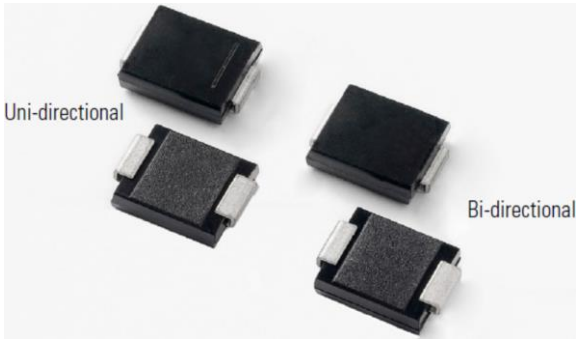
SMDJ-H Series

Description

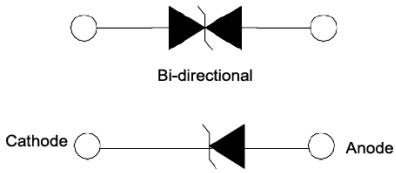
The SMDJ-H series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SMD-H series is supplied in YINT Semiconductor's exclusive, cost-effective, 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 μs waveform
- Typical failure mode is short from over-specified voltage or current.
- Meet MSL level1, per J-STD-020, LF maximun peak of 260°C
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).
- AEC-Q101 qualified

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℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000μs 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
Steady State Power Dissipation @ T_L = 50 °C	$P_{M(AV)}$	6.5	Watts
Maximum Instantaneous Forward Voltage @ I_{PP} = 50 A (For Unidirectional Units Only)	V_F	3.5	Volts
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

NOTES:

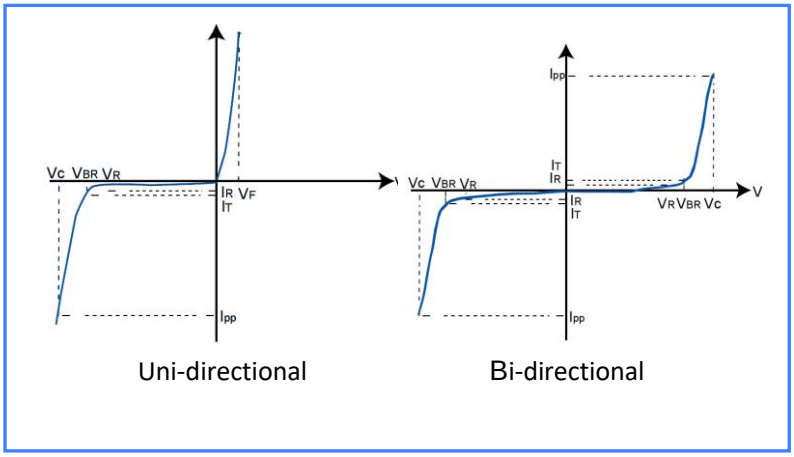
1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 25 °C per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

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(μA)	Maximum Peak Pulse Current Ipp(A)	Maximum Clamping Voltage V_C @I_{pp}(V)
		BI	UNI		Min .V	Max .V				
SMDJ5.0CA-H	SMDJ5.0A-H	DDEH	RDEH	5.0	6.40	7.00	10	800	326.1	9.2
SMDJ6.0CA-H	SMDJ6.0A-H	DDGH	RDGH	6.0	6.67	7.37	10	800	291.3	10.3
SMDJ 6.5CA-H	SMDJ 6.5A-H	DDKH	RDKH	6.5	7.22	7.98	10	500	267.9	11.2
SMDJ7.0 CA-H	SMDJ7.0 A-H	DDMH	PDMH	7.0	7.78	8.60	10	200	250.0	12.0
SMDJ 7.5CA-H	SMDJ 7.5A-H	DDPH	PDPH	7.5	8.33	9.21	1	100	232.6	12.9
SMDJ 8.0CA-H	SMDJ 8.0A-H	DDRH	PDRH	8.0	8.89	9.83	1	50	220.6	13.6
SMDJ8.5 CA-H	SMDJ8.5 A-H	DDTH	PDTH	8.5	9.44	10.40	1	20	208.3	14.4
SMDJ9.0 CA-H	SMDJ9.0 A-H	DDVH	PDVH	9.0	10.00	11.10	1	10	194.8	15.4
SMDJ10CA-H	SMDJ10A-H	DDXH	PDXH	10.0	11.10	12.30	1	5	176.5	17.0
SMDJ11CA-H	SMDJ11A-H	DDZH	PDZH	11.0	12.20	13.50	1	2	164.8	18.2
SMDJ12CA-H	SMDJ12A-H	DEEH	PEEH	12.0	13.30	14.70	1	2	150.8	19.9
SMDJ13CA-H	SMDJ13A-H	DEGH	PEGH	13.0	14.40	15.90	1	2	139.5	21.5
SMDJ14CA-H	SMDJ14A-H	DEKH	PEKH	14.0	15.60	17.20	1	2	129.3	23.2
SMDJ15CA-H	SMDJ15A-H	DEMH	PEMH	15.0	16.70	18.50	1	2	123.0	24.4
SMDJ16CA-H	SMDJ16A-H	DEPH	PEPH	16.0	17.80	19.70	1	2	115.4	26.0
SMDJ17CA-H	SMDJ17A-H	DERH	PERH	17.0	18.90	20.90	1	2	108.7	27.6
SMDJ18CA-H	SMDJ18A-H	DETH	PETH	18.0	20.00	22.10	1	2	102.7	29.2
SMDJ20CA-H	SMDJ20A-H	DEVH	PEVH	20.0	22.20	24.50	1	2	92.6	32.4
SMDJ22CA-H	SMDJ22A-H	DEXH	PEXH	22.0	24.40	26.90	1	2	84.5	35.5
SMDJ24CA-H	SMDJ24A-H	DEZH	PEZH	24.0	26.70	29.50	1	2	77.1	38.9
SMDJ26CA-H	SMDJ26A-H	DFEH	PFEH	26.0	28.90	31.90	1	2	71.3	42.1
SMDJ28CA-H	SMDJ28A-H	DFGH	PFGH	28.0	31.10	34.40	1	2	66.1	45.4
SMDJ30CA-H	SMDJ30A-H	DFKH	PFKH	30.0	33.30	36.80	1	2	62.0	48.4
SMDJ33CA-H	SMDJ33A-H	DFMH	PFMH	33.0	36.70	40.60	1	2	56.3	53.3
SMDJ36CA-H	SMDJ36A-H	DFPH	PFPH	36.0	40.00	44.20	1	2	51.6	58.1
SMDJ40CA-H	SMDJ40A-H	DFRH	PFRH	40.0	44.40	49.10	1	2	46.5	64.5
SMDJ43CA-H	SMDJ43A-H	DFTH	PFTH	43.0	47.80	52.80	1	2	43.2	69.4
SMDJ45CA-H	SMDJ45A-H	DFVH	PFVH	45.0	50.00	55.30	1	2	41.3	72.7
SMDJ48CA-H	SMDJ48A-H	DFXH	PFXH	48.0	53.30	58.90	1	2	38.8	77.4
SMDJ51CA-H	SMDJ51A-H	DFZH	PFZH	51.0	56.70	62.70	1	2	36.4	82.4
SMDJ54CA-H	SMDJ54A-H	DGEH	RGEH	54.0	60.00	66.30	1	2	34.4	87.1
SMDJ58CA-H	SMDJ58A-H	DGGH	PGGH	58.0	64.40	71.20	1	2	32.1	93.6
SMDJ60CA-H	SMDJ60A-H	DGKH	PGKH	60.0	66.70	73.70	1	2	31.0	96.8
SMDJ64CA-H	SMDJ64A-H	DGMH	PGMH	64.0	71.10	78.60	1	2	29.1	103.0
SMDJ70CA-H	SMDJ70A-H	DGPH	PGPH	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(μA)	Maximum Peak Pulse Current Ipp(A)	Maximum Clamping Voltage V_C @I_{pp}(V)
		BI	UNI		Min .V	Max .V				
SMDJ75CA-H	SMDJ75A-H	DGRH	PGRH	75.0	83.30	92.10	1	2	24.8	121.0
SMDJ78CA-H	SMDJ78A-H	DGTH	PGTH	78.0	86.70	95.80	1	2	23.8	126.0
SMDJ85CA-H	SMDJ85A-H	DGVH	PGVH	85.0	94.40	104.0	1	2	21.9	137.0
SMDJ90CA-H	SMDJ90A-H	DGXH	PGXH	90.0	100.0	111.0	1	2	20.5	146.0
SMDJ100CA-H	SMDJ100A-H	DGZH	PGZH	100.0	111.0	123.0	1	2	18.5	162.0
SMDJ110CA-H	SMDJ110A-H	DHEH	PHEH	110.0	122.0	135.0	1	2	16.9	177.0
SMDJ120CA-H	SMDJ120A-H	DHGH	PHGH	120.0	133.0	147.0	1	2	15.5	193.0
SMDJ130CA-H	SMDJ130A-H	DHKH	PHKH	130.0	144.0	159.0	1	2	14.4	209.0
SMDJ150CA-H	SMDJ150A-H	DHMH	PHMH	150.0	167.0	185.0	1	2	12.3	243.0
SMDJ160CA-H	SMDJ160A-H	DHPH	PHPH	160.0	178.0	197.0	1	2	11.6	259.0
SMDJ170CA-H	SMDJ170A-H	DHRH	PHRH	170.0	189.0	209.0	1	2	10.9	275.0
SMDJ180CA-H	SMDJ180A-H	IHTH	HHTH	180.0	201.0	222.0	1	2	10.3	292.0
SMDJ190CA-H	SMDJ190A-H	IHVH	HHVH	190.0	211.0	233.0	1	2	9.7	308.0
SMDJ200CA-H	SMDJ200A-H	IHXH	HHXH	200.0	224.0	247.0	1	2	9.3	324.0
SMDJ210CA-H	SMDJ210A-H	IHZH	HHZH	210.0	237.0	263.0	1	2	8.8	340.0
SMDJ220CA-H	SMDJ220A-H	IIIEH	HIEH	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

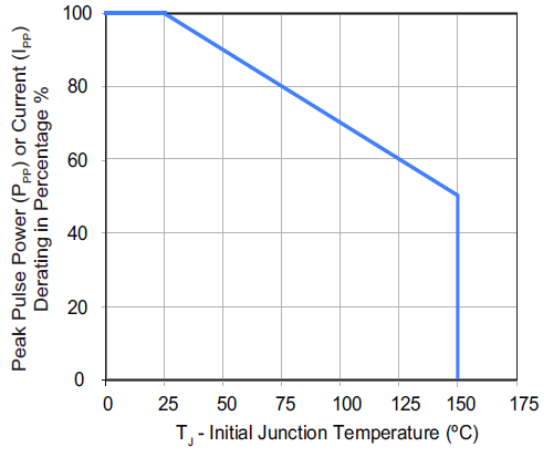


Figure 2- Pulse waveform

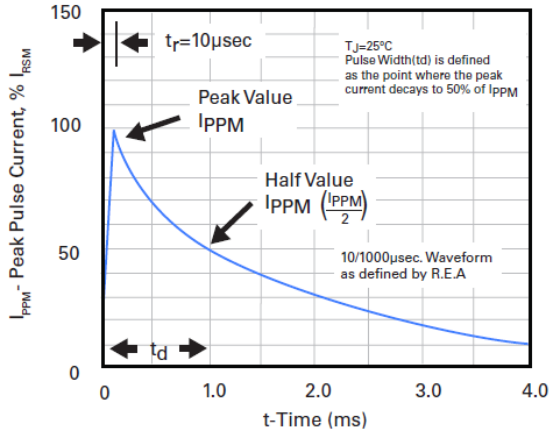


Figure 3- Peak pulse power rating curve

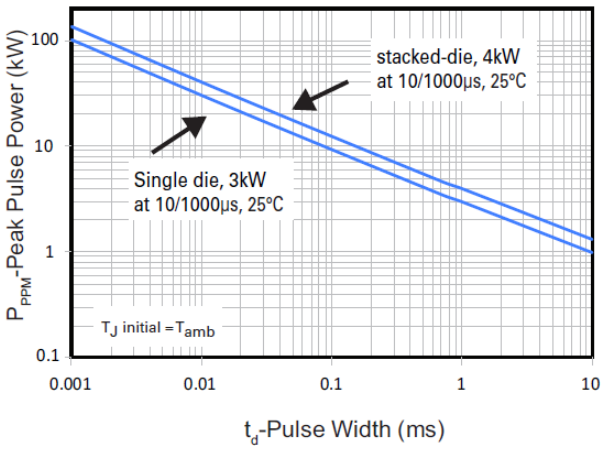


Figure 4- Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

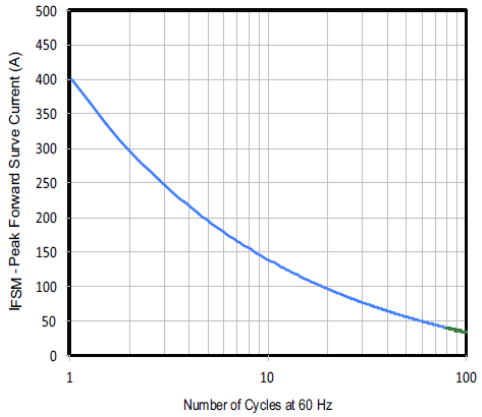
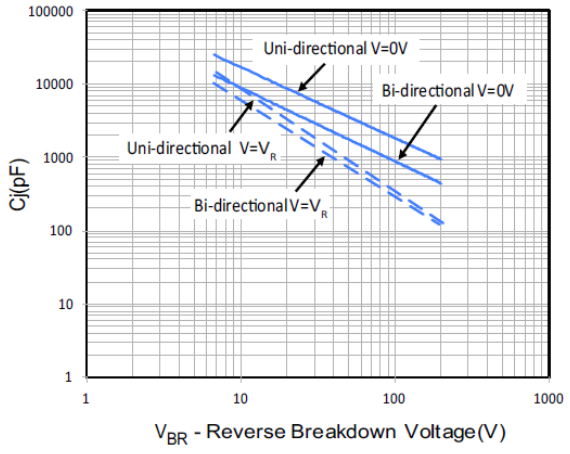
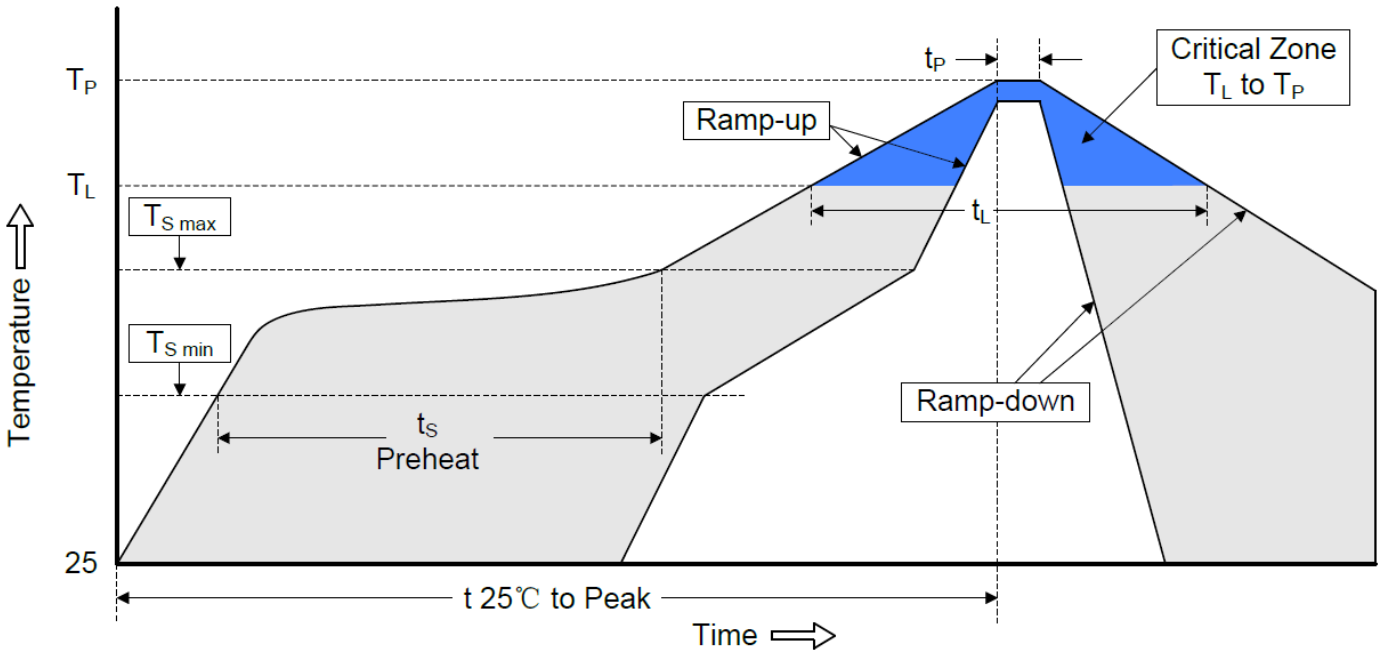


Figure 5- Typical Junction Capacitance

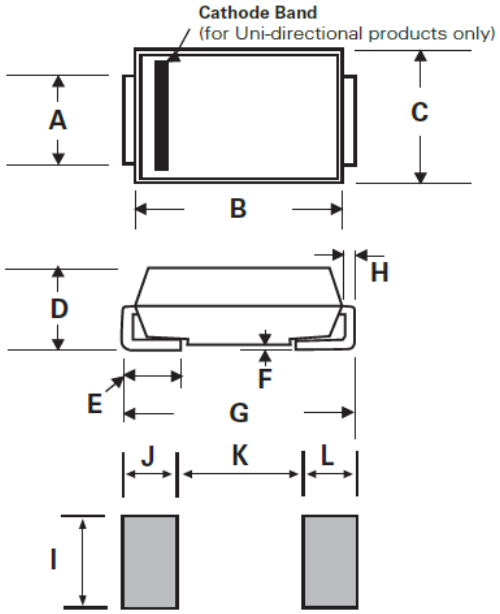


Soldering Parameters



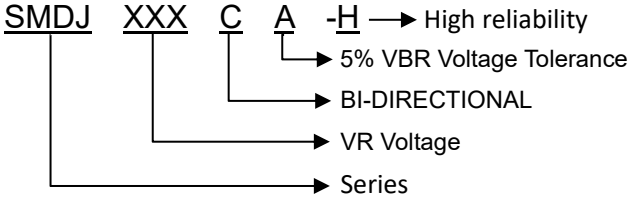
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max)(t_S)	 150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3°C/second max.
Time maintained above: - Temperature (T_L) - Time (t_L)	 217°C 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.

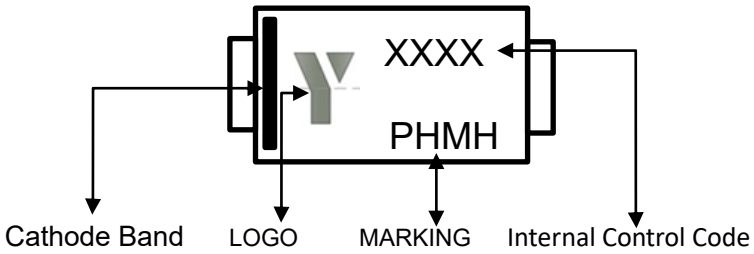
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Dimensions	Inches		Millimeter	
	Min	Max	Min	Max
A	0.108	0.123	2.750	3.250
B	0.256	0.280	6.500	7.100
C	0.217	0.245	5.500	6.220
D	0.079	0.106	2.060	2.700
E	0.030	0.060	0.760	1.520
F	-	0.008	-	0.250
G	0.291	0.331	7.400	8.400
H	0.006	0.012	0.152	0.305
I	0.129	-	3.300	-
J	0.094	-	2.400	-
K	-	0.165	-	4.200
L	0.094	-	2.400	-

Part Number Code & Marking Code





(for Uni-directional products only)

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.