

SMDJ Series

Description

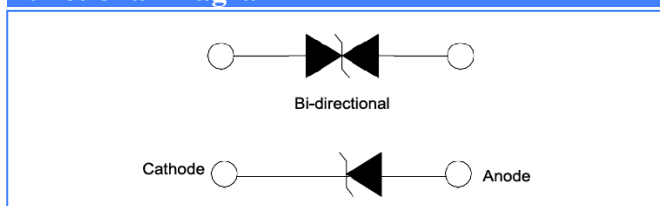
The SMD series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SMD series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer Applications.

Features

- Case: DO-214AB/SMC
- For surface mounted applications in order to optimize board space.
- 3000 W peak pulse power capability with a 10/1000 μ s waveform
- Typical failure mode is short from over-specified voltage or current.
- High Temperature soldering: 260°C/10 seconds at terminals.
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026.
- IEC61000-4-2 (ESD) $\pm$ 30kV (air), $\pm$ 30kV (contact).



Functional Diagram



Applications

TVS devices are ideal for the protection of I/O Interfaces, V_{CC} bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications

Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000 μ s Waveform (note1 note 2)	P_{PK}	3000	Watts
Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I_{FSM}	300	Amps
Power Dissipation on Infinite Heat Sink at $T_L=50^\circ\text{C}$	P_D	6.5	Watts
Maximum Instantaneous Forward Voltage @ $I_{PP} = 50\text{ A}$ (For Unidirectional Units Only)	V_F	3.5	Volts
Operating Temperature Range	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

NOTES:

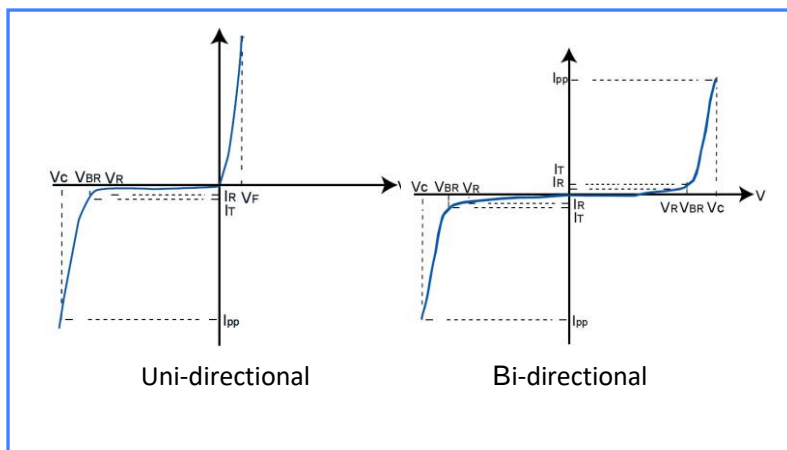
1. Non-repetitive current pulse, per Pulse Waveform graph and derated above $T_A = 25^\circ\text{C}$ per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

Electrical Characteristics (TA = 25 °C unless otherwise noted)

Part Number (Bi)	Part Number (Uni)	MARKING		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@ I_T		Test Current I_T (mA)	Maximum Reverse Leakage I_R @ V_R (μ A)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Clamping Voltage V_C @ I_{pp} (V)
		BI	UNI		Min .V	Max .V				
SMDJ5.0CA	SMDJ5.0A	DDE	RDE	5.0	6.40	7.00	10	800	326.1	9.2
SMDJ6.0CA	SMDJ6.0A	DDG	RDG	6.0	6.67	7.37	10	800	291.3	10.3
SMDJ 6.5CA	SMDJ 6.5A	DDK	RDK	6.5	7.22	7.98	10	500	267.9	11.2
SMDJ7.0 CA	SMDJ7.0 A	DDM	PDM	7.0	7.78	8.60	10	200	250.0	12.0
SMDJ 7.5CA	SMDJ 7.5A	DDP	PDP	7.5	8.33	9.21	1	100	232.6	12.9
SMDJ 8.0CA	SMDJ 8.0A	DDR	PDR	8.0	8.89	9.83	1	50	220.6	13.6
SMDJ8.5 CA	SMDJ8.5 A	DDT	PDT	8.5	9.44	10.40	1	20	208.3	14.4
SMDJ9.0 CA	SMDJ9.0 A	DDV	PDV	9.0	10.00	11.10	1	10	194.8	15.4
SMDJ10CA	SMDJ10A	DDX	PDX	10.0	11.10	12.30	1	5	176.5	17.0
SMDJ11CA	SMDJ11A	DDZ	PDZ	11.0	12.20	13.50	1	2	164.8	18.2
SMDJ12CA	SMDJ12A	DEE	PEE	12.0	13.30	14.70	1	2	150.8	19.9
SMDJ13CA	SMDJ13A	DEG	PEG	13.0	14.40	15.90	1	2	139.5	21.5
SMDJ14CA	SMDJ14A	DEK	PEK	14.0	15.60	17.20	1	2	129.3	23.2
SMDJ15CA	SMDJ15A	DEM	PEM	15.0	16.70	18.50	1	2	123.0	24.4
SMDJ16CA	SMDJ16A	DEP	PEP	16.0	17.80	19.70	1	2	115.4	26.0
SMDJ17CA	SMDJ17A	DER	PER	17.0	18.90	20.90	1	2	108.7	27.6
SMDJ18CA	SMDJ18A	DET	PET	18.0	20.00	22.10	1	2	102.7	29.2
SMDJ20CA	SMDJ20A	DEV	PEV	20.0	22.20	24.50	1	2	92.6	32.4
SMDJ22CA	SMDJ22A	DEX	PEX	22.0	24.40	26.90	1	2	84.5	35.5
SMDJ24CA	SMDJ24A	DEZ	PEZ	24.0	26.70	29.50	1	2	77.1	38.9
SMDJ26CA	SMDJ26A	DFE	PFE	26.0	28.90	31.90	1	2	71.3	42.1
SMDJ28CA	SMDJ28A	DFG	PFG	28.0	31.10	34.40	1	2	66.1	45.4
SMDJ30CA	SMDJ30A	DFK	PFK	30.0	33.30	36.80	1	2	62.0	48.4
SMDJ33CA	SMDJ33A	DFM	PFM	33.0	36.70	40.60	1	2	56.3	53.3
SMDJ36CA	SMDJ36A	DFP	PFP	36.0	40.00	44.20	1	2	51.6	58.1
SMDJ40CA	SMDJ40A	DFR	PFR	40.0	44.40	49.10	1	2	46.5	64.5
SMDJ43CA	SMDJ43A	DFT	PFT	43.0	47.80	52.80	1	2	43.2	69.4
SMDJ45CA	SMDJ45A	DFV	PFV	45.0	50.00	55.30	1	2	41.3	72.7
SMDJ48CA	SMDJ48A	DFX	PFX	48.0	53.30	58.90	1	2	38.8	77.4
SMDJ51CA	SMDJ51A	DFZ	PFZ	51.0	56.70	62.70	1	2	36.4	82.4
SMDJ54CA	SMDJ54A	DGE	RGE	54.0	60.00	66.30	1	2	34.4	87.1
SMDJ58CA	SMDJ58A	DGG	PGG	58.0	64.40	71.20	1	2	32.1	93.6
SMDJ60CA	SMDJ60A	DGK	PGK	60.0	66.70	73.70	1	2	31.0	96.8
SMDJ64CA	SMDJ64A	DGM	PGM	64.0	71.10	78.60	1	2	29.1	103.0
SMDJ70CA	SMDJ70A	DGP	PGP	70.0	77.80	86.00	1	2	26.5	113.0

Part Number (Bi)	Part Number (Uni)	MARKING		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@ I_T		Test Current I_T (mA)	Maximum Reverse Leakage I_R @ V_R (μ A)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Clamping Voltage V_C @ I_{pp} (V)
		BI	UNI		Min .V	Max .V				
SMDJ78CA	SMDJ78A	DGT	PGT	78.0	86.70	95.80	1	2	23.8	126.0
SMDJ85CA	SMDJ85A	DGV	PGV	85.0	94.40	104.0	1	2	21.9	137.0
SMDJ90CA	SMDJ90A	DGX	PGX	90.0	100.0	111.0	1	2	20.5	146.0
SMDJ100CA	SMDJ100A	DGZ	PGZ	100.0	111.0	123.0	1	2	18.5	162.0
SMDJ110CA	SMDJ110A	DHE	PHE	110.0	122.0	135.0	1	2	16.9	177.0
SMDJ120CA	SMDJ120A	DHG	PHG	120.0	133.0	147.0	1	2	15.5	193.0
SMDJ130CA	SMDJ130A	DHK	PHK	130.0	144.0	159.0	1	2	14.4	209.0
SMDJ150CA	SMDJ150A	DHM	PHM	150.0	167.0	185.0	1	2	12.3	243.0
SMDJ160CA	SMDJ160A	DHP	PHP	160.0	178.0	197.0	1	2	11.6	259.0
SMDJ170CA	SMDJ170A	DHR	PHR	170.0	189.0	209.0	1	2	10.9	275.0
SMDJ180CA	SMDJ180A	IHT	HHT	180.0	201.0	222.0	1	2	10.3	292.0
SMDJ190CA	SMDJ190A	IHV	HHV	190.0	211.0	233.0	1	2	9.7	308.0
SMDJ200CA	SMDJ200A	IHX	HHX	200.0	224.0	247.0	1	2	9.3	324.0
SMDJ210CA	SMDJ210A	IHZ	HHZ	210.0	237.0	263.0	1	2	8.8	340.0
SMDJ220CA	SMDJ220A	IIIE	HIE	220.0	246.0	272.0	1	2	8.4	356.0

I-V Curve Characteristics



Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T (Test Current)

Rating & Characteristic Curves

Figure 1- Peak pulse power derating curve

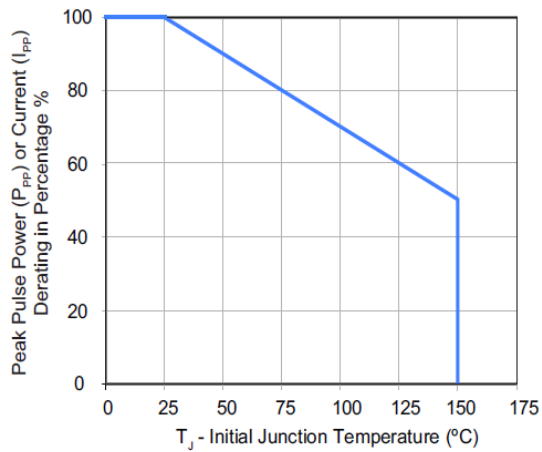


Figure 2- Pulse waveform

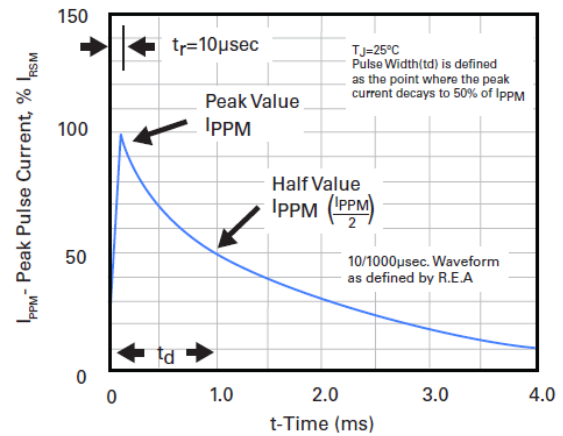


Figure 3- Peak pulse power rating curve

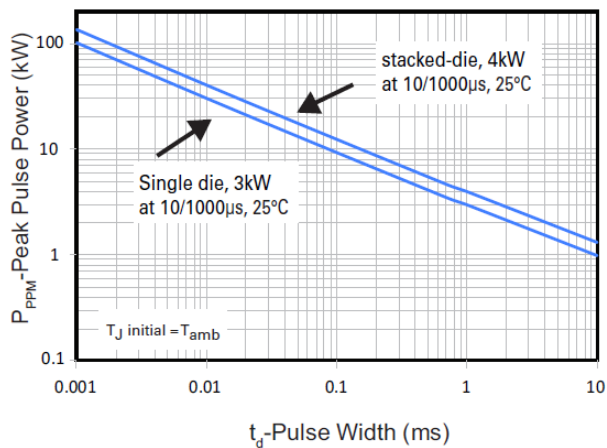


Figure 4- Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

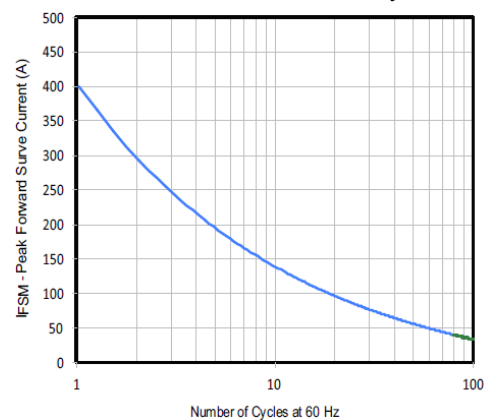
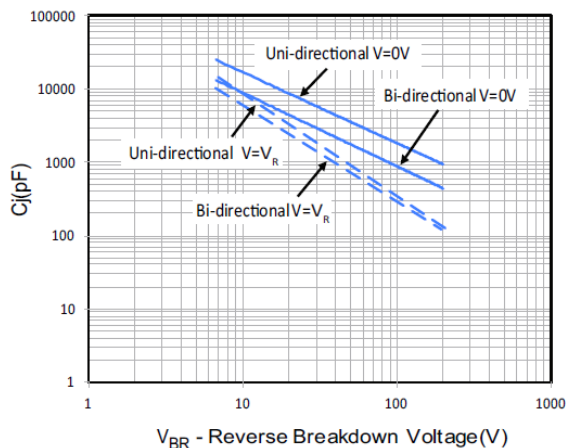
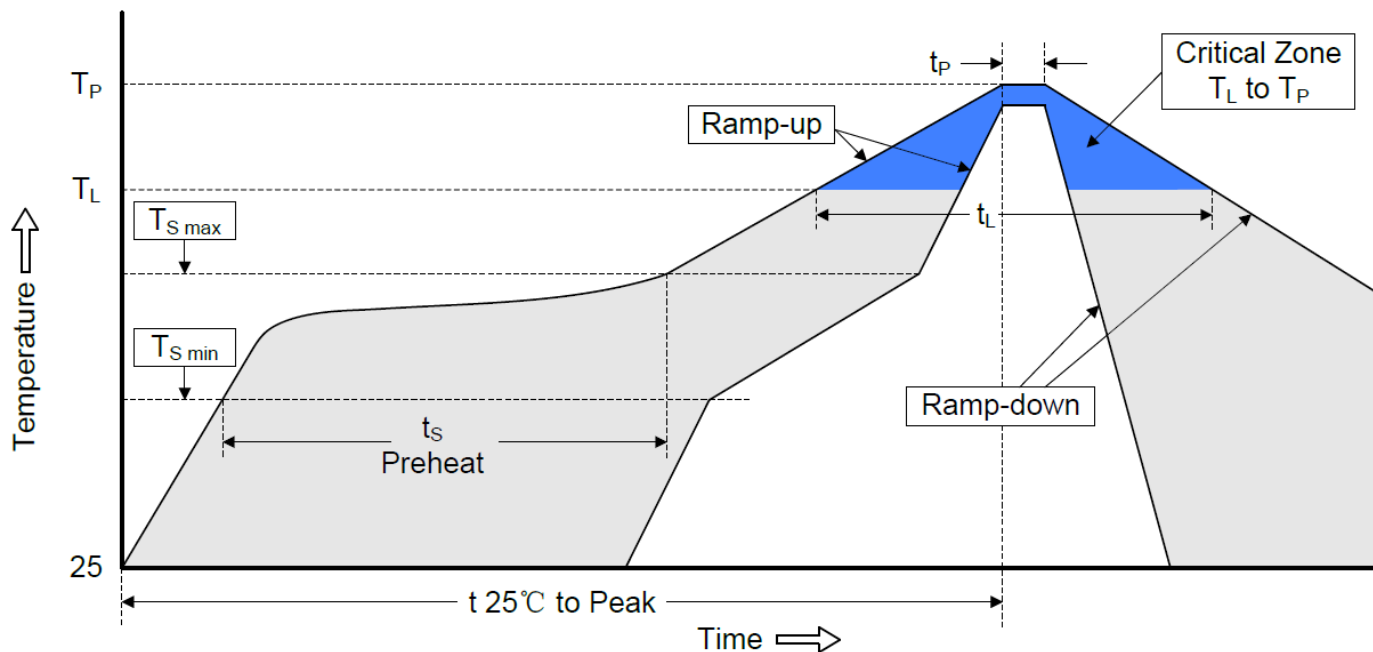


Figure 5- Typical Junction Capacitance

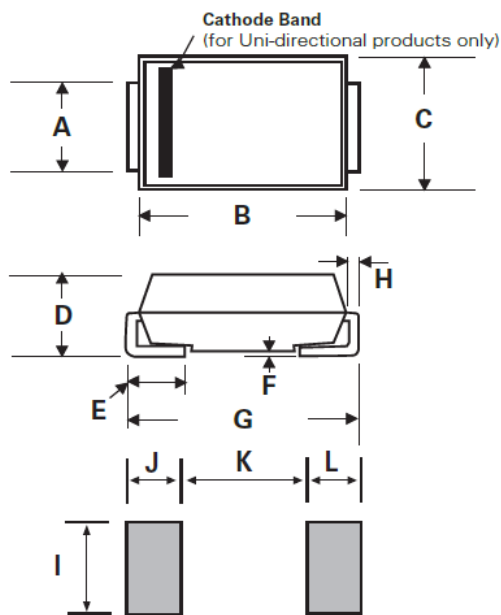


Soldering Parameters



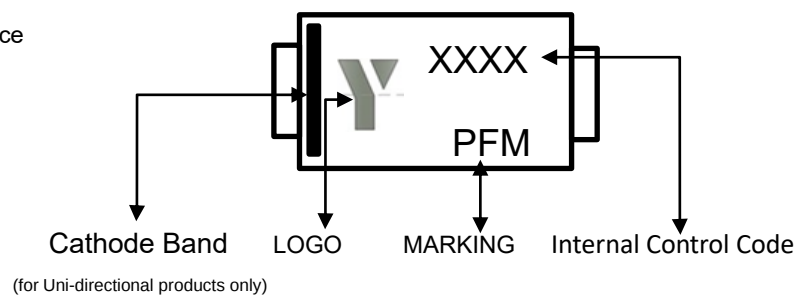
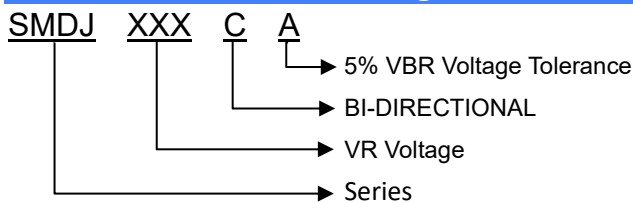
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat	
-Temperature Min ($T_{S\min}$)	150°C
-Temperature Max ($T_{S\max}$)	200°C
-Time (min to max)(t_s)	60-180 seconds
$T_{S\max}$ to T_L	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
- Temperature (T_L)	217°C
- Time (t_L)	60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6°C /second max.
Time 25°C to Peak Temperature	8 minutes max.

PACKAGE OUTLINE DIMENSIONS in millimeters



Dimensions	Millimeter	
	Min	Max
A	2.900	3.200
B	6.600	7.110
C	5.590	6.220
D	2.060	2.830
E	0.760	1.520
F	-	0.203
G	7.750	8.130
H	0.152	0.305
I	3.300	-
J	2.400	-
K	-	4.200
L	2.400	-

Part Number Code & Marking Code



Disclaimer

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.