

Transient Voltage Suppressors

TVS Diodes - 400W > SMAJ Series

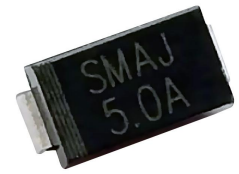


Description

The SMBJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- For surface mounted applications in order to optimize board space
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL flammability classification 94V-0
- Typical IR less than 1uA above 10V
- Fast response time: typically less than 1.0ps from 0 Volts to VBR min
- Glass passivated junction
- Low inductance
- High Temperature soldering: 260°C/10 seconds at terminals



Package: DO-214AC / SMA

Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

Electrical Characteristics

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10x1000µs waveform (Fig.1)(Note 1), (Note 2)	PPPM	400	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	IFSM	40	A
Operating Junction and Storage Temperature Range	TJ, TSTG	-55 to 150	°C
Typical Thermal Resistance Junction to Lead	RθJL	20	°C/W
Typical Thermal Resistance Junction to Ambient	RθJA	100	°C/W

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig. 2.
2. Mounted on 5.0x5.0mm copper pad to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only.

Electrical Characteristics (TA=25°C)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (Volts)@I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Unidirectional	Bidirectional	V _{RWM} (V)	Min	Max	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SMAJ5.0A	SMAJ5.0CA	5.0	6.40	7.00	10	9.2	43.5	800
SMAJ6.0A	SMAJ6.0CA	6.0	6.67	7.37	10	10.3	38.8	800
SMAJ6.5A	SMAJ6.5CA	6.5	7.22	7.98	10	11.2	35.7	500
SMAJ7.0A	SMAJ7.0CA	7.0	7.78	8.60	10	12.0	33.3	200
SMAJ7.5A	SMAJ7.5CA	7.5	8.33	9.21	1	12.9	31.0	100
SMAJ8.0A	SMAJ8.0CA	8.0	8.89	9.83	1	13.6	29.4	50
SMAJ8.5A	SMAJ8.5CA	8.5	9.44	10.40	1	14.4	27.8	20
SMAJ9.0A	SMAJ9.0CA	9.0	10.0	11.10	1	15.4	26.0	10
SMAJ10A	SMAJ10CA	10	11.1	12.3	1	17.0	23.5	1
SMAJ11A	SMAJ11CA	11	12.2	13.5	1	18.2	22.0	1
SMAJ12A	SMAJ12CA	12	13.3	14.7	1	19.9	20.1	1
SMAJ13A	SMAJ13CA	13	14.4	15.9	1	21.5	18.6	1
SMAJ14A	SMAJ14CA	14	15.6	17.2	1	23.2	17.2	1
SMAJ15A	SMAJ15CA	15	16.7	18.5	1	24.4	16.4	1
SMAJ16A	SMAJ16CA	16	17.8	19.7	1	26.0	15.4	1
SMAJ17A	SMAJ17CA	17	18.9	20.9	1	27.6	14.5	1
SMAJ18A	SMAJ18CA	18	20.0	22.1	1	29.2	13.7	1
SMAJ20A	SMAJ20CA	20	22.2	24.5	1	32.4	12.3	1
SMAJ22A	SMAJ22CA	22	24.4	26.9	1	35.5	11.3	1
SMAJ24A	SMAJ24CA	24	26.7	29.5	1	38.9	10.3	1
SMAJ26A	SMAJ26CA	26	28.9	31.9	1	42.1	9.5	1
SMAJ28A	SMAJ28CA	28	31.1	34.4	1	45.4	8.8	1
SMAJ30A	SMAJ30CA	30	33.3	36.8	1	48.4	8.3	1
SMAJ33A	SMAJ33CA	33	36.7	40.6	1	53.3	7.5	1

Electrical Characteristics (TA=25°C)

continued

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (Volts)@I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Unidirectional	Bidirectional	V _{RWM} (V)	Min	Max	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SMAJ36A	SMAJ36CA	36.0	40.0	44.2	1	58.1	6.9	1
SMAJ40A	SMAJ40CA	40.0	44.4	49.1	1	64.5	6.2	1
SMBJ43A	SMAJ43CA	43.0	47.8	52.8	1	69.4	5.8	1
SMAJ45A	SMAJ45CA	45.0	50.0	55.3	1	72.7	5.5	1
SMAJ48A	SMAJ48CA	48.0	53.3	58.9	1	77.4	5.2	1
SMAJ51A	SMAJ51CA	51.0	56.7	62.7	1	82.4	4.9	1
SMAJ54A	SMAJ54CA	54.0	60.0	66.3	1	87.1	4.6	1
SMAJ58A	SMAJ58CA	58.0	64.4	71.2	1	93.6	4.3	1
SMAJ60A	SMAJ60CA	60.0	66.7	73.7	1	96.8	4.1	1
SMAJ64A	SMAJ64CA	64.0	71.1	78.6	1	103.0	3.9	1
SMAJ70A	SMAJ70CA	70.0	77.8	86.0	1	113.0	3.5	1
SMAJ75A	SMAJ75CA	75.0	83.3	92.1	1	121.0	3.3	1
SMAJ78A	SMAJ78CA	78.0	86.7	95.8	1	126.0	3.2	1
SMAJ85A	SMAJ85CA	85.0	94.4	104.0	1	137.0	2.9	1
SMAJ90A	SMAJ90CA	90.0	100.0	111.0	1	146.0	2.7	1
SMAJ100A	SMAJ100CA	100.0	111.0	123.0	1	162.0	2.5	1
SMAJ110A	SMAJ110CA	110.0	122.0	135.0	1	177.0	2.3	1
SMAJ120A	SMAJ120CA	120.0	133.0	147.0	1	193.0	2.1	1
SMAJ130A	SMAJ130CA	130.0	144.0	159.0	1	209.0	1.9	1
SMAJ150A	SMAJ150CA	150.0	167.0	185.0	1	243.0	1.6	1
SMAJ160A	SMAJ160CA	160.0	178.0	197.0	1	259.0	1.5	1
SMAJ170A	SMAJ170CA	170.0	189.0	209.0	1	275.0	1.5	1
SMAJ180A	SMAJ180CA	180.0	201.0	222.0	1	292.0	1.4	1
SMAJ190A	SMAJ190CA	190.0	209.0	243.2	1	308.0	1.3	1

Electrical Characteristics (TA=25°C)

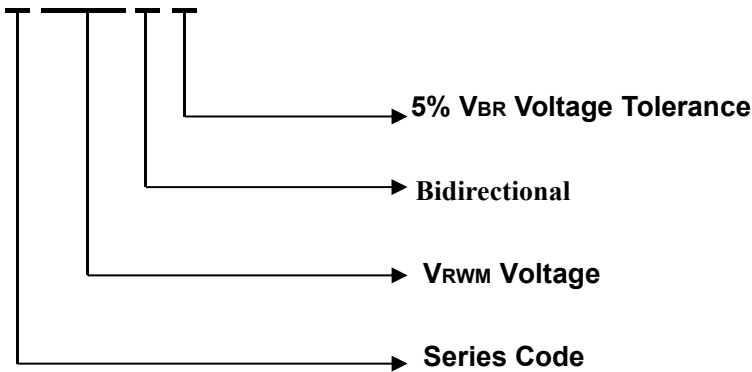
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Part Number		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (Volts)@I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Unidirectional	Bidirectional	V _{RWM} (V)	Min	Max	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SMAJ200A	SMAJ200CA	200.0	220.0	247.0	1	324.0	1.2	1
SMAJ210A	SMAJ210CA	210.0	231.0	268.8	1	340.0	1.2	1
SMAJ220A	SMAJ220CA	220.0	246.0	281.6	1	356.0	1.1	1
SMAJ250A	SMAJ250CA	250.0	279.0	309.0	1	405.0	1.0	1
SMAJ300A	SMAJ300CA	300.0	335.0	371.0	1	486.0	0.8	1
SMAJ350A	SMAJ350CA	350.0	391.0	432.0	1	567.0	0.7	1
SMAJ400A	SMAJ400CA	400.0	447.0	494.0	1	648.0	0.6	1
SMAJ440A	SMAJ440CA	440.0	492.0	543.0	1	713.0	0.6	1

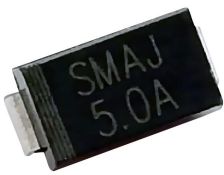
Notes: For bidirectional type having V_{RWM} of 10 volts and less, the I_R limit is double.

Description of Part Number

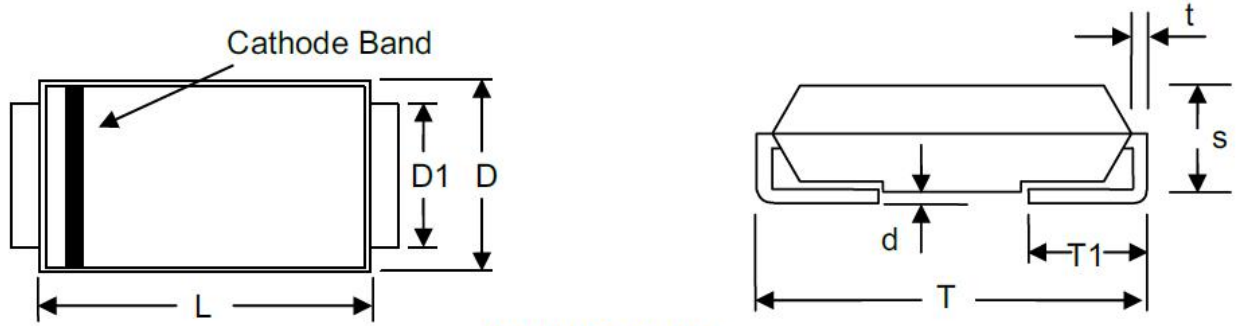
SMAJ XXX C A



Packing Options

Package Type	Description	Packing Quantity	Industry Standard
 DO-214AC	Embossed Carrier Reel Pack	1800PCS / 2000PCS	EIA STD RS-481

Dimensions - DO-214AC



SMA/DO-214AC

Item	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	3.99	4.50	0.157	0.177
D	2.54	2.79	0.100	0.110
D1	1.25	1.65	0.049	0.065
T	4.93	5.28	0.194	0.208
T1	0.78	1.52	0.030	0.060
d	-	0.203	-	0.008
s	1.98	2.29	0.078	0.090
t	0.152	0.305	0.006	0.012

Ratings and Characteristics Curve

Figure 1 - Peak Pulse Power Rating Curve

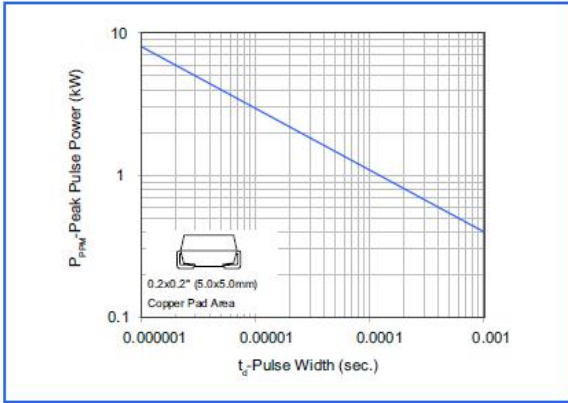


Figure 2 - Pulse Derating Curve

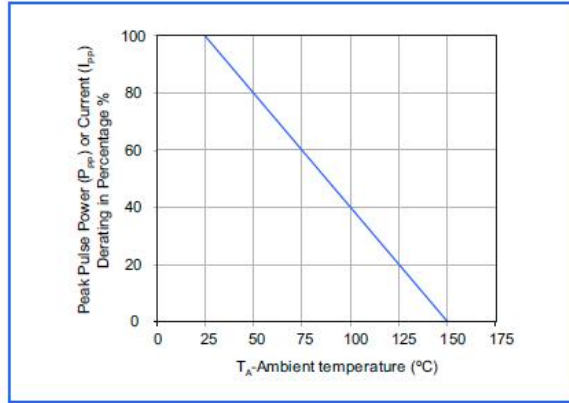


Figure 3 - Pulse Waveform

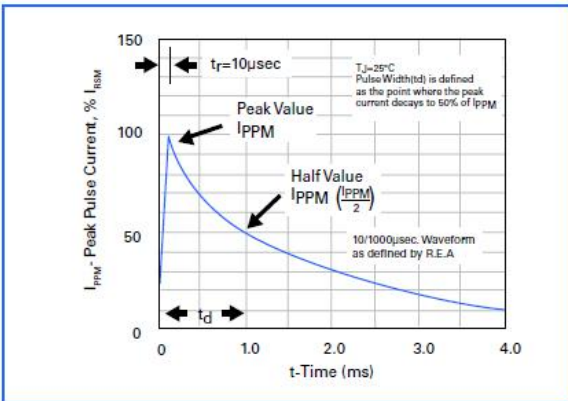


Figure 4 - Typical Junction Capacitance

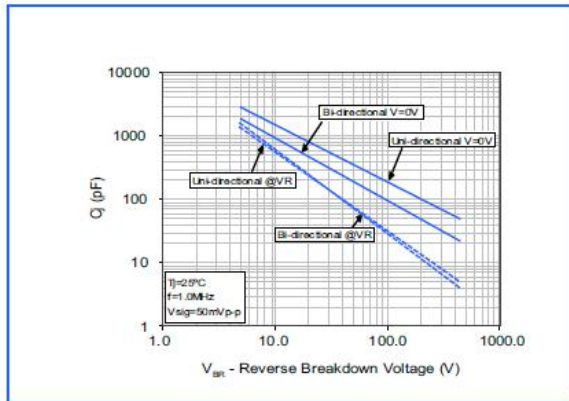


Figure 5 - Steady State Power Dissipation Derating Curve

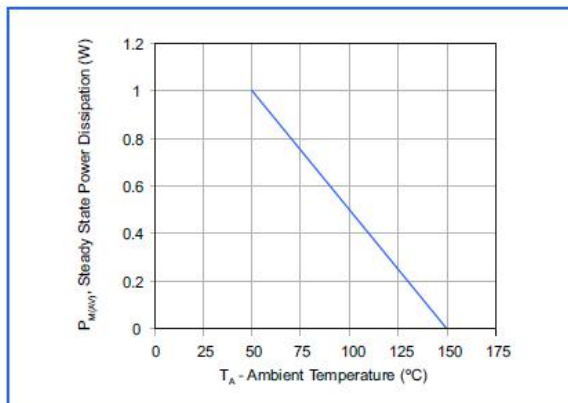
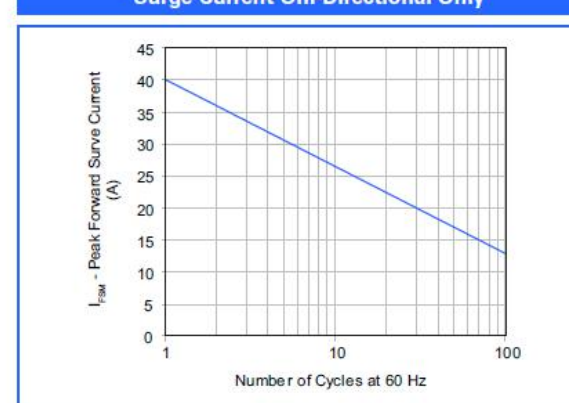


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



sales@huaandz.com