Transient Voltage Suppression Diodes: TPSMDJ Series

SMD Type 3000 W

■ Features

1. For surface mounted applications
2. RoHS compliant and halogen-free
3. Reliable low cost construction utilizing molded plastic technique
4. Glass passivated chip junction
5. Both bi-directional and uni-directional devices are available
6. Fast response time
7. Low leakage
8. Excellent clamping capability
9. 3000W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle): 0.01%
10. High reliability application and automotive grade AEC Q101 qualified

■ Recommended Applications

1. Telecommunication
2. Computer
3. Industrial device
4. Consumer electronic device
5. Automotive

■ Mechanical Data

1. Case: DO-214AB (SMC), molded plastic meets UL flammability rating 94V-0
2. Terminal: Matte Tin-plated leads, solderable per MIL-STD-750, Method 2026
3. Polarity: The band denotes cathode (Note: no polarity indicator for bi-directional devices)

■ Part Number Code

T	P	S	M	D	J	5	.	0	C	A
1	2	3	4	5	6	7	8	9	10	11

1
THINKING Automotive Transient Voltage Suppression Diodes

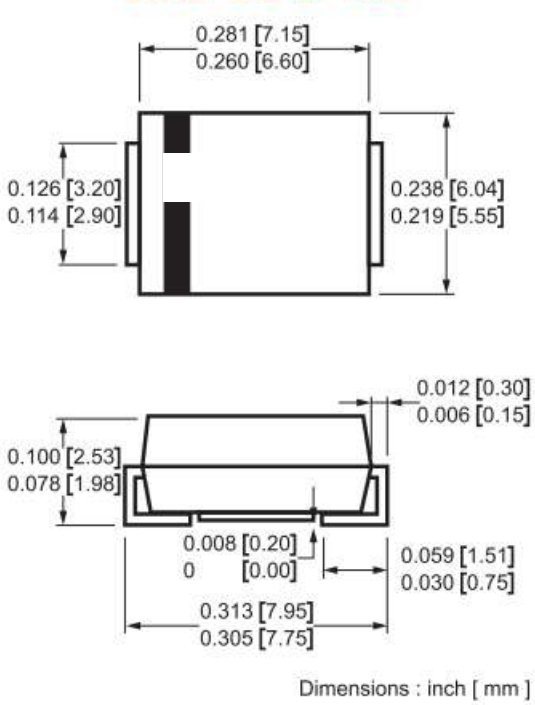
3	4
Product Series	
SMDJ	THINKING Transient Voltage Suppression Diodes SMDJ Series

7	8
Reverse Stand Off Voltage (V_{RWM})	
10	10V
70	70V
120	120V

10	11
Type Code	
Blank	Uni-directional, 10% V_{BR} Voltage Tolerance
C	Bi-directional, 10% V_{BR} Voltage Tolerance
A	Uni-directional, 5% V_{BR} Voltage Tolerance
CA	Bi-directional, 5% V_{BR} Voltage Tolerance

■ Structures and Dimensions

SMC-DO214AB



■ Maximum Rating (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at T_A=25 ℃ by 10/1000μs waveform (Note1).	P_{PPM}	3000	W
Peak pulse current of on 10/1000us waveform (Note1)	I_{PPM}	See Table	A
Peak forward surge current, 8.3ms single half sine wave on rated load (Note 2)	I_{FSM}	300	A
Power dissipation on infinite heatsink at T_L=75℃	P_D	6.5	W
Operating junction and storage temperature range	T_J, T_{STG}	-55~+150	ºC

Note: 1. Please refer to Fig. 5 for non-repetitive current pulse, and Fig. 1 for derated above T_A = 25℃

2. 8.3ms single half sine-wave, or square wave that has a maximum of 4 pulses per minute.

■ Electrical Characteristics (T_A=25℃ unless otherwise noted)

Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage VBR @ IT		Test Current	Maximum Clamping Voltage VC @ Ipp	Maximum Peak Pulse Current	Maximum Reverse Leakage IR @VRWM	Marking Code	
		VRWM (V)	Min(V)	Max(V)	IT(mA)	VC(V)	Ipp(A)	IR(μA)	UNI	BI
TPSMDJ10A	TPSMDJ10CA	10	11.1	12.3	1	17	176.47	15	PDXA	DDXA
TPSMDJ11A	TPSMDJ11CA	11	12.2	13.5	1	18.2	164.84	2	PDZA	DDZA
TPSMDJ12A	TPSMDJ12CA	12	13.3	14.7	1	19.9	150.75	2	PEEA	DEEA
TPSMDJ13A	TPSMDJ13CA	13	14.4	15.9	1	21.5	139.53	2	PEGA	DEGA
TPSMDJ14A	TPSMDJ14CA	14	15.6	17.2	1	23.2	129.31	2	PEKA	DEKA
TPSMDJ15A	TPSMDJ15CA	15	16.7	18.5	1	24.4	122.95	2	PEMA	DEMA
TPSMDJ16A	TPSMDJ16CA	16	17.8	19.7	1	26	115.38	2	PEPA	DEPA
TPSMDJ17A	TPSMDJ17CA	17	18.9	20.9	1	27.6	108.7	2	PERA	DERA
TPSMDJ18A	TPSMDJ18CA	18	20	22.1	1	29.2	102.74	2	PETA	DETA
TPSMDJ19A	TPSMDJ19CA	19	21.1	23.3	1	30.8	97.47	2	PEBA	DEBA
TPSMDJ20A	TPSMDJ20CA	20	22.2	24.5	1	32.4	92.59	2	PEVA	DEVA
TPSMDJ22A	TPSMDJ22CA	22	24.4	26.9	1	35.5	84.51	2	PEXA	DEXA
TPSMDJ24A	TPSMDJ24CA	24	26.7	29.5	1	38.9	77.12	2	PEZA	DEZA
TPSMDJ26A	TPSMDJ26CA	26	28.9	31.9	1	42.1	71.26	2	PFEA	DFEA
TPSMDJ28A	TPSMDJ28CA	28	31.1	34.4	1	45.4	66.08	2	PFGA	DFGA
TPSMDJ30A	TPSMDJ30CA	30	33.3	36.8	1	48.4	61.98	2	PFKA	DFKA
TPSMDJ33A	TPSMDJ33CA	33	36.7	40.6	1	53.3	56.29	2	PFMA	DFMA
TPSMDJ36A	TPSMDJ36CA	36	40	44.2	1	58.1	51.64	2	PFPA	DFPA
TPSMDJ40A	TPSMDJ40CA	40	44.4	49.1	1	64.5	46.51	2	PFRA	DFRA
TPSMDJ43A	TPSMDJ43CA	43	47.8	52.8	1	69.4	43.23	2	PFTA	DFTA

Note:

1. Add suffix “C” or “CA” after part number to specify Bi-directional devices.

2. For bidirectional type having V_{RWM} of 10 volts and under, the I_R limit is doubled.

■ Rate and Characteristic Curve (T_A=25℃ unless otherwise noted)

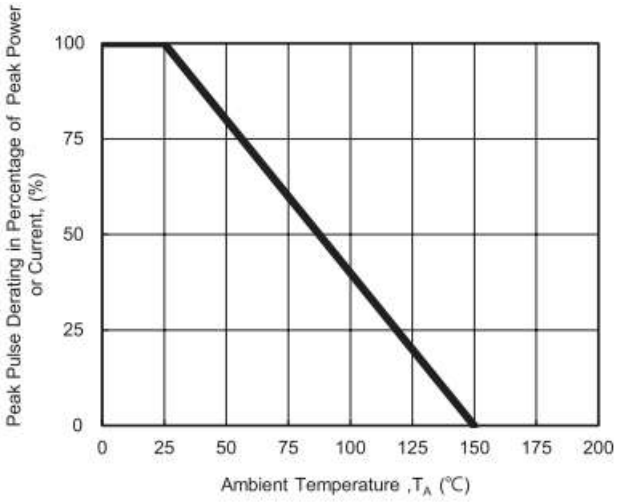


Fig. 1 - Pulse Derating Curve

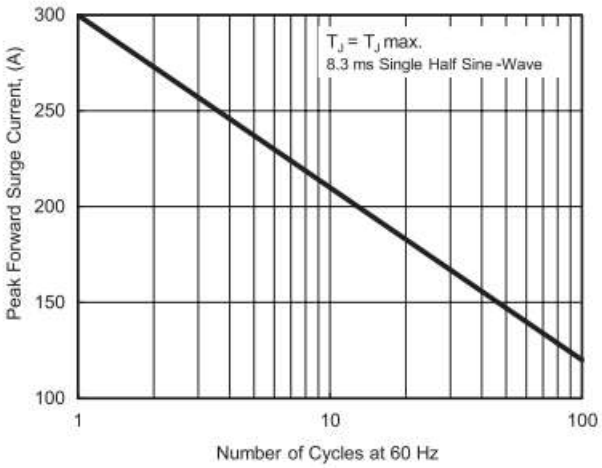


Fig. 2 - Maximum Non-Repetitive Surge Current

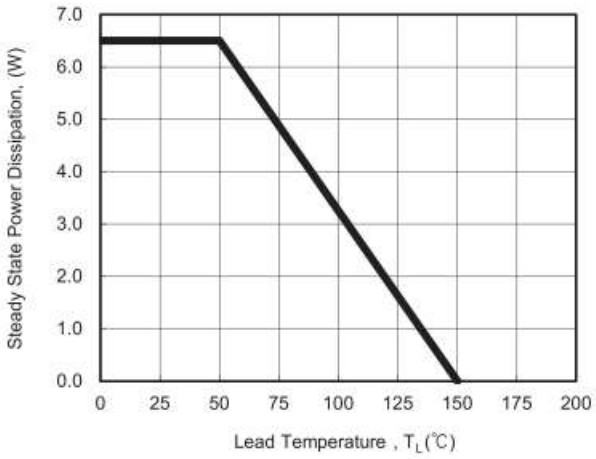


Fig. 3 - Steady State Power Derating Curve

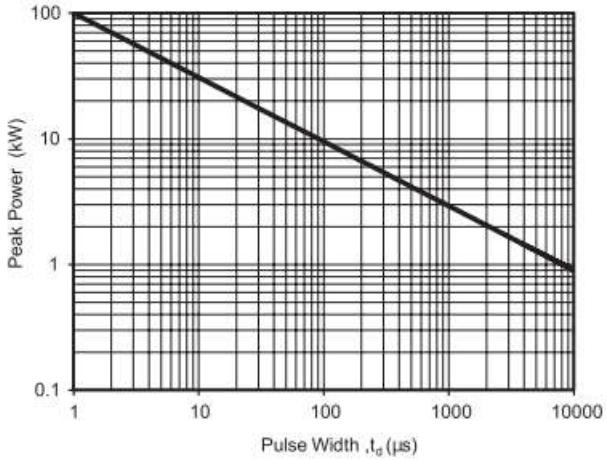


Fig. 4 - Peak Pulse Power Rating Curve

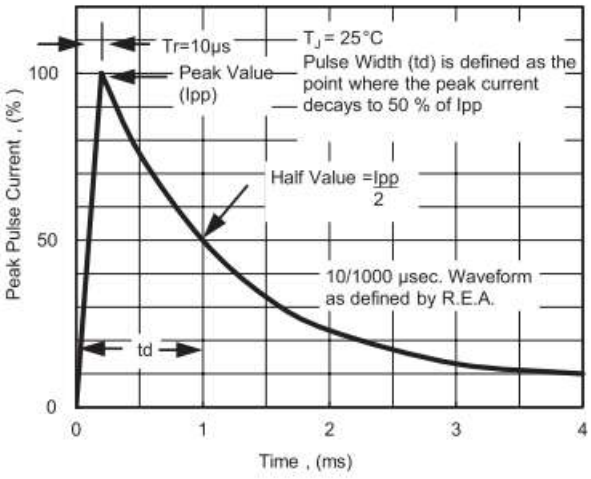


Fig. 5 - Pulse Waveform

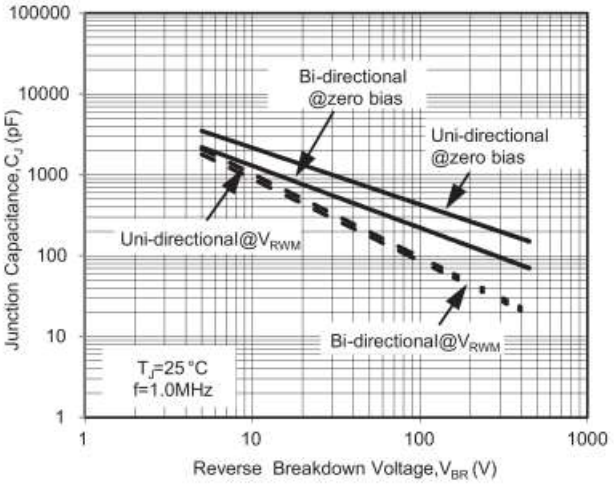
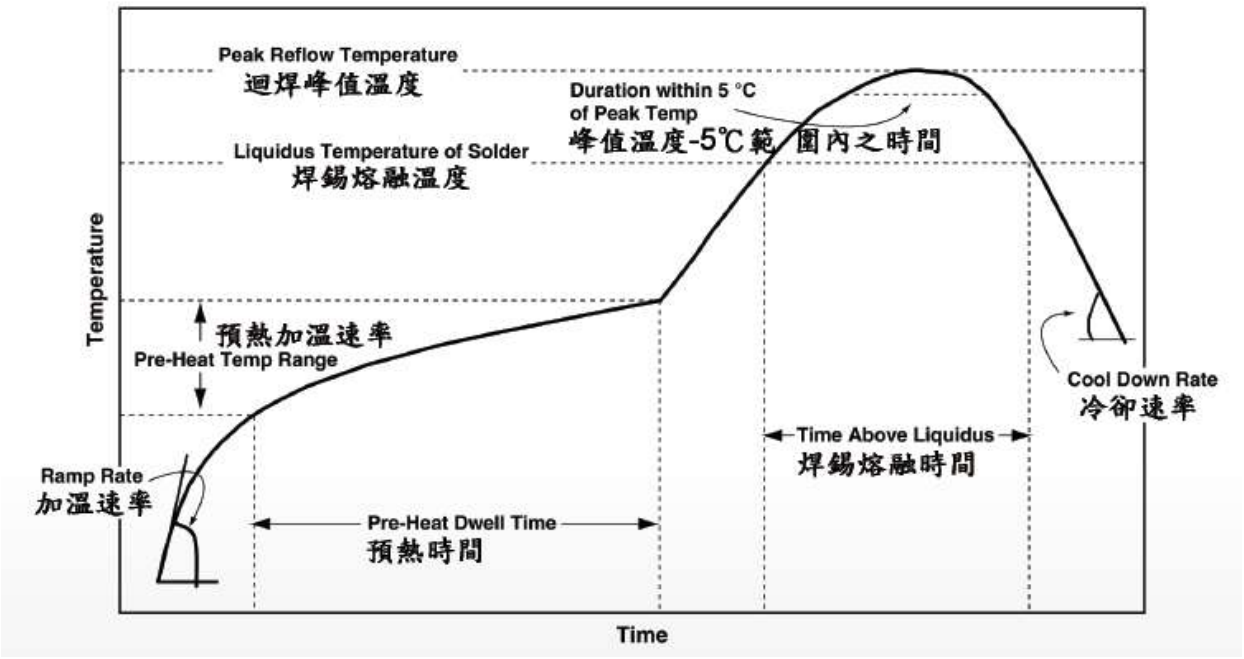


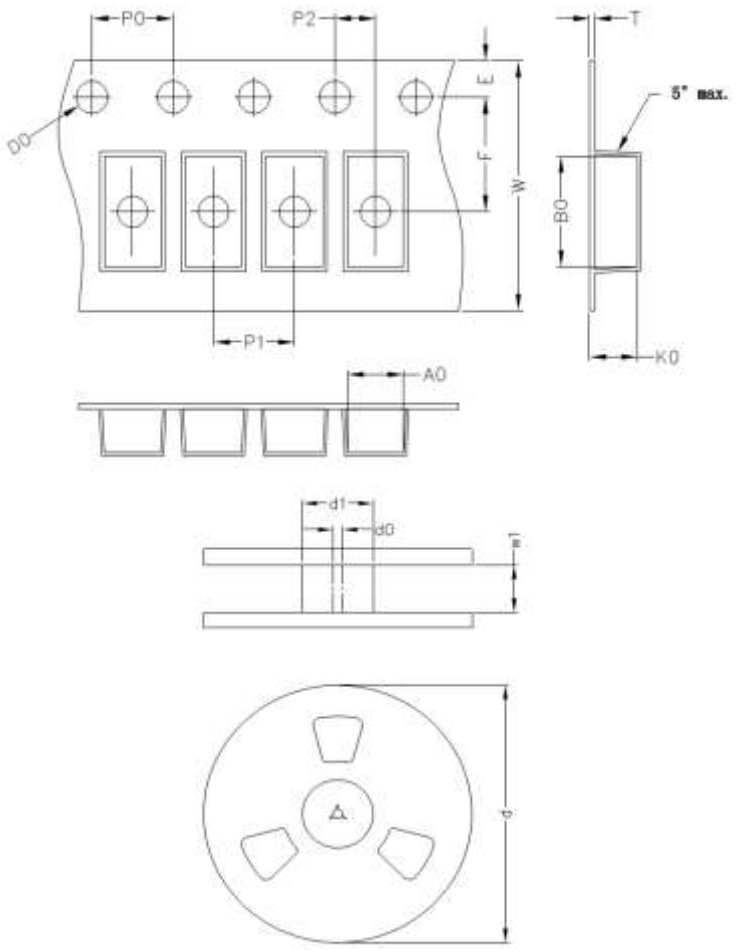
Fig. 6 - Typical Junction Capacitance

IR-reflow soldering profile



LEAD(Pb)-FREE SOLDER(SnAgCu) REFLOW PROFILE ATTRIBUTES	
PROFILE ATTRIBUTE	PROFILE ATTRIBUTE
Peak Reflow Temperature	250(+10/-5)℃
Time within 5℃ of Peak Temperature	30s max
Liquidus Temperatura of Solder	217℃
Cool Down Rate	6 ℃/s max
Time above Liquidus	60s to 150s
Pre-heat Temperature Range	150℃ to 200℃
Pre-heat Dwell Time	60s to 120s
Maximum Ramp Rate	3 ℃/s max

■ Packaging



Item	Symbol	DO-214AB (SMC) Unit: mm
Carrier width	A0	6.05
Carrier length	B0	8.31
Carrier depth	K0	2.54
Sprocket hole	D0	1.55
Sprocket hole position	E	1.75
Punch hole position	F	7.50
Sprocket hole pitch	P0	4.00
Carrier pitch	P1	8.00
Embossment center	P2	2.00
Tape thickness	T	0.25
Tape width	W	16.00
Reel outside diameter	d (13")	330.00
Reel inner diameter	d1	75
Feed hole diameter	d0	13.50
Reel inner width	w1	17.00

Note:The tolerance of carrier tape and top cover is ±0.1mm, and the tolerance of reel is ±2mm

■ Quantity

Package Type	Reel Size	Reel	Inner Box
	inch	Kpcs	Kpcs
DO-214AB	13	3	6

■ Warehouse Storage Conditions of product

● Storage Condition:

1. Storage Temperature: 15~30℃
2. Relative Humidity: ≦75%RH
3. Keep away from corrosive atmosphere and sunlight.

● Period of Storage: 1 year.