APSMAJ SERIES

SURFACE MOUNT UNIDIRECTIONAL AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS

STAND-OFF VOLTAGE – 6.8 to 120 Volts
POWER DISSIPATION - 400 Watts

FEATURES

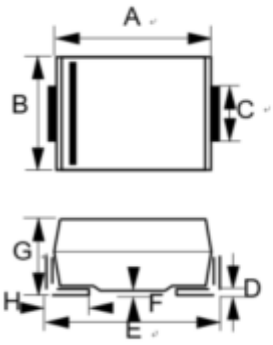
AUTOMOTIVE

- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL flammability classification 94V-O
- IR less than 0.5uA above 11V
- Fast response time: typically less than 1.0ns for Uni-direction less than 5.0ns for Bi-direction form 0 Volts to BV min
- RoHS compliant
- Automotive grade
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The APSMAJ SERIES are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

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, none cathode band denotes bi-directional device
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL STD-202, Method 208 e3
- Weight: 0.002 ounces, 0.064 gram (Approximate)

SMA



SMA		
DIM.	MIN.	MAX.
A	4.06	4.57
B	2.29	2.92
C	1.27	1.63
D	0.15	0.31
E	4.83	5.59
F	0.05	0.20
G	1.96	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 POWER DISSIPATION AT TJ = 25 ℃ , TP = 1ms (Note 4)	P_{PK}	400	W
Peak Forward Surge Current 8.3ms single half sine-wave @ TJ = 25 ℃ (Note 5)	I_{FSM}	40	A
Steady State Power Dissipation, with PCB	$P_{M(AV)}$	1.0	W
Maximum Instantaneous forward voltage at 16A (Notes 5, 6)	V_F	3.0	V
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 TA=25°C per fig.1.
5. Only for uni-directional units.
6. VF max=3V at IF-16A 300us square wave pulse.

ELECTRICAL CHARACTERISTICS

Device Uni- Directional	Device Bi- Directional	Device Marking Code		Reverse Standoff Voltage	Breakdown Voltage VBR Volts			Max. Peak Pulse Current	Max. Clamping Voltage @Ipp	Max. Peak Pulse Current
(UNI)	(BI)	(UNI)	(BI)	VR (V)	Min (V)	Max (V)	It (mA)	IR (uA)	Vc (V)	Ipp (A)
APSMAJ6.8A	APSMAJ6.8CA	A6V8A	A6V8C	5.8	6.45	7.13	10	10.5	38.1	1000
APSMAJ7.5A	APSMAJ7.5CA	A7V5A	A7V5C	6.4	7.13	7.88	10	11.3	35.4	500
APSMAJ8.2A	APSMAJ8.2CA	A8V2A	A8V2C	7.0	7.79	8.61	10	12.1	33.1	200
APSMAJ9.1A	APSMAJ9.1CA	A9V1A	A9V1C	7.8	8.65	9.56	1.0	13.4	29.9	50
APSMAJ10A	APSMAJ10CA	A10A	A10C	8.6	9.50	10.5	1.0	14.5	27.6	10
APSMAJ11A	APSMAJ11CA	A11A	A11C	9.4	10.5	11.6	1.0	15.6	25.6	5
APSMAJ12A	APSMAJ12CA	A12A	A12C	10.	11.4	12.6	1.0	16.7	24.0	0.5
APSMAJ13A	APSMAJ13CA	A13A	A13C	11.	12.4	13.7	1.0	18.2	22.0	0.5
APSMAJ15A	APSMAJ15CA	A15A	A15C	12.8	14.3	15.8	1.0	21.2	18.9	0.5
APSMAJ16A	APSMAJ16CA	A16A	A16C	13.6	15.2	16.8	1.0	22.5	17.8	0.5
APSMAJ18A	APSMAJ18CA	A18A	A18C	15.3	17.1	18.9	1.0	25.2	15.9	0.5
APSMAJ20A	APSMAJ20CA	A20A	A20C	17.1	19.0	21.0	1.0	27.7	14.4	0.5
APSMAJ22A	APSMAJ22CA	A22A	A22C	18.8	20.9	23.1	1.0	30.6	13.1	0.5
APSMAJ24A	APSMAJ24CA	A24A	A24C	20.5	22.8	25.2	1.0	33.2	12.0	0.5
APSMAJ27A	APSMAJ27CA	A27A	A27C	23.1	25.7	28.4	1.0	37.5	10.7	0.5
APSMAJ30A	APSMAJ30CA	A30A	A30C	25.6	28.5	31.5	1.0	41.4	9.7	0.5
APSMAJ33A	APSMAJ33CA	A33A	A33C	28.2	31.4	34.7	1.0	45.7	8.8	0.5
APSMAJ36A	APSMAJ36CA	A36A	A36C	30.8	34.2	37.8	1.0	49.9	8.0	0.5
APSMAJ39A	APSMAJ39CA	A39A	A39C	33.3	37.1	41.0	1.0	53.9	7.4	0.5
APSMAJ43A	APSMAJ43CA	A43A	A43C	36.8	40.9	45.2	1.0	59.3	6.7	0.5
APSMAJ47A	APSMAJ47CA	A47A	A47C	40.2	44.7	49.4	1.0	64.8	6.2	0.5
APSMAJ51A	APSMAJ51CA	A51A	A51C	43.6	48.5	53.6	1.0	70.1	5.7	0.5
APSMAJ56A	APSMAJ56CA	A56A	A56C	47.8	53.2	58.8	1.0	77.0	5.2	0.5
APSMAJ62A	APSMAJ62CA	A62A	A62C	53.0	58.9	65.1	1.0	85.0	4.7	0.5
APSMAJ68A	APSMAJ68CA	A68A	A68C	58.1	64.6	71.4	1.0	92.0	4.3	0.5
APSMAJ75A	APSMAJ75CA	A75A	A75C	64.7	71.3	78.8	1.0	103.0	3.9	0.5
APSMAJ82A	APSMAJ82CA	A82A	A82C	70.1	77.9	86.1	1.0	113.0	3.5	0.5
APSMAJ91A	APSMAJ91CA	A91A	A91C	77.8	86.5	95.6	1.0	125.0	3.2	0.5
APSMAJ100A	APSMAJ100CA	A100A	A100C	85.5	95.0	105.0	1.0	137.0	2.9	0.5
APSMAJ110A	APSMAJ110CA	A110A	A110C	94.0	105.0	116.1	1.0	152.0	2.6	0.5
APSMAJ120A	APSMAJ120CA	A120A	A120C	102.0	114.0	126.0	1.0	165.0	2.4	0.5

Notes:
Suffix 'A ' denotes 5% tolerance device.
1.) Add suffix 'C 'or ' CA ' after part number to specify Bi-directional devices.
2.) The IR limit is double for Bi-Directional devices.

RATING AND CHARACTERISTIC CURVES
APSMAJ SERIES

FIG.1 - PULSE DERATING CURVE

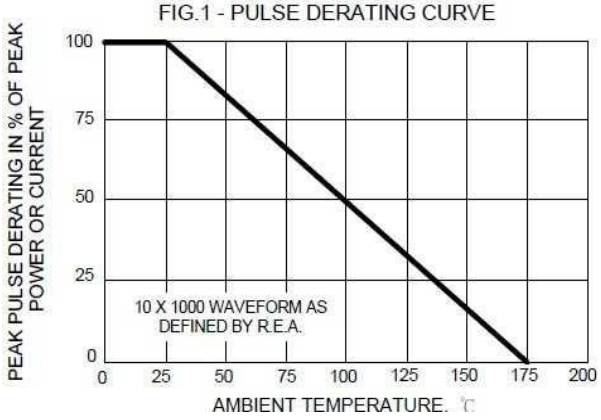


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

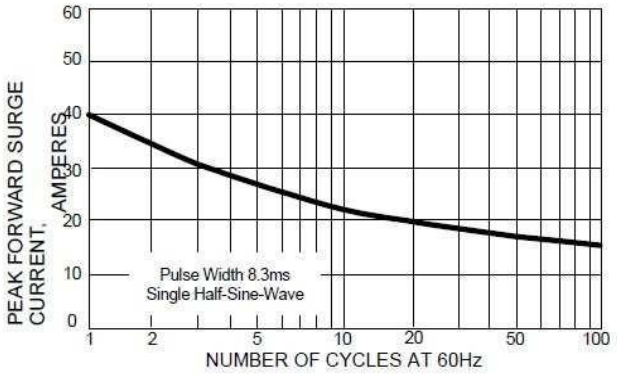


FIG.3 - PULSE WAVEFORM

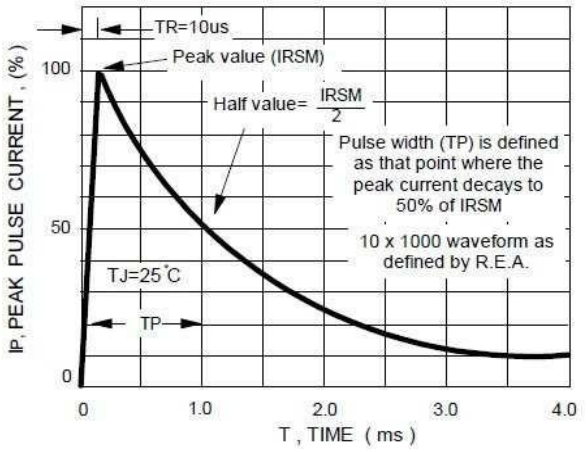


FIG.4 - TYPICAL JUNCTION CAPACITANCE

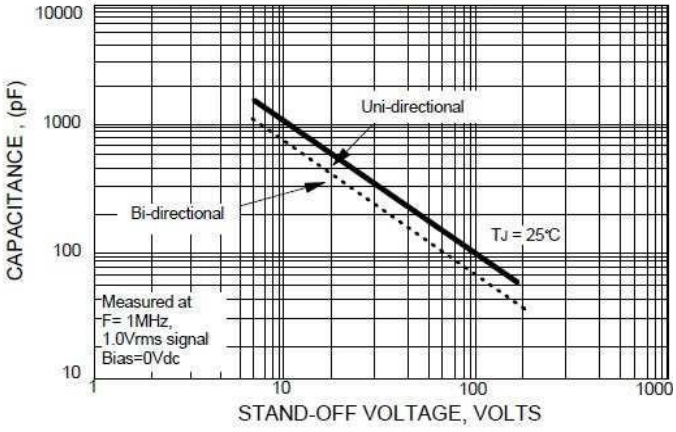


FIG.5 - PULSE RATING CURVE

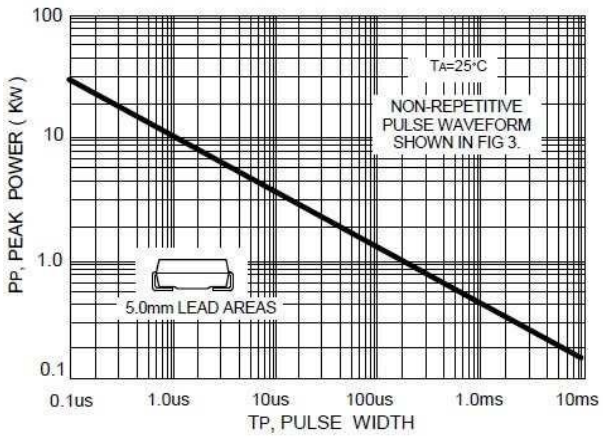
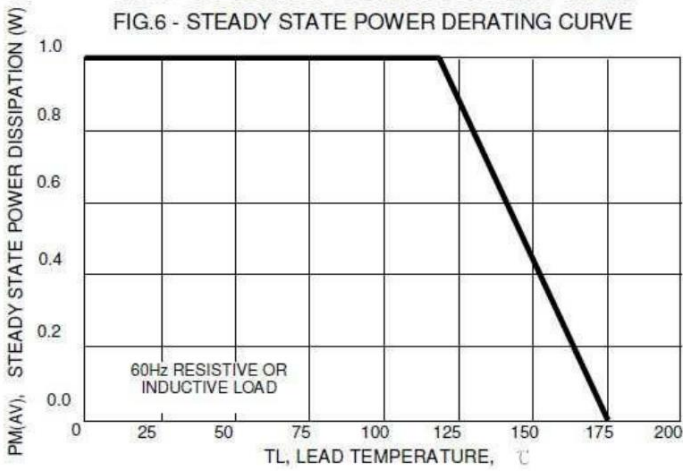


FIG.6 - STEADY STATE POWER DERATING CURVE



Ordering Information :

Part Number	Package	Packing	
		Qty.	Carrier
APSMAJ SERIES	SMA	5000pcs	Reel

Marking Information :

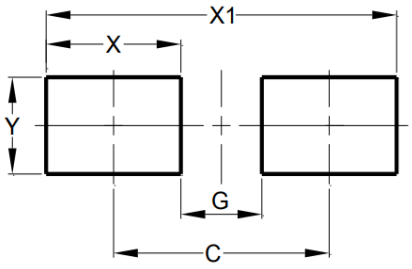
XXXX : Assembly Tracing Code
ZZZ : Product Type Marking Code
Bar Denotes Cathode Side

Packaging Information :

DEVICE	Q'TY/REEL (PCS)	REEL DIA. (INCH)	Q'TY/BOX (PCS)	Q'TY/CARTON (PCS)
APSMAJXXA APSMAJXXCA	5000	13	10K	80K

Suggested Pad Layout :

SMA



Dimensions	Value (in mm)
C	4.00
G	1.50
X	2.50
X1	6.50
Y	1.70

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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