

### »Features

- Excellent clamping capability
- Low leakage current
- Low capacitance
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- Fast response time:  
typically less than 1.0ps from 0 Volts to  $V_{BR}$  min



SMC (DO-214AB)

### »Mechanical Characteristics

- Package: SMC plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

### »Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic

### »Electrical Parameters

Parameter	Definition
$C_J$	Junction Capacitance - typical capacitance measured with 0V or $V_R$ bias
$I_{PP}$	Peak Pulse Current - maximum rated peak impulse current
$V_C$	Clamping Voltage - Peak voltage measured across the suppressor at a specified $I_{pp}$ (peak impulse current)
$V_{BR}$	Breakdown Voltage - Maximum voltage that flows through the TVS at a specified test current ( $I_T$ )
$I_R$	Leakage Current - maximum peak off-state current measured at $V_R$
$V_R$	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



### »Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SMC	Tape/Reel, 13" reel	3000	EIA-481-1
	Tape/Reel, 7" reel	500	EIA-481-1

**»Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

Parameter	Symbol	Value	Units	Remarks
Peak Pulse Power Dissipation	$P_{PPM}$	5000	W	(Note1)(Note2)
Steady State Power Dissipation	$P_D$	6.5	W	(Note3)
Peak Forward Surge Current	$I_{FSM}$	300	A	(Note4)
Maximum Instantaneous Forward Voltage at 100A	$V_{FM}$	5	V	(Note5)
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	15	$^{\circ}\text{C}/\text{W}$	
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	75	$^{\circ}\text{C}/\text{W}$	
Operating Temperature Range	$T_J$	-55 to 150	$^{\circ}\text{C}$	
Storage Temperature Range	$T_{STG}$	-55 to 150	$^{\circ}\text{C}$	

Notes1: Non-repetitive current pulse , 10/1000us Waveform.

Notes2: Mounted on copper pad area of 8x8mm to each terminal.

Notes3: Infinite HeatSink at  $T_A=50^{\circ}\text{C}$

Notes4: Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 perminute maximum.

Notes5: For UnidirectionalOnly.

**»Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR} @ I_T$ (V)		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C @ I_{PP}$ (V)	Maximum Peak Pulse Current $I_{PP}$ (A)	Maximun Reverse Leakage $I_R @ V_R$ ( $\mu\text{A}$ )
			Min	Max				
5.0SMDJ5.0A	5.0SMDJ5.0CA	5	6.4	7	10	9.2	543	800
5.0SMDJ12A	5.0SMDJ12CA	12	13.3	14.7	10	19.9	252	800
5.0SMDJ13A	5.0SMDJ13CA	13	14.4	15.9	10	21.5	233	500
5.0SMDJ14A	5.0SMDJ14CA	14	15.6	17.2	10	23.2	216	200
5.0SMDJ15A	5.0SMDJ15CA	15	16.7	18.5	1	24.4	205	100
5.0SMDJ16A	5.0SMDJ16CA	16	17.8	19.7	1	26	193	50
5.0SMDJ17A	5.0SMDJ17CA	17	18.9	20.9	1	27.6	181	20
5.0SMDJ18A	5.0SMDJ18CA	18	20	22.1	1	29.2	172	10
5.0SMDJ20A	5.0SMDJ20CA	20	22.2	24.5	1	32.4	155	5
5.0SMDJ22A	5.0SMDJ22CA	22	24.4	26.9	1	35.5	141	5
5.0SMDJ24A	5.0SMDJ24CA	24	26.7	29.5	1	38.9	129	5
5.0SMDJ26A	5.0SMDJ26CA	26	28.9	31.9	1	42.1	119	5
5.0SMDJ28A	5.0SMDJ28CA	28	31.1	34.4	1	45.4	110	5
5.0SMDJ30A	5.0SMDJ30CA	30	33.3	36.8	1	48.4	103	5
5.0SMDJ33A	5.0SMDJ33CA	33	36.7	40.6	1	53.3	93.9	5
5.0SMDJ36A	5.0SMDJ36CA	36	40	44.2	1	58.1	86.1	5
5.0SMDJ40A	5.0SMDJ40CA	40	44.4	49.1	1	64.5	77.6	5
5.0SMDJ43A	5.0SMDJ43CA	43	47.8	52.8	1	69.4	72.1	5
5.0SMDJ45A	5.0SMDJ45CA	45	50	55.3	1	72.7	68.8	5
5.0SMDJ48A	5.0SMDJ48CA	48	53.3	58.9	1	77.4	64.7	5

**»Electrical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR} @ I_T$ (V)		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C @ I_{PP}$ (V)	Maximum Peak Pulse Current $I_{PP}$ (A)	Maximun Reverse Leakage $I_R @ V_R$ ( $\mu\text{A}$ )
			Min	Max				
5.0SMDJ51A	5.0SMDJ51CA	51	56.7	62.7	1	82.4	60.7	5
5.0SMDJ54A	5.0SMDJ54CA	54	60	66.3	1	87.1	57.5	5
5.0SMDJ58A	5.0SMDJ58CA	58	64.4	71.2	1	93.6	53.5	5
5.0SMDJ60A	5.0SMDJ60CA	60	66.7	73.7	1	96.8	51.7	5
5.0SMDJ64A	5.0SMDJ64CA	64	71.1	78.6	1	103	48.6	5
5.0SMDJ70A	5.0SMDJ70CA	70	77.8	86	1	113	44.3	5
5.0SMDJ75A	5.0SMDJ75CA	75	83.3	92.1	1	121	41.4	5
5.0SMDJ78A	5.0SMDJ78CA	78	86.7	95.8	1	126	39.7	5
5.0SMDJ85A	5.0SMDJ85CA	85	94.4	104	1	137	36.5	5
5.0SMDJ90A	5.0SMDJ90CA	90	100	111	1	146	34.3	5
5.0SMDJ100A	5.0SMDJ100CA	100	111	123	1	162	30.9	5
5.0SMDJ110A	5.0SMDJ110CA	110	122	135	1	177	28.3	5
5.0SMDJ120A	5.0SMDJ120CA	120	133	147	1	193	26	5
5.0SMDJ130A	5.0SMDJ130CA	130	144	159	1	209	24	5
5.0SMDJ150A	5.0SMDJ150CA	150	167	185	1	243	20.6	5
5.0SMDJ160A	5.0SMDJ160CA	160	178	197	1	259	19.3	5
5.0SMDJ170A	5.0SMDJ170CA	170	189	209	1	275	18.2	5

»Rating And Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)

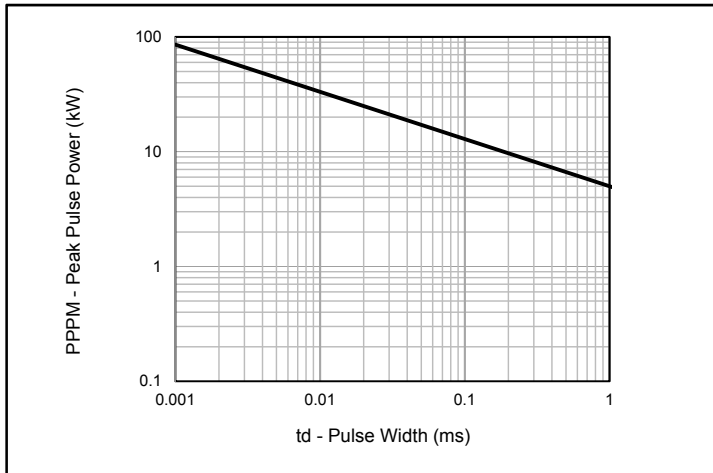


Fig.1 - Peak Pulse Power Rating

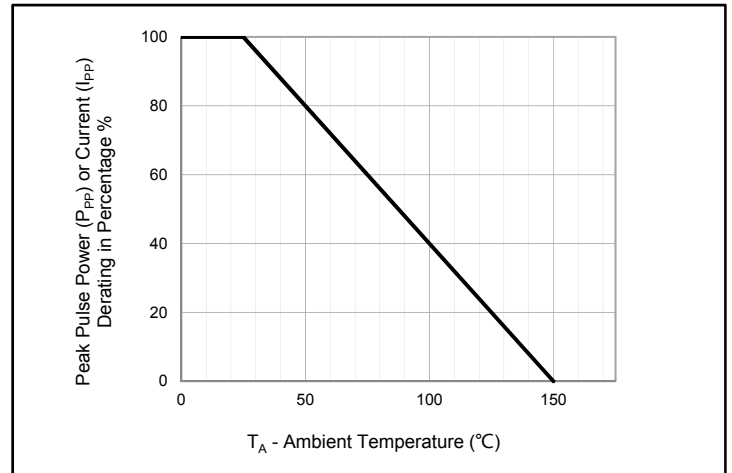


Fig.2 - Pulse Derating Curve

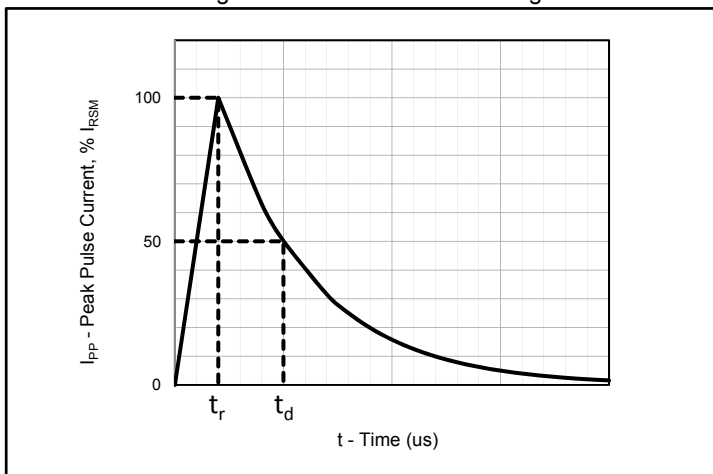


Fig.3 - Pulse Waveform

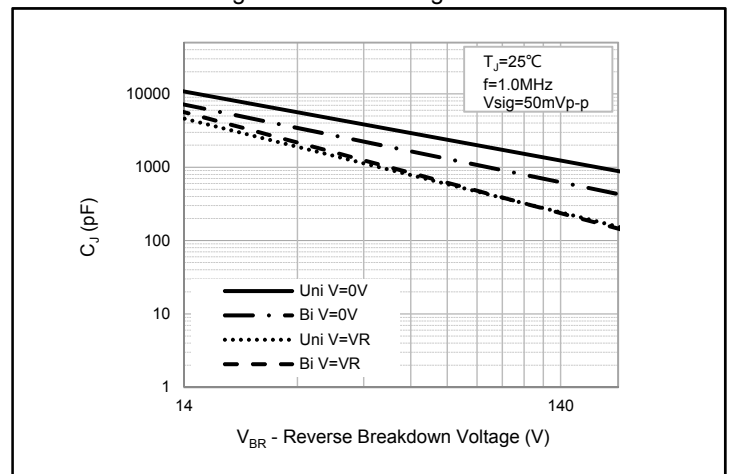


Fig.4 - Typical Junction Capacitance

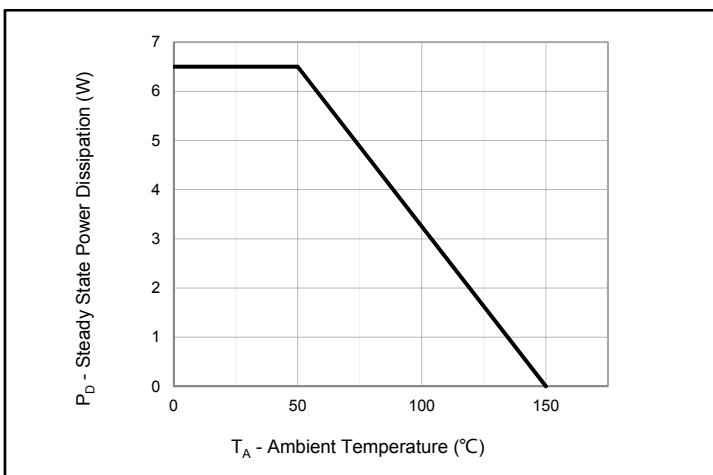


Fig.5 - Steady State Power Dissipation Derating Curve

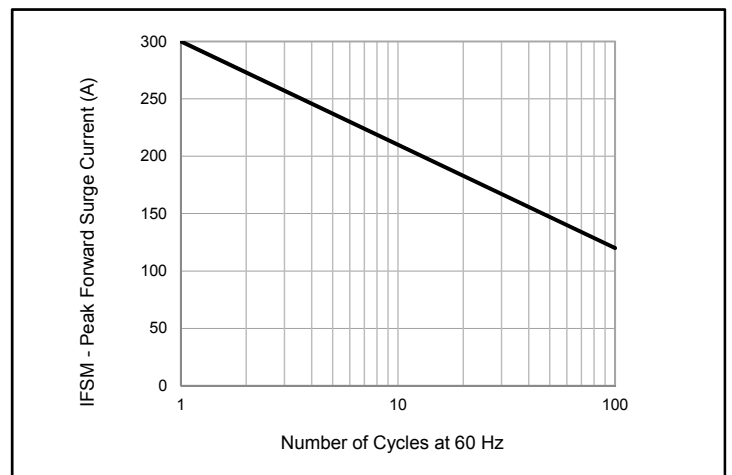
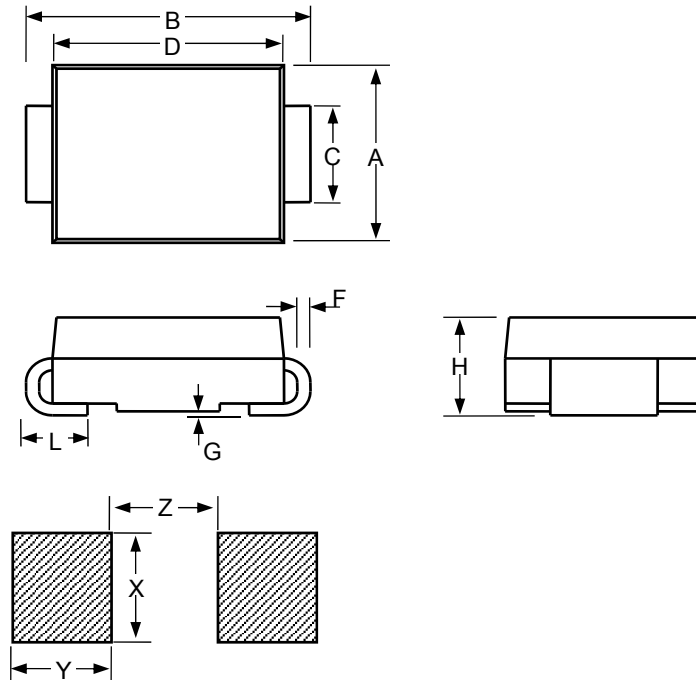


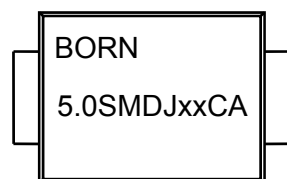
Fig.6 - Maximum Non-Repetitive Peak Forward Surge Current  
Uni-Directional Only

»Package Dimensions

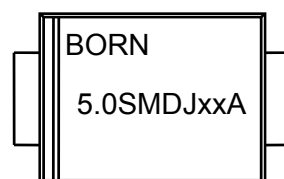


SMC						
Dimension	Inches			Millimeters		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.22		0.245	5.59		6.22
B	0.305		0.32	7.75		8.13
C	0.114		0.126	2.9		3.2
D	0.26		0.28	6.6		7.11
F	0.006		0.012	0.15		0.305
G	-		0.008	-		0.203
H	0.087		0.11	2.2		2.8
L	0.03		0.06	0.76		1.52
X		0.15			3.82	
Y		0.119			3.03	
Z		0.151			3.84	

»Marking Information



Bidirection



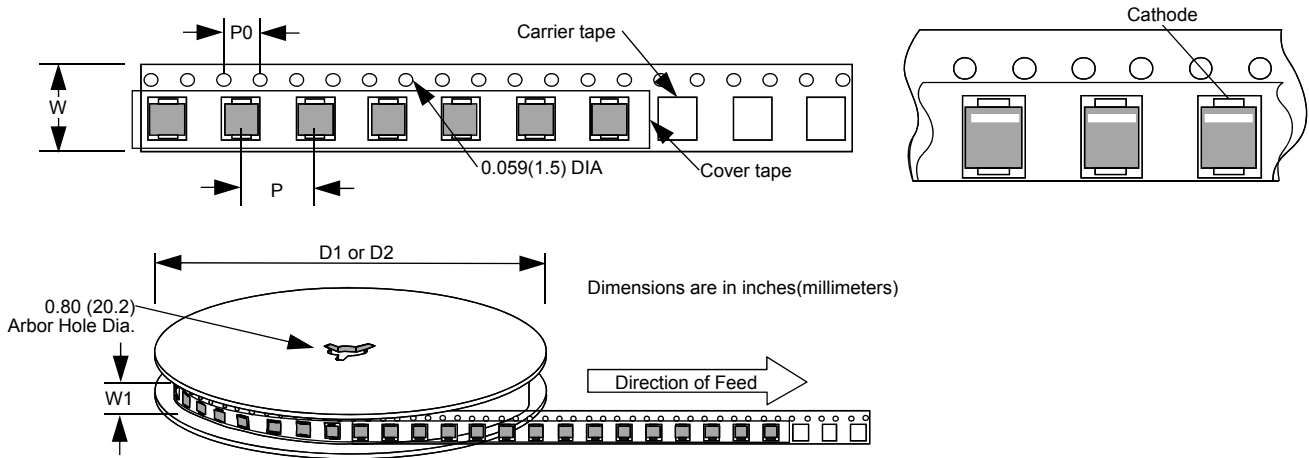
Unidirection

»Soldering Parameters



Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Time ( $t_L$ )	60 – 150 secs
Peak Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C

»Tape and Reel Specification



Dimension	Inches			Millimeters		
	MIN	NOM	MAX	MIN	NOM	MAX
P		0.315			8	
P0		0.157			4	
W		0.63			16	
W1		0.646			16.4	
D1		7			177.8	
D2		13			330.2	

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