Applications

- Computer system
- Domestic appliance
- Video input

Description

- Transient voltage suppression diodes, also known as TVS diodes, are protective electronic parts that protect electrical equipment from voltage spikes introduced by wires.

Mechanical Data

- Package：SMC/DO-214AB
- Case Material：Molded Plastic. UL Flammability Classification Rating 94V-0. RoHS compliant
- Moisture Sensitivity：Meet MSL 1
- Terminal：Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity：Color band denotes cathode except bi-directional models
- Weight：0.28g(approximate)

Features

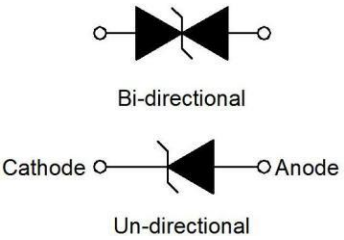
- For surface mounted applications
- Excellent clamping capability
- 5000 W peak pulse power capability with a 10/1000μs Waveform.
- V_{RWM} 12 ~190V
- Low profile package and low inductance
- Typical IR less than 1uA above 12V
- Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- AEC-Q101 Qualified

Product and Packing Information Data

Part Number	QTY/Reel	Reel Size
5.0SMDJxx(C)A-AT	3,000	13 inch

DO-214AB(SMC)

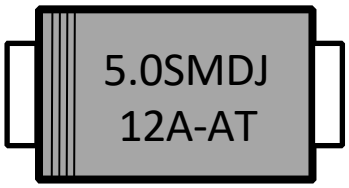
DO-214AB



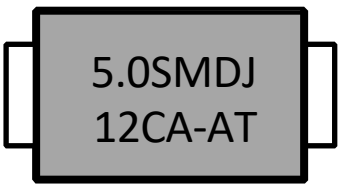
Marking Information

EX :

5.0SMDJ12A-AT Marking code : 5.0SMDJ12A-AT



5.0SMDJ12CA-AT Marking code : 5.0SMDJ12CA-AT



Electrical Characteristics (T=25℃)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
5.0SMDJ12A-AT	5.0SMDJ12CA-AT	5.0SMDJ12A-AT	5.0SMDJ12CA-AT	12.0	1	13.30	14.70	1	19.9	251.3
5.0SMDJ13A-AT	5.0SMDJ13CA-AT	5.0SMDJ13A-AT	5.0SMDJ13CA-AT	13.0	1	14.40	15.90	1	21.5	232.6
5.0SMDJ14A-AT	5.0SMDJ14CA-AT	5.0SMDJ14A-AT	5.0SMDJ14CA-AT	14.0	1	15.60	17.20	1	23.2	215.6
5.0SMDJ15A-AT	5.0SMDJ15CA-AT	5.0SMDJ15A-AT	5.0SMDJ15CA-AT	15.0	1	16.70	18.50	1	24.4	205.0
5.0SMDJ16A-AT	5.0SMDJ16CA-AT	5.0SMDJ16A-AT	5.0SMDJ16CA-AT	16.0	1	17.80	19.70	1	26.0	192.4
5.0SMDJ17A-AT	5.0SMDJ17CA-AT	5.0SMDJ17A-AT	5.0SMDJ17CA-AT	17.0	1	18.90	20.90	1	27.6	181.2
5.0SMDJ18A-AT	5.0SMDJ18CA-AT	5.0SMDJ18A-AT	5.0SMDJ18CA-AT	18.0	1	20.00	22.10	1	29.2	171.3
5.0SMDJ20A-AT	5.0SMDJ20CA-AT	5.0SMDJ20A-AT	5.0SMDJ20CA-AT	20.0	1	22.20	24.50	1	32.4	154.4
5.0SMDJ22A-AT	5.0SMDJ22CA-AT	5.0SMDJ22A-AT	5.0SMDJ22CA-AT	22.0	1	24.40	26.90	1	35.5	140.9
5.0SMDJ24A-AT	5.0SMDJ24CA-AT	5.0SMDJ24A-AT	5.0SMDJ24CA-AT	24.0	1	26.70	29.50	1	38.9	128.6
5.0SMDJ26A-AT	5.0SMDJ26CA-AT	5.0SMDJ26A-AT	5.0SMDJ26CA-AT	26.0	1	28.90	31.90	1	42.1	118.8
5.0SMDJ28A-AT	5.0SMDJ28CA-AT	5.0SMDJ28A-AT	5.0SMDJ28CA-AT	28.0	1	31.10	34.40	1	45.4	110.2
5.0SMDJ30A-AT	5.0SMDJ30CA-AT	5.0SMDJ30A-AT	5.0SMDJ30CA-AT	30.0	1	33.30	36.80	1	48.4	103.4
5.0SMDJ33A-AT	5.0SMDJ33CA-AT	5.0SMDJ33A-AT	5.0SMDJ33CA-AT	33.0	1	36.70	40.60	1	53.3	93.81
5.0SMDJ36A-AT	5.0SMDJ36CA-AT	5.0SMDJ36A-AT	5.0SMDJ36CA-AT	36.0	1	40.00	44.20	1	58.1	86.06
5.0SMDJ40A-AT	5.0SMDJ40CA-AT	5.0SMDJ40A-AT	5.0SMDJ40CA-AT	40.0	1	44.40	49.10	1	64.5	77.52
5.0SMDJ43A-AT	5.0SMDJ43CA-AT	5.0SMDJ43A-AT	5.0SMDJ43CA-AT	43.0	1	47.80	52.80	1	69.4	72.05
5.0SMDJ45A-AT	5.0SMDJ45CA-AT	5.0SMDJ45A-AT	5.0SMDJ45CA-AT	45.0	1	50.00	55.30	1	72.7	68.78
5.0SMDJ48A-AT	5.0SMDJ48CA-AT	5.0SMDJ48A-AT	5.0SMDJ48CA-AT	48.0	1	53.30	58.90	1	77.4	64.60
5.0SMDJ51A-AT	5.0SMDJ51CA-AT	5.0SMDJ51A-AT	5.0SMDJ51CA-AT	51.0	1	56.70	62.70	1	82.4	60.68
5.0SMDJ54A-AT	5.0SMDJ54CA-AT	5.0SMDJ54A-AT	5.0SMDJ54CA-AT	54.0	1	60.00	66.30	1	87.1	57.41
5.0SMDJ58A-AT	5.0SMDJ58CA-AT	5.0SMDJ58A-AT	5.0SMDJ58CA-AT	58.0	1	64.40	71.20	1	93.6	53.42
5.0SMDJ60A-AT	5.0SMDJ60CA-AT	5.0SMDJ60A-AT	5.0SMDJ60CA-AT	60.0	1	66.70	73.70	1	96.8	51.66
5.0SMDJ64A-AT	5.0SMDJ64CA-AT	5.0SMDJ64A-AT	5.0SMDJ64CA-AT	64.0	1	71.10	78.60	1	103.0	48.55
5.0SMDJ70A-AT	5.0SMDJ70CA-AT	5.0SMDJ70A-AT	5.0SMDJ70CA-AT	70.0	1	77.80	86.00	1	113.0	44.25

Electrical Characteristics (T=25℃)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
5.0SMDJ75A-AT	5.0SMDJ75CA-AT	5.0SMDJ75A-AT	5.0SMDJ75CA-AT	75.0	1	83.30	92.10	1	121.0	12.40
5.0SMDJ78A-AT	5.0SMDJ78CA-AT	5.0SMDJ78A-AT	5.0SMDJ78CA-AT	78.0	1	86.70	95.80	1	126.0	11.91
5.0SMDJ85A-AT	5.0SMDJ85CA-AT	5.0SMDJ85A-AT	5.0SMDJ85CA-AT	85.0	1	94.40	104.0	1	137.0	10.95
5.0SMDJ90A-AT	5.0SMDJ90CA-AT	5.0SMDJ90A-AT	5.0SMDJ90CA-AT	90.0	1	100.0	111.0	1	146.0	10.28
5.0SMDJ100A-AT	5.0SMDJ100CA-AT	5.0SMDJ100A-AT	5.0SMDJ100CA-AT	100.0	1	111.0	123.0	1	162.0	9.26
5.0SMDJ110A-AT	5.0SMDJ110CA-AT	5.0SMDJ110A-AT	5.0SMDJ110CA-AT	110.0	1	122.0	135.0	1	177.0	8.48
5.0SMDJ120A-AT	5.0SMDJ120CA-AT	5.0SMDJ120A-AT	5.0SMDJ120CA-AT	120.0	1	133.0	147.0	1	193.0	7.78
5.0SMDJ130A-AT	5.0SMDJ130CA-AT	5.0SMDJ130A-AT	5.0SMDJ130CA-AT	130.0	1	144.0	159.0	1	209.0	7.18
5.0SMDJ150A-AT	5.0SMDJ150CA-AT	5.0SMDJ150A-AT	5.0SMDJ150CA-AT	150.0	1	167.0	185.0	1	243.0	6.18
5.0SMDJ160A-AT	5.0SMDJ160CA-AT	5.0SMDJ160A-AT	5.0SMDJ160CA-AT	160.0	1	178.0	197.0	1	259.0	5.80
5.0SMDJ170A-AT	5.0SMDJ170CA-AT	5.0SMDJ170A-AT	5.0SMDJ170CA-AT	170.0	1	189.0	209.0	1	275.0	5.46
5.0SMDJ180A-AT	5.0SMDJ180CA-AT	5.0SMDJ180A-AT	5.0SMDJ180CA-AT	180.0	1	201.0	222.0	1	292.0	5.14
5.0SMDJ190A-AT	5.0SMDJ190CA-AT	5.0SMDJ190A-AT	5.0SMDJ190CA-AT	190.0	1	209.0	233.0	1	308.0	4.88

Note: ①.Surge waveform: 10/1000μs

V_R: Stand-off voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

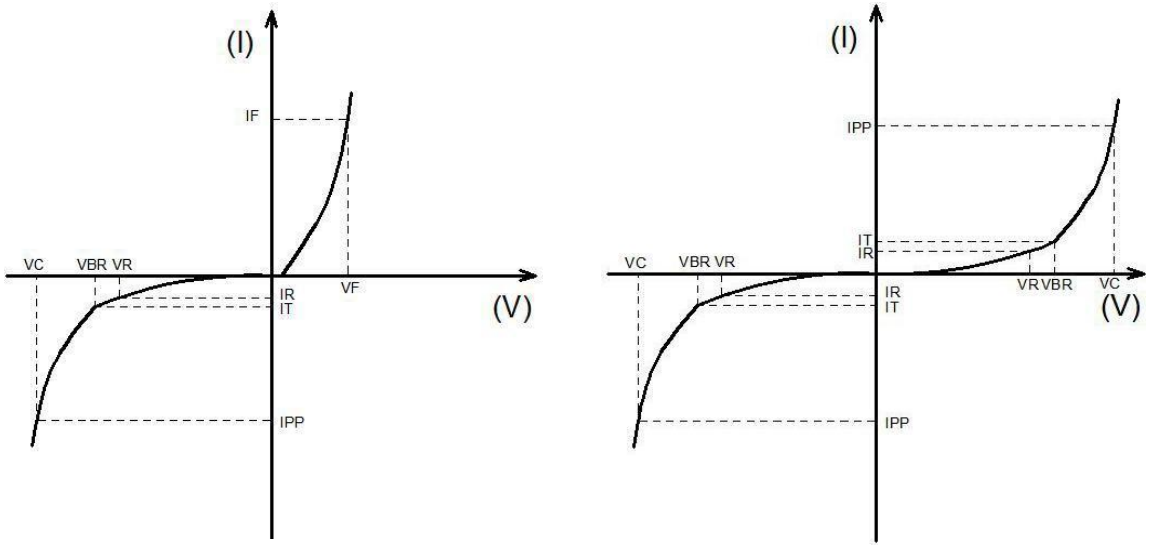
I_R: Reverse leakage current

I_T: Test current

Maximum Ratings (T=25°C, RH=45% ~ 75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	5000	W
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	6.5	W
Operating junction temperature range	T_j	-55 to +175	℃
Storage temperature range	T_{stg}	-55 to +175	℃

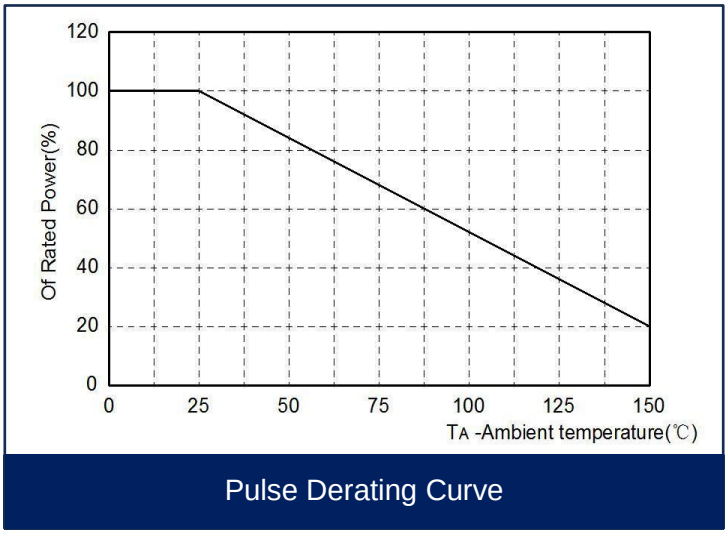
Ratings And V-I Characteristics Curves (T=25ºC, unless otherwise noted)



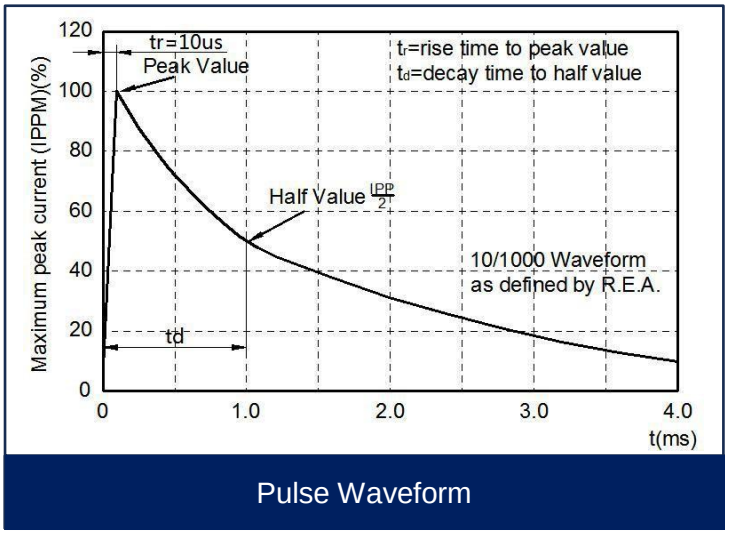
V-I cure characteristics

Symbol	Parameter
I_F	Mean Forward Current
V_F	Maximum Forward Voltage @I_F
V_R	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_R
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}

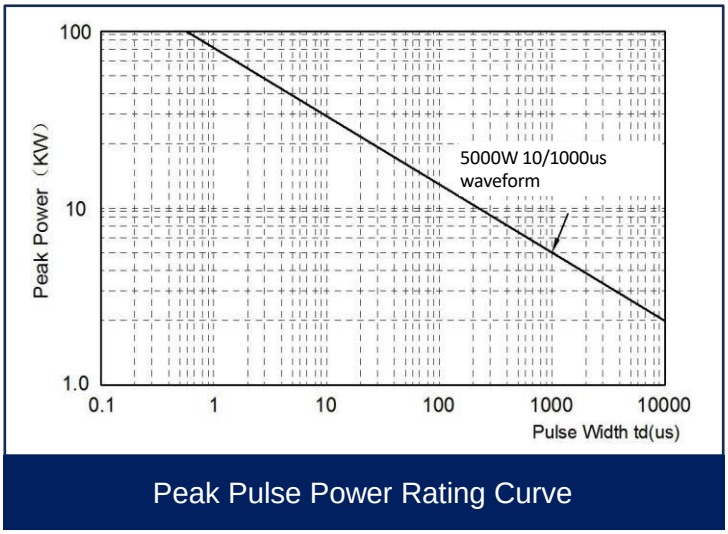
Typical Characteristics



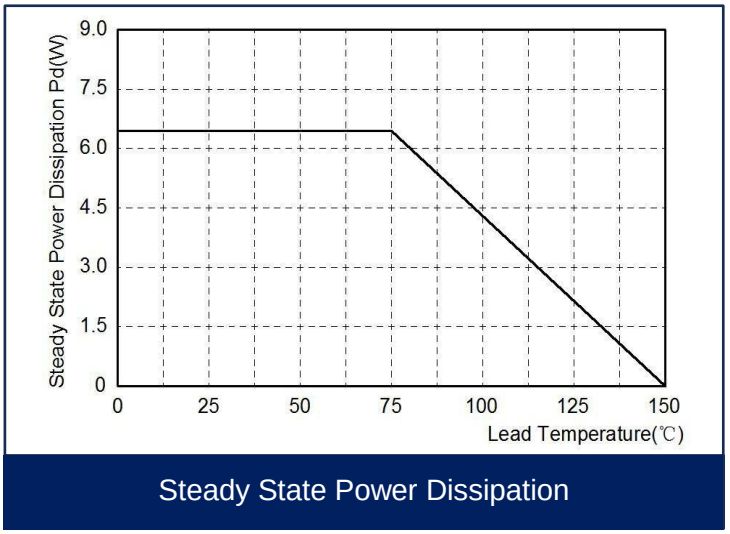
Pulse Derating Curve



Pulse Waveform



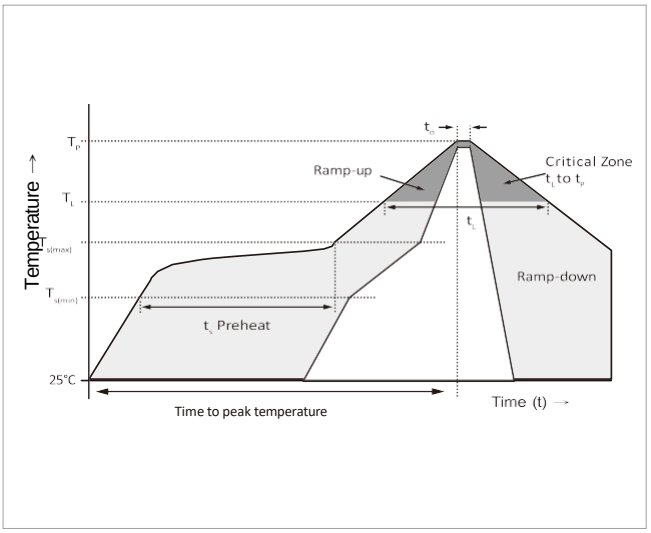
Peak Pulse Power Rating Curve



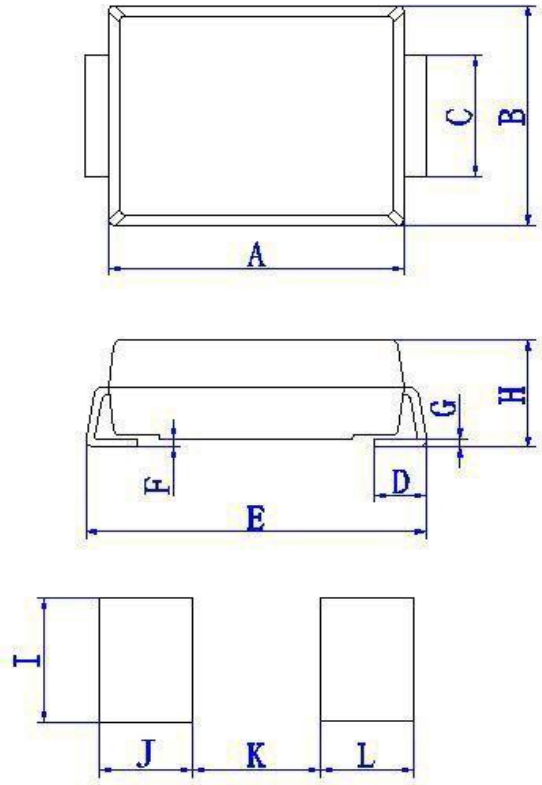
Steady State Power Dissipation

Soldering Parameters

Reflow Condition		Lead–free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	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 (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C (+0/-5)
Time within 5°C of actual peak Temperature (t_p)		30 seconds Max
Ramp-down Rate		6°C/second Max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C

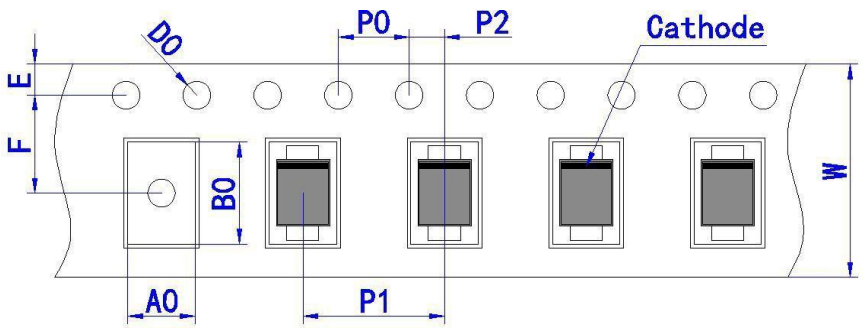


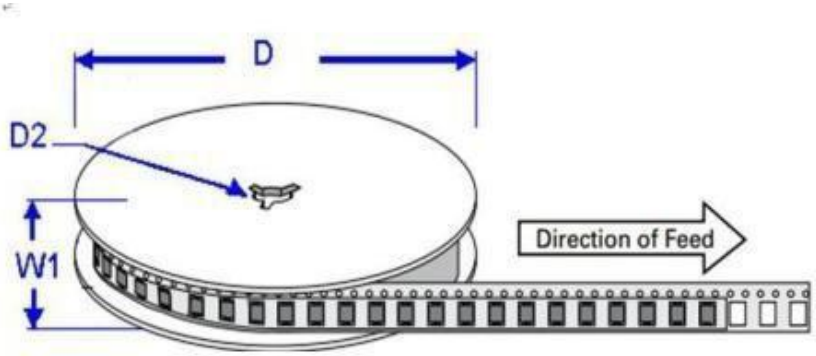
Package mechanical data & Suggested Land Pattern



Ref. (mm)	Millimeters	
	Min.	Max.
A	6.60	7.11
B	5.59	6.20
C	2.75	3.20
D	0.76	1.52
E	7.71	8.13
F	0.051	0.203
G	0.15	0.25
H	2.06	2.75
I	3.30	--
J	1.30	--
K	--	5.30
L	1.30	--

Tape And Reel Specification - SMC





Ref.	Millimeters
A0	6.20±0.20
B0	8.31±0.20
C	330.00
D0	1.55±0.10
E	1.75±0.20
E1	13.50±1.00
F	7.50±0.10
P0	8.00±0.20
P1	4.00±0.20
P2	2.00±0.20
W	16.00±0.30
W1	20.00±4.00
D	333.00±2.00
D2	13.50±0.30