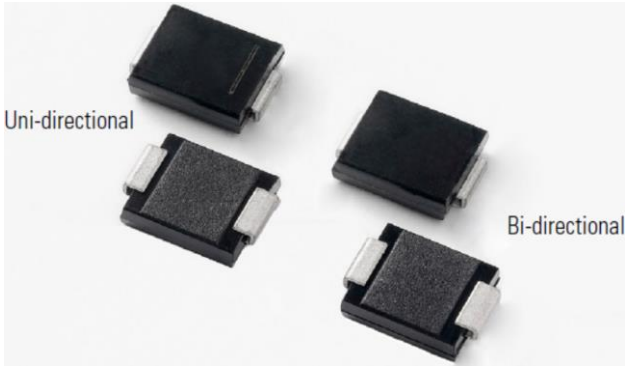
5.0SMDJ-H Series

Description

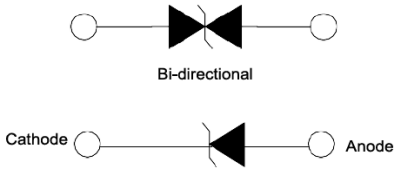
The 5.0SMDJ-H series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The 5.0SMDJ-H series is supplied in YINT Semiconductor's exclusive, cost-effective, 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.
- Polarity: Color band denoted positive end (cathode) except Bidirectional.
- Typical failure mode is short from over-specified voltage or current.
- Meet MSL level1, per J-STD-020, LF maximun peak of 260°C
- Terminal: Solder plated, solderable per MIL-STD-750,Method 2026.
- 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}	5000	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:

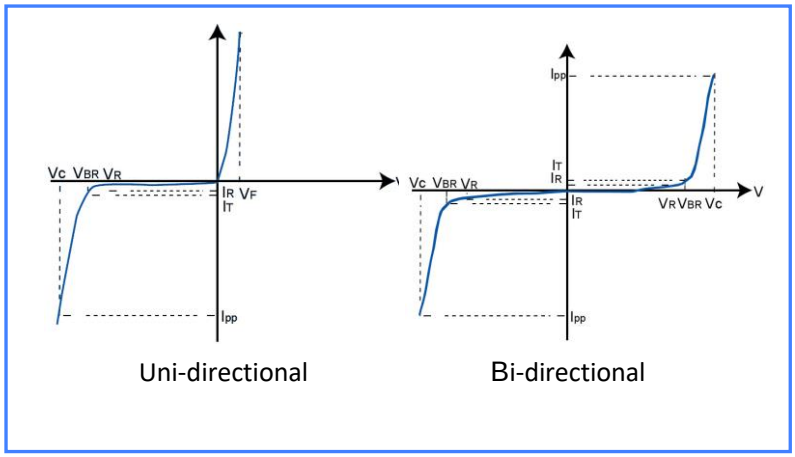
1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 25 °C per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

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				
5.0SMDJ11CA-H	5.0SMDJ11A-H	HBEN	HPEN	11.0	12.20	13.50	10	800	275.00	18.2
5.0SMDJ12CA-H	5.0SMDJ12A-H	HBEP	HPEP	12.0	13.30	14.70	10	800	252.00	19.9
5.0SMDJ13CA-H	5.0SMDJ13A-H	HBEQ	HPEQ	13.0	14.40	15.90	10	500	233.00	21.5
5.0SMDJ14CA-H	5.0SMDJ14A-H	HBER	HPER	14.0	15.60	17.20	10	200	216.00	23.2
5.0SMDJ15CA-H	5.0SMDJ15A-H	HBES	HPES	15.0	16.70	18.50	1	100	205.00	24.4
5.0SMDJ16CA-H	5.0SMDJ16A-H	HBET	HPET	16.0	17.80	19.70	1	50	193.00	26.0
5.0SMDJ17CA-H	5.0SMDJ17A-H	HBEU	HPEU	17.0	18.90	20.90	1	20	181.00	27.6
5.0SMDJ18CA-H	5.0SMDJ18A-H	HBEV	HPEV	18.0	20.00	22.10	1	10	172.00	29.2
5.0SMDJ20CA-H	5.0SMDJ20A-H	HBEW	HPEW	20.0	22.20	24.50	1	5	155.00	32.4
5.0SMDJ22CA-H	5.0SMDJ22A-H	HBEX	HPEX	22.0	24.40	26.90	1	5	141.00	35.5
5.0SMDJ24CA-H	5.0SMDJ24A-H	HBEZ	HPEZ	24.0	26.70	29.50	1	5	129.00	38.9
5.0SMDJ26CA-H	5.0SMDJ26A-H	HBFE	HPFE	26.0	28.90	31.90	1	5	119.00	42.1
5.0SMDJ28CA-H	5.0SMDJ28A-H	HBFG	HPFG	28.0	31.10	34.40	1	5	110.00	45.4
5.0SMDJ30CA-H	5.0SMDJ30A-H	HBFK	HPFK	30.0	33.30	36.80	1	5	103.00	48.4
5.0SMDJ33CA-H	5.0SMDJ33A-H	HBFM	HPFM	33.0	36.70	40.60	1	5	93.90	53.3
5.0SMDJ36CA-H	5.0SMDJ36A-H	HBFP	HPFP	36.0	40.00	44.20	1	5	86.10	58.1
5.0SMDJ40CA-H	5.0SMDJ40A-H	HBFR	HPFR	40.0	44.40	49.10	1	5	77.60	64.5
5.0SMDJ43CA-H	5.0SMDJ43A-H	HBFT	HPFT	43.0	47.80	52.80	1	5	72.10	69.4
5.0SMDJ45CA-H	5.0SMDJ45A-H	HBFV	HPFV	45.0	50.00	55.30	1	5	68.80	72.7
5.0SMDJ48CA-H	5.0SMDJ48A-H	HBFX	HPFX	48.0	53.30	58.90	1	5	64.70	77.4
5.0SMDJ51CA-H	5.0SMDJ51A-H	HBFZ	HPFZ	51.0	56.70	62.70	1	5	60.70	82.4
5.0SMDJ54CA-H	5.0SMDJ54A-H	HBGE	HPGE	54.0	60.00	66.30	1	5	57.50	87.1
5.0SMDJ58CA-H	5.0SMDJ58A-H	HBGG	HPGG	58.0	64.40	71.20	1	5	53.50	93.6
5.0SMDJ60CA-H	5.0SMDJ60A-H	HBGK	HPGK	60.0	66.70	73.70	1	5	51.70	96.8
5.0SMDJ64CA-H	5.0SMDJ64A-H	HBGM	HPGM	64.0	71.10	78.60	1	5	48.60	103.0
5.0SMDJ70CA-H	5.0SMDJ70A-H	HBGP	HPGP	70.0	77.80	86.00	1	5	44.30	113.0
5.0SMDJ75CA-H	5.0SMDJ75A-H	HBGR	HPGR	75.0	83.30	92.10	1	5	41.40	121.0
5.0SMDJ78CA-H	5.0SMDJ78A-H	HBGT	HPGT	78.0	86.70	95.80	1	5	39.70	126.0
5.0SMDJ85CA-H	5.0SMDJ85A-H	HBGV	HPGV	85.0	94.40	104.00	1	5	36.50	137.0
5.0SMDJ90CA-H	5.0SMDJ90A-H	HBGX	HPGX	90.0	100.00	111.00	1	5	34.30	146.0
5.0SMDJ100CA-H	5.0SMDJ100A-H	HBGZ	HPGZ	100.0	111.00	123.00	1	5	30.90	162.0
5.0SMDJ110CA-H	5.0SMDJ110A-H	HBHE	HPHE	110.0	122.00	135.00	1	5	28.30	177.0
5.0SMDJ120CA-H	5.0SMDJ120A-H	HBHG	HPHG	120.0	133.00	147.00	1	5	26.00	193.0
5.0SMDJ130CA-H	5.0SMDJ130A-H	HBHK	HPHK	130.0	144.00	159.00	1	5	24.00	209.0
5.0SMDJ150CA-H	5.0SMDJ150A-H	HBHM	HPHM	150.0	167.00	185.00	1	5	20.60	243.0

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				
5.0SMDJ160CA-H	5.0SMDJ160A-H	HBHB	HPHP	160.0	178.00	197.00	1	5	19.30	259.0
5.0SMDJ170CA-H	5.0SMDJ170A-H	HBHR	HPHR	170.0	189.00	209.00	1	5	18.20	275.0

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

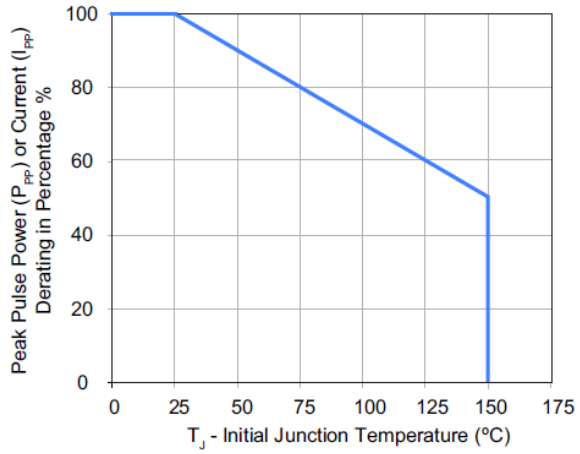


Figure 2- Pulse waveform

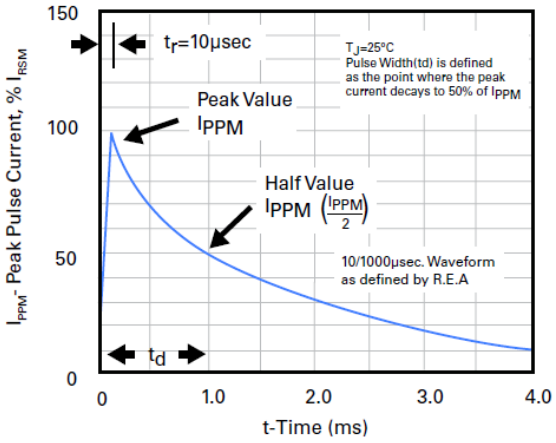


Figure 3- Peak pulse power rating curve

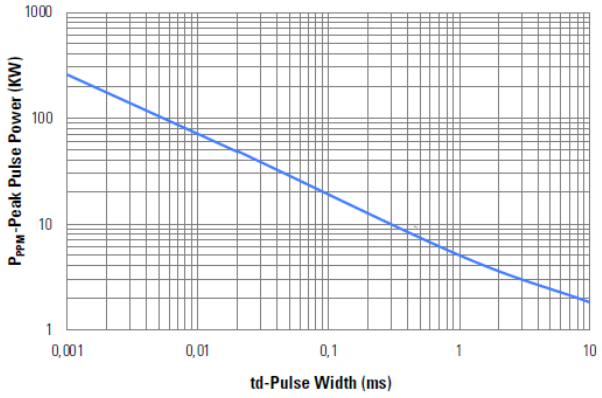


Figure 4- Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

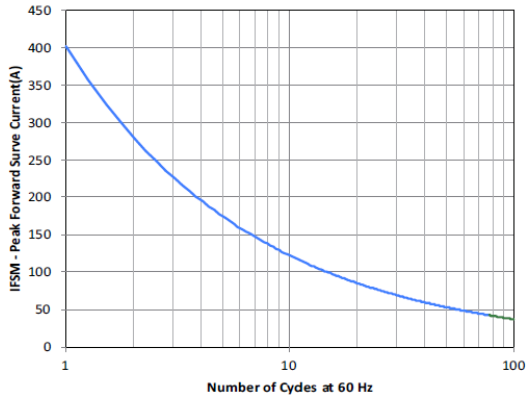
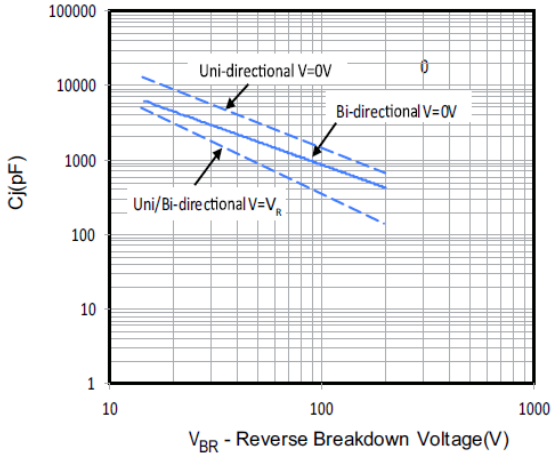
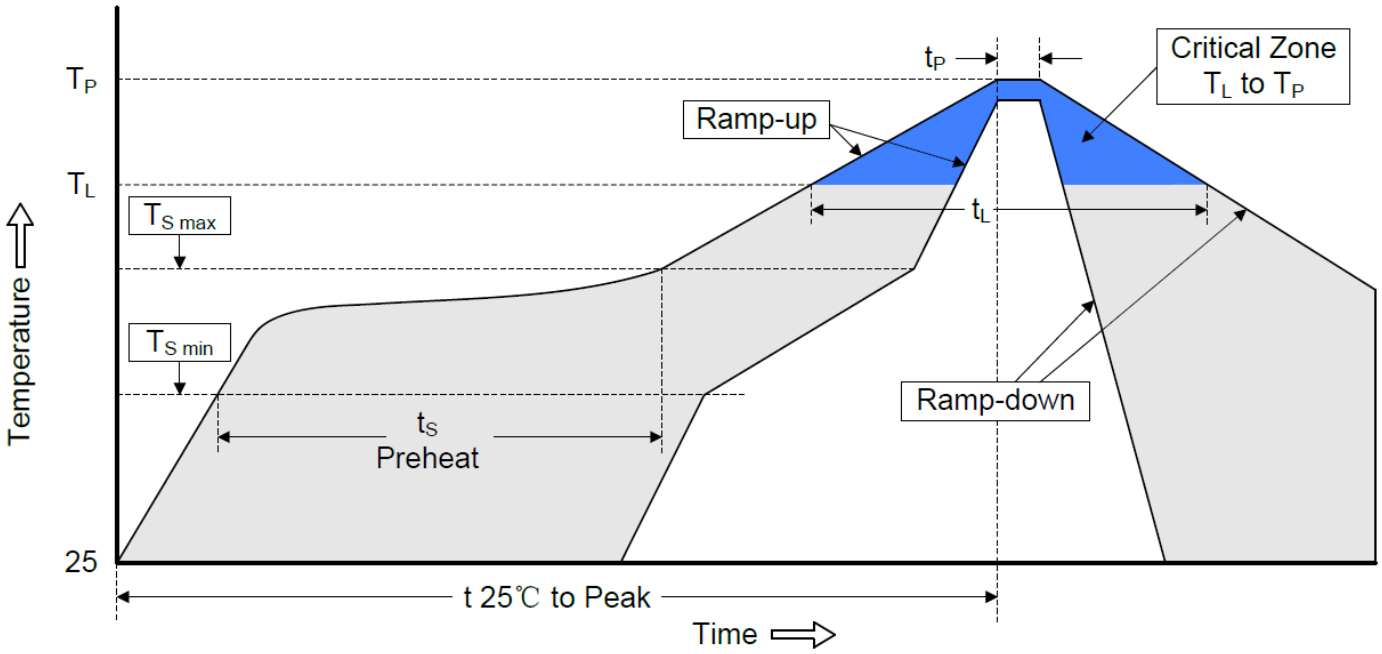


Figure 5- Typical Junction Capacitance

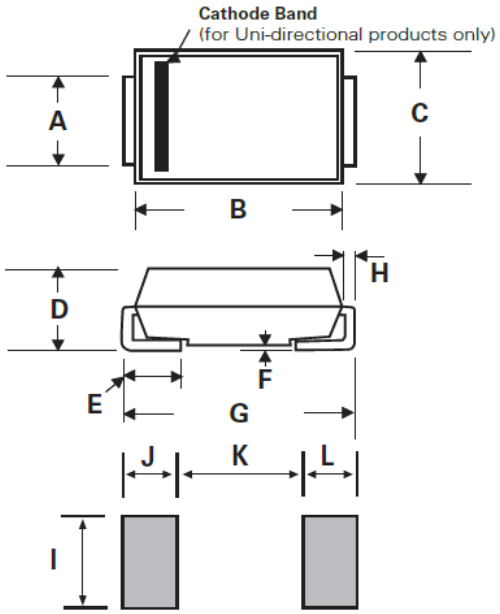


Soldering Parameters



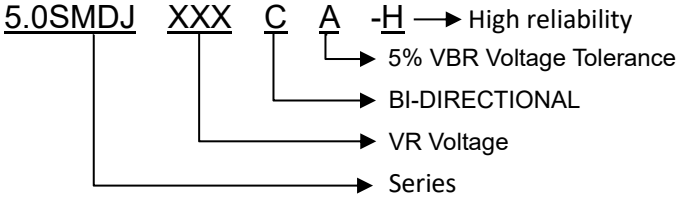
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max)(t_S)	 150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3°C/second max.
Time maintained above: - Temperature (T_L)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

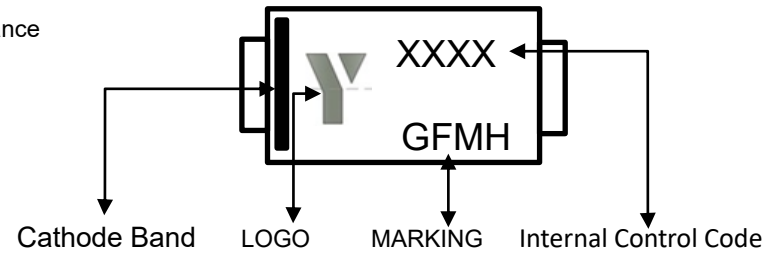
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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.