

TVS Diode: TP5.0SMDJ Series



SMD Type 5000 W

■ Features

1. High reliability application and automotive grade AEC Q101 qualified
2. 5000W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle): 0.01%
3. Low leakage current
4. Excellent clamping capability
5. RoHS compliant
6. Very fast response time
7. ESD protection of data lines in accordance with IEC 61000-4-2,30kV(Air),30kV(Contact)



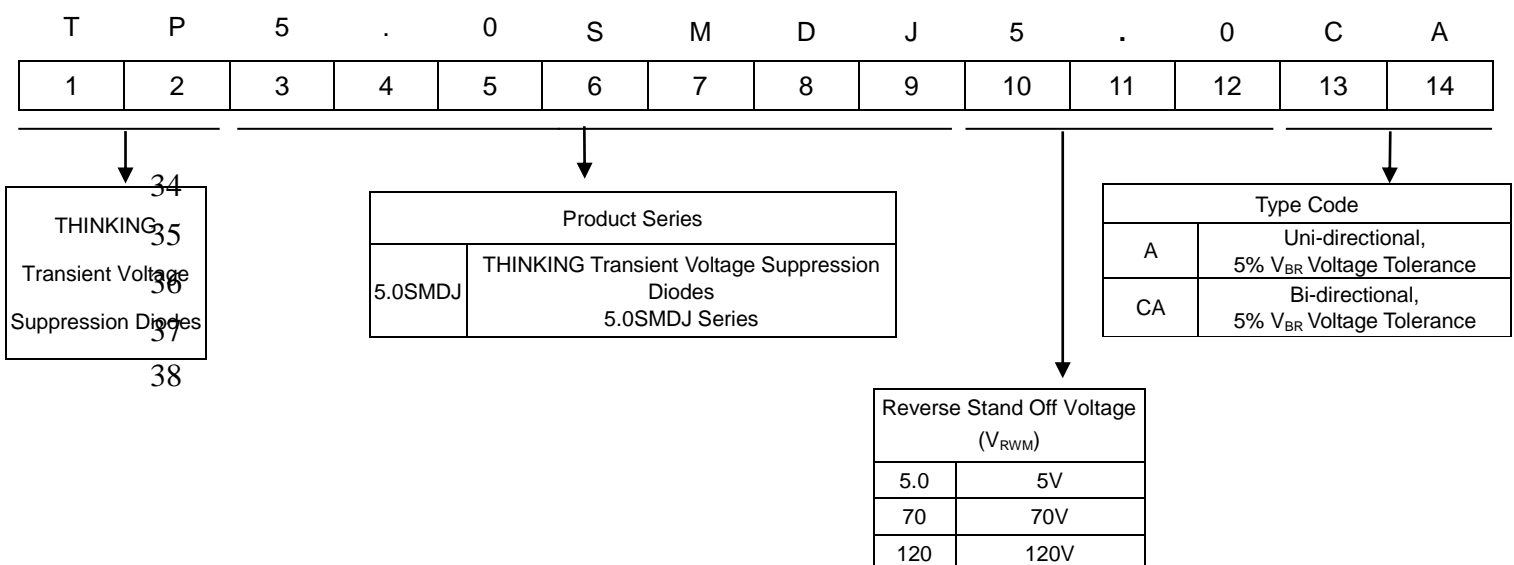
■ Recommended Applications

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

■ Mechanical Data

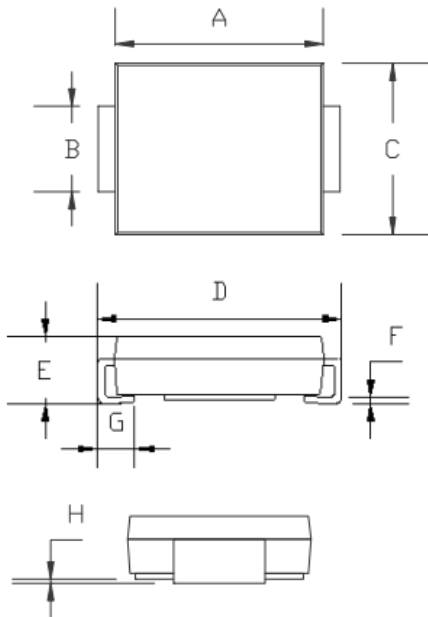
1. Case: DO-214AB (SMC), molded plastic meets
2. Epoxy : UL 94V-0 rate flame retardant
3. Terminal: Solderable per MIL-STD-750, Method 2026
4. Polarity: Color band denotes cathode end

■ Part Number Code

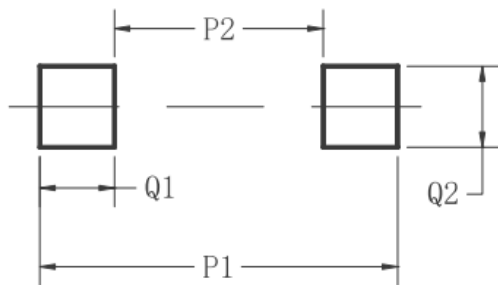


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Structures and Dimensions



SMC / DO-214AB		
Dimensions	Millimeters	
	Min	Max
A	6.60	7.15
B	2.75	3.27
C	5.55	6.22
D	7.75	8.13
E	1.98	2.80
F	0.15	0.31
G	0.75	1.52
H	0.00	0.30



SMC / DO-214AB	
Dimensions	Millimeters
P1	9.90
P2	3.84
Q1	3.03
Q2	3.82

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 μs waveform (Note 1, 2)	P_{PPM}	C	W
Peak forward surge current, 8.3ms single half sine wave on rated load (Note 3)	I_{FSM}	300	A
Power dissipation on infinite heatsink at $T_L=75^{\circ}\text{C}$	P_D	6.5	W
Maximum instantaneous forward voltage at 100A for unidirectional only	VF	3.5	V
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}\text{C/W}$
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	$^{\circ}\text{C/W}$
Operating junction and storage temperature range	T_J, T_{STG}	-65~+150	$^{\circ}\text{C}$

Notes : (1) Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^{\circ}\text{C}$ per Fig. 2

(2) Mounted on copper pad area of 0.31" x 0.31" (8.0 x 8.0mm) to each terminal

(3) Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

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■ Electrical Characteristics (T_A=25°C 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)
TP5.0SMDJ11A	TP5.0SMDJ11CA	11	12.2	13.5	1	18.2	274.73	800	5PDX	5BDX
TP5.0SMDJ12A	TP5.0SMDJ12CA	12	13.3	14.7	1	19.9	251.26	800	5PDZ	5BDZ
TP5.0SMDJ13A	TP5.0SMDJ13CA	13	14.4	15.9	1	21.5	232.56	500	5PEE	5BEE
TP5.0SMDJ14A	TP5.0SMDJ14CA	14	15.6	17.2	1	23.2	215.52	200	5PEG	5BEG
TP5.0SMDJ15A	TP5.0SMDJ15CA	15	16.7	18.5	1	24.4	204.92	100	5PEK	5BEK
TP5.0SMDJ16A	TP5.0SMDJ16CA	16	17.8	19.7	1	26	192.31	50	5PEM	5BEM
TP5.0SMDJ17A	TP5.0SMDJ17CA	17	18.9	20.9	1	27.6	181.16	20	5PEP	5BEP
TP5.0SMDJ18A	TP5.0SMDJ18CA	18	20	22.1	1	29.2	171.23	10	5PER	5BER
TP5.0SMDJ19A	TP5.0SMDJ19CA	19	21.1	23.3	1	30.8	162.34	10	5PET	5BET
TP5.0SMDJ20A	TP5.0SMDJ20CA	20	22.2	24.5	1	32.4	154.32	5	5PEV	5BEV
TP5.0SMDJ22A	TP5.0SMDJ22CA	22	24.4	26.9	1	35.5	140.85	5	5PEX	5BEX
TP5.0SMDJ24A	TP5.0SMDJ24CA	24	26.7	29.5	1	38.9	128.53	2	5PEZ	5BEZ
TP5.0SMDJ26A	TP5.0SMDJ26CA	26	28.9	31.9	1	42.1	118.76	2	5PFE	5BFE
TP5.0SMDJ28A	TP5.0SMDJ28CA	28	31.1	34.4	1	45.4	110.13	2	5PFG	5BFG
TP5.0SMDJ30A	TP5.0SMDJ30CA	30	33.3	36.8	1	48.4	103.31	2	5PFK	5BFK
TP5.0SMDJ33A	TP5.0SMDJ33CA	33	36.7	40.6	1	53.3	93.81	2	5PFM	5BFM
TP5.0SMDJ36A	TP5.0SMDJ36CA	36	40	44.2	1	58.1	86.06	2	5PFP	5BFP
TP5.0SMDJ40A	TP5.0SMDJ40CA	40	44.4	49.1	1	64.5	77.52	2	5PFR	5BFR
TP5.0SMDJ43A	TP5.0SMDJ43CA	43	47.8	52.8	1	69.4	72.05	2	5PFT	5BFT
TP5.0SMDJ45A	TP5.0SMDJ45CA	45	50	55.3	1	72.7	68.78	2	5PFV	5BFV
TP5.0SMDJ48A	TP5.0SMDJ48CA	48	53.3	58.9	1	77.4	64.60	2	5PFX	5BFX
TP5.0SMDJ51A	TP5.0SMDJ51CA	51	56.7	62.7	1	82.4	60.68	2	5PFZ	5BFZ
TP5.0SMDJ54A	TP5.0SMDJ54CA	54	60	66.3	1	87.1	57.41	2	5PGE	5BGE
TP5.0SMDJ58A	TP5.0SMDJ58CA	58	64.4	71.2	1	93.6	53.42	2	5PGG	5BGG

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

Fig.1 - Peak Pulse Power Rating Curve

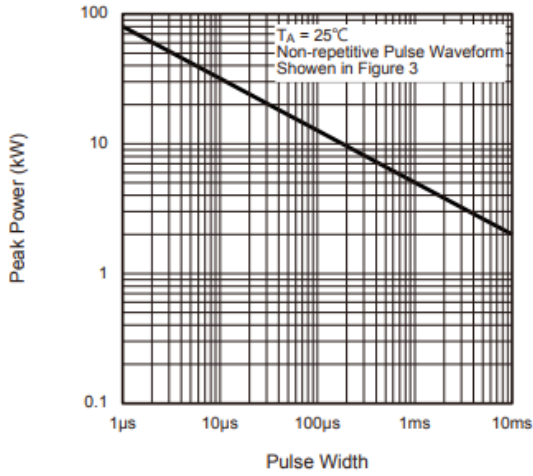


Fig.2 - Pulse Derating Curve

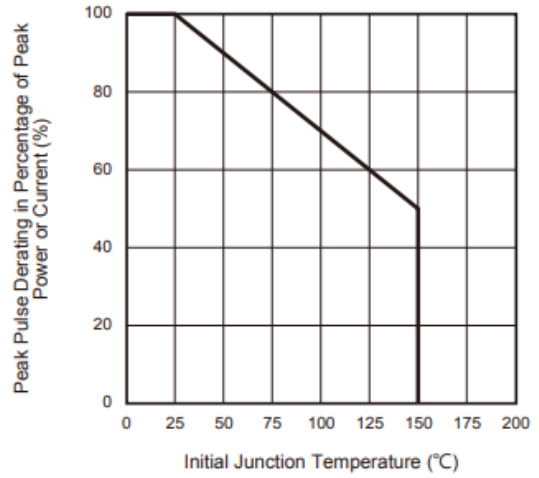


Fig.3 - Pulse Waveform

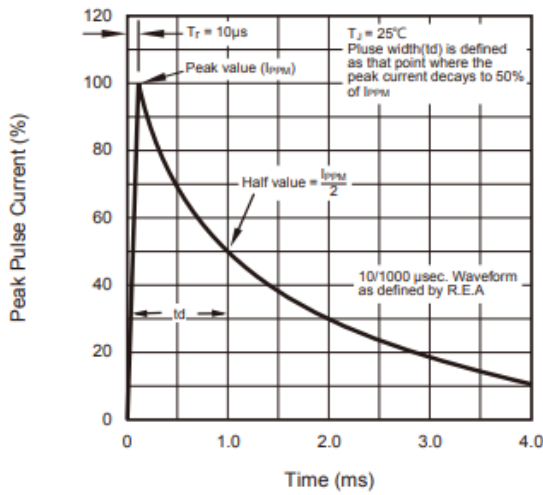


Fig.4 - Typical Junction Capacitance

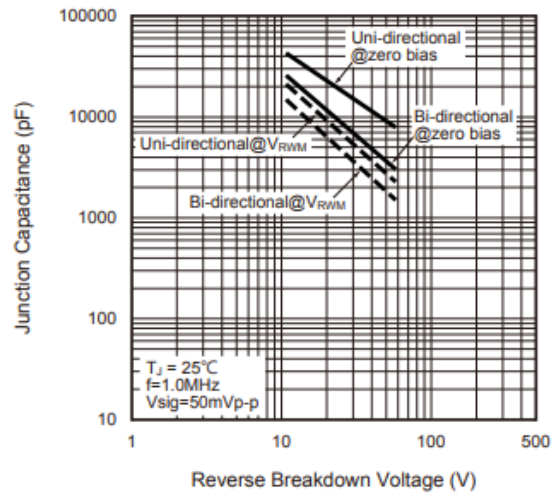


Fig.5 - Steady State Power Derating Curve

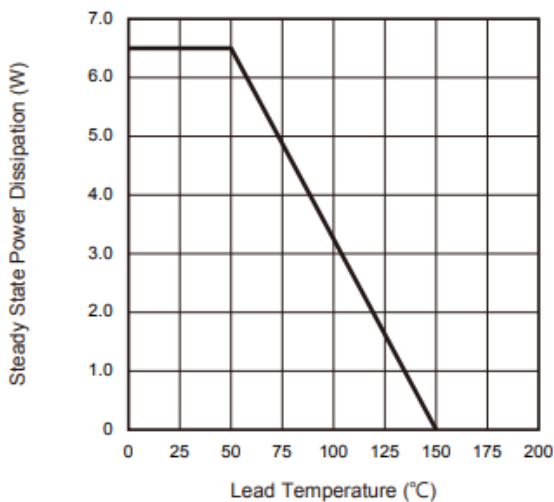
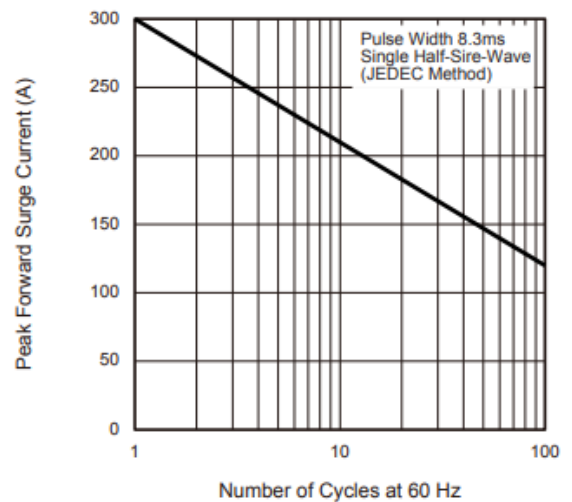
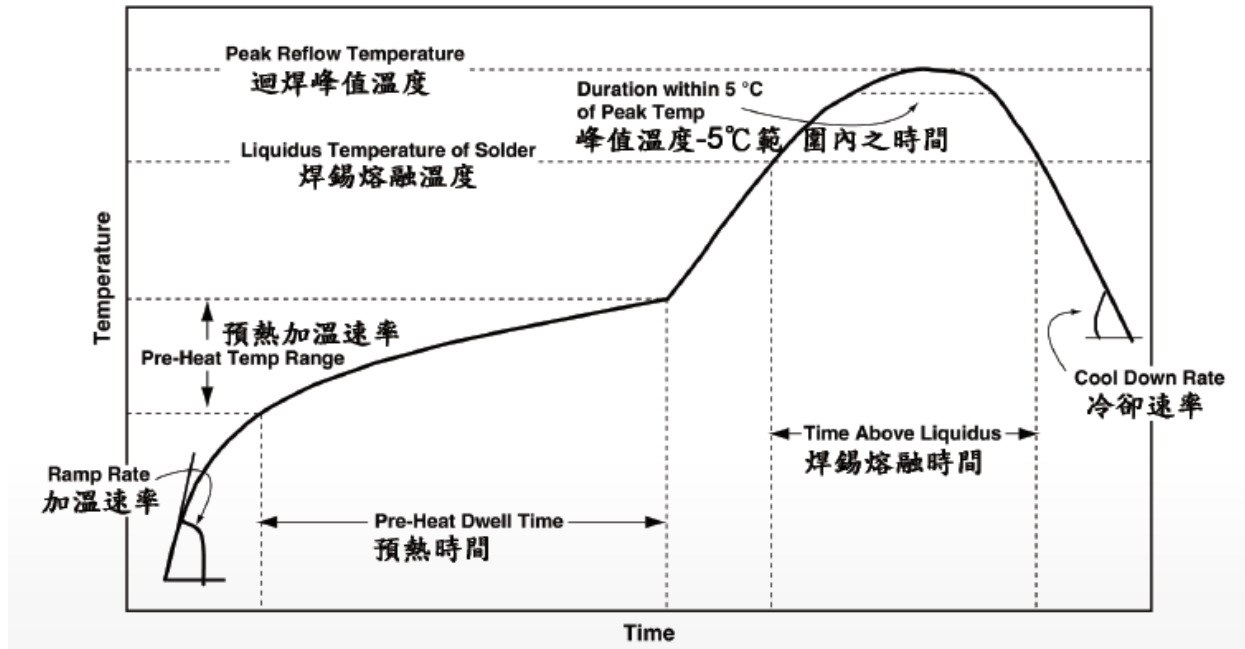


Fig.6 - Maximum Non-Repetitive Surge Current



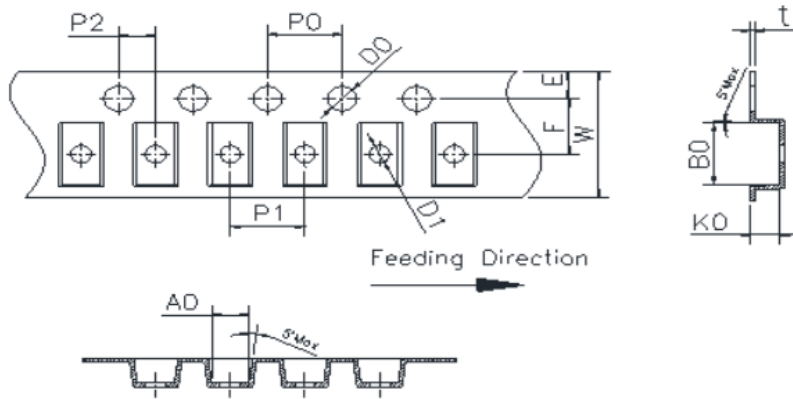
IR-reflow soldering profile



LEAD(Pb)-FREE SOLDER(SnAgCu) REFLOW PROFILE ATTRIBUTES	
PROFILE ATTRIBUTE	PROFILE ATTRIBUTE
Peak Reflow Temperature	260(+8/-8)°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

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■ Packaging



Item	Symbol	DO-214AB (SMC)
		Unit:mm
Carrier width	A0	6.05±0.1
Carrier length	B0	8.31±0.1
Carrier depth	K0	2.54±0.1
Sprocket hole	D0/D1	1.55±0.05
Sprocket hole position	E	1.75±0.1
Punch hole position	F	7.5±0.1
Sprocket hole pitch	P0	4±0.1
Carrier pitch	P1	8±0.1
Embossment center	P2	2±0.1
Tape thickness	t	0.3±0.02
Tape width	W	16±0.3

■ Quantity

Package Type	Reel Size (inch)	Quantity (pcs/reel)
DO-214AB	13	3,000

■ Warehouse Storage Conditions of product

- Storage Condition:
 1. Storage Temperature: ≤25°C
 2. Relative Humidity: 50%~80%RH
 3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.