

Transient Voltage Suppression Diodes: SMDJ 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. Typical IR less than 2μA above 11V
7. Fast response time
8. Excellent clamping capacity
9. 3000W peak pulse power capability with a 10/1000 μs waveform, repetition rate (duty cycle): 0.01%



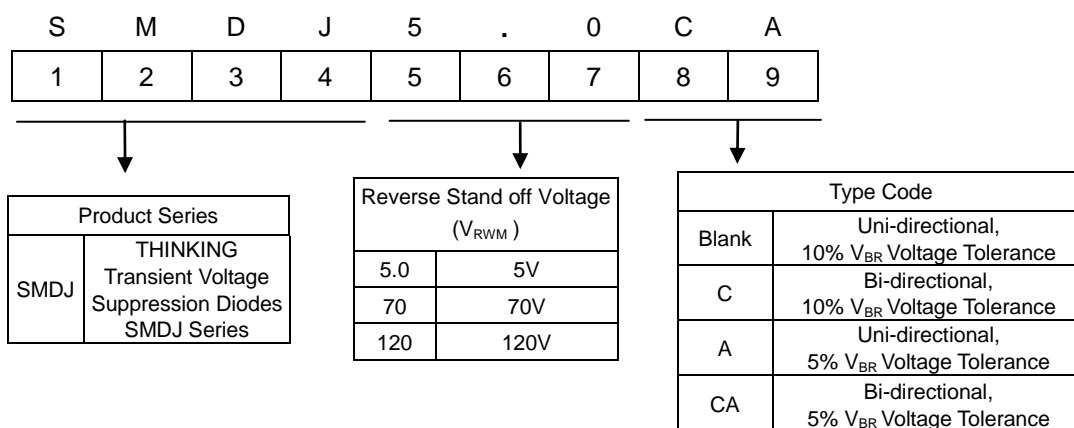
■ Recommended Applications

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

■ 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



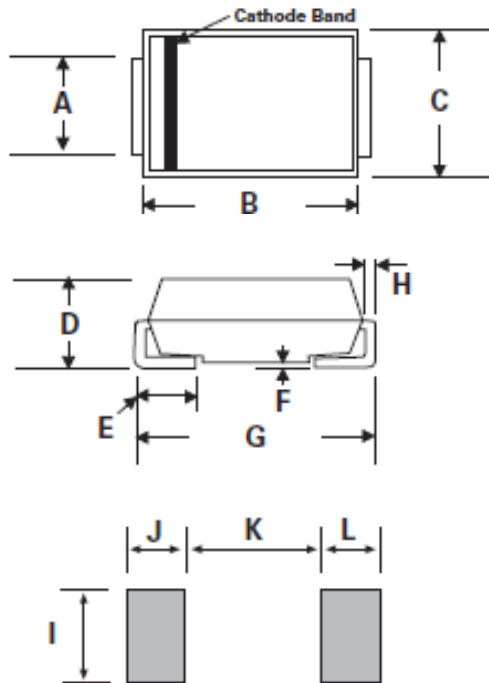
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Structures and Dimensions

SMC/DO-214AB



Item	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.90	3.20	0.114	0.126
B	6.60	7.11	0.260	0.280
C	5.59	6.22	0.220	0.245
D	2.06	2.62	0.079	0.103
E	0.76	1.52	0.030	0.060
F	-	0.203	-	0.008
G	7.75	8.13	0.305	0.320
H	0.152	0.305	0.006	0.012
I	3.30	-	0.129	-
J/L	2.40	-	0.094	-
K	-	4.20	-	0.165

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 (Note1, Fig.1)	P_{PPM}	3000	W
Peak pulse current of on 10/1000 μs waveform.(Note1, Fig.3)	I_{PPM}	See Table	A
Peak forward surge current, 8.3ms single half sine wave on rated load (Note 2)	I_{FSM}	300	A
Steady state power dissipation at $T_A=50^\circ\text{C}$ (Fig.5).	$P_{M(AV)}$	6.5	W
Operating junction and storage temperature range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

Note: 1. Please refer to Fig. 3 for non-repetitive current pulse, and Fig. 2 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.

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■ Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage V_{BR} @ I_T		Test Current	Maximum Clamping Voltage V_C @ I_{pp}	Maximum Peak Pulse Current	Maximum Reverse Leakage I_R @ V_{RWM}	Marking Code	
		V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	V_C (V)	I_{pp} (A)	I_R (μA)	UNI	BI
SMDJ5.0A	SMDJ5.0CA	5	6.4	7.00	10	9.2	326.1	800	RDE	DDE
SMDJ6.0A	SMDJ6.0CA	6	6.67	7.37	10	10.3	291.3	800	RDG	DDG
SMDJ6.5A	SMDJ6.5CA	6.5	7.22	7.98	10	11.2	267.9	500	RDK	DDK
SMDJ7.0A	SMDJ7.0CA	7	7.78	8.60	10	12	250	200	PDM	DDM
SMDJ7.5A	SMDJ7.5CA	7.5	8.33	9.21	1	12.9	232.6	100	PDP	DDP
SMDJ8.0A	SMDJ8.0CA	8	8.89	9.83	1	13.6	220.6	50	PDR	DDR
SMDJ8.5A	SMDJ8.5CA	8.5	9.44	10.40	1	14.4	208.3	20	PDT	DDT
SMDJ9.0A	SMDJ9.0CA	9	10	11.10	1	15.4	194.8	10	PDV	DDV
SMDJ10A	SMDJ10CA	10	11.1	12.30	1	17	176.5	5	PDX	DDX
SMDJ11A	SMDJ11CA	11	12.2	13.50	1	18.2	164.8	2	PDZ	DDZ
SMDJ12A	SMDJ12CA	12	13.3	14.70	1	19.9	150.8	2	PEE	DEE
SMDJ13A	SMDJ13CA	13	14.4	15.90	1	21.5	139.5	2	PEG	DEG
SMDJ14A	SMDJ14CA	14	15.6	17.20	1	23.2	129.3	2	PEK	DEK
SMDJ15A	SMDJ15CA	15	16.7	18.50	1	24.4	123	2	PEM	DEM
SMDJ16A	SMDJ16CA	16	17.8	19.70	1	26	115.4	2	PEP	DEP
SMDJ17A	SMDJ17CA	17	18.9	20.90	1	27.6	108.7	2	PER	DER
SMDJ18A	SMDJ18CA	18	20	22.10	1	29.2	102.7	2	PET	DET
SMDJ20A	SMDJ20CA	20	22.2	24.50	1	32.4	92.6	2	PEV	DEV
SMDJ22A	SMDJ22CA	22	24.4	26.90	1	35.5	84.5	2	PEX	DEX
SMDJ24A	SMDJ24CA	24	26.7	29.50	1	38.9	77.1	2	PEZ	DEZ
SMDJ26A	SMDJ26CA	26	28.9	31.90	1	42.1	71.3	2	PFE	DFE
SMDJ28A	SMDJ28CA	28	31.1	34.40	1	45.4	66.1	2	PFG	DFG
SMDJ30A	SMDJ30CA	30	33.3	36.80	1	48.4	62	2	PFK	DFK
SMDJ33A	SMDJ33CA	33	36.7	40.60	1	53.3	56.3	2	PFM	DFM
SMDJ36A	SMDJ36CA	36	40	44.20	1	58.1	51.6	2	PFP	DFP
SMDJ40A	SMDJ40CA	40	44.4	49.10	1	64.5	46.5	2	PFR	DFR
SMDJ43A	SMDJ43CA	43	47.8	52.80	1	69.4	43.2	2	PFT	DFT
SMDJ45A	SMDJ45CA	45	50	55.30	1	72.7	41.3	2	PFV	DFV
SMDJ48A	SMDJ48CA	48	53.3	58.90	1	77.4	38.8	2	PFX	DFX

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

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Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage V_{BR} @ I_T		Test Current	Maximum Clamping Voltage V_C @ I_{pp}	Maximum Peak Pulse Current	Maximum Reverse Leakage I_R @ V_{RWM}	Marking Code	
			V_{RWM} (V)	Min(V)					Max(V)	I_T (mA)
SMDJ51A	SMDJ51CA	51	56.7	62.70	1	82.4	36.4	2	PFZ	DFZ
SMDJ54A	SMDJ54CA	54	60	66.30	1	87.1	34.4	2	PGE	DGE
SMDJ58A	SMDJ58CA	58	64.4	71.20	1	93.6	32.1	2	PGG	DGG
SMDJ60A	SMDJ60CA	60	66.7	73.70	1	96.8	31	2	PGK	DGK
SMDJ64A	SMDJ64CA	64	71.1	78.60	1	103	29.1	2	PGM	DGM
SMDJ70A	SMDJ70CA	70	77.8	86.00	1	113	26.5	2	PGP	DGP
SMDJ75A	SMDJ75CA	75	83.3	92.10	1	121	24.8	2	PGR	DGR
SMDJ78A	SMDJ78CA	78	86.7	95.80	1	126	23.8	2	PGT	DGT
SMDJ85A	SMDJ85CA	85	94.4	104.00	1	137	21.9	2	PGV	DGV
SMDJ90A	SMDJ90CA	90	100.00	111.00	1	146	20.5	2	PGX	DGX
SMDJ100A	SMDJ100C	100	111.00	123.00	1	162	18.5	2	PGZ	DGZ
SMDJ110A	SMDJ110CA	110	122.00	135.00	1	177	16.9	2	PHE	DHE
SMDJ120A	SMDJ120CA	120	133.00	147.00	1	193	15.5	2	PHG	DHG
SMDJ130A	SMDJ130CA	130	144.00	159.00	1	209	14.4	2	PHK	DHK
SMDJ150A	SMDJ150CA	150	167.00	185.00	1	243	12.3	2	PHM	DHM
SMDJ160A	SMDJ160CA	160	178.00	197.00	1	259	11.6	2	PHP	DHP
SMDJ170A	SMDJ170CA	170	189.00	209.00	1	275	10.9	2	PHR	DHR
SMDJ180A	SMDJ180CA	180	201.00	222.00	1	292	10.3	2	HHT	IHT
SMDJ190A	SMDJ190CA	190	211.00	233.00	1	308	9.7	2	HHV	IHV
SMDJ200A	SMDJ200CA	200	224.00	247.00	1	324	9.3	2	HHX	IHX
SMDJ210A	SMDJ210CA	210	237.00	263.00	1	340	8.8	2	HHZ	IHZ
SMDJ220A	SMDJ220CA	220	246.00	272.00	1	356	8.4	2	HIE	IIE

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

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

Figure 1. Peak Pulse Power Rating Curve

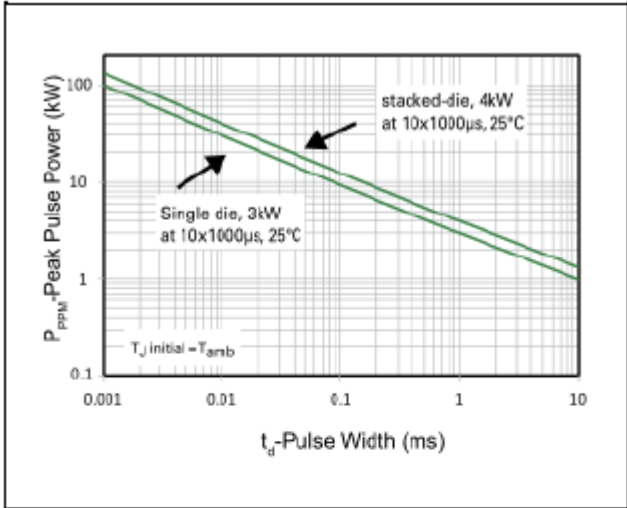


Figure 2. Pulse Derating Curve

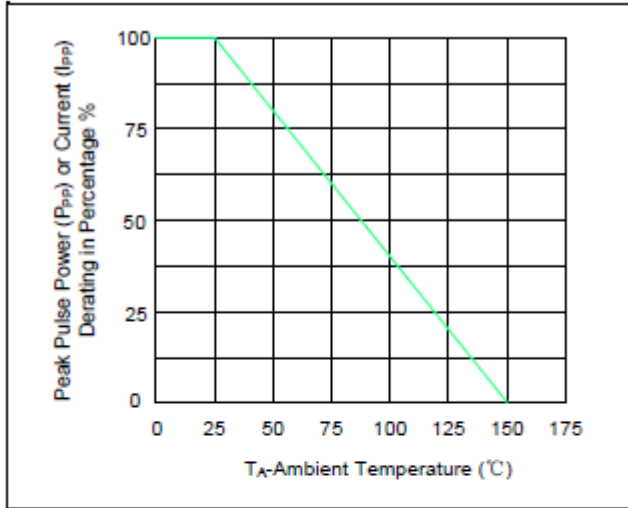


Figure 3. Pulse Waveform

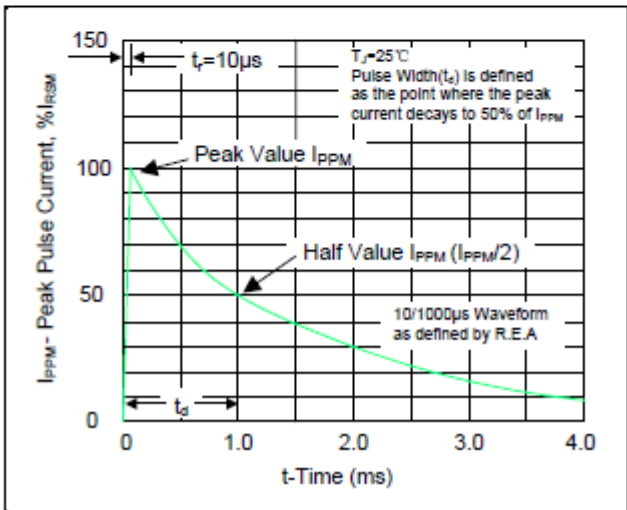


Figure 4. Typical Junction Capacitance

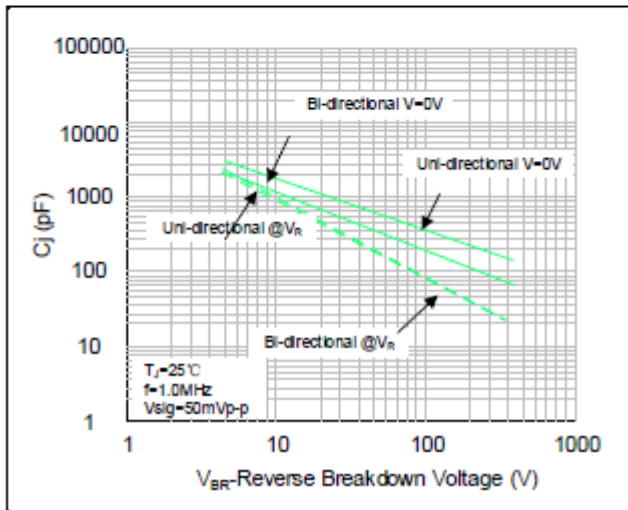


Figure 5. Steady State Power Dissipation Derating Curve

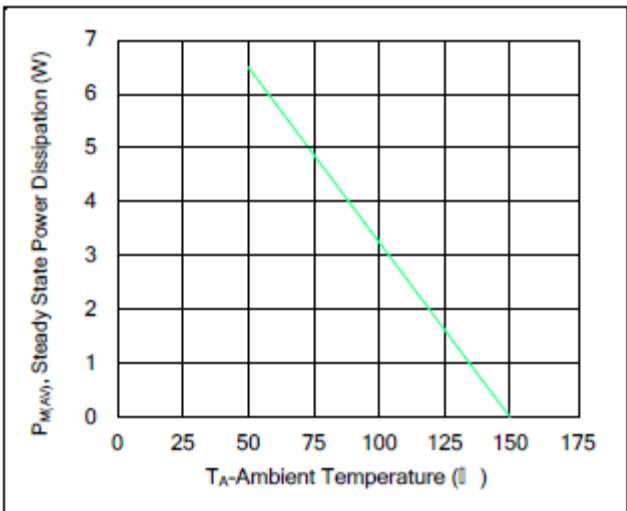
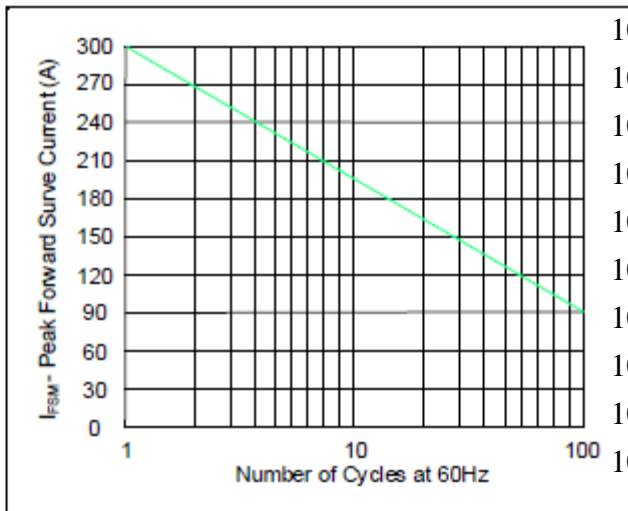


Figure 6. Maximum Non-Repetitive Forward Surge Current

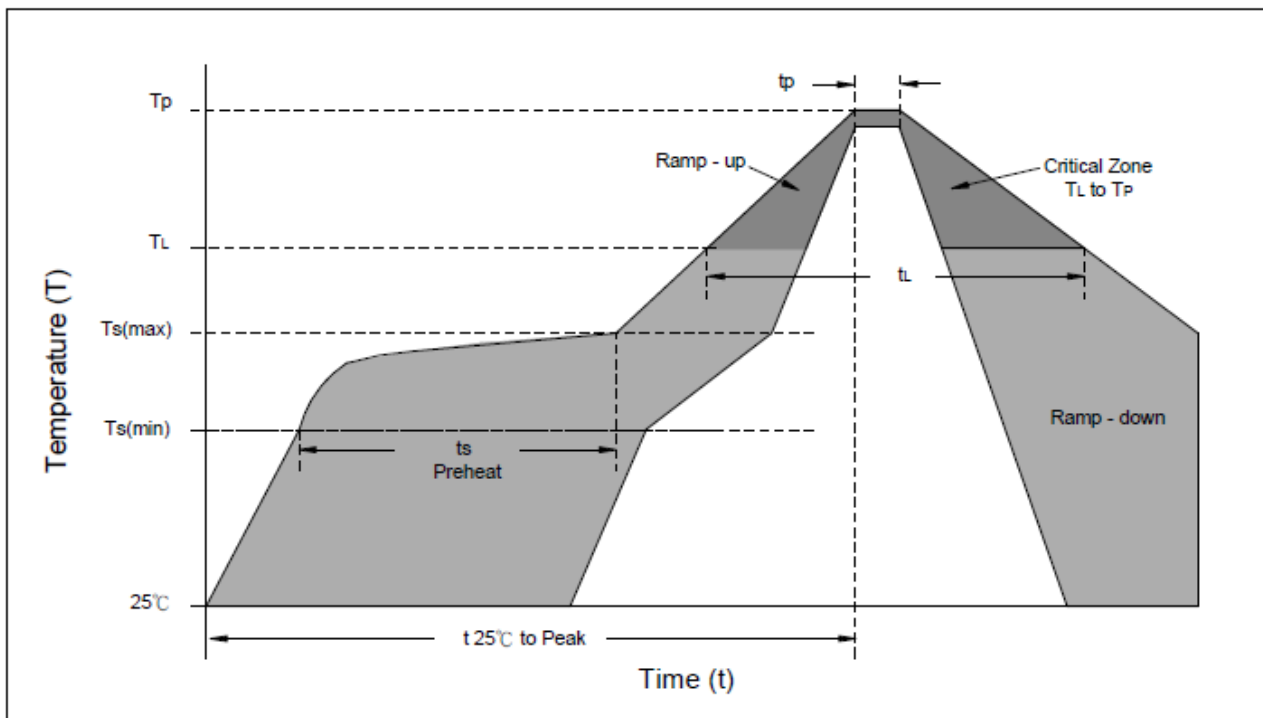


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■ Soldering Recommendation



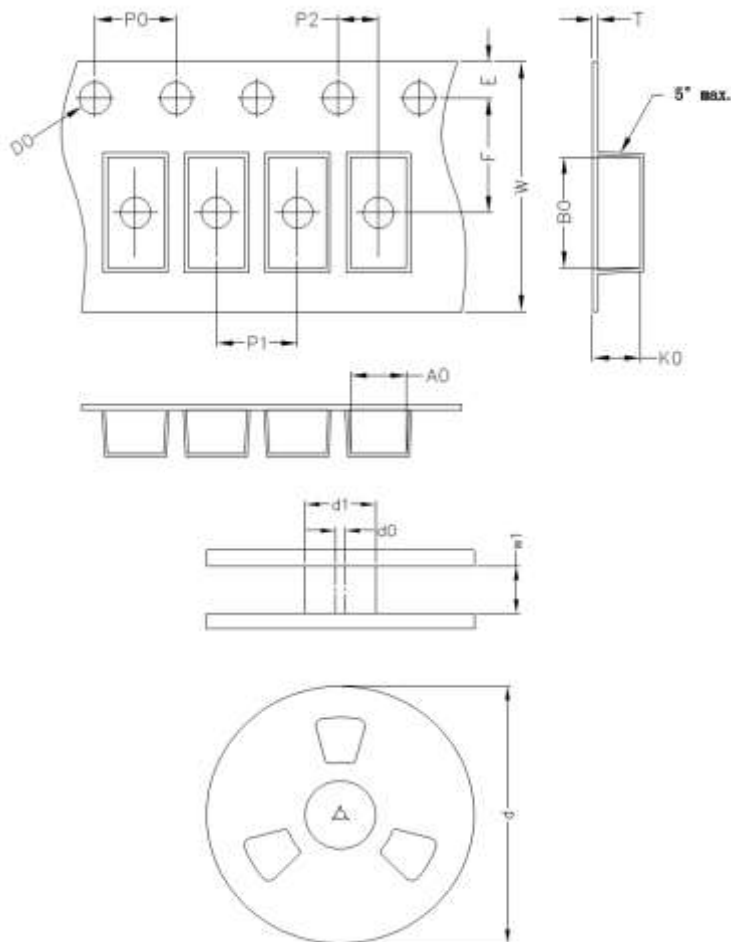
Reflow Condition	Lead-free assembly
Preheat -Temperature Min(Ts min) -Temperature Min(Ts max) -Time (min to max) (ts)	150°C 200°C 60 – 180 seconds
Average ramp up rate -Temperature Liquidus (TL) to peak	3°C/second max
Ts(max) to TL -Ramp-up Rate	3°C/second max.
Reflow -Temperature Liquidus (TL) -Time (tL)	217°C 60 – 150 seconds
Peak Temperature (TP)	260°C
Time within 5°C of actual peak Temperature(tp)	20 – 40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to peak Temperature(TP)	8 minutes max.
Do not exceed	260°C

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■ 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 ± 0.1 mm, and the tolerance of reel is ± 2 mm

■ Quantity

Package Type	Reel Size	Reel
	inch	Kpcs
SMC	13	3

■ Warehouse Storage Conditions of product

- Storage Condition:
 - Storage Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
 - Relative Humidity: $\leq 75\% \text{RH}$
 - Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.