

## SMD Type 5000 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. 5000W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01%
10. High reliability application and automotive grade AEC Q101 qualified



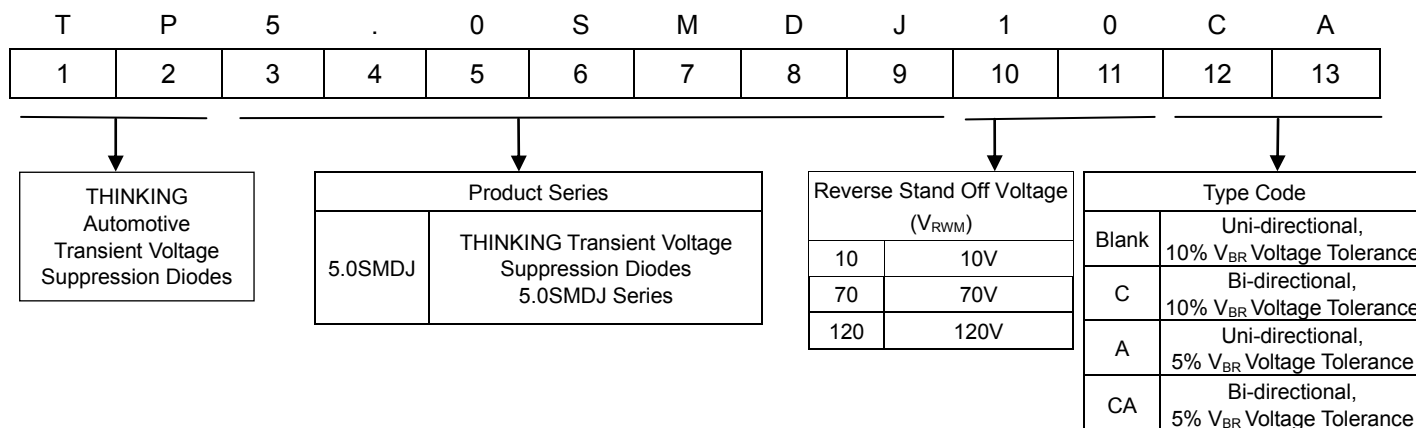
### ■ Recommended Applications

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)

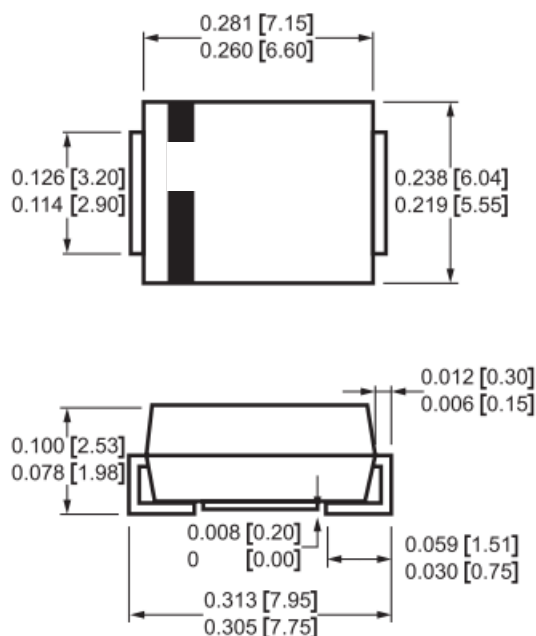
### ■ Part Number Code



## SMD Type 5000 W

### Structures and Dimensions

#### SMC/DO214AB



Dimensions : inch [ mm ]

### Maximum Rating ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at $T_A=25^\circ\text{C}$ by 10/1000 $\mu\text{s}$ waveform (Note1)	$P_{PPM}$	5000	W
Peak pulse current of 10/1000 $\mu\text{s}$ 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 $T_L=75^\circ\text{C}$	$P_D$	6.5	W
Operating junction and storage temperature range	$T_J, T_{STG}$	-55~+150	$^\circ\text{C}$

Note: 1. Please refer to Fig. 5 for non-repetitive current pulse, and Fig. 1 for derated above  $T_A = 25^\circ\text{C}$

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

# Transient Voltage Suppression Diodes: TP5.0SMDJ Series



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### ■ Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage VBR @ IT		Test Current IT( mA )	Maximum Clamping Voltage VC @ Ipp	Maximum Peak Pulse Current Ipp(A)	Maximum Reverse Leakage IR @VRWM	Marking Code	
			VRWM ( V )	Min( V )					Max( V )	UNI
TP5.0SMDJ10A	TP5.0SMDJ10CA	10	11.1	12.3	1	17	294.12	5	5SAE	5DAE
TP5.0SMDJ11A	TP5.0SMDJ11CA	11	12.2	13.5	1	18.2	275.00	2	5SAF	5DAF
TP5.0SMDJ12A	TP5.0SMDJ12CA	12	13.3	14.7	1	19.9	252.00	2	5SAG	5DAG
TP5.0SMDJ13A	TP5.0SMDJ13CA	13	14.4	15.9	1	21.5	233.00	2	5SAK	5DAK
TP5.0SMDJ14A	TP5.0SMDJ14CA	14	15.6	17.2	1	23.2	216.00	2	5SAM	5DAM
TP5.0SMDJ15A	TP5.0SMDJ15CA	15	16.7	18.5	1	24.4	205.00	2	5SAP	5DAP
TP5.0SMDJ16A	TP5.0SMDJ16CA	16	17.8	19.7	1	26	193.00	2	5SAR	5DAR
TP5.0SMDJ17A	TP5.0SMDJ17CA	17	18.9	20.9	1	27.6	181.00	2	5SAT	5DAT
TP5.0SMDJ18A	TP5.0SMDJ18CA	18	20	22.1	1	29.2	172.00	2	5SAV	5DAV
TP5.0SMDJ19A	TP5.0SMDJ19CA	19	21.1	23.3	1	30.8	162.40	2	5SAX	5DAX
TP5.0SMDJ20A	TP5.0SMDJ20CA	20	22.2	24.5	1	32.4	155.00	2	5SAZ	5DAZ
TP5.0SMDJ22A	TP5.0SMDJ22CA	22	24.4	26.9	1	35.5	141.00	2	5SBE	5DBE
TP5.0SMDJ24A	TP5.0SMDJ24CA	24	26.7	29.5	1	38.9	129.00	2	5SBF	5DBF
TP5.0SMDJ26A	TP5.0SMDJ26CA	26	28.9	31.9	1	42.1	119.00	2	5SBG	5DBG
TP5.0SMDJ28A	TP5.0SMDJ28CA	28	31.1	34.4	1	45.4	110.00	2	5SBK	5DBK
TP5.0SMDJ30A	TP5.0SMDJ30CA	30	33.3	36.8	1	48.4	103.00	2	5SBM	5DBM
TP5.0SMDJ33A	TP5.0SMDJ33CA	33	36.7	40.6	1	53.3	93.90	2	5SBP	5DBP
TP5.0SMDJ36A	TP5.0SMDJ36CA	36	40	44.2	1	58.1	86.10	2	5SBR	5DBR
TP5.0SMDJ40A	TP5.0SMDJ40CA	40	44.4	49.1	1	64.5	77.60	2	5SBT	5DBT
TP5.0SMDJ43A	TP5.0SMDJ43CA	43	47.8	52.8	1	69.4	72.10	2	5SBV	5DBV
TP5.0SMDJ45A	TP5.0SMDJ45CA	45	50	55.3	1	72.7	68.80	2	5SBX	5DBX
TP5.0SMDJ48A	TP5.0SMDJ48CA	48	53.3	58.9	1	77.4	64.70	2	5SBZ	5DBZ
TP5.0SMDJ51A	TP5.0SMDJ51CA	51	56.7	62.7	1	82.4	60.70	2	5SCE	5DCE
TP5.0SMDJ54A	TP5.0SMDJ54CA	54	60	66.3	1	87.1	57.50	2	5SCF	5DCF
TP5.0SMDJ58A	TP5.0SMDJ58CA	58	64.4	71.2	1	93.6	53.50	2	5SCG	5DCG

Note:

1. Add suffix "C" or "CA" after part number to specify Bi-directional devices.
2. For bidirectional type having V<sub>RWM</sub> of 10 volts and under, the I<sub>R</sub> limit is doubled.

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### Rate and Characteristic Curve ( $T_A=25^\circ\text{C}$ unless otherwise noted)

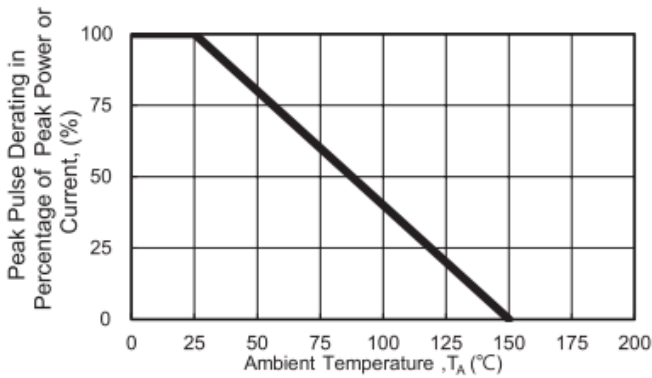


Fig. 1 - Pulse Derating Curve

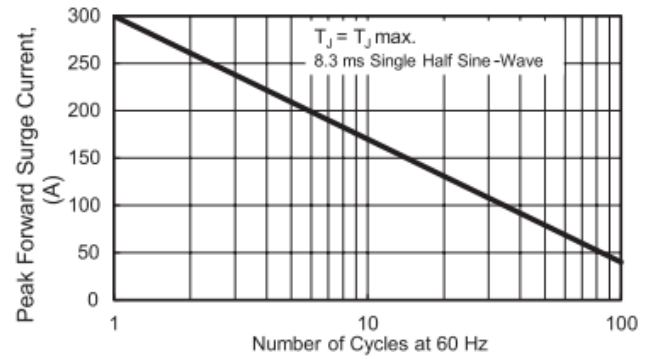


Fig. 2 - Maximum Non-Repetitive Surge Current

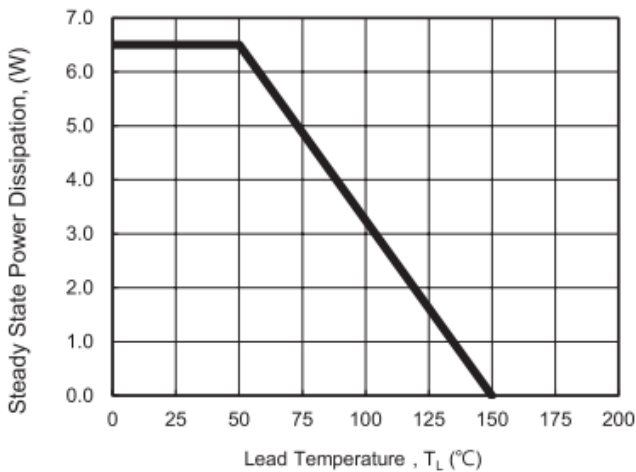


Fig. 3 - Steady State Power Derating Curve

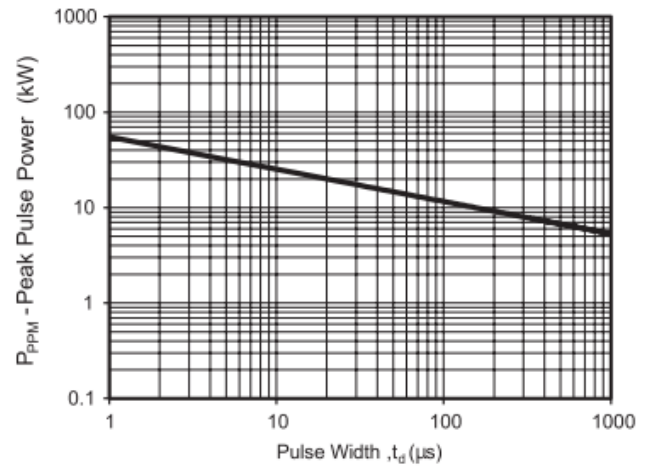


Fig. 4 - Peak Pulse Power Rating Curve

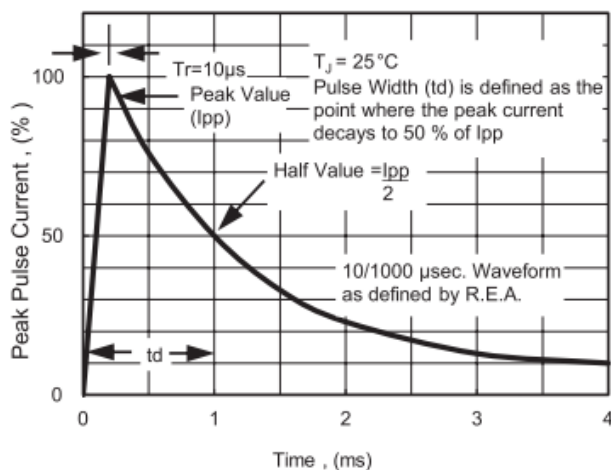


Fig. 5 - Pulse Waveform

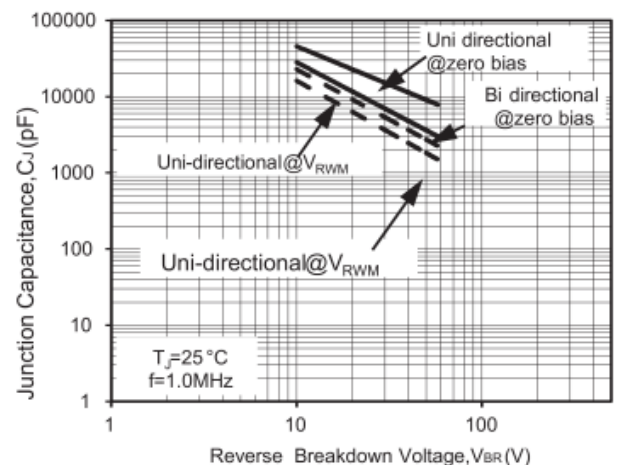
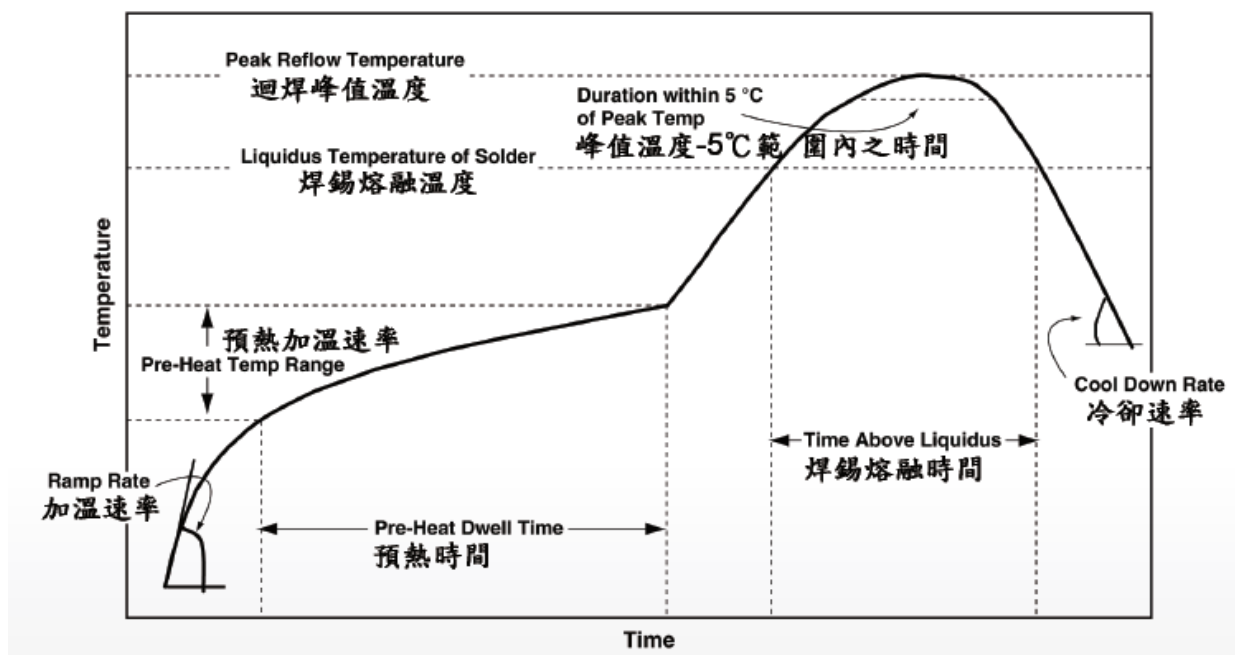


Fig. 6 - Typical Junction Capacitance

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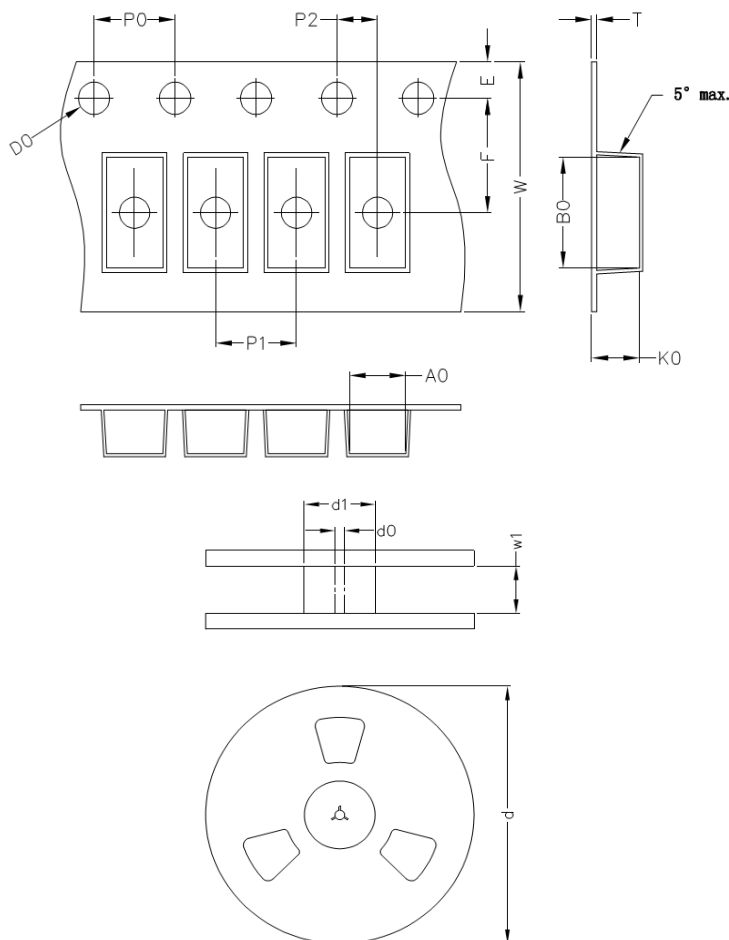
### IR-reflow soldering profile



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

## SMD Type 5000 W

### ■ 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	7.5
Sprocket hole pitch	P0	4
Carrier pitch	P1	8
Embossment center	P2	2
Tape thickness	T	0.4
Tape width	W	16
Reel outside diameter	d (13")	330
Reel inner diameter	d1	50
Feed hole diameter	d0	13.5
Reel inner width	w1	18.4

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

### ■ Quantity

MPQ: 3,000pcs

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

### ■ Warehouse Storage Conditions of product

- Storage Condition:
  - Storage Temperature: 15~30°C
  - Relative Humidity:  $\leq 75\%$ RH
  - Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.