

## SMD Type 600 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. Typical IR less than 1µA above 11V
8. Excellent clamping capacity
9. 600 W peak pulse power capability with a 10/1000 µs waveform, repetition rate (duty cycle): 0.01%



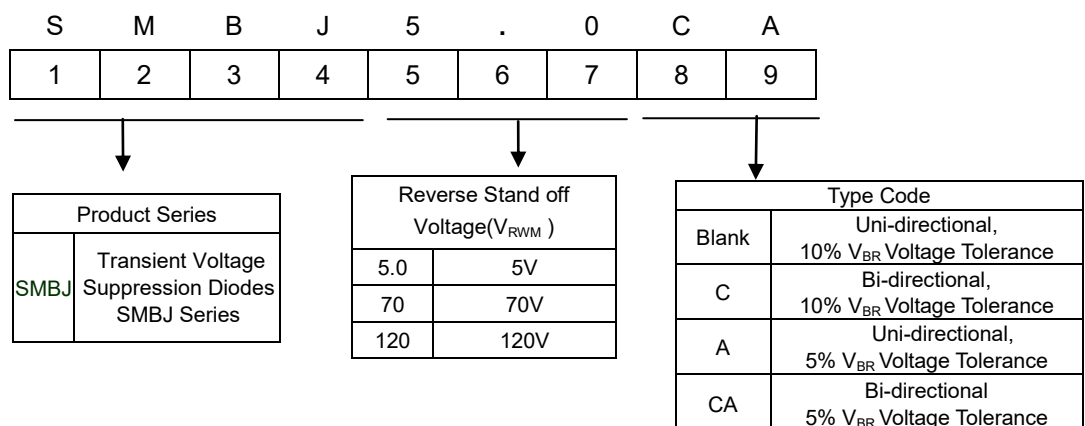
### ■ Recommended Applications

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

### ■ Mechanical Data

1. Case: DO-214AA (SMB), 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)

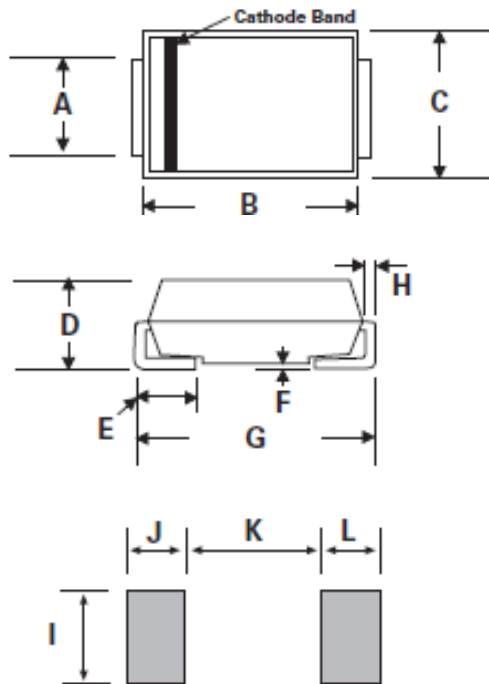
### ■ Part Number Code



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### Structures and Dimensions

#### SMB/DO-214AA



Item	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.91	2.20	0.075	0.086
B	4.06	4.70	0.160	0.185
C	3.30	3.94	0.130	0.155
D	2.13	2.44	0.083	0.096
E	0.76	1.52	0.030	0.060
F	-	0.203	-	0.008
G	5.08	5.59	0.200	0.220
H	0.152	0.305	0.006	0.012
I	2.26	-	0.089	-
J/L	2.16	-	0.085	-
K	-	2.74	-	0.107

### Maximum Rating (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at TA=25 °C by 10/1000µs waveform (Note1, Fig.1).	P <sub>PPM</sub>	600	W
Peak Pulse Current of on 10/1000us waveform.(Note1, Fig.3)	I <sub>PPM</sub>	See Table	A
Peak forward surge current, 8.3ms single half sine wave on rated load (Note 2, Fig.6)	I <sub>FSM</sub>	100	A
Steady State Power Dissipation at TA=50 °C (Fig.5).	PM <sub>(AV)</sub>	5.0	W
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55~+150	°C

Notes:1. Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub> = 25°C per Fig. 2.

2. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

# Transient Voltage Suppression Diodes: SMBJ Series

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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)	$I_T (mA)$
SMBJ5.0A	SMBJ5.0CA	5.0	6.40	7.00	10	9.2	65.3	800	KE	AE
SMBJ6.0A	SMBJ6.0CA	6.0	6.67	7.37	10	10.3	58.3	800	KG	AG
SMBJ6.5A	SMBJ6.5CA	6.5	7.22	7.98	10	11.2	53.6	500	KK	AK
SMBJ7.0A	SMBJ7.0CA	7.0	7.78	8.60	10	12.0	50.0	200	KM	AM
SMBJ7.5A	SMBJ7.5CA	7.5	8.33	9.21	1	12.9	46.6	100	KP	AP
SMBJ8.0A	SMBJ8.0CA	8.0	8.89	9.83	1	13.6	44.2	50	KR	AR
SMBJ8.5A	SMBJ8.5CA	8.5	9.44	10.4	1	14.4	41.7	20	KT	AT
SMBJ9.0A	SMBJ9.0CA	9.0	10.0	11.1	1	15.4	39.0	10	KV	AV
SMBJ10A	SMBJ10CA	10	11.1	12.3	1	17.0	35.3	5	KX	AX
SMBJ11A	SMBJ11CA	11	12.2	13.5	1	18.2	33.0	1	KZ	AZ
SMBJ12A	SMBJ12CA	12	13.3	14.7	1	19.9	30.2	1	LE	BE
SMBJ13A	SMBJ13CA	13	14.4	15.9	1	21.5	28.0	1	LG	BG
SMBJ14A	SMBJ14CA	14	15.6	17.2	1	23.2	25.9	1	LK	BK
SMBJ15A	SMBJ15CA	15	16.7	18.5	1	24.4	24.6	1	LM	BM
SMBJ16A	SMBJ16CA	16	17.8	19.7	1	26.0	23.1	1	LP	BP
SMBJ17A	SMBJ17CA	17	18.9	20.9	1	27.6	21.8	1	LR	BR
SMBJ18A	SMBJ18CA	18	20.0	22.1	1	29.2	20.6	1	LT	BT
SMBJ20A	SMBJ20CA	20	22.2	24.5	1	32.4	18.6	1	LV	BV
SMBJ22A	SMBJ22CA	22	24.4	26.9	1	35.5	16.9	1	LX	BX
SMBJ24A	SMBJ24CA	24	26.7	29.5	1	38.9	15.5	1	LZ	BZ
SMBJ26A	SMBJ26CA	26	28.9	31.9	1	42.1	14.3	1	ME	CE
SMBJ28A	SMBJ28CA	28	31.1	34.4	1	45.4	13.3	1	MG	CG
SMBJ30A	SMBJ30CA	30	33.3	36.8	1	48.4	12.4	1	MK	CK
SMBJ33A	SMBJ33CA	33	36.7	40.6	1	53.3	11.3	1	MM	CM
SMBJ36A	SMBJ36CA	36	40.0	44.2	1	58.1	10.4	1	MP	CP
SMBJ40A	SMBJ40CA	40	44.4	49.1	1	64.5	9.3	1	MR	CR
SMBJ43A	SMBJ43CA	43	47.8	52.8	1	69.4	8.7	1	MT	CT
SMBJ45A	SMBJ45CA	45	50.0	55.3	1	72.7	8.3	1	MV	CV
SMBJ48A	SMBJ48CA	48	53.3	58.9	1	77.4	7.8	1	MX	CX

Notes: For bidirectional type having VRWM of 10 volts and less, the  $I_R$  limit is double

# Transient Voltage Suppression Diodes: SMBJ Series

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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 $I_R$ @ $VRWM$	Marking Code	
		$V_{RWM}$ ( V )	Min( V )	Max( V )	$I_T$ ( mA )	$V_C$ ( V )	$I_{pp}$ (A)	$I_R$ ( $\mu$ A)	UNI	BI
SMBJ51A	SMBJ51CA	51	56.7	62.7	1	82.4	7.3	1	MZ	CZ
SMBJ54A	SMBJ54CA	54	60.0	66.3	1	87.1	6.9	1	NE	DE
SMBJ58A	SMBJ58CA	58	64.4	71.2	1	93.6	6.5	1	NG	DG
SMBJ60A	SMBJ60CA	60	66.7	73.7	1	96.8	6.2	1	NK	DK
SMBJ64A	SMBJ64CA	64	71.1	78.6	1	103	5.9	1	NM	DM
SMBJ70A	SMBJ70CA	70	77.8	86.0	1	113	5.3	1	NP	DP
SMBJ75A	SMBJ75CA	75	83.3	92.1	1	121	5.0	1	NR	DR
SMBJ78A	SMBJ78CA	78	86.7	95.8	1	126	4.8	1	NT	DT
SMBJ85A	SMBJ85CA	85	94.4	104	1	137	4.4	1	NV	DV
SMBJ90A	SMBJ90CA	90	100	111	1	146	4.1	1	NX	DX
SMBJ100A	SMBJ100CA	100	111	123	1	162	3.7	1	NZ	DZ
SMBJ110A	SMBJ110CA	110	122	135	1	177	3.4	1	PE	EE
SMBJ120A	SMBJ120CA	120	133	147	1	193	3.1	1	PG	EG
SMBJ130A	SMBJ130CA	130	144	159	1	209	2.9	1	PK	EK
SMBJ150A	SMBJ150CA	150	167	185	1	243	2.5	1	PM	EM
SMBJ160A	SMBJ160CA	160	178	197	1	259	2.3	1	PP	EP
SMBJ170A	SMBJ170CA	170	189	209	1	275	2.2	1	PR	ER
SMBJ180A	SMBJ180CA	180	201	222	1	292	2.1	1	PT	ET
SMBJ190A	SMBJ190CA	190	209	243	1	308	2.0	1	PV	EV
SMBJ200A	SMBJ200CA	200	224	247	1	324	1.9	1	PW	EW
SMBJ220A	SMBJ220CA	220	246	272	1	356	1.7	1	PX	EX
SMBJ250A	SMBJ250CA	250	279	309	1	405	1.5	1	PZ	EZ
SMBJ300A	SMBJ300CA	300	335	371	1	486	1.3	1	QE	FE
SMBJ350A	SMBJ350CA	350	391	432	1	567	1.1	1	QG	FG
SMBJ400A	SMBJ400CA	400	447	494	1	648	0.9	1	QK	FK
SMBJ440A	SMBJ440CA	440	492	543	1	713	0.9	1	QM	FM

Notes: For bidirectional type having  $VRWM$  of 10 volts and less, the  $I_R$  limit is double

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

FIG.1 - PULSE RATING CURVE

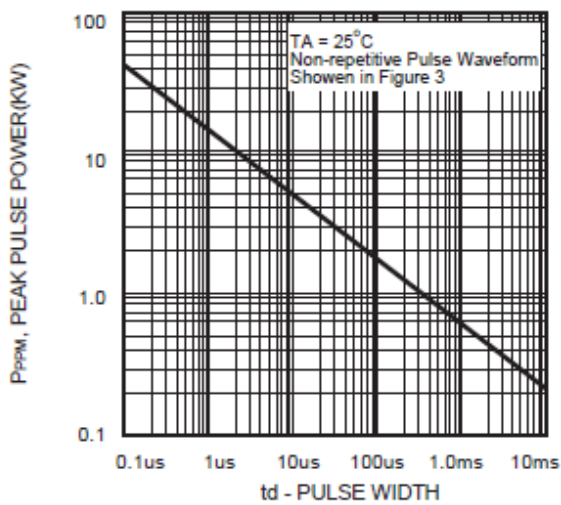


FIG.2 - PULSE DERATING CURVE

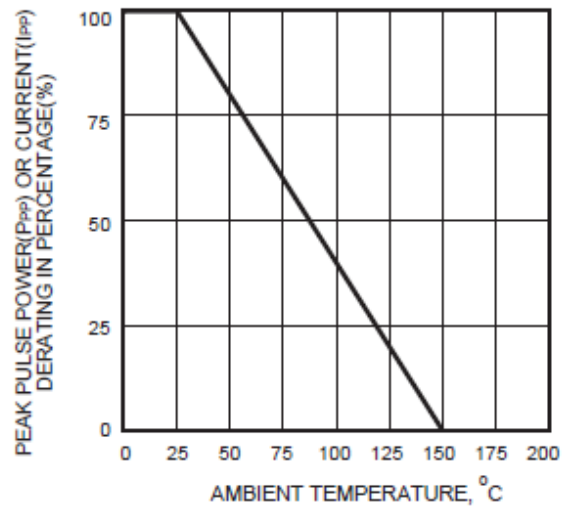


FIG.3 - PULSE WAVEFORM

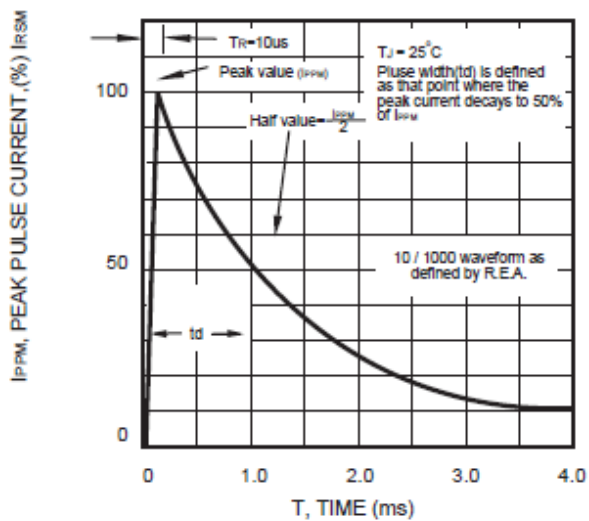


FIG.4 - TYPICAL JUNCTION CAPACITANCE

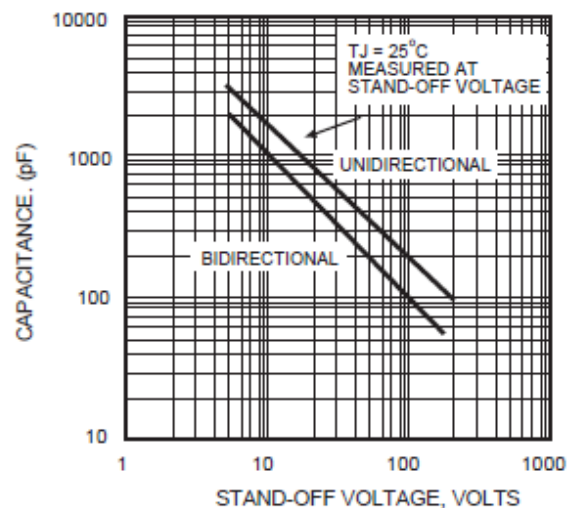
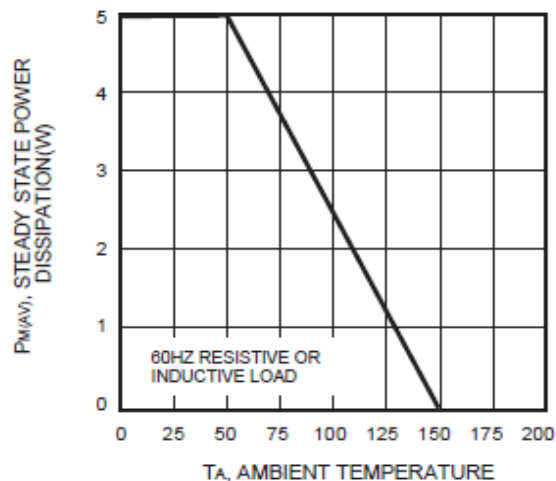
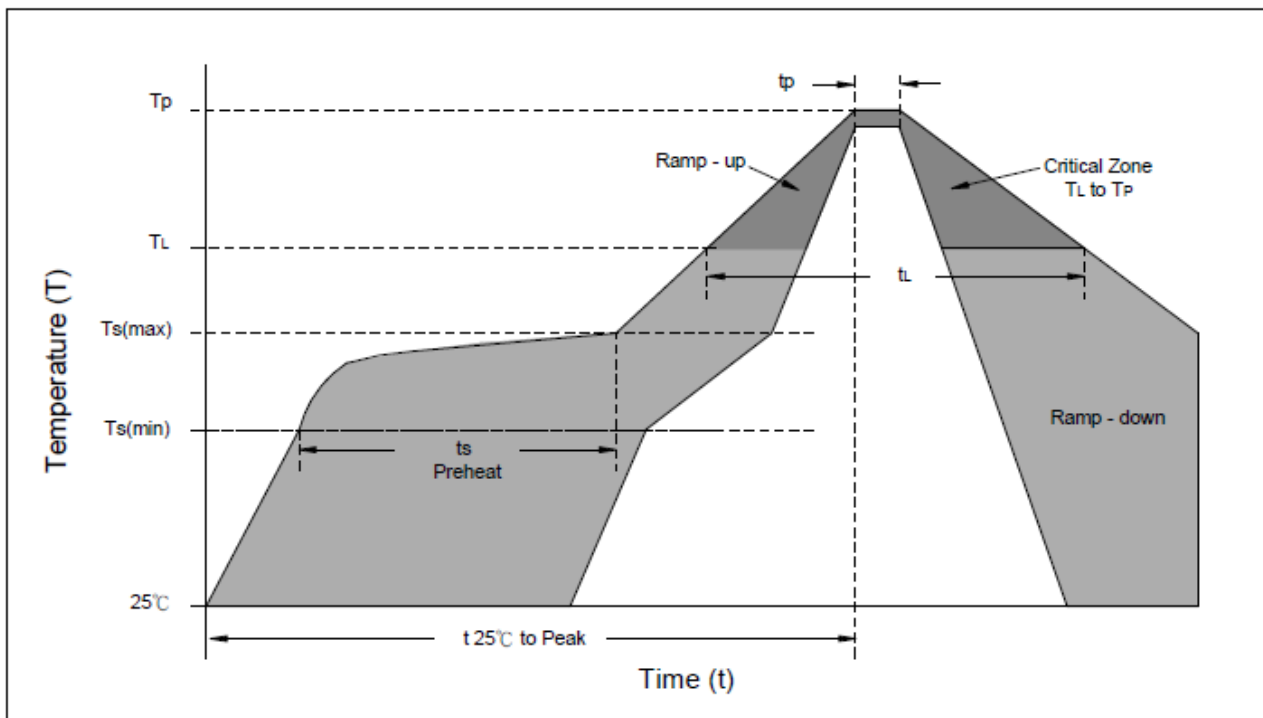


FIG.5 - STEADY STATE POWER DERATING CURVE



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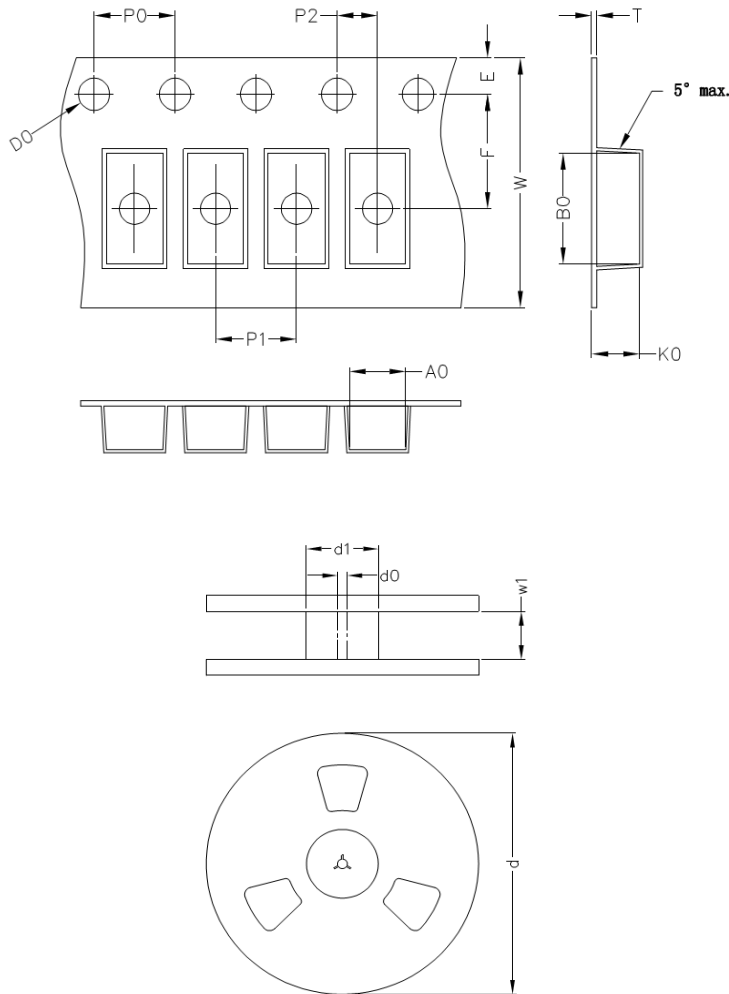
### ■ Soldering Recommendation



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

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### ■ Packaging



Item	Symbol	DO-214AA (SMB) 單位:mm
Carrier width	A0	3.80
Carrier length	B0	5.40
Carrier depth	K0	2.45
Sprocket hole	D0	1.55
Sprocket hole position	E	1.75
Punch hole position	F	5.50
Sprocket hole pinth	P0	4.00
Carrier pinth	P1	8.00
Embossment center	P2	2.00
Tape thickness	T	0.25
Tape width	W	12.00
Reel outside diameter	d (13")	330.00
Reel inner diameter	d1	75
Feed hole diameter	d0	13.50
Reel inner width	w1	13.50

Notes: The tolerance of carrier tape and top cover is  $\pm 0.1\text{mm}$ , the tolerance of reel is  $\pm 2\text{mm}$

### ■ Quantity

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

### ■ 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.