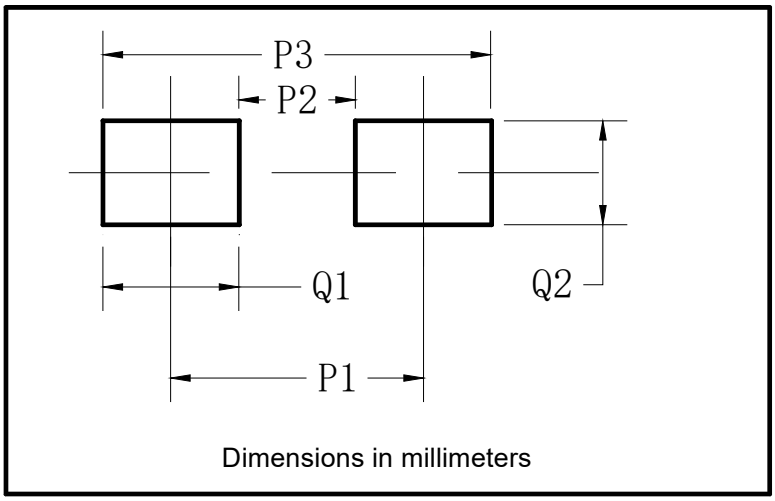
PREFERED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMA6J SERIES	F1	Approximate 0.059	5000	/	80000	13” reel
SMA6J SERIES	F2	Approximate 0.059	7500	/	120000	13” reel
SMA6J SERIES	F3	Approximate 0.059	7500	/	60000	13” reel
SMA6J SERIES	F4	Approximate 0.059	1800	7200	57600	7” reel
SMA6J SERIES	F5	Approximate 0.059	2000	8000	64000	7” reel
SMA6J SERIES	F6	Approximate 0.059	5000	/	100000	13” reel

■ Outline Dimensions



DO-214AC(SMA)		
Dim	Min	Max
A	1.25	1.58
B	2.40	2.83
C	4.00	4.75
D	1.90	2.30
E	4.93	5.28
F	0.76	1.41
G	0.05	0.20
H	0.15	0.31
I	1.70	2.10

■Suggested Pad Layout



DO-214AC(SMA)	
Dim	**Millimeters**
P1	4.00
P2	1.50
P3	6.50
Q1	2.50
Q2	1.70

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