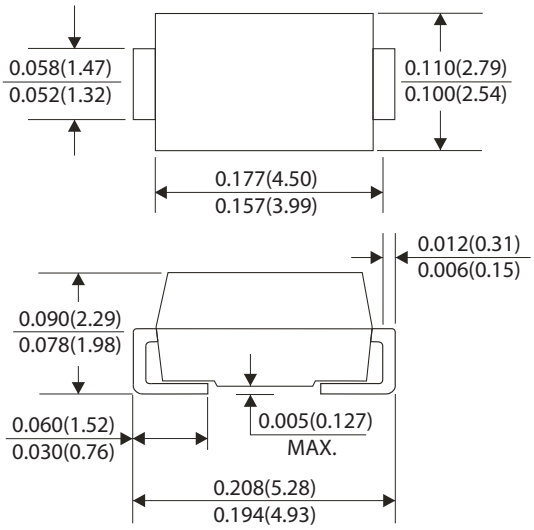
SMAJ5.0 THRU SMAJ188CA

POWER 400Watts
VOLTAGE 5.0 to 188 Volts

Features

- Plastic package has Underwriters Laboratory flammability classification 94V-0
- Optimized for LAN protection applications
- Ideal for ESD protection of data lines in accordance with IEC 1000-4-2 (IEC801-2)
- Ideal for EFT protection of data lines in accordance with IEC 1000-4-4 (IEC801-4)
- Low profile package with built-in strain relief for surface mounted applications
- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- 400W peak pulse power capability with a 10/1000μS waveform, repetition rate(duty cycle) : 0.01% (300W above 78V)
- Very fast response time
- High temperature soldering guaranteed : 250℃/10 seconds at terminals

DO-214AC (SMA)



Dimensions in inches and (millimeters)

Mechanical Data

- Case : JEDEC DO-214AC(SMA) molded plastic over passivated chip
- Terminals : Solder plated , solderable per MIL-STD-750, method 2026
- Polarity : For uni-directional types the band denotes the cathode, which is positive with respect to the anode under normal TVS operation
- Mounting Position : Any
- Weight : 0.002 ounce, 0.064 gram

Devices For Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g. SMAJ10C, SMAJ10CA). Electrical characteristics apply in both directions.

Maximum Ratings And Electrical Characteristics

(Ratings at 25℃ ambient temperature unless otherwise specified)

	Symbols	Values	Units
Peak pulse power dissipation with a 10/1000μS waveform (Note 1,2. Fig. 1)	P_{PPM}	400	Watts
Peak pulse current with a waveform (Note 1)	I_{PPM}	See next table	Amps
Peak forward surge current, 8.3mm single half sine-wave unidirectional only (Note 2)	I_{FSM}	40	Amps
Typical thermal resistance, junction to ambient (Note 3)	$R\Theta_{JA}$	120	℃/W
Typical thermal resistance, junction to lead	$R\Theta_{JL}$	30	℃/W
Operating junction and storage temperature range	T_J,T_{STG}	-55 to +150	℃

Notes:
(1) Non repetitive current pulse, per Fig.3 and derated above T_A=25℃ per Fig.2 Rating is 300W above 78V
(2) Mounted on 0.2×0.2"(5.0×5.0mm) copper pads to each terminal
(3) Mounted on minimum recommended pad layout

DEC

ELECTRICAL CHARACTERISTIC

Ratings at 25℃ ambient temperature unless otherwise specified. VF=3.5V at IF=25A (uni-directional only)

Device Type	Device Marking Code		Breakdown Voltage $V_{(BR)}$ at I_T [1] (V)		Test Current I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μA) [3]	Maximum Peak Pulse Surge Current I_{PPM} (A)[2]	Maximum Clamping Voltage at I_{PPM} V_C (V)
	UNI	BI	Min	Max					
SMAJ5.0(C)	AD	WD	6.40	7.82	10	5.0	800	41.7	9.6
SMAJ5.0(C)A[5]	AE	WE	6.40	7.07	10	5.0	800	43.5	9.2
SMAJ6.0(C)	AF	WF	6.67	8.15	10	6.0	800	35.1	11.4
SMAJ6.0(C)A	AG	WG	6.67	7.37	10	6.0	800	38.8	10.3
SMAJ6.5(C)	AH	WH	7.22	8.82	10	6.5	500	32.5	12.3
SMAJ6.5(C)A	AK	WK	7.22	7.98	10	6.5	500	35.7	11.2
SMAJ7.0(C)	AL	WL	7.78	9.51	10	7.0	200	30.1	13.3
SMAJ7.0(C)A	AM	WM	7.78	8.60	10	7.0	200	33.3	12.0
SMAJ7.5(C)	AN	WN	8.33	10.2	1.0	7.5	100	28.0	14.3
SMAJ7.5(C)A	AP	WP	8.33	9.21	1.0	7.5	100	31.0	12.9
SMAJ8.0(C)	AQ	WQ	8.89	10.9	1.0	8.0	50	26.7	15.0
SMAJ8.0(C)A	AR	WR	8.89	9.83	1.0	8.0	50	29.4	13.6
SMAJ8.5(C)	AS	WS	9.44	11.5	1.0	8.5	10	25.2	15.9
SMAJ8.5(C)A	AT	WT	9.44	10.4	1.0	8.5	10	27.8	14.4
SMAJ9.0(C)	AU	WU	10.0	12.2	1.0	9.0	5.0	23.7	16.9
SMAJ9.0(C)A	AV	WV	10.0	11.1	1.0	9.0	5.0	26.0	15.4
SMAJ10(C)	AW	WW	11.1	13.6	1.0	10	1.0	21.3	18.8
SMAJ10(C)A	AX	WX	11.1	12.3	1.0	10	1.0	23.5	17.0
SMAJ11(C)	AY	WY	12.2	14.9	1.0	11	1.0	19.9	20.1
SMAJ11(C)A	AZ	WZ	12.2	13.5	1.0	11	1.0	22.0	18.2
SMAJ12(C)	BD	XD	13.3	16.3	1.0	12	1.0	18.2	22.0
SMAJ12(C)A	BE	XE	13.3	14.7	1.0	12	1.0	20.1	19.9
SMAJ13(C)	BF	XF	14.4	17.6	1.0	13	1.0	16.8	23.8
SMAJ13(C)A	BG	XG	14.4	15.9	1.0	13	1.0	18.6	21.5
SMAJ14(C)	BH	XH	15.6	19.1	1.0	14	1.0	15.5	25.8
SMAJ14(C)A	BK	XK	15.6	17.2	1.0	14	1.0	17.2	23.2
SMAJ15(C)	BL	XL	16.7	20.4	1.0	15	1.0	14.9	26.9
SMAJ15(C)A	BM	XM	16.7	18.5	1.0	15	1.0	16.4	24.4
SMAJ16(C)	BN	XN	17.8	21.8	1.0	16	1.0	13.9	28.8
SMAJ16(C)A	BP	XP	17.8	19.7	1.0	16	1.0	15.4	26.0
SMAJ17(C)	BQ	XQ	18.9	23.1	1.0	17	1.0	13.1	30.5
SMAJ17(C)A	BR	XR	18.9	20.9	1.0	17	1.0	14.5	27.6
SMAJ18(C)	BS	XS	20.0	24.4	1.0	18	1.0	12.4	32.2
SMAJ18(C)A	BT	XT	20.0	22.1	1.0	18	1.0	13.7	29.2
SMAJ20(C)	BU	XU	22.2	27.1	1.0	20	1.0	11.2	35.8
SMAJ20(C)A	BV	XV	22.2	24.5	1.0	20	1.0	12.3	32.4
SMAJ22(C)	BW	XW	24.4	29.8	1.0	22	1.0	10.2	39.4
SMAJ22(C)A	BX	XX	24.4	26.9	1.0	22	1.0	11.3	35.5
SMAJ24(C)	BY	XY	26.7	32.6	1.0	24	1.0	9.3	43.0
SMAJ24(C)A	BZ	XZ	26.7	29.5	1.0	24	1.0	10.3	38.9
SMAJ26(C)	CD	YD	28.9	35.3	1.0	26	1.0	8.6	46.6
SMAJ26(C)A	CE	YE	28.9	31.9	1.0	26	1.0	9.5	42.1
SMAJ28(C)	CF	YF	31.1	38.0	1.0	28	1.0	8.0	50.0
SMAJ28(C)A	CG	YG	31.1	34.4	1.0	28	1.0	8.8	45.4
SMAJ30(C)	CH	YH	33.3	40.7	1.0	30	1.0	7.5	53.5
SMAJ30(C)A	CK	YK	33.3	36.8	1.0	30	1.0	8.3	48.4

Notes: (1) Pulse test: t_P=50ms

(2) Surge current waveform per Fig. 3 and derate per Fig. 2

(3) For bi-directional types having V_{WM} of 10 Volts and less, the I_D limit is doubled

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

(5) For the bidirectional SMAJ5.0CA, the maximum $V_{(BR)}$ is 7.25V.

DEC

ELECTRICAL CHARACTERISTIC

Ratings at 25℃ ambient temperature unless otherwise specified. VF=3.5V at IF=25A (uni-directional only)

Device Type	Device Marking Code		Breakdown Voltage $V_{(BR)}$ at I_T [1] (V)		Test Current I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μA) [3]	Maximum Peak Pulse Surge Current I_{PPM} (A)[2]	Maximum Clamping Voltage at I_{PPM} V_C (V)
	UNI	BI	Min	Max					
SMAJ33(C)	CL	YL	36.7	44.9	1.0	33	1.0	6.8	59.0
SMAJ33(C)A	CM	YM	36.7	40.6	1.0	33	1.0	7.5	53.3
SMAJ36(C)	CN	YN	40.0	48.9	1.0	36	1.0	6.2	64.3
SMAJ36(C)A	CP	YP	40.0	44.2	1.0	36	1.0	6.9	58.1
SMAJ40(C)	CQ	YQ	44.4	54.3	1.0	40	1.0	5.6	71.4
SMAJ40(C)A	CR	YR	44.4	49.1	1.0	40	1.0	6.2	64.5
SMAJ43(C)	CS	YS	47.8	58.4	1.0	43	1.0	5.2	76.7
SMAJ43(C)A	CT	YT	47.8	52.8	1.0	43	1.0	5.8	69.4
SMAJ45(C)	CU	YU	50.0	61.1	1.0	45	1.0	5.0	80.3
SMAJ45(C)A	CV	YV	50.0	55.3	1.0	45	1.0	5.5	72.7
SMAJ48(C)	CW	YW	53.3	65.1	1.0	48	1.0	4.7	85.5
SMAJ48(C)A	CX	YX	53.3	58.9	1.0	48	1.0	5.2	77.4
SMAJ51(C)	CY	YY	56.7	69.3	1.0	51	1.0	4.4	91.1
SMAJ51(C)A	CZ	YZ	56.7	62.7	1.0	51	1.0	4.9	82.4
SMAJ54(C)	RD	ZD	60.0	73.3	1.0	54	1.0	4.2	96.3
SMAJ54(C)A	RE	ZE	60.0	66.3	1.0	54	1.0	4.6	87.1
SMAJ58(C)	RF	ZF	64.4	78.7	1.0	58	1.0	3.9	103
SMAJ58(C)A	RG	ZG	64.4	71.2	1.0	58	1.0	4.3	93.6
SMAJ60(C)	RH	ZH	66.7	81.5	1.0	60	1.0	3.7	107
SMAJ60(C)A	RK	ZK	66.7	73.7	1.0	60	1.0	4.1	96.8
SMAJ64(C)	RL	ZL	71.1	86.9	1.0	64	1.0	3.5	114
SMAJ64(C)A	RM	ZM	71.1	78.6	1.0	64	1.0	3.9	103
SMAJ70(C)	RN	ZN	77.8	95.1	1.0	70	1.0	3.2	125
SMAJ70(C)A	RP	ZP	77.8	86.0	1.0	70	1.0	3.5	113
SMAJ75(C)	RQ	ZQ	83.3	102	1.0	75	1.0	3.0	134
SMAJ75(C)A	RR	ZR	83.3	92.1	1.0	75	1.0	3.3	121
SMAJ78(C)	RS	ZS	86.7	106	1.0	78	1.0	2.9	139
SMAJ78(C)A	RT	ZT	86.7	95.8	1.0	78	1.0	3.2	126
SMAJ85(C)	RU	ZU	94.4	115	1.0	85	1.0	2.0	151
SMAJ85(C)A	RV	ZV	94.4	104	1.0	85	1.0	2.2	137
SMAJ90(C)	RW	ZW	100	122	1.0	90	1.0	1.9	160
SMAJ90(C)A	RX	ZX	100	111	1.0	90	1.0	2.1	146
SMAJ100(C)	RY	ZY	111	136	1.0	100	1.0	1.7	179
SMAJ100(C)A	RZ	ZZ	111	123	1.0	100	1.0	1.9	162
SMAJ110(C)	VD	VD	122	149	1.0	110	1.0	1.5	196
SMAJ110(C)A	SE	VE	122	135	1.0	110	1.0	1.7	177
SMAJ120(C)	SF	VF	133	163	1.0	120	1.0	1.4	214
SMAJ120(C)A	VG	VG	133	147	1.0	120	1.0	1.6	193
SMAJ130(C)	SH	VH	144	176	1.0	130	1.0	1.3	231
SMAJ130(C)A	VK	VK	144	159	1.0	130	1.0	1.4	209
SMAJ150(C)	SL	VL	167	204	1.0	150	1.0	1.1	268
SMAJ150(C)A	VM	VM	167	185	1.0	150	1.0	1.2	243
SMAJ160(C)	SN	VN	178	218	1.0	160	1.0	1.0	287
SMAJ160(C)A	SP	VP	178	197	1.0	160	1.0	1.2	259
SMAJ170(C)	SQ	VQ	189	231	1.0	170	1.0	0.99	304
SMAJ170(C)A	SR	VR	189	209	1.0	170	1.0	1.09	275
SMAJ188(C)	ST	VT	209	255	1.0	188	1.0	0.9	344
SMAJ188(C)A	SS	VS	209	231	1.0	188	1.0	0.91	328

Notes: (1) Pulse test: t_p ≦50ms

(2) Surge current waveform per Fig. 3 and derate per Fig. 2

(3) For bi-directional types having V_{WM} of 10 Volts and less, the I_D limit is doubled

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

RATINGS AND CHARACTERISTIC CURVES SMAJ5.0 THRU SMAJ188CA

Fig. 1ÐPeak Pulse Power Rating Curve

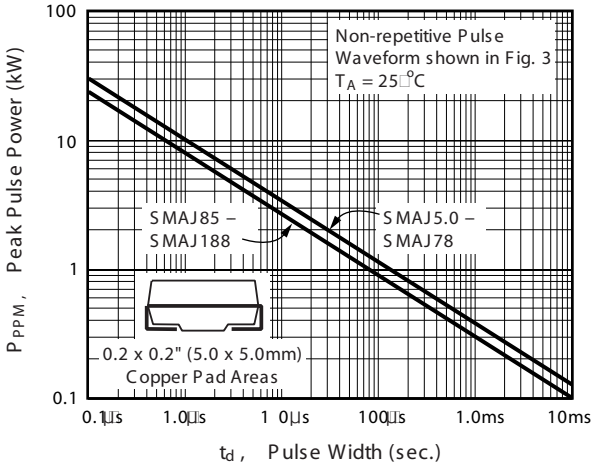


Fig. 2ÐPulse Derating Curve

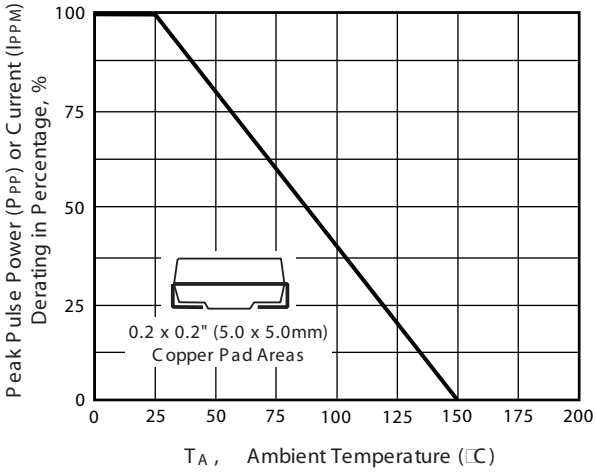


Fig. 3Ð Pulse Waveform

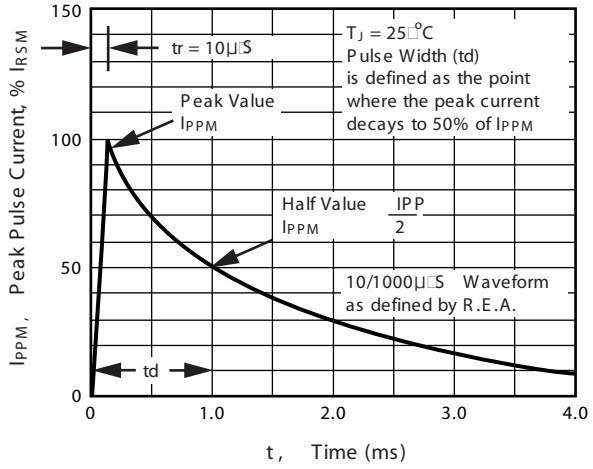


Fig. 4Ð Typical Junction Capacitance

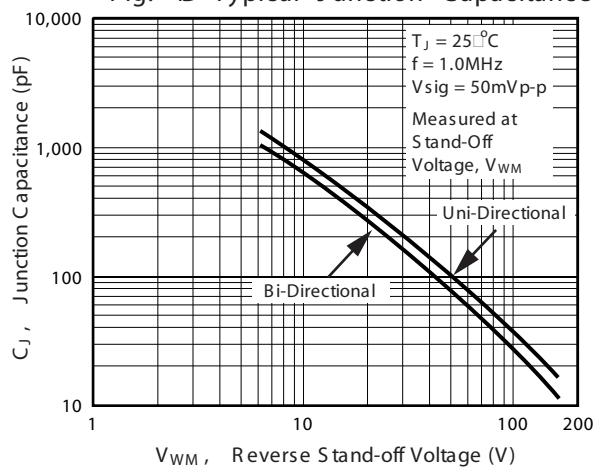


Fig. 5ÐTypical Transient Thermal Impedance

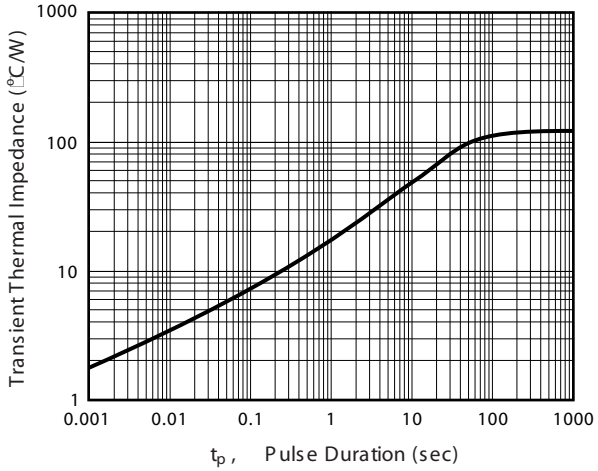


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only