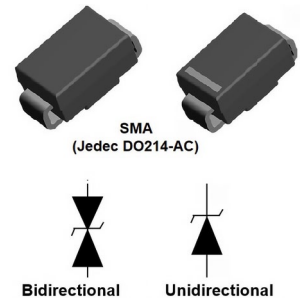


Features

- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Low inductance
- ◆ Excellent clamping capability
- ◆ Glassed passivated junction
- ◆ Typical I_R less than 1uA above 10V
- ◆ Repetition rate (duty cycle):0.01%
- ◆ Fast response time: typically less than 1.0ps from 0V to V_{BR} for unidirectional types
- ◆ High temperature soldering: 260°C/10s at terminals
- ◆ Plastic package has Underwriters Laboratory Flammability 94V-0
- ◆ For surface mounted applications in order to optimize board space
- ◆ Pb-free plated

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Top View

Simplified outline SMA and symbol

Mechanical Data

- ◆ Case: JEDEC DO-214AC. Molded plastic over glass passivated junction
- ◆ Terminals: Solder plated, solderable per MIL-STD-750 Method 2026
- ◆ Polarity: For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation

Device for Bipolar Application

- ◆ For Bidirectional use C or CA Suffix for types SMAJ5.0 thru types SMAJ170 (e.g. SMAJ5.0C, SMAJ170CA)
- ◆ Electrical characteristics apply in both directions

Maximum Ratings and Characteristics

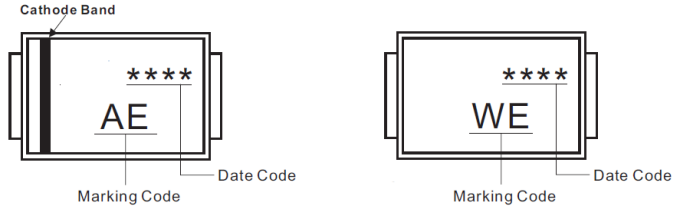
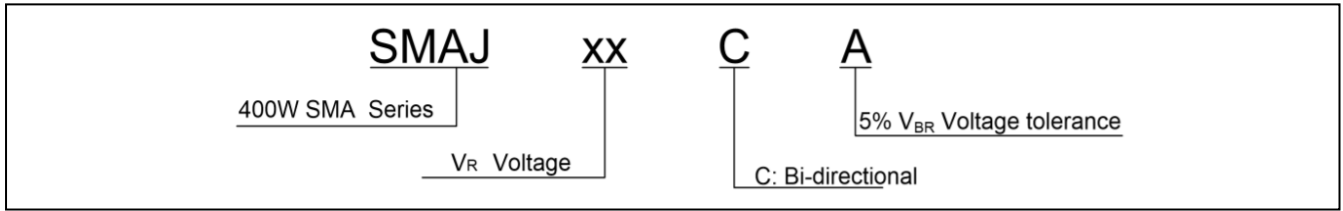
Ratings at 25°C ambient temperature unless otherwise specified

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000us waveform (Note1,2, FIG.1)	P_{PPM}	400	W
Peak Pulse Current on 10/1000us waveform (Note1, FIG.3)	I_{PPM}	SEE TABLE1	A
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load, (JEDEC Method) (Note2,3)	I_{FSM}	20	A
Operating Junction and Storage Temperature Range	T_J / T_{STG}	-55 to +150	°C

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^\circ\text{C}$ per Fig.2.
2. Mounted on 5.0mm x 5.0mm (0.03mm thick) copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum

Part Number Naming Rule and Marking



For example: the device marking code of SMAJ5.0A and SMAJ5.0CA are AE and WE respectively.

Electrical Characteristics ($T_a=25^{\circ}\text{C}$, unless otherwise noted)

Table1

Part Number		Marking		V_R	$I_{R@V_R}$	$V_{BR@I_T}$		I_T	$V_C@I_{PP}$	$I_{PP}^{(1)}$
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMAJ5.0A	SMAJ5.0CA	AE	WE	5	500	6.4	7	10	9.2	43.5
SMAJ6.0A	SMAJ6.0CA	AG	WG	6	500	6.67	7.37	10	10.3	38.8
SMAJ6.5A	SMAJ6.5CA	AK	WK	6.5	300	7.22	7.98	10	11.2	35.7
SMAJ7.0A	SMAJ7.0CA	AM	WM	7	200	7.78	8.6	10	12	33.3
SMAJ7.5A	SMAJ7.5CA	AP	WP	7.5	100	8.33	9.21	1	12.9	31
SMAJ8.0A	SMAJ8.0CA	AR	WR	8	50	8.89	9.83	1	13.6	29.4
SMAJ8.5A	SMAJ8.5CA	AT	WT	8.5	20	9.44	10.4	1	14.4	27.8
SMAJ9.0A	SMAJ9.0CA	AV	WV	9	10	10	11.1	1	15.4	26
SMAJ10A	SMAJ10CA	AX	WX	10	5	11.1	12.3	1	17	23.5
SMAJ11A	SMAJ11CA	AZ	WZ	11	1	12.2	13.5	1	18.2	22
SMAJ12A	SMAJ12CA	BE	XE	12	1	13.3	14.7	1	19.9	20.1
SMAJ13A	SMAJ13CA	BG	XG	13	1	14.4	15.9	1	21.5	18.6
SMAJ14A	SMAJ14CA	BK	XK	14	1	15.6	17.2	1	23.2	17.2
SMAJ15A	SMAJ15CA	BM	XM	15	1	16.7	18.5	1	24.4	16.4
SMAJ16A	SMAJ16CA	BP	XP	16	1	17.8	19.7	1	26	15.4
SMAJ17A	SMAJ17CA	BR	XR	17	1	18.9	20.9	1	27.6	14.5
SMAJ18A	SMAJ18CA	BT	XT	18	1	20	22.1	1	29.2	13.7
SMAJ20A	SMAJ20CA	BV	XV	20	1	22.2	24.5	1	32.4	12.3
SMAJ22A	SMAJ22CA	BX	XY	22	1	24.4	26.9	1	35.5	11.3

Electrical Characteristics (Ta=25°C, unless otherwise noted)

Table1

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _c @I _{pp}	I _{pp} ⁽¹⁾
Uni-Polar	Bi-Polar	Uni	Bi	V	uA	min(V)	max(V)	mA	max(V)	A
SMAJ24A	SMAJ24CA	BZ	XZ	24	1	26.7	29.5	1	38.9	10.3
SMAJ26A	SMAJ26CA	CE	YE	26	1	28.9	31.9	1	42.1	9.5
SMAJ28A	SMAJ28CA	CG	YG	28	1	31.1	34.4	1	45.4	8.8
SMAJ30A	SMAJ30CA	CK	YK	30	1	33.3	36.8	1	48.4	8.3
SMAJ33A	SMAJ33CA	CM	YM	33	1	36.7	40.6	1	53.3	7.5
SMAJ36A	SMAJ36CA	CP	YP	36	1	40	44.2	1	58.1	6.9
SMAJ40A	SMAJ40CA	CR	YR	40	1	44.4	49.1	1	64.5	6.2
SMAJ43A	SMAJ43CA	CT	YT	43	1	47.8	52.8	1	69.4	5.8
SMAJ45A	SMAJ45CA	CV	YV	45	1	50	55.3	1	72.7	5.5
SMAJ48A	SMAJ48CA	CX	YX	48	1	53.3	58.9	1	77.4	5.2
SMAJ51A	SMAJ51CA	CZ	YZ	51	1	56.7	62.7	1	82.4	4.9
SMAJ54A	SMAJ54CA	RE	ZE	54	1	60	66.3	1	87.1	4.6
SMAJ58A	SMAJ58CA	RG	ZG	58	1	64.4	71.2	1	93.6	4.3
SMAJ60A	SMAJ60CA	RK	ZK	60	1	66.7	73.7	1	96.8	4.1
SMAJ64A	SMAJ64CA	RM	ZM	64	1	71.1	78.6	1	103	3.9
SMAJ70A	SMAJ70CA	RP	ZP	70	1	77.8	86	1	113	3.5
SMAJ75A	SMAJ75CA	RR	ZR	75	1	83.3	92.1	1	121	3.3
SMAJ78A	SMAJ78CA	RT	ZT	78	1	86.7	95.8	1	126	3.2
SMAJ85A	SMAJ85CA	RV	ZV	85	1	94.4	104	1	137	2.9
SMAJ90A	SMAJ90CA	RX	ZX	90	1	100	111	1	146	2.7
SMAJ100A	SMAJ100CA	RZ	ZZ	100	1	111	123	1	162	2.5
SMAJ110A	SMAJ110CA	SE	VE	110	1	122	135	1	177	2.3
SMAJ120A	SMAJ120CA	SG	VG	120	1	133	147	1	193	2.1
SMAJ130A	SMAJ130CA	SK	VK	130	1	144	159	1	209	1.9
SMAJ150A	SMAJ150CA	SM	VM	150	1	167	185	1	243	1.6
SMAJ160A	SMAJ160CA	SP	VP	160	1	178	197	1	259	1.5
SMAJ170A	SMAJ170CA	SR	VR	170	1	189	209	1	275	1.5
SMAJ180A	SMAJ180CA	ST	VT	180	1	201	222	1	292	1.4
SMAJ200A	SMAJ200CA	SV	VV	200	1	224	247	1	324	1.2
SMAJ220A	SMAJ220CA	SX	VX	220	1	246	272	1	356	1.1
SMAJ250A	SMAJ250CA	SZ	VZ	250	1	279	309	1	405	1
SMAJ300A	SMAJ300CA	TE	UE	300	1	335	371	1	486	0.8
SMAJ350A	SMAJ350CA	TG	UG	350	1	391	432	1	567	0.7
SMAJ400A	SMAJ400CA	TK	UK	400	1	447	494	1	648	0.6
SMAJ440A	SMAJ440CA	TM	UM	450	1	492	543	1	713	0.6

(1) Surge waveform: 10/1000us

 V_R: Stand-off voltage—maximum voltage that can be applied

 V_{BR}: Breakdown voltage

V_C : Clamping voltage—peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse leakage current

Characteristics curves ($T_a=25^\circ\text{C}$, unless otherwise noted)

Fig.1 Peak Pulse Power Rating Curve

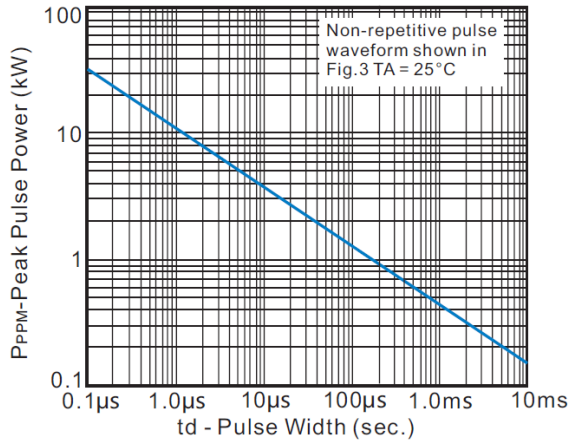


Fig.2 Pulse Derating Curve

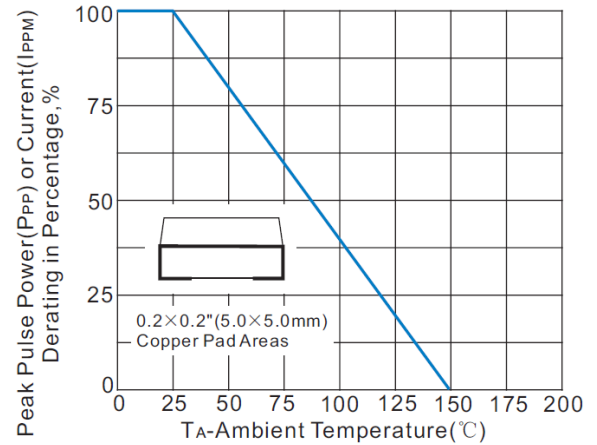


Fig.3 Pulse Waveform

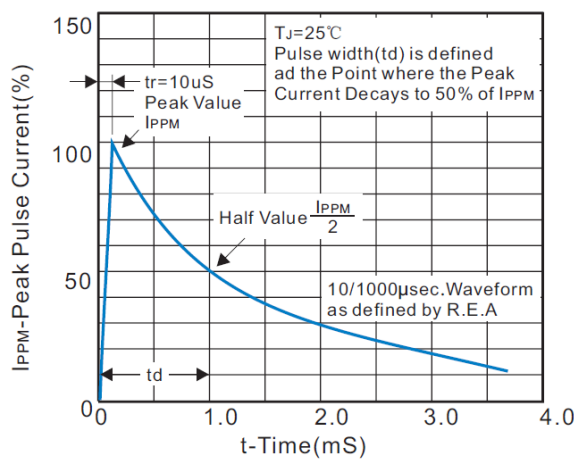


Fig.4 Type Junction Capacitance

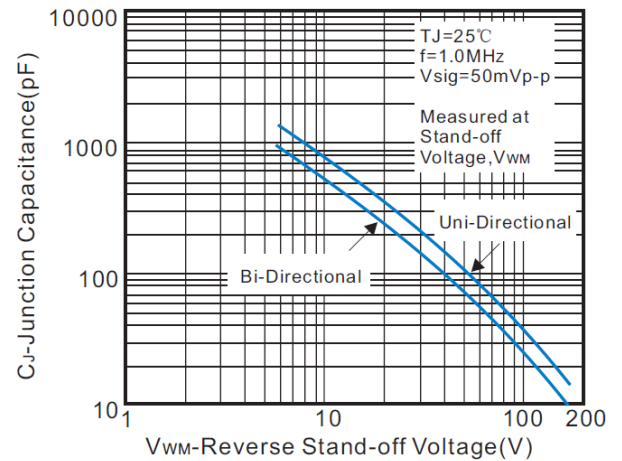


Fig.5 Typ. Transient Thermal Impedance

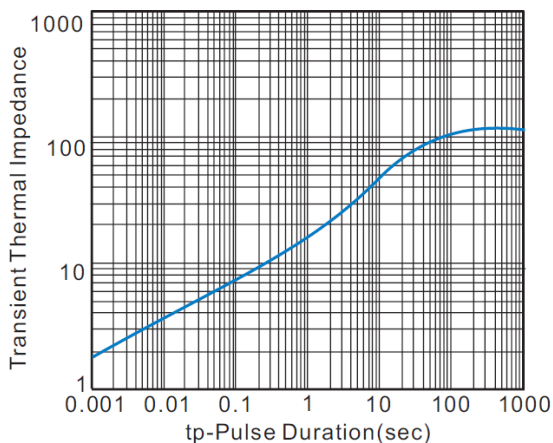
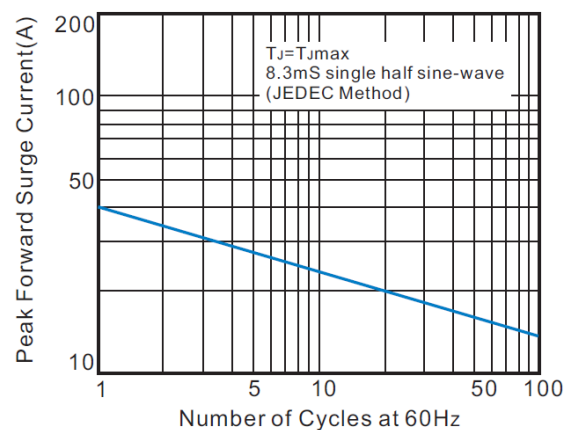
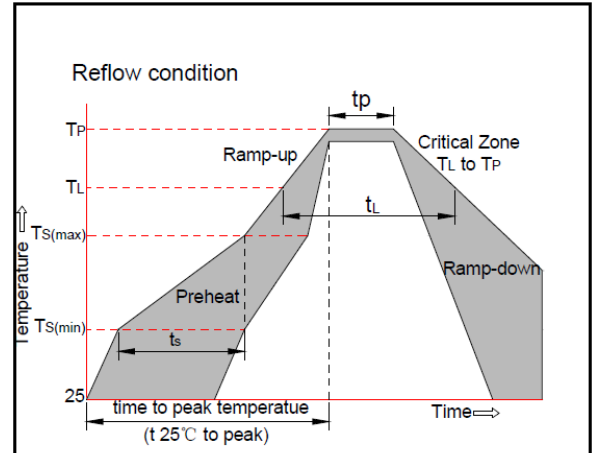


Fig.6 Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



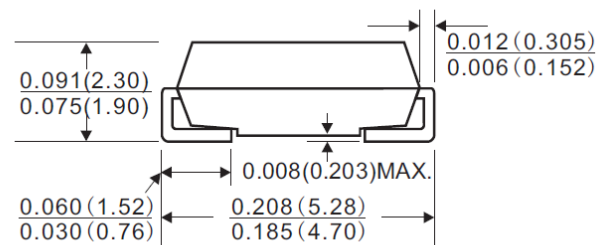
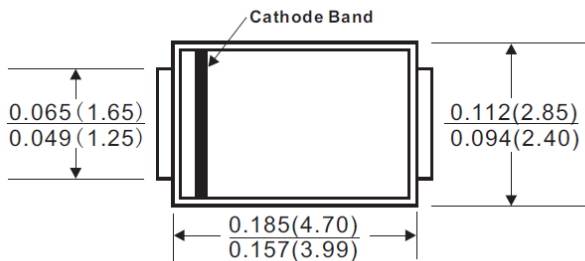
Recommended Soldering Conditions

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min($T_{S(min)}$)	+150°C
	-Temperature Min($T_{S(max)}$)	+200°C
	-Time(Min to Max)(t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp(T_L) to peak)		3°C/sec.Max
$T_{S(max)}$ to T_L -Ramp-up-Rate		3°C/sec.Max
Reflow	-Temperature(T_L)(Liquidus)	+ 217°C
	- Temperature(t_L)	60-150 secs
Peak Temp(T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		20-40 secs.
Ramp-down Rate		6°C/sec.Max
Time 25°C to Peak Temp (T_p)		8 min.Max
Do not exceed		260°C



Package Outline Dimensions(DO-214AC)

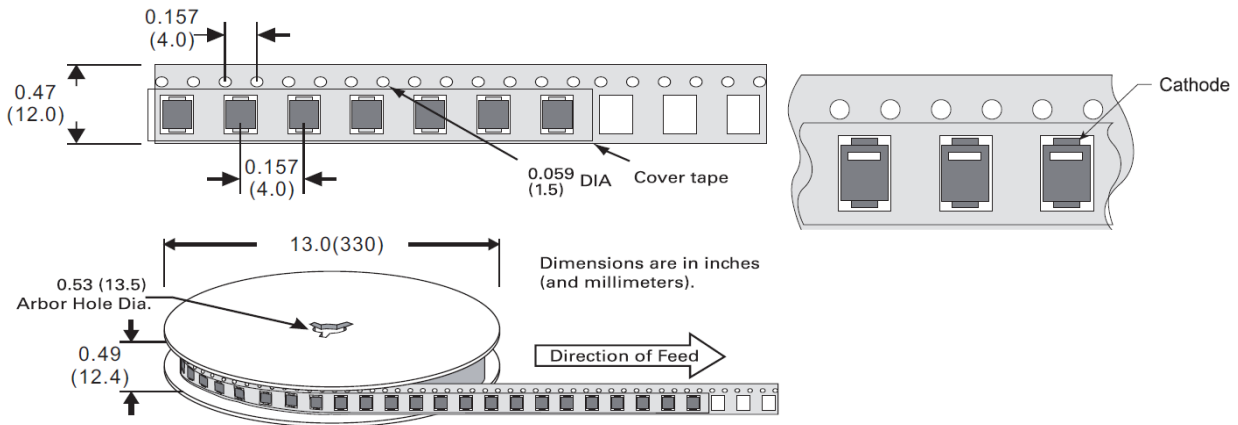
DO-214AC(SMA J-Bend)



Dimensions in inches and (millimeters)

Tape And Reel Specification

Symbol	Ea Per Reel	REEL DIA(mm)	Industry Standard
SMAJ***	1000/5000	178/330	EIA RS-481



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