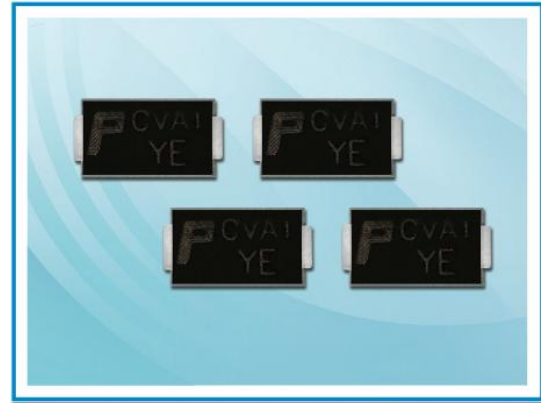


## TVS Diode – ASMAJ Series

### Features

- Plastic package, excellent insulation strength.
- Glass passivated chip junction in SMA package.
- Excellent voltage clamping capability.
- Automotive grade AEC-Q101 qualified.
- Low Zener impedance.
- 400W peak pulse power capability on 10/1000 $\mu$ s waveform.
- Typical leakage current less than 1 $\mu$ A above 13V.
- Very fast response time, typically less than 1.0ps from 0 volt to  $V_{BR}$  minimum.
- High temperature soldering guaranteed: 265°C/10 sec.
- MSL: JEDEC-J-STD-020, Level 1

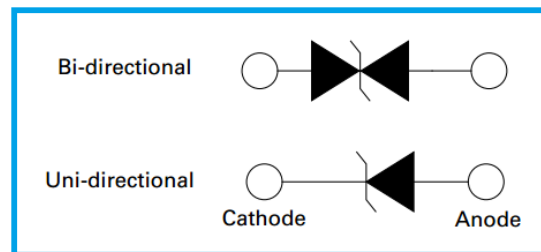


### Applications

- I/O interface,  $V_{CC}$  bus
- Telecom / Automotive
- Industrial and consumer electronic applications.
- Relay and electromagnetic valve surge absorption.

### Agency Approval

- UL certification pending



### Mechanical and Physical Data

- Case: JEDEC SMA molded plastic.
- Axial leaded, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denoted cathode except bidirectional.

### Maximum Ratings and Thermal Characteristics

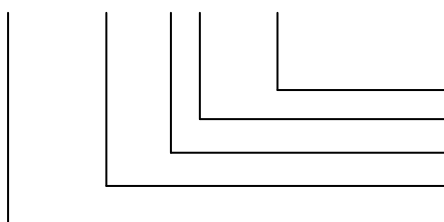
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (Note 1, Fig.1).	$P_{PPM}$	Min 400	Watt
Peak Pulse Current of 10/1000 $\mu$ s waveform (Note 1, Fig.3).	$I_{PPM}$	See Table	Amp
Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ , Lead lengths 0.375", (9.5mm) (Fig.5).	$P_{M(AV)}$	3.3	Watt
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave Superimposed on Rated Load (Note 2, Fig.6).	$I_{FSM}$	40	Amp
Operating Junction and Storage Temperature Range.	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$

Note:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.2.
2. 8.3ms single half sine wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

### Part Number Code

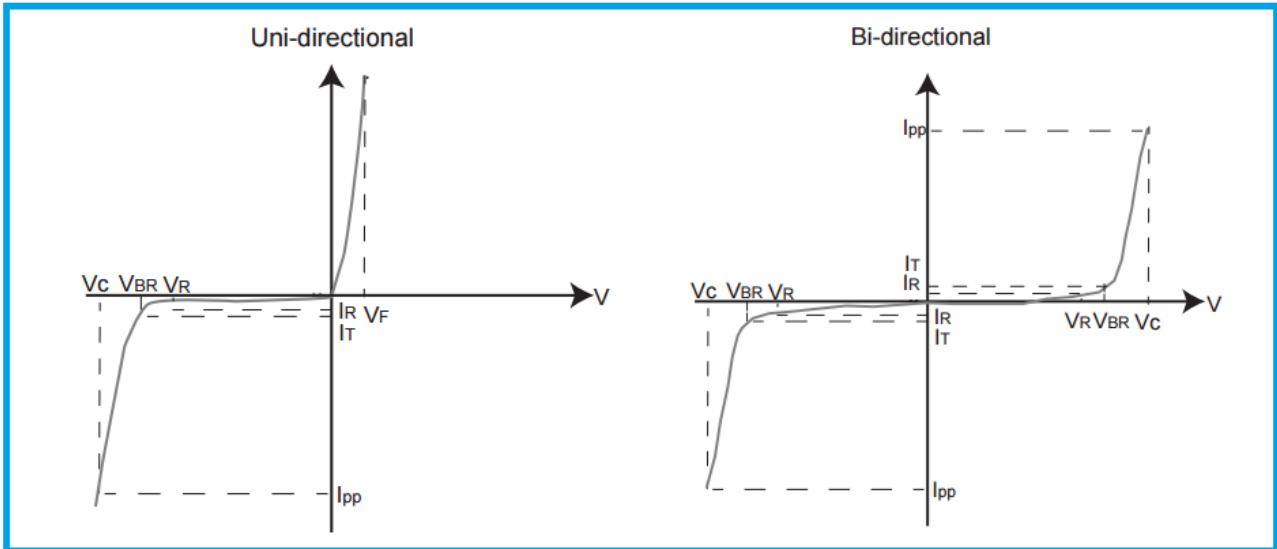
ASMAJ □□□ CA - □□□



- Packaging Code (T13: Tape with 13" Reel; T7: Tape with 7")
- $V_{BR}$  Voltage tolerance (A: 5%; Blank: 10%)
- C: Bi-directional; Blank: Uni-directional
- Reverse Stand-Off Voltage or Typical Breakdown Voltage
- Automotive ASMAJ Series (400W)

## TVS Diode – ASMAJ Series

### I-V Curve Characteristics



- $P_{PPM}$  Peak Pulse Power Dissipation – Maximum power dissipation
- $V_R$  Stand-off Voltage – Maximum voltage that can be applied to the TVS without operation
- $V_{BR}$  Breakdown Voltage – Maximum voltage that flows through the TVS at a specified test current ( $I_T$ )
- $V_C$  Clamping Voltage – Peak voltage measured across the TVS at a specified  $I_{PPM}$  (Peak Impulse Current)
- $I_R$  Reverse Leakage Current – Current measured at  $V_R$
- $V_F$  Forward Voltage Drop for Uni-directional

### Electrical Characteristics

Part Number		Marking		Reverse Stand Off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR}$ (V) @ $I_T$		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) @ $I_{PP}$	Maximum Peak Pulse Current $I_{PP}$ (A)	Maximum Reverse Leakage $I_R$ ( $\mu$ A) @ $V_R$	UL
Uni	Bi	Uni	Bi		Min.	Max.					
ASMAJ10A	ASMAJ10CA	AXA	WXA	10.0	11.1	12.3	1	17.0	23.5	5	Pending
ASMAJ11A	ASMAJ11CA	AZA	WZA	11.0	12.2	13.5	1	18.2	22.0	1	Pending
ASMAJ12A	ASMAJ12CA	BEA	XEA	12.0	13.3	14.7	1	19.9	20.1	1	Pending
ASMAJ13A	ASMAJ13CA	BGA	XGA	13.0	14.4	15.9	1	21.5	18.6	1	Pending
ASMAJ14A	ASMAJ14CA	BKA	XKA	14.0	15.6	17.2	1	23.2	17.2	1	Pending
ASMAJ15A	ASMAJ15CA	BMA	XMA	15.0	16.7	18.5	1	24.4	16.4	1	Pending
ASMAJ16A	ASMAJ16CA	BPA	XPA	16.0	17.8	19.7	1	26.0	15.4	1	Pending
ASMAJ17A	ASMAJ17CA	BRA	XRA	17.0	18.9	20.9	1	27.6	14.5	1	Pending
ASMAJ18A	ASMAJ18CA	BTA	XTA	18.0	20.0	22.1	1	29.2	13.7	1	Pending
ASMAJ19A	ASMAJ19CA	BBA	XBA	19.0	21.1	23.3	1	30.8	48.7	1	Pending
ASMAJ20A	ASMAJ20CA	BVA	XVA	20.0	22.2	24.5	1	32.4	12.3	1	Pending
ASMAJ22A	ASMAJ22CA	BXA	XXA	22.0	24.4	26.9	1	35.5	11.3	1	Pending
ASMAJ24A	ASMAJ24CA	BZA	XZA	24.0	26.7	29.5	1	38.9	10.3	1	Pending
ASMAJ26A	ASMAJ26CA	CEA	YEA	26.0	28.9	31.9	1	42.1	9.5	1	Pending
ASMAJ28A	ASMAJ28CA	CGA	YGA	28.0	31.1	34.4	1	45.4	8.8	1	Pending
ASMAJ30A	ASMAJ30CA	CKA	YKA	30.0	33.3	36.8	1	48.4	8.3	1	Pending
ASMAJ33A	ASMAJ33CA	CMA	YMA	33.0	36.7	40.6	1	53.3	7.5	1	Pending
ASMAJ36A	ASMAJ36CA	CPA	YPA	36.0	40.0	44.2	1	58.1	6.9	1	Pending
ASMAJ40A	ASMAJ40CA	CRA	YRA	40.0	44.4	49.1	1	64.5	6.2	1	Pending



## TVS Diode – ASMAJ Series

Part Number		Marking		Reverse Stand Off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR}$ (V) @ $I_T$		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) @ $I_{PP}$	Maximum Peak Pulse Current $I_{PP}$ (A)	Maximum Reverse Leakage $I_R$ ( $\mu$ A) @ $V_R$	UL
Uni	Bi	Uni	Bi		Min.	Max.					
ASMAJ43A	ASMAJ43CA	CTA	YTA	43.0	47.8	52.8	1	69.4	5.8	1	Pending
ASMAJ45A	ASMAJ45CA	CVA	YVA	45.0	50.0	55.3	1	72.7	5.5	1	Pending
ASMAJ48A	ASMAJ48CA	CXA	YXA	48.0	53.3	58.9	1	77.4	5.2	1	Pending
ASMAJ51A	ASMAJ51CA	CZA	YZA	51.0	56.7	62.7	1	82.4	4.9	1	Pending
ASMAJ54A	ASMAJ54CA	REA	ZEA	54.0	60.0	66.3	1	87.1	4.6	1	Pending
ASMAJ58A	ASMAJ58CA	RGA	ZGA	58.0	64.4	71.2	1	93.6	4.3	1	Pending
ASMAJ60A	ASMAJ60CA	RKA	ZKA	60.0	66.7	73.7	1	96.8	4.1	1	Pending
ASMAJ64A	ASMAJ64CA	RMA	ZMA	64.0	71.1	78.6	1	103.0	3.9	1	Pending
ASMAJ70A	ASMAJ70CA	RPA	ZPA	70.0	77.8	86.0	1	113.0	3.5	1	Pending
ASMAJ75A	ASMAJ75CA	RRA	ZRA	75.0	83.3	92.1	1	121.0	3.3	1	Pending
ASMAJ78A	ASMAJ78CA	RTA	ZTA	78.0	86.7	95.8	1	126.0	3.2	1	Pending
ASMAJ85A	ASMAJ85CA	RVA	ZVA	85.0	94.4	104.0	1	137.0	2.9	1	Pending

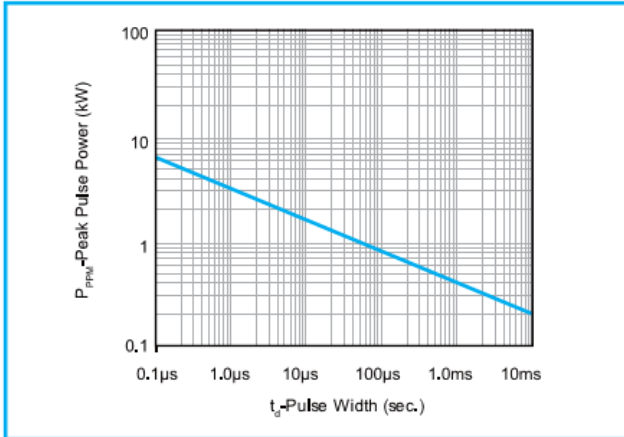
**Note:**

1. For bi-directional type having  $V_R$  of 10 volts and less, the  $I_R$  limit is double.

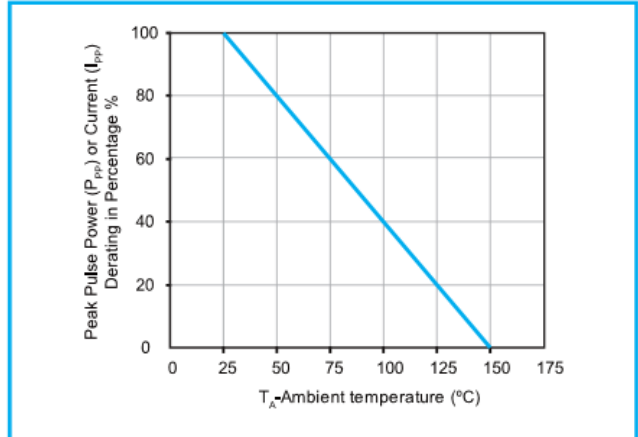
## TVS Diode – ASMAJ Series

### Ratings and Characteristic Curves

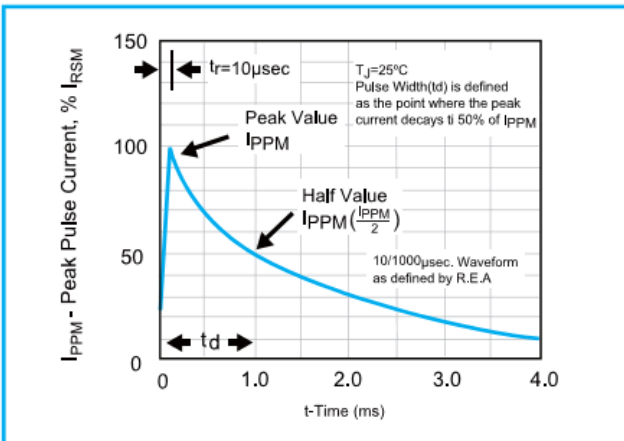
**Fig 1 - Peak Pulse Power Rating Curve**



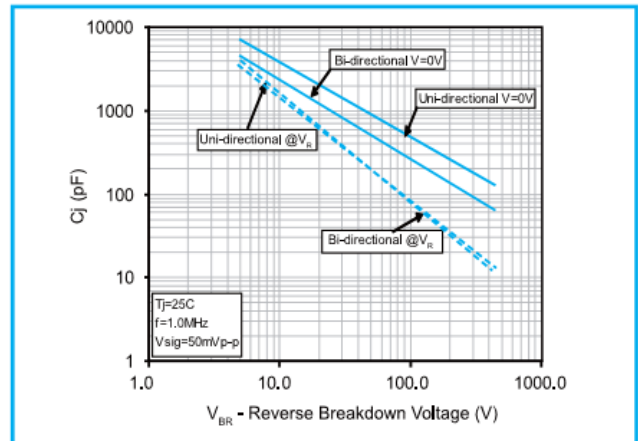
**Fig 2 - Pulse Derating Curve**



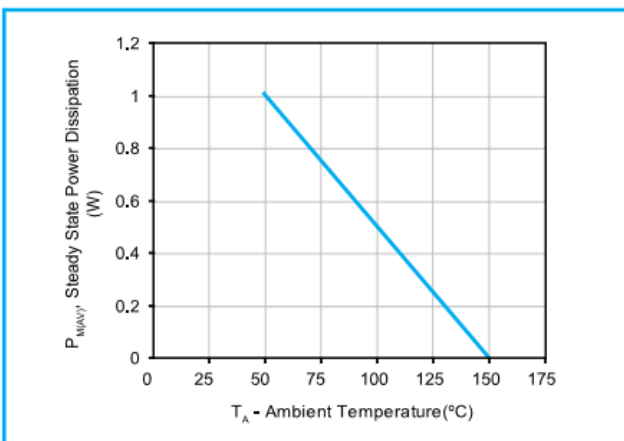
**Fig 3 - Pulse Waveform**



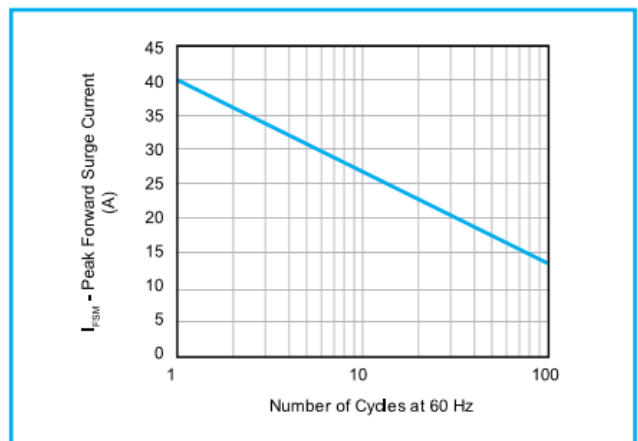
**Fig 4 - Typical Junction Capacitance Uni-directional**



**Fig 5 - Steady State Power Dissipation Derating Curve**

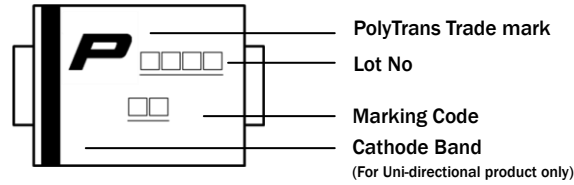


**Fig 6 - Maximum Non-Repetitive Forward Surge Current (Uni-directional Only)**

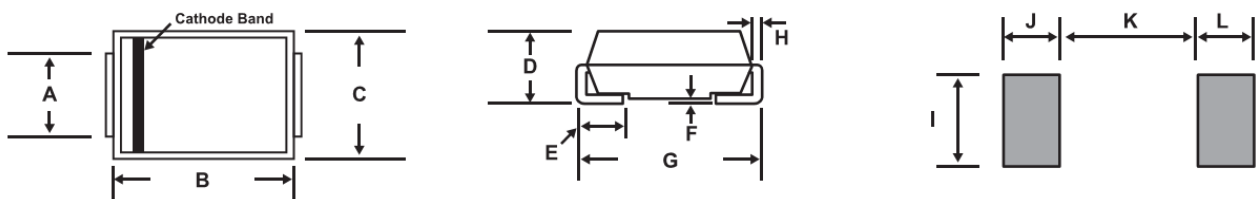


## TVS Diode – ASMAJ Series

### Marking Definitions



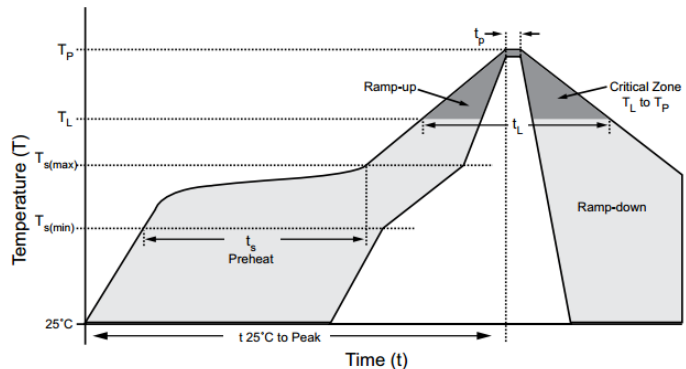
### Physical Dimensions



Dimension	Millimeters		Inches	
	Min	Max	Min	Max
A	1.25	1.65	0.049	0.065
B	3.99	4.60	0.157	0.177
C	2.50	2.90	0.100	0.110
D	1.98	2.29	0.078	0.090
E	0.78	1.52	0.030	0.060
F	-	0.203	-	0.008
G	4.93	5.28	0.194	0.208
H	0.152	0.305	0.006	0.012
I	1.80	-	0.070	-
J	2.10	-	0.082	-
K	-	2.30	-	0.090
L	2.10	-	0.082	-

### Lead Free Reflow Soldering Recommendations

Preheat	
- Temperature Min ( $T_{s\_min}$ )	150°C
- Temperature Max ( $T_{s\_max}$ )	200°C
- Time ( $T_{s\_min}$ to $T_{s\_max}$ )	60-180 seconds
- Average Ramp-Up Rate	1~3°C/second
Peak Temperature	260°C max.
Time within 5°C of actual Peak Temperature ( $t_p$ )	40 seconds max.
Ramp-Down Rate	6 °C /second max.



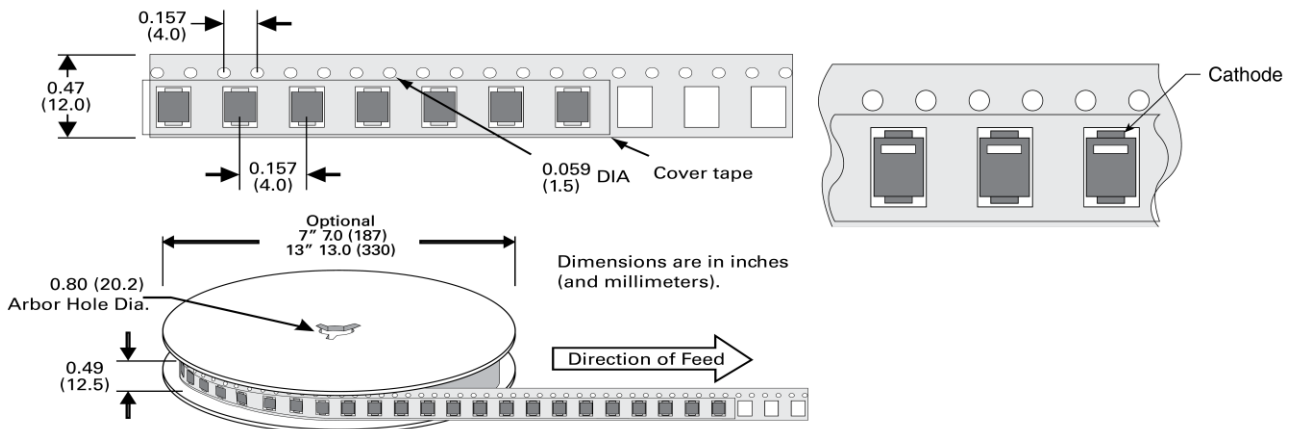
Note: If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

## TVS Diode – ASMAJ Series

### Packaging Information

Part Number	Packaging Code	Component Package	Quantity	Packaging Option	Packaging Specification
ASMAJ Series	T13	D0-214AC	5000	Tape & Reel - 12mm tape/13" reel	EIA STD RS-481
ASMAJ Series	T7	D0-214AC	1800	Tape & Reel - 12mm tape/7" reel	EIA STD RS-481

### Tape and Reel Specifications



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