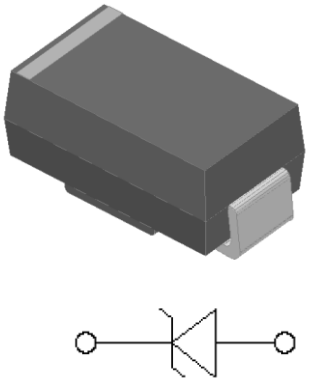
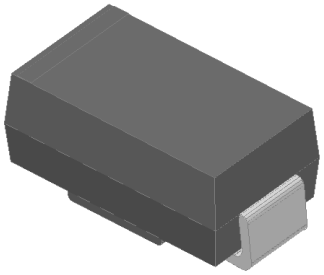
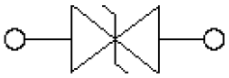
Surface Mount Transient Voltage Suppressor Diodes

Uni-directional



Bi-directional





Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 400 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	400
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	1.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (2)	I_{FSM}	A	40
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 (3)	V_F	V	3.5/5.0
Maximum instantaneous forward voltage @ at 1A for unidirectional only	V_F	V	1.5

■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

(3) V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

■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)				
SMAJ5.0A	SMAJ5.0CA	6.40	7.07	10	800	5.0	43.38	9.2
SMAJ6.0A	SMAJ6.0CA	6.67	7.37	10	800	6.0	38.83	10.3
SMAJ6.5A	SMAJ6.5CA	7.22	7.98	10	500	6.5	35.71	11.2
SMAJ7.0A	SMAJ7.0CA	7.78	8.60	10	200	7.0	33.33	12.0
SMAJ7.5A	SMAJ7.5CA	8.33	9.21	1	100	7.5	31.01	12.9
SMAJ8.0A	SMAJ8.0CA	8.89	9.83	1	50	8.0	29.41	13.6
SMAJ8.5A	SMAJ8.5CA	9.44	10.40	1	10	8.5	27.78	14.4
SMAJ9.0A	SMAJ9.0CA	10.00	11.10	1	5	9.0	25.97	15.4
SMAJ10A	SMAJ10CA	11.10	12.30	1	5	10.0	23.53	17.0
SMAJ11A	SMAJ11CA	12.20	13.50	1	5	11.0	21.98	18.2
SMAJ12A	SMAJ12CA	13.30	14.70	1	1	12.0	20.10	19.9
SMAJ13A	SMAJ13CA	14.40	15.90	1	1	13.0	18.60	21.5
SMAJ14A	SMAJ14CA	15.60	17.20	1	1	14.0	17.24	23.2
SMAJ15A	SMAJ15CA	16.70	18.50	1	1	15.0	16.39	24.4
SMAJ16A	SMAJ16CA	17.80	19.70	1	1	16.0	15.40	26.0
SMAJ17A	SMAJ17CA	18.90	20.90	1	1	17.0	14.49	27.6
SMAJ18A	SMAJ18CA	20.00	22.10	1	1	18.0	13.70	29.2
SMAJ19A	SMAJ19CA	21.10	23.30	1	1	19.0	13.00	30.8
SMAJ20A	SMAJ20CA	22.20	24.50	1	1	20.0	12.35	32.4
SMAJ22A	SMAJ22CA	24.40	26.90	1	1	22.0	11.27	35.5
SMAJ24A	SMAJ24CA	26.70	29.50	1	1	24.0	10.28	38.9
SMAJ26A	SMAJ26CA	28.90	31.90	1	1	26.0	9.50	42.1
SMAJ28A	SMAJ28CA	31.10	34.40	1	1	28.0	8.81	45.4
SMAJ30A	SMAJ30CA	33.3	36.8	1	1	30.0	8.26	48.4
SMAJ33A	SMAJ33CA	36.7	40.6	1	1	33.0	7.5	53.3
SMAJ36A	SMAJ36CA	40	44.2	1	1	36.0	6.88	58.1
SMAJ40A	SMAJ40CA	44.4	49.1	1	1	40.0	6.2	64.5
SMAJ43A	SMAJ43CA	47.8	52.8	1	1	43.0	5.76	69.4
SMAJ45A	SMAJ45CA	50	55.3	1	1	45.0	5.5	72.7
SMAJ48A	SMAJ48CA	53.3	58.9	1	1	48.0	5.17	77.4
SMAJ51A	SMAJ51CA	56.7	62.7	1	1	51.0	4.85	82.4
SMAJ54A	SMAJ54CA	60	66.3	1	1	54.0	4.59	87.1

■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)				
SMAJ58A	SMAJ58CA	64.4	71.2	1	1	58.0	4.27	93.6
SMAJ60A	SMAJ60CA	66.7	73.7	1	1	60.0	4.13	96.8
SMAJ64A	SMAJ64CA	71.1	78.6	1	1	64.0	3.88	103
SMAJ70A	SMAJ70CA	77.8	86	1	1	70.0	3.54	113
SMAJ75A	SMAJ75CA	83.3	92.1	1	1	75.0	3.31	121
SMAJ78A	SMAJ78CA	86.7	95.8	1	1	78.0	3.17	126
SMAJ80A	SMAJ80CA	88.8	97.6	1	1	80.0	3.09	129
SMAJ85A	SMAJ85CA	94.4	104	1	1	85.0	2.92	137
SMAJ90A	SMAJ90CA	100	111	1	1	90.0	2.74	146
SMAJ100A	SMAJ100CA	111	123	1	1	100.0	2.47	162
SMAJ110A	SMAJ110CA	122	135	1	1	110.0	2.26	177
SMAJ120A	SMAJ120CA	133	147	1	1	120.0	2.07	193
SMAJ130A	SMAJ130CA	144	159	1	1	130.0	1.91	209
SMAJ140A	SMAJ140CA	155	171	1	1	140.0	1.76	226.8
SMAJ150A	SMAJ150CA	167	185	1	1	150.0	1.65	243
SMAJ160A	SMAJ160CA	178	197	1	1	160.0	1.54	259
SMAJ170A	SMAJ170CA	189	209	1	1	170.0	1.45	275
SMAJ180A	SMAJ180CA	200	220	1	1	180.0	1.37	291.6
SMAJ190A	SMAJ190CA	211	232	1	1	190.0	1.3	307.8
SMAJ200A	SMAJ200CA	224	247	1	1	200.0	1.23	324
SMAJ220A	SMAJ220CA	246	272	1	1	220.0	1.12	356
SMAJ250A	SMAJ250CA	279	309	1	1	250.0	0.99	405
SMAJ300A	SMAJ300CA	335	371	1	1	300.0	0.82	486
SMAJ350A	SMAJ350CA	391	432	1	1	350.0	0.71	567
SMAJ400A	SMAJ400CA	447	494	1	1	400.0	0.62	648
SMAJ440A	SMAJ440CA	492	543	1	1	440.0	0.56	713

(4) Pulse test: t_p≤50ms

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

(6) For bi-directional types having V_{RWM} of 10 V and less, the I_R limit is doubled.

■ Characteristics (Typical)

FIG1:Peak Pulse Power Rating Curve

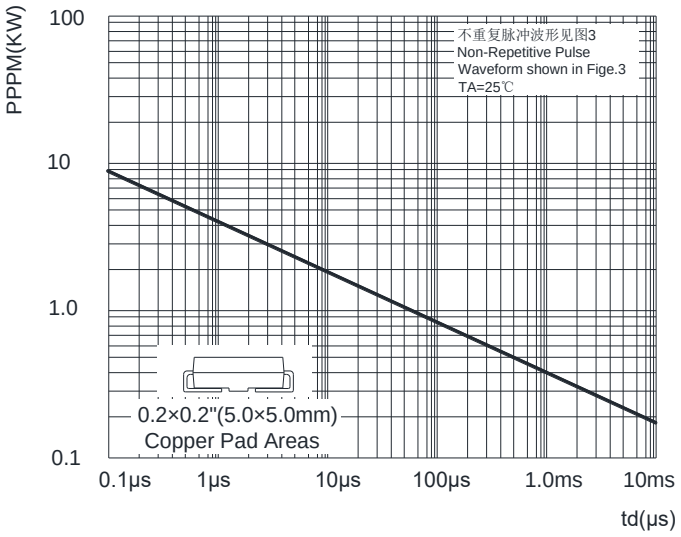


FIG2: Pulse Power or Current vs. Initial Junction Temperature

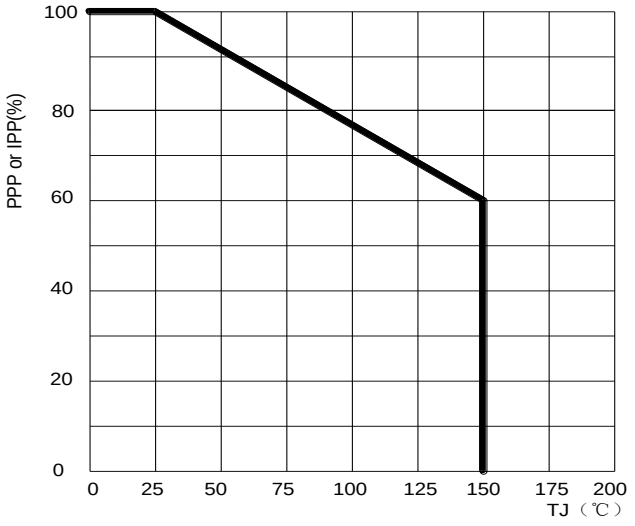


FIG3: Pulse Waveform

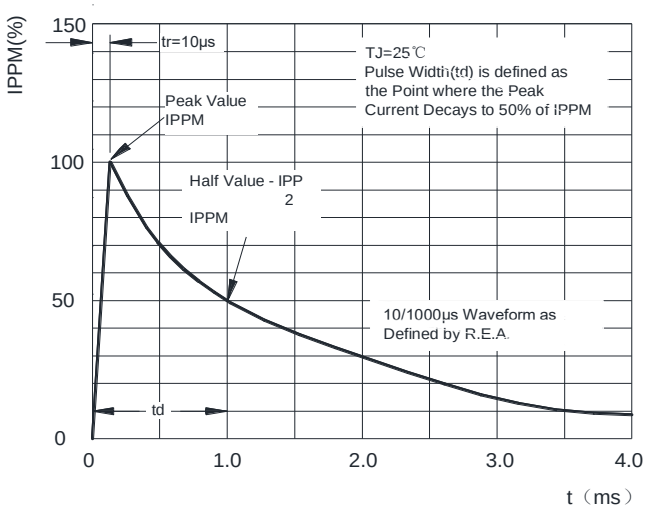


FIG4:Typical Transient Thermal Impedance

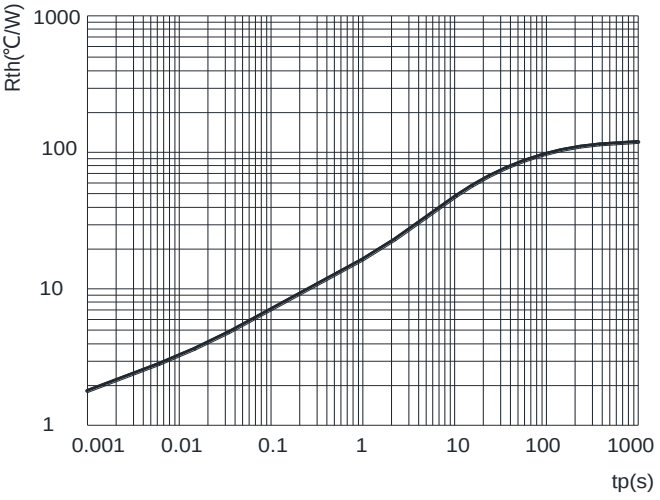
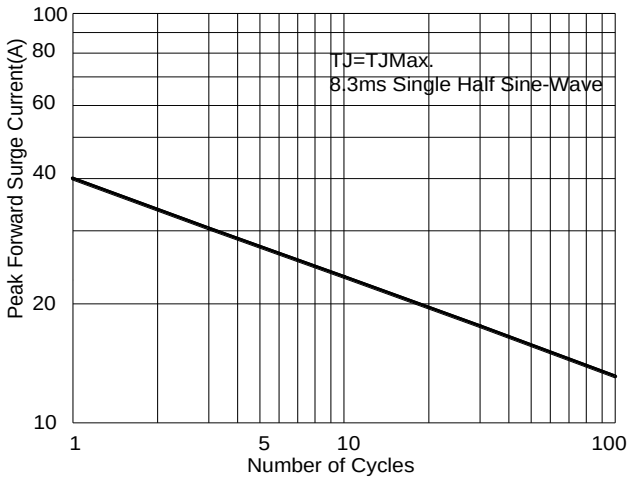


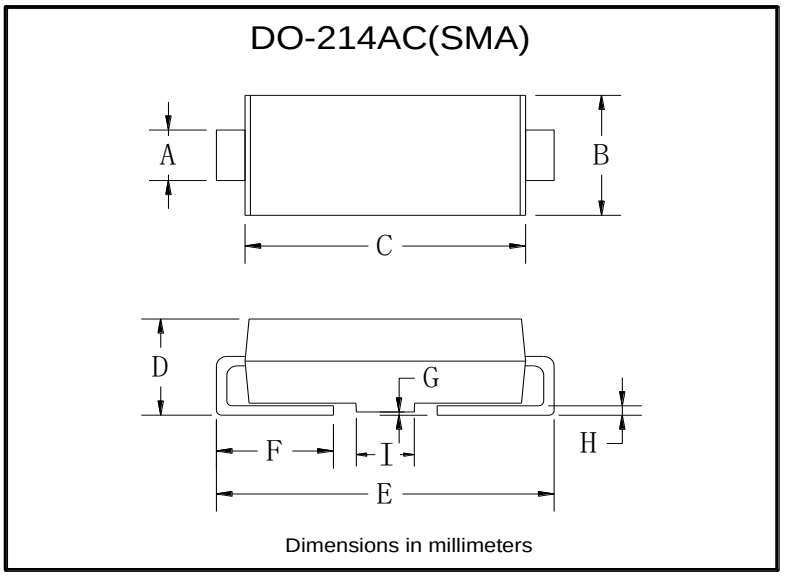
FIG5: Maximum Non-Repetitive Surge Current



■**Ordering Information** (Example)

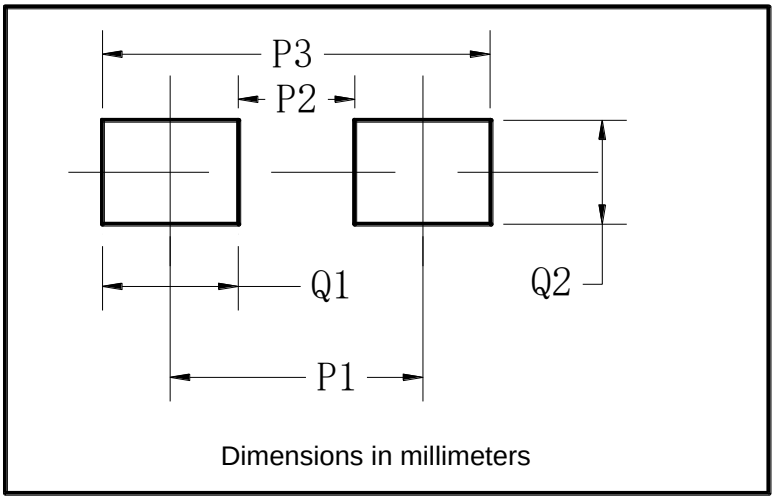
PREFERED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMAJ SERIES	F1	Approximate 0.059	5000	/	80000	13” reel
SMAJ SERIES	F2	Approximate 0.059	7500	/	120000	13” reel
SMAJ SERIES	F3	Approximate 0.059	7500	/	60000	13” reel
SMAJ SERIES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

Notice

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