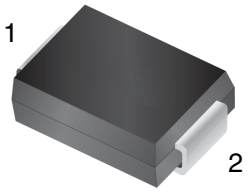
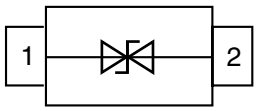
Power TVS in DO-214AC/SMA

Features

- Glass passivated chip
- 400W peak pulse power(10/1000us)
- High accuracy, 5% tolerance
- Uni and Bidirectional unit
- Low clamping voltage
- Low Leakage current
- Very fast response time

Bidirectional

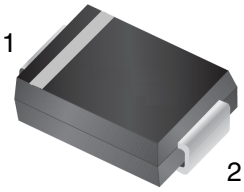


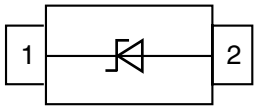


Mechanical Data

- **Case:** DO-214AC/SMA (plastic package). RoHS compliant
- **Molding Compound Flammability Rating:** UL 94 V-0
- **Terminals:** High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Unidirectional





Applications

- Computers
- Telecom system
- Industrial equipments
- Consumer electronic applications
- Other VCC bus and I/O interfaces

Absolute Maximum Ratings

Ratings at 25 °C, ambient temperature unless otherwise specified

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000us waveform (1)	P_{PP}	400	W
Maximum peak reverse pulse current a 10/1000us waveform (1)	I_{PP}	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave (2)	I_{FSM}	40	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	℃

Notes:

1.Non-repetitive current pulse,per Fig.5 and detated above TA=25°C per Fig.1

2.Measured on 8.3ms single half sine-wave,or equivalent square wave,duty cycle=4 pulses per minute maximum

Electrical Characteristics

(T_A = 25 °C unless otherwise specified)

Part Number	Direction	Maximum Working Voltage V_{RWM} (V)	Maximum Reverse Current@V_{RWM} I_R max(uA)	Breakdown Voltage@I_T			Peak Surge Current I_{PP} (A)	Maximum Clamping Voltage@I_{PP} V_C (V)
				V_{BR} min(V)	V_{BR} max(V)	I_T(mA)		
SMAJ5.0A	Uni-Dir	5.0	800	6.4	7.07	10	43.48	9.2
SMAJ5.0CA	Bi-Dir	5.0	1600	6.4	7.07	10	43.48	9.2
SMAJ6.0A	Uni-Dir	6.0	800	6.67	7.37	10	38.83	10.3
SMAJ6.0CA	Bi-Dir	6.0	1600	6.67	7.37	10	38.83	10.3
SMAJ6.5A	Uni-Dir	6.5	500	7.22	7.98	10	35.71	11.2
SMAJ6.5CA	Bi-Dir	6.5	1000	7.22	7.98	10	35.71	11.2
SMAJ7.0A	Uni-Dir	7.0	200	7.78	8.60	10	33.33	12.0
SMAJ7.0CA	Bi-Dir	7.0	400	7.78	8.60	10	33.33	12.0
SMAJ7.5A	Uni-Dir	7.5	100	8.33	9.21	1	31.01	12.9
SMAJ7.5CA	Bi-Dir	7.5	200	8.33	9.21	1	31.01	12.9
SMAJ8.0A	Uni-Dir	8.0	50	8.89	9.83	1	29.41	13.6
SMAJ8.0CA	Bi-Dir	8.0	100	8.89	9.83	1	29.41	13.6
SMAJ8.5A	Uni-Dir	8.5	10	9.44	10.40	1	27.78	14.4
SMAJ8.5CA	Bi-Dir	8.5	20	9.44	10.40	1	27.78	14.4
SMAJ9.0A	Uni-Dir	9.0	5	10.00	11.10	1	25.97	15.4
SMAJ9.0CA	Bi-Dir	9.0	10	10.00	11.10	1	25.97	15.4
SMAJ10A	Uni-Dir	10.0	5	11.10	12.30	1	23.53	17.0
SMAJ10CA	Bi-Dir	10.0	10	11.10	12.30	1	23.53	17.0
SMAJ11A	Uni-Dir	11.0	1	12.20	13.50	1	21.98	18.2
SMAJ11CA	Bi-Dir	11.0	1	12.20	13.50	1	21.98	18.2
SMAJ12A	Uni-Dir	12.0	1	13.30	14.70	1	20.10	19.9
SMAJ12CA	Bi-Dir	12.0	1	13.30	14.70	1	20.10	19.9
SMAJ13A	Uni-Dir	13.0	1	14.40	15.90	1	18.60	21.5
SMAJ13CA	Bi-Dir	13.0	1	14.40	15.90	1	18.60	21.5
SMAJ14A	Uni-Dir	14.0	1	15.60	17.20	1	17.24	23.2
SMAJ14CA	Bi-Dir	14.0	1	15.60	17.20	1	17.24	23.2
SMAJ15A	Uni-Dir	15.0	1	16.70	18.50	1	16.39	24.4
SMAJ15CA	Bi-Dir	15.0	1	16.70	18.50	1	16.39	24.4
SMAJ16A	Uni-Dir	16.0	1	17.80	19.70	1	15.38	26.0
SMAJ16CA	Bi-Dir	16.0	1	17.80	19.70	1	15.38	26.0
SMAJ17A	Uni-Dir	17.0	1	18.90	20.90	1	14.49	27.6
SMAJ17CA	Bi-Dir	17.0	1	18.90	20.90	1	14.49	27.6
SMAJ18A	Uni-Dir	18.0	1	20.00	22.10	1	13.70	29.2
SMAJ18CA	Bi-Dir	18.0	1	20.00	22.10	1	13.70	29.2
SMAJ19A	Uni-Dir	19.0	1	21.10	23.30	1	13.00	30.8
SMAJ19CA	Bi-Dir	19.0	1	21.10	23.30	1	13.00	30.8
SMAJ20A	Uni-Dir	20.0	1	22.20	24.50	1	12.35	32.4
SMAJ20CA	Bi-Dir	20.0	1	22.20	24.50	1	12.35	32.4

Part Number	Direction	Maximum Working Voltage V_{RWM} (V)	Maximum Reverse Current@V_{RWM} I_R max(uA)	Breakdown Voltage@I_T			Peak Surge Current I_{PP} (A)	Maximum Clamping Voltage@I_{PP} V_C (V)
				V_{BR} min(V)	V_{BR} max(V)	I_T(mA)		
SMAJ22A	Uni-Dir	22.0	1	24.40	26.90	1	11.27	35.5
SMAJ22CA	Bi-Dir	22.0	1	24.40	26.90	1	11.27	35.5
SMAJ24A	Uni-Dir	24.0	1	26.70	29.50	1	10.28	38.9
SMAJ24CA	Bi-Dir	24.0	1	26.70	29.50	1	10.28	38.9
SMAJ26A	Uni-Dir	26.0	1	28.90	31.90	1	9.50	42.1
SMAJ26CA	Bi-Dir	26.0	1	28.90	31.90	1	9.50	42.1
SMAJ28A	Uni-Dir	28.0	1	31.10	34.40	1	8.81	45.4
SMAJ28CA	Bi-Dir	28.0	1	31.10	34.40	1	8.81	45.4
SMAJ30A	Uni-Dir	30.0	1	33.30	36.80	1	8.26	48.4
SMAJ30CA	Bi-Dir	30.0	1	33.30	36.80	1	8.26	48.4
SMAJ33A	Uni-Dir	33.0	1	36.70	40.60	1	7.50	53.3
SMAJ33CA	Bi-Dir	33.0	1	36.70	40.60	1	7.50	53.3
SMAJ36A	Uni-Dir	36.0	1	40.00	44.20	1	6.88	58.1
SMAJ36CA	Bi-Dir	36.0	1	40.00	44.20	1	6.88	58.1
SMAJ40A	Uni-Dir	40.0	1	44.40	49.10	1	6.20	64.5
SMAJ40CA	Bi-Dir	40.0	1	44.40	49.10	1	6.20	64.5
SMAJ43A	Uni-Dir	43.0	1	47.80	52.80	1	5.76	69.4
SMAJ43CA	Bi-Dir	43.0	1	47.80	52.80	1	5.76	69.4
SMAJ45A	Uni-Dir	45.0	1	50.00	55.30	1	5.50	72.7
SMAJ45CA	Bi-Dir	45.0	1	50.00	55.30	1	5.50	72.7
SMAJ48A	Uni-Dir	48.0	1	53.30	58.90	1	5.17	77.4
SMAJ48CA	Bi-Dir	48.0	1	53.30	58.90	1	5.17	77.4
SMAJ51A	Uni-Dir	51.0	1	56.70	62.70	1	4.85	82.4
SMAJ51CA	Bi-Dir	51.0	1	56.70	62.70	1	4.85	82.4
SMAJ54A	Uni-Dir	54.0	1	60.00	66.30	1	4.59	87.1
SMAJ54CA	Bi-Dir	54.0	1	60.00	66.30	1	4.59	87.1
SMAJ58A	Uni-Dir	58.0	1	64.40	71.20	1	4.27	93.6
SMAJ58CA	Bi-Dir	58.0	1	64.40	71.20	1	4.27	93.6
SMAJ60A	Uni-Dir	60.0	1	66.70	73.70	1	4.13	96.8
SMAJ60CA	Bi-Dir	60.0	1	66.70	73.70	1	4.13	96.8
SMAJ64A	Uni-Dir	64.0	1	71.10	78.60	1	3.88	103.0
SMAJ64CA	Bi-Dir	64.0	1	71.10	78.60	1	3.88	103.0
SMAJ70A	Uni-Dir	70.0	1	77.80	86.00	1	3.54	113.0
SMAJ70CA	Bi-Dir	70.0	1	77.80	86.00	1	3.54	113.0
SMAJ75A	Uni-Dir	75.0	1	83.30	92.10	1	3.31	121.0
SMAJ75CA	Bi-Dir	75.0	1	83.30	92.10	1	3.31	121.0
SMAJ78A	Uni-Dir	78.0	1	86.70	95.80	1	3.17	126.0
SMAJ78CA	Bi-Dir	78.0	1	86.70	95.80	1	3.17	126.0

Part Number	Direction	Maximum Working Voltage V_{RWM} (V)	Maximum Reverse Current@V_{RWM} I_R max(uA)	Breakdown Voltage@I_T			Peak Surge Current I_{PP} (A)	Maximum Clamping Voltage@I_{PP} V_C (V)
				V_{BR} min(V)	V_{BR} max(V)	I_T(mA)		
SMAJ80A	Uni-Dir	80.0	1	88.80	97.60	1	3.09	129.6
SMAJ80CA	Bi-Dir	80.0	1	88.80	97.60	1	3.09	129.6
SMAJ85A	Uni-Dir	85.0	1	94.40	104.00	1	2.92	137.0
SMAJ85CA	Bi-Dir	85.0	1	94.40	104.00	1	2.92	137.0
SMAJ90A	Uni-Dir	90.0	1	100.00	111.00	1	2.74	146.0
SMAJ90CA	Bi-Dir	90.0	1	100.00	111.00	1	2.74	146.0
SMAJ100A	Uni-Dir	100.0	1	111.00	123.00	1	2.47	162.0
SMAJ100CA	Bi-Dir	100.0	1	111.00	123.00	1	2.47	162.0
SMAJ110A	Uni-Dir	110.0	1	122.00	135.00	1	2.26	177.0
SMAJ110CA	Bi-Dir	110.0	1	122.00	135.00	1	2.26	177.0
SMAJ120A	Uni-Dir	120.0	1	133.00	147.00	1	2.07	193.0
SMAJ120CA	Bi-Dir	120.0	1	133.00	147.00	1	2.07	193.0
SMAJ130A	Uni-Dir	130.0	1	144.00	159.00	1	1.91	209.0
SMAJ130CA	Bi-Dir	130.0	1	144.00	159.00	1	1.91	209.0
SMAJ140A	Uni-Dir	140.0	1	155.00	171.00	1	1.76	226.8
SMAJ140CA	Bi-Dir	140.0	1	155.00	171.00	1	1.76	226.8
SMAJ150A	Uni-Dir	150.0	1	167.00	185.00	1	1.65	243.0
SMAJ150CA	Bi-Dir	150.0	1	167.00	185.00	1	1.65	243.0
SMAJ160A	Uni-Dir	160.0	1	178.00	197.00	1	1.54	259.0
SMAJ160CA	Bi-Dir	160.0	1	178.00	197.00	1	1.54	259.0
SMAJ170A	Uni-Dir	170.0	1	189.00	209.00	1	1.45	275.0
SMAJ170CA	Bi-Dir	170.0	1	189.00	209.00	1	1.45	275.0
SMAJ180A	Uni-Dir	180.0	1	200.00	220.00	1	1.37	291.6
SMAJ180CA	Bi-Dir	180.0	1	200.00	220.00	1	1.37	291.6
SMAJ190A	Uni-Dir	190.0	1	211.00	232.00	1	1.30	307.8
SMAJ190CA	Bi-Dir	190.0	1	211.00	232.00	1	1.30	307.8
SMAJ200A	Uni-Dir	200.0	1	224.00	247.00	1	1.23	324.0
SMAJ200CA	Bi-Dir	200.0	1	224.00	247.00	1	1.23	324.0
SMAJ220A	Uni-Dir	220.0	1	246.00	272.00	1	1.12	356.0
SMAJ220CA	Bi-Dir	220.0	1	246.00	272.00	1	1.12	356.0
SMAJ250A	Uni-Dir	250.0	1	279.00	309.00	1	0.99	405.0
SMAJ250CA	Bi-Dir	250.0	1	279.00	309.00	1	0.99	405.0
SMAJ300A	Uni-Dir	300.0	1	335.00	371.00	1	0.82	486.0
SMAJ300CA	Bi-Dir	300.0	1	335.00	371.00	1	0.82	486.0
SMAJ350A	Uni-Dir	350.0	1	391.00	432.00	1	0.71	567.0
SMAJ350CA	Bi-Dir	350.0	1	391.00	432.00	1	0.71	567.0
SMAJ400A	Uni-Dir	400.0	1	447.00	494.00	1	0.62	648.0
SMAJ400CA	Bi-Dir	400.0	1	447.00	494.00	1	0.62	648.0
SMAJ440A	Uni-Dir	440.0	1	492.00	543.00	1	0.56	713.0
SMAJ440CA	Bi-Dir	440.0	1	492.00	543.00	1	0.56	713.0

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

Fig. 1 - Pulse Derating Curve

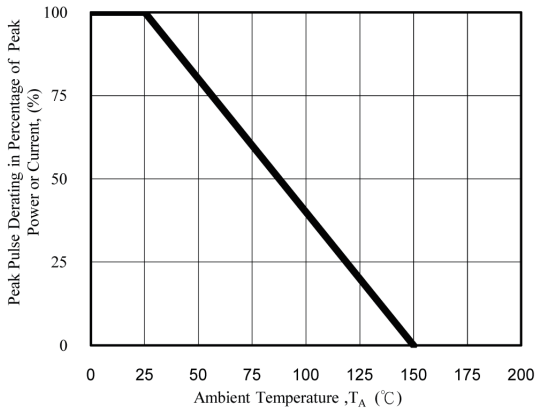


Fig. 2 - Maximum Non-Repetitive Surge Current

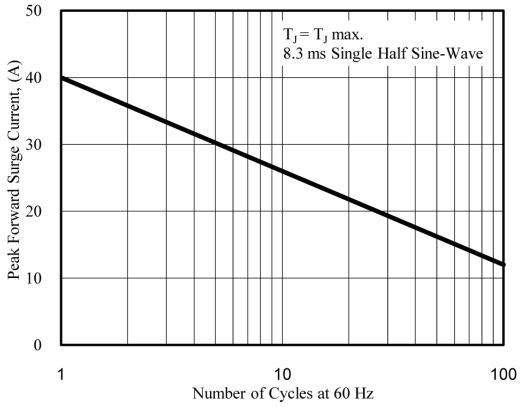


Fig. 3 - Steady State Power Derating Curve

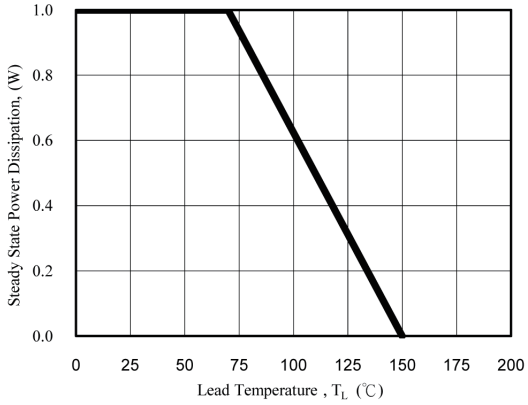


Fig. 4 - Peak Pulse Power Rating Curve

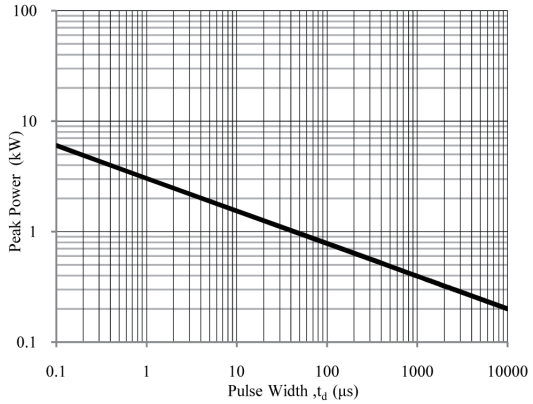


Fig. 5 - Pulse Waveform

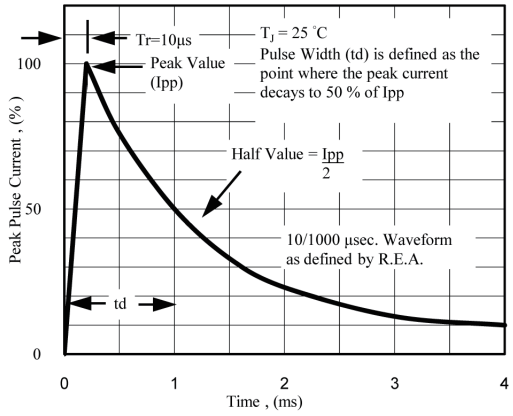
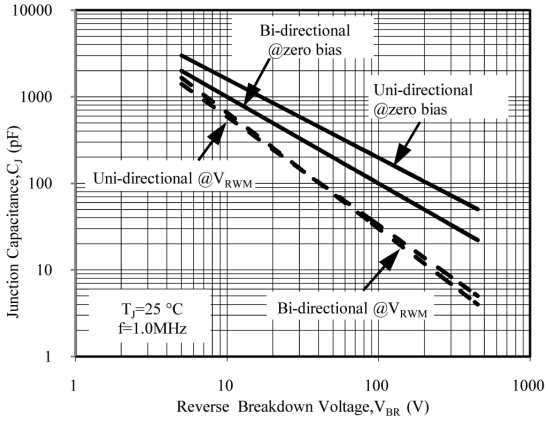
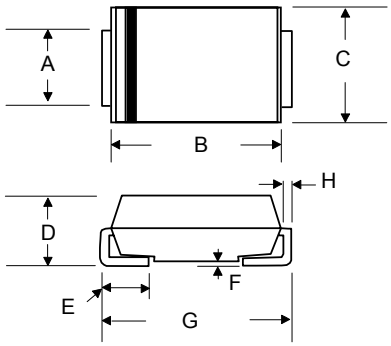


Fig. 6 - Typical Junction Capacitance



Package Dimensions



Symbol	Dimensions in millimeters	
	Min	Max
A	1.27	1.63
B	4.00	4.60
C	2.40	2.65
D	1.90	2.25
E	0.80	1.50
F	0.10	0.20
G	4.80	5.20
H	0.15	0.31

Ordering inormation

Order code	Package	Packaging option	Base quantity	Packaging specification
SMAJ Series	DO-214AC/SMA	Tape and reel	7500pcs / reel	EIA STD RS-481

Reision history

Date	Revision	Changes
23-May-2012	1.0	Initial release

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