A5.0SMCJ SERIES

SURFACE MOUNT UNIDIRECTIONAL AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS

STAND-OFF VOLTAGE - 10 to 36 Volts POWER DISSIPATION -5000 Watts

FEATURES

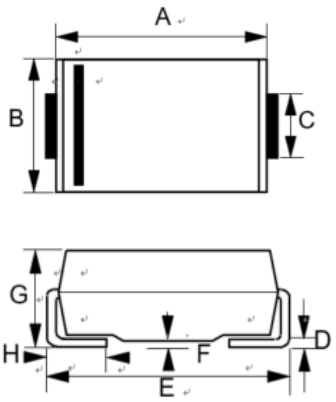
AUTOMOTIVE

- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- 5000W peak pulse power capability with a 10/1000 μs waveform
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time: typically less than 1.0ns for Uni-direction, form 0 Volts to BV min
- AEC-Q101 qualified
- PPAP capable
- Automotive grade
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

MECHANICAL DATA

- Package: Molded plastic
- Package Material: Molding compound, UL Flammability classification 94V-0, (No Br. Sb. Cl.) "Halogen-free"
- Polarity: by cathode band denotes uni-directional device
- Moisture Sensitivity: Max Soldering Temperature +260°C for 30 secs as per JEDEC J-STD-020
- Terminals: Finish- Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.007 ounces, 0.21 gram (Approximate)

SMC



SMC		
DIM.	MIN.	MAX.
A	6.60	7.11
B	5.59	6.22
C	2.92	3.18
D	0.15	0.31
E	7.75	8.13
F	0.05	0.20
G	2.01	2.40
H	0.76	1.52
All Dimensions in millimeter		

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

ABSOLUTE RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power at Tj=25℃, Tp=1ms (Note 4)	P_{PK}	5000	W
Peak Forward Surge Current 8.3ms single half sine-wave@Tj=25℃ (Note 5)	I_{FSM}	300	A
Steady State Power Dissipation with PCB , see fig.6	$P_{M(AV)}$	6.5	W
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Non-repetitive current pulse, per Fig. 3 and derated above TJ= 25°C per Fig.1.
5. Only for unidirectional units.

ELECTRICAL CHARACTERISTICS

Type Number	Device Marking code	Reverse Standoff Voltage	Breakdown Voltage VBR Volts			Max. Peak Pulse Current	Max. Clamping Voltage @Ipp	Max. Peak Pulse Current
(UNI)	(UNI)	VR (V)	Min (V)	Max (V)	It (mA)	IR (uA)	Vc (V)	Ipp (A)
A5.0SMCJ10A	AHDE	10	11.1	12.3	1	20	17	294.1
A5.0SMCJ12A	AHDF	12	13.3	14.7	1	10	19.9	251.3
A5.0SMCJ13A	AHDG	13	14.4	15.9	1	10.0	21.5	232.6
A5.0SMCJ16A	AHDK	16	17.8	19.7	1	2.0	26.0	192.3
A5.0SMCJ17A	AHDM	17	18.9	20.9	1	2.0	27.6	181.2
A5.0SMCJ18A	AHDP	18	20.0	22.1	1	2.0	29.2	171.2
A5.0SMCJ20A	AHDR	20	22.2	24.5	1	2.0	32.4	154.3
A5.0SMCJ22A	AHDT	22	24.4	26.9	1	2.0	35.5	140.8
A5.0SMCJ24A	AHDV	24	26.7	29.5	1	2.0	38.9	128.5
A5.0SMCJ26A	AHDX	26	28.9	31.9	1	2.0	42.1	118.8
A5.0SMCJ28A	AHDZ	28	32.1	34.4	1	2.0	45.4	110.1
A5.0SMCJ30A	AHEE	30	33.3	36.8	1	2.0	48.4	103.3
A5.0SMCJ33A	AHEG	33	36.7	40.6	1	2.0	53.3	93.8
A5.0SMCJ36A	AHEK	36	40.0	44.2	1	2.0	58.1	86.1

Notes

(1) Pulse test: tp≦50 ms

(2) Surge current waveform per fig. 3 and derated per fig. 2

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

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient	RJA	100	°C/W

Notes

(1) Mounted on minimum recommended pad layout

(2) Mounted on infinite heat sink

RATING AND CHARACTERISTIC CURVES
A5.0SMCJ SERIES

FIG.1 - PULSE DERATING CURVE

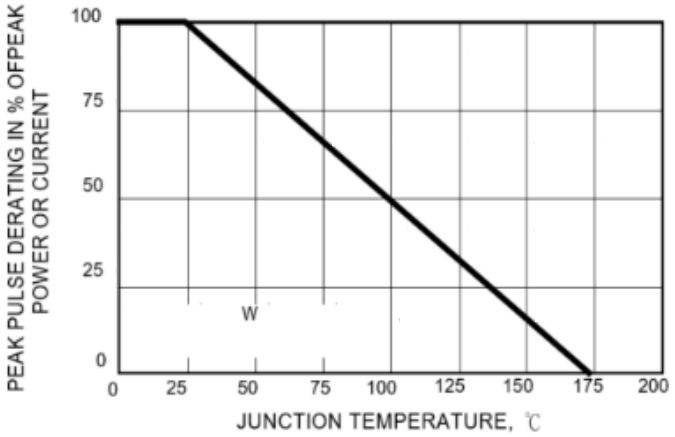


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

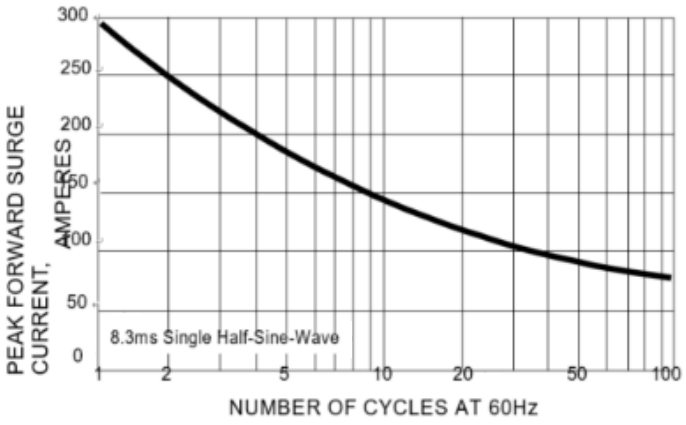


FIG.3 - PULSE WAVEFORM

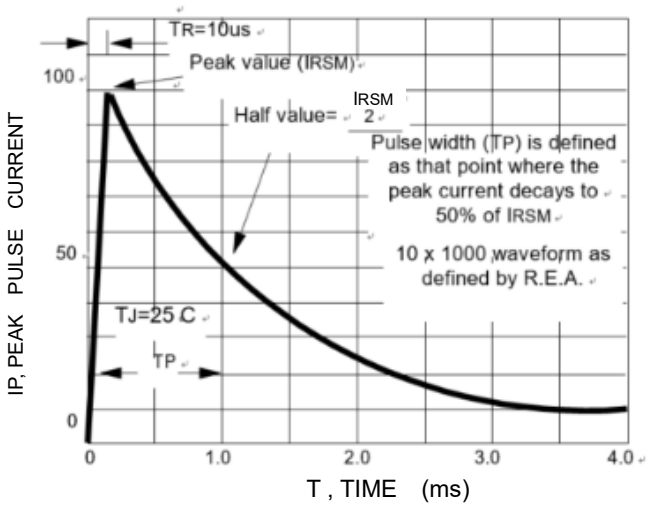


FIG.4 - TYPICAL JUNCTION CAPACITANCE

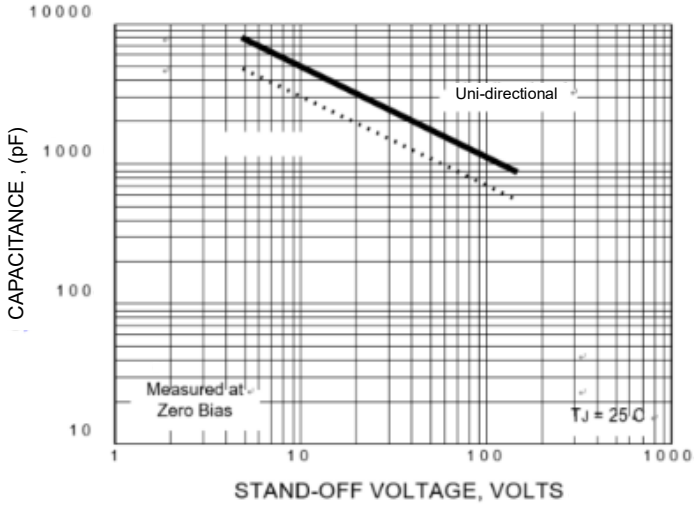


FIG.5 - PULSE RATING CURVE

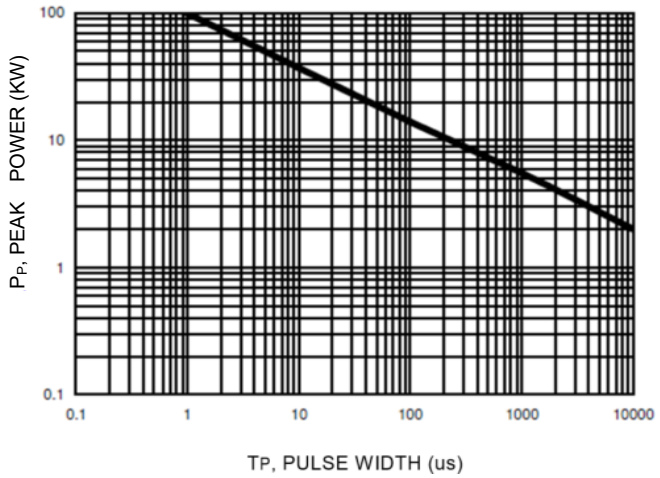
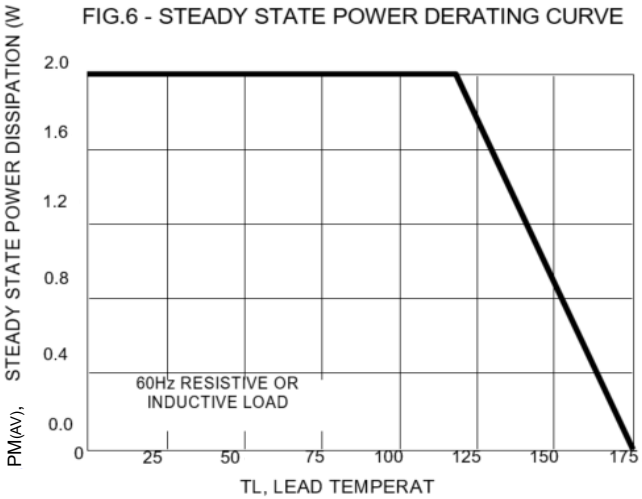


FIG.6 - STEADY STATE POWER DERATING CURVE



Ordering Information:

Part Number	Package	Packing	
		Qty.	Carrier
A5.0SMCJ SERIES	SMC	3000pcs	Reel

Marking Information:

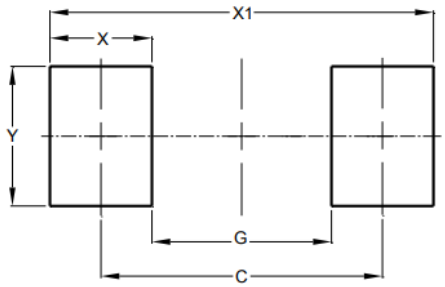
XXXX: Assembly Tracing code
ZZZ: Product Type Marking code
Bar Denotes Cathode Side

Packaging Information:

DEVICE	Q'TY/REEL (PCS)	REEL DIA. (INCH)	Q'TY/BOX (PCS)	Q'TY/CARTON (PCS)
A5.0SMCJXXA	3000	13	6K	36K

Suggested Pad Layout:

SMC



Dimensions	Value (in mm)
C	6.90
G	4.40
X	2.50
X1	9.40
Y	3.30

Note: The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application. These dimensions may be modified based on user equipment capability or fabrication criteria. A more robust pattern may be desired for wave soldering and is calculated by adding 0.2 mm to the 'Z' dimension. For further information, please reference document IPC-7351A, Naming Convention for Standard SMT Land Patterns, and for International grid details, please see document IEC, Publication 97.

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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