



Surface Mount Uni/Bi-Directional Automotive TVS Diodes

Description

The SMAJ-AT automotive series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- For surface mounted applications
- Low profile package
- 400W Peak pulse power capability at 10/1000 μ s waveform
- Glass passivated junction
- Excellent clamping capability
- Typical IR less than 1 μ A above 10V
- Fast response time: typically less than 1.0ps from 0 Volts to VBR min
- Plastic package has Underwriters Laboratory Flammability 94V-O
- Halogen-Free / RoHS compliant / Matte Tin Lead-free plated
- High temperature soldering: 260°C/40s
- High reliability and automotive grade (AEC-Q101 qualified)

Mechanical Data

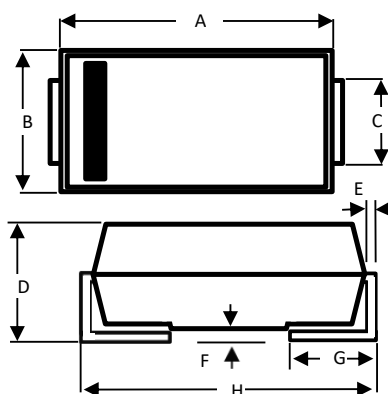
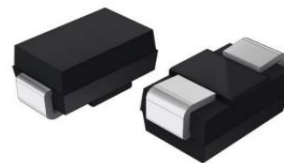
- Case:SMA(DO-214AC)package
 - Terminal: Solderable per MIL-STD-750, Method 2026
 - Polarity : by cathode band denotes uni-directional device, none cathode band denotes bi-directional device
 - Weight:0.061 grams
- Note: Products with logo  or  are made by HY Electronic (Cayman) Limited

Applications

TVS devices are ideal for the protection of I/O Interfaces,Vcc bus and other vulnerable circuits used in telecom, computer, industrial and consumer electronic applications.

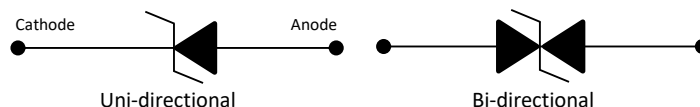
Peak Pulse Power - 400 W
Reverse Stand Off Voltage - 5 to 200 V

Package Outline Dimensions



SMA Package		
Dim	Min	Max
A	3.99	4.50
B	2.54	2.79
C	1.25	1.65
D	1.98	2.29
E	0.152	0.305
F	-	0.203
G	0.76	1.52
H	4.93	5.28
All Dimensions in mm		

Device Schematic



Ordering Information

- Package : SMA(DO-214AC)
- Reel Size : 13 (inches)
- Quantity Per Reel : 5Kpcs
- Quantity Per Box : 10Kpcs
- Quantity Per Carton : 80Kpcs

Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Absolute Ratings

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10/1000us Waveform (Note 1)	P _{PP}	400	W
Power Dissipation on Infinite Heat Sink at TL=50°C	P _{M(AV)}	1	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 2)	I _{FSM}	40	A
Operating Temperature Range	T _j	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +150	

Note:

1. Non-repetitive current pulse, per Fig.4 and derated above T_j(initial) =25°C per Fig.1
2. For unidirectional units only

Electrical Characteristics (@T_A = 25°C, unless otherwise specified.)

Part Number		Marking Code		Reverse Working Voltage V _{RWM} (V)	Reverse Breakdown Voltage V _B (V)			Reverse Leakage (Max) I _R (μ A) @V _R	Reverse Clamping Voltage (Max) V _C (V) @I _{PP}	Peak Pulse Current (Max) I _{PP} (A)
Uni.	Bi.	Uni.	Bi.		Min.	Max.	@I _T (mA)			
SMAJ5.0A-AT	SMAJ5.0CA-AT	AAA	ABY	5.0	6.40	7.00	10	800	9.2	43.5
SMAJ6.0A-AT	SMAJ6.0CA-AT	AAB	ABZ	6.0	6.67	7.37	10	800	10.3	38.8
SMAJ6.5A-AT	SMAJ6.5CA-AT	AAC	ACA	6.5	7.22	7.98	10	500	11.2	35.7
SMAJ7.0A-AT	SMAJ7.0CA-AT	AAD	ACB	7.0	7.78	8.60	10	200	12.0	33.3
SMAJ7.5A-AT	SMAJ7.5CA-AT	AAE	ACC	7.5	8.33	9.21	1	100	12.9	31.0
SMAJ8.0A-AT	SMAJ8.0CA-AT	AAF	ACD	8.0	8.89	9.83	1	50	13.6	29.4
SMAJ8.5A-AT	SMAJ8.5CA-AT	AAG	ACE	8.5	9.44	10.4	1	20	14.4	27.8
SMAJ9.0A-AT	SMAJ9.0CA-AT	AAH	ACF	9.0	10.0	11.1	1	10	15.4	26.0
SMAJ10A-AT	SMAJ10CA-AT	AAI	ACG	10	11.1	12.3	1	5	17.0	23.5
SMAJ11A-AT	SMAJ11CA-AT	AAJ	ACH	11	12.2	13.5	1	1	18.2	22.0
SMAJ12A-AT	SMAJ12CA-AT	AAK	ACI	12	13.3	14.7	1	1	19.9	20.1
SMAJ13A-AT	SMAJ13CA-AT	AAL	ACJ	13	14.4	15.9	1	1	21.5	18.6
SMAJ14A-AT	SMAJ14CA-AT	AAM	ACK	14	15.6	17.2	1	1	23.2	17.2
SMAJ15A-AT	SMAJ15CA-AT	AAN	ACL	15	16.7	18.5	1	1	24.4	16.4
SMAJ16A-AT	SMAJ16CA-AT	AAO	ACM	16	17.8	19.7	1	1	26.0	15.4
SMAJ17A-AT	SMAJ17CA-AT	AAP	ACN	17	18.9	20.9	1	1	27.6	14.5
SMAJ18A-AT	SMAJ18CA-AT	AAQ	ACO	18	20.0	22.1	1	1	29.2	13.7
SMAJ20A-AT	SMAJ20CA-AT	AAR	ACP	20	22.2	24.5	1	1	32.4	12.3
SMAJ22A-AT	SMAJ22CA-AT	AAS	ACQ	22	24.4	26.9	1	1	35.5	11.3
SMAJ24A-AT	SMAJ24CA-AT	AAT	ACR	24	26.7	29.5	1	1	38.9	10.3
SMAJ26A-AT	SMAJ26CA-AT	AAU	ACS	26	28.9	31.9	1	1	42.1	9.5
SMAJ28A-AT	SMAJ28CA-AT	AAV	ACT	28	31.1	34.4	1	1	45.4	8.8
SMAJ30A-AT	SMAJ30CA-AT	AAW	ACU	30	33.3	36.8	1	1	48.4	8.3
SMAJ33A-AT	SMAJ33CA-AT	AAX	ACV	33	36.7	40.6	1	1	53.3	7.5
SMAJ36A-AT	SMAJ36CA-AT	AAY	ACW	36	40.0	44.2	1	1	58.1	6.9
SMAJ40A-AT	SMAJ40CA-AT	AAZ	ACX	40	44.4	49.1	1	1	64.5	6.2
SMAJ43A-AT	SMAJ43CA-AT	ABA	ACY	43	47.8	52.8	1	1	69.4	5.8
SMAJ45A-AT	SMAJ45CA-AT	ABB	ACZ	45	50.0	55.3	1	1	72.7	5.5
SMAJ48A-AT	SMAJ48CA-AT	ABC	ADA	48	53.3	58.9	1	1	77.4	5.2
SMAJ51A-AT	SMAJ51CA-AT	ABD	ADB	51	56.7	62.7	1	1	82.4	4.9
SMAJ54A-AT	SMAJ54CA-AT	ABE	ADC	54	60.0	66.3	1	1	87.1	4.6
SMAJ58A-AT	SMAJ58CA-AT	ABF	ADD	58	64.4	71.2	1	1	93.6	4.3
SMAJ60A-AT	SMAJ60CA-AT	ABG	ADE	60	66.7	73.7	1	1	96.8	4.1
SMAJ64A-AT	SMAJ64CA-AT	ABH	ADF	64	71.1	78.6	1	1	103	3.9
SMAJ70A-AT	SMAJ70CA-AT	ABI	ADG	70	77.8	86.0	1	1	113	3.5
SMAJ75A-AT	SMAJ75CA-AT	ABJ	ADH	75	83.3	92.1	1	1	121	3.3
SMAJ78A-AT	SMAJ78CA-AT	ABK	ADI	78	86.7	95.8	1	1	126	3.2
SMAJ85A-AT	SMAJ85CA-AT	ABL	ADJ	85	94.4	104	1	1	137	2.9
SMAJ90A-AT	SMAJ90CA-AT	ABM	ADK	90	100	111	1	1	146	2.7
SMAJ100A-AT	SMAJ100CA-AT	ABN	ADL	100	111	123	1	1	162	2.5
SMAJ110A-AT	SMAJ110CA-AT	ABO	ADM	110	122	135	1	1	177	2.3
SMAJ120A-AT	SMAJ120CA-AT	ABP	ADN	120	133	147	1	1	193	2.1
SMAJ130A-AT	SMAJ130CA-AT	ABQ	ADO	130	144	159	1	1	209	1.9
SMAJ150A-AT	SMAJ150CA-AT	ABR	ADP	150	167	185	1	1	243	1.6
SMAJ160A-AT	SMAJ160CA-AT	ABS	ADQ	160	178	197	1	1	259	1.5
SMAJ170A-AT	SMAJ170CA-AT	ABT	ADR	170	189	209	1	1	275	1.5
SMAJ180A-AT	SMAJ180CA-AT	ABU	ADS	180	201	222	1	1	292	1.4
SMAJ200A-AT	SMAJ200CA-AT	ABW	ADU	200	224	247	1	1	324	1.2
SMAJ220A-AT	SMAJ220CA-AT	ABX	ADV	220	246	272	1	1	356	1.1

Note:

1. Suffix "A" denotes 5% tolerance device.
2. Add suffix "CA" after part number to specify bi-directional devices.
3. The IR limit is double for bi-directional devices.



Rating and Characteristic Curves

FIG.1 - Peak Pulse Power Derating Curve

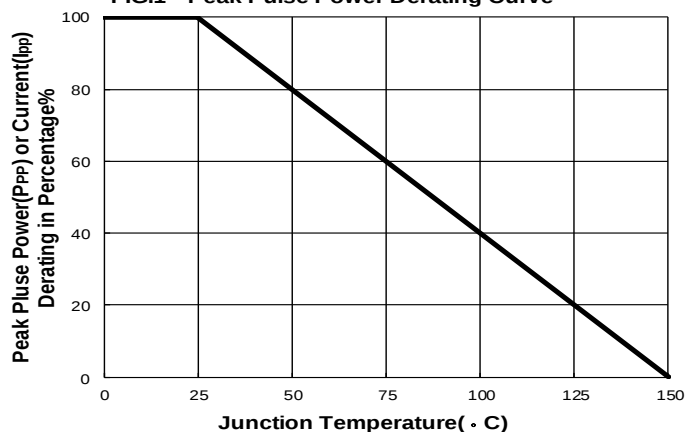


FIG.2 - Steady State Power Derating Curve

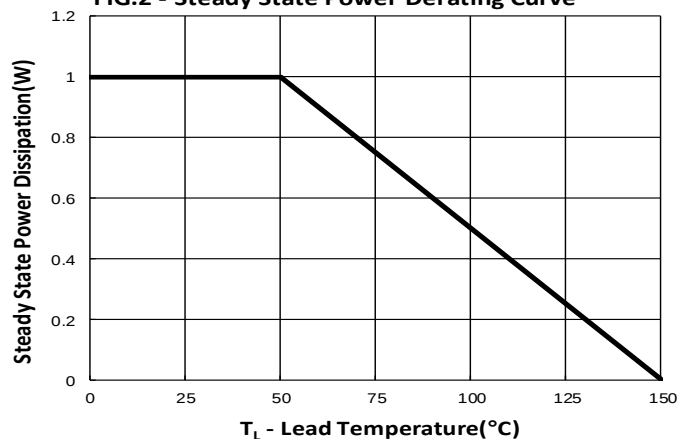


FIG.3 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

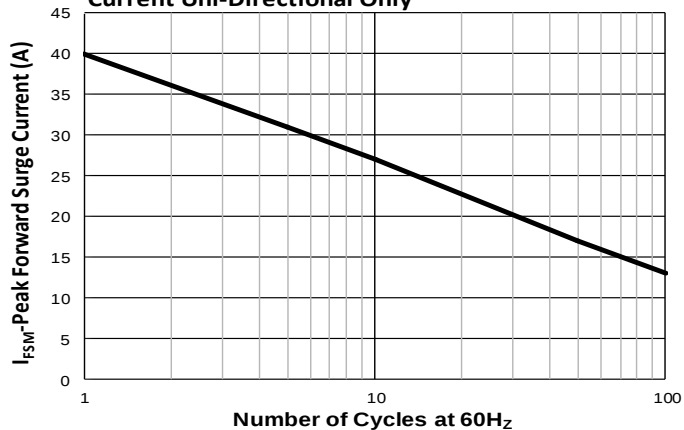


FIG.4 - Pulse Waveform

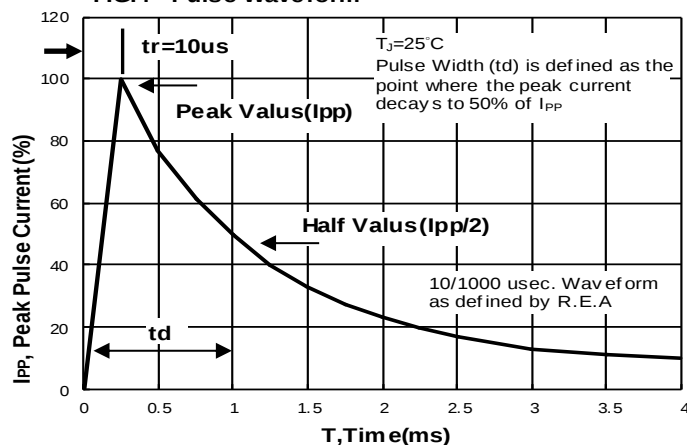


FIG.5 - Typical Junction Capacitance

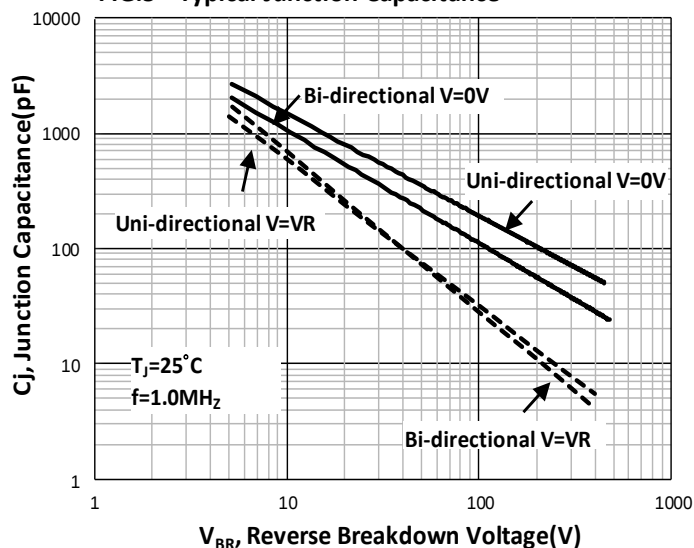
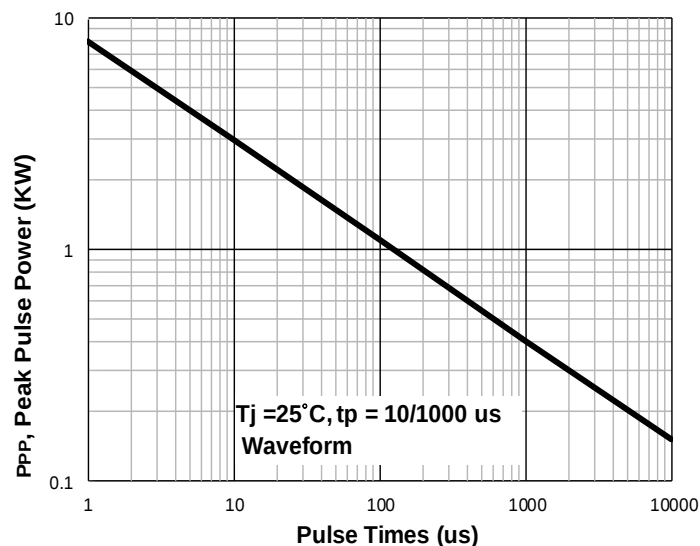


FIG.6 - Peak Pulse Power Rating Curve





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