

## SMBJ-AM Series

<b>Product Name</b>	<b>ESD TVS (Transient Voltage Suppressor)</b>
<b>Series</b>	<b>SMBJ-AM Series</b>
<b>Package Size</b>	<b>DO-214AA</b>



## SMBJ-AM Series Engineering Specification

### 1. Features

- 600W surface mount transient voltage suppressors
- Glass passivated chip junction
- Reliable low cost construction utilizing molded plastic technique
- Excellent clamping capability
- Low incremental surge resistance.
- Fast response time
- Qualified to AEC-Q101 standards for high reliability

### 2. Mechanical Date

- Case: Molded plastic DO-214AA
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Solderable per MIL-STD-750, method 2026
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

### 3. Pinning Information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

### 4. Maximum Ratings @Ta=25°C unless otherwise noted

Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000μs waveform <sup>(1)</sup>	P <sub>PP</sub>	600	W
Peak pulse current with a 10/1000μs waveform <sup>(1)</sup>	I <sub>PP</sub>	See Next Table	A
Power dissipation on infinite heatsink at T <sub>L</sub> = 75 °C	P <sub>D</sub>	5.0	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup>	I <sub>FSM</sub>	100	A
Maximum instantaneous forward voltage at 25 A for unidirectional only <sup>(3)</sup>	V <sub>F</sub>	3.5/5.0	V
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to +150	°C

(1)Non-repetitive current pulse per Fig.5 and derated above TA= 25 °C per Fig.1

(2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(3)V<sub>F</sub><3.5V for devices of VBR<200V and V<sub>F</sub><5.0V for devices of VBR>201V

## 5. Electrical characteristics

Part Number		Device Marking Code		Breakdown Voltage $V_{BR}$ @ $I_T$			Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}$ (A)	Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V)
Uni	Bi	Uni	Bi	Min (V)	Max (V)	$I_T$ (mA)				
SMBJ11A-AM	SMBJ11CA-AM	KZA	AZA	12.2	13.5	1	1	11.0	32.97	18.2
SMBJ12A-AM	SMBJ12CA-AM	LEA	BEA	13.3	14.7	1	1	12.0	30.15	19.9
SMBJ13A-AM	SMBJ13CA-AM	LGA	BGA	14.4	15.9	1	1	13.0	27.91	21.5
SMBJ14A-AM	SMBJ14CA-AM	LKA	BKA	15.6	17.2	1	1	14.0	25.86	23.2
SMBJ15A-AM	SMBJ15CA-AM	LMA	BMA	16.7	18.5	1	1	15.0	24.59	24.4
SMBJ16A-AM	SMBJ16CA-AM	LPA	BPA	17.8	19.7	1	1	16.0	23.08	26.0
SMBJ17A-AM	SMBJ17CA-AM	LRA	BRA	18.9	20.9	1	1	17.0	21.74	27.6
SMBJ18A-AM	SMBJ18CA-AM	LTA	BT A	20.0	22.1	1	1	18.0	20.55	29.2
SMBJ19A-AM	SMBJ19CA-AM	LBA	BBA	21.1	23.3	1	1	19.0	19.49	30.8
SMBJ20A-AM	SMBJ20CA-AM	LVA	BVA	22.2	24.5	1	1	20.0	18.52	32.4
SMBJ22A-AM	SMBJ22CA-AM	LXA	BXA	24.4	26.9	1	1	22.0	16.90	35.5
SMBJ24A-AM	SMBJ24CA-AM	LZA	BZA	26.7	29.5	1	1	24.0	15.42	38.9
SMBJ26A-AM	SMBJ26CA-AM	MEA	CEA	28.9	31.9	1	1	26.0	14.25	42.1
SMBJ28A-AM	SMBJ28CA-AM	MGA	CGA	31.1	34.4	1	1	28.0	13.22	45.4
SMBJ30A-AM	SMBJ30CA-AM	MKA	CKA	33.3	36.8	1	1	30.0	12.40	48.4
SMBJ33A-AM	SMBJ33CA-AM	MMA	CMA	36.7	40.6	1	1	33.0	11.26	53.3
SMBJ36A-AM	SMBJ36CA-AM	MPA	CPA	40.0	44.2	1	1	36.0	10.33	58.1
SMBJ40A-AM	SMBJ40CA-AM	MRA	CRA	44.4	49.1	1	1	40.0	9.30	64.5
SMBJ43A-AM	SMBJ43CA-AM	MTA	CTA	47.8	52.8	1	1	43.0	8.65	69.4
SMBJ45A-AM	SMBJ45CA-AM	MVA	CVA	50.0	55.3	1	1	45.0	8.25	72.7
SMBJ48A-AM	SMBJ48CA-AM	MXA	CXA	53.3	58.9	1	1	48.0	7.75	77.4
SMBJ51A-AM	SMBJ51CA-AM	MZA	CZA	56.7	62.7	1	1	51.0	7.28	82.4
SMBJ54A-AM	SMBJ54CA-AM	NEA	DEA	60.0	66.3	1	1	54.0	6.89	87.1
SMBJ58A-AM	SMBJ58CA-AM	NGA	DGA	64.4	71.2	1	1	58.0	6.41	93.6
SMBJ60A-AM	SMBJ60CA-AM	NKA	DKA	66.7	73.7	1	1	60.0	6.20	96.8
SMBJ64A-AM	SMBJ64CA-AM	NMA	DMA	71.1	78.6	1	1	64.0	5.83	103.0
SMBJ70A-AM	SMBJ70CA-AM	NPA	DPA	77.8	86.0	1	1	70.0	5.31	113.0
SMBJ75A-AM	SMBJ75CA-AM	NRA	DRA	83.3	92.1	1	1	75.0	4.96	121.0
SMBJ78A-AM	SMBJ78CA-AM	NTA	DTA	86.7	95.8	1	1	78.0	4.76	126.0

Part Number		Device Marking Code		Breakdown Voltage $V_{BR}$ @ $I_T$			Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}$ (A)	Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V)
Uni	Bi	Uni	Bi	Min (V)	Max (V)	$I_T$ (mA)				
SMBJ85A-AM	SMBJ85CA-AM	NVA	DVA	94.4	104.0	1	1	85.0	4.38	137.0
SMBJ90A-AM	SMBJ90CA-AM	NXA	DXA	100.0	111.0	1	1	90.0	4.11	146.0
SMBJ100A-AM	SMBJ100CA-AM	NZA	DZA	111.0	123.0	1	1	100.0	3.70	162.0
SMBJ110A-AM	SMBJ110CA-AM	PEA	EEA	122.0	135.0	1	1	110.0	3.39	177.0
SMBJ120A-AM	SMBJ120CA-AM	PGA	EGA	133.0	147.0	1	1	120.0	3.11	193.0
SMBJ130A-AM	SMBJ130CA-AM	PKA	EKA	144.0	159.0	1	1	130.0	2.87	209.0
SMBJ140A-AM	SMBJ140CA-AM	PBA	EBA	155.0	171.0	1	1	140.0	2.65	226.8
SMBJ150A-AM	SMBJ150CA-AM	PMA	EMA	167.0	185.0	1	1	150.0	2.47	243.0
SMBJ160A-AM	SMBJ160CA-AM	PPA	EPA	178.0	197.0	1	1	160.0	2.32	259.0
SMBJ170A-AM	SMBJ170CA-AM	PRA	ERA	189.0	209.0	1	1	170.0	2.18	275.0

## 6. Typical Characteristics

Fig. 1 - Pulse Derating Curve

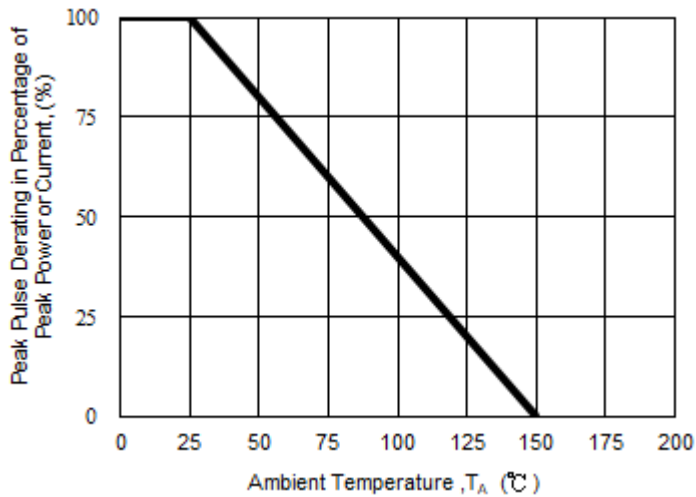


Fig. 2 - Maximum Non-Repetitive Surge Current

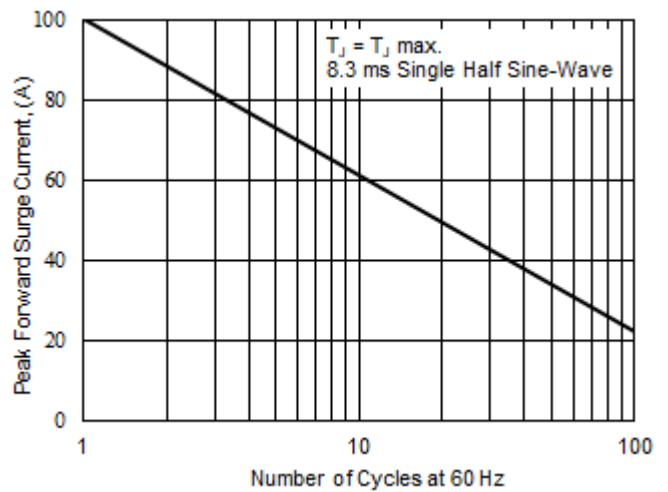


Fig. 3 - Steady State Power Derating Curve

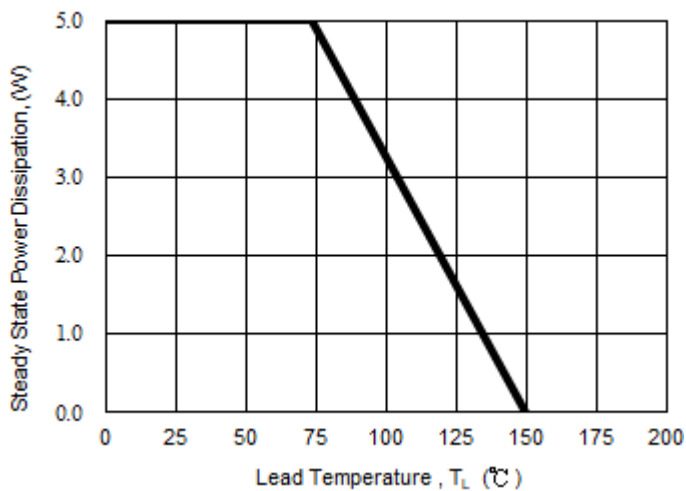


Fig. 4 - Peak Pulse Power Rating Curve

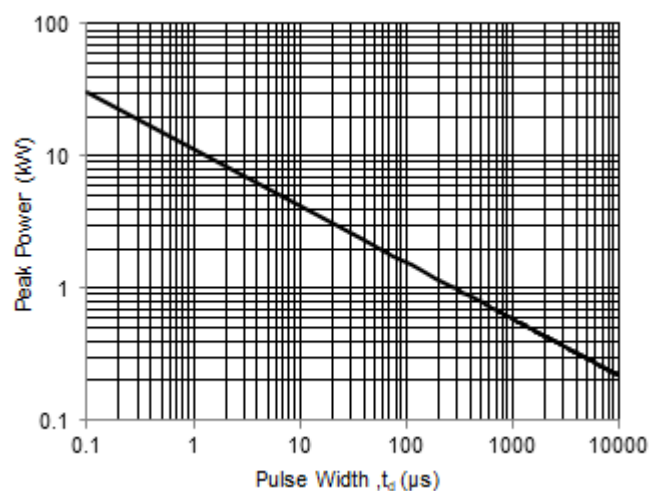


Fig. 5 - Pulse Waveform

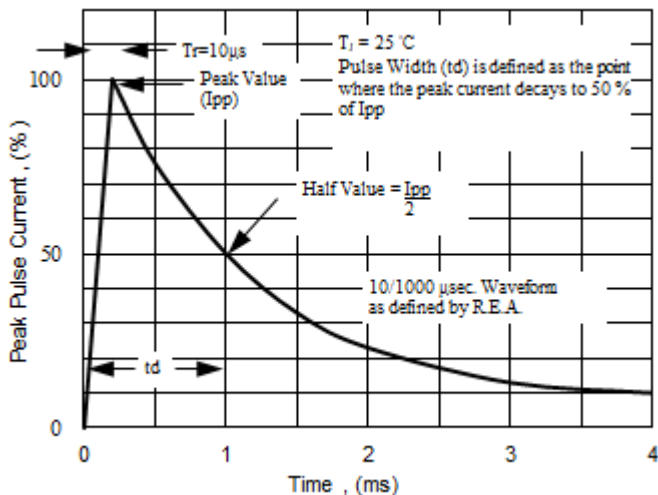
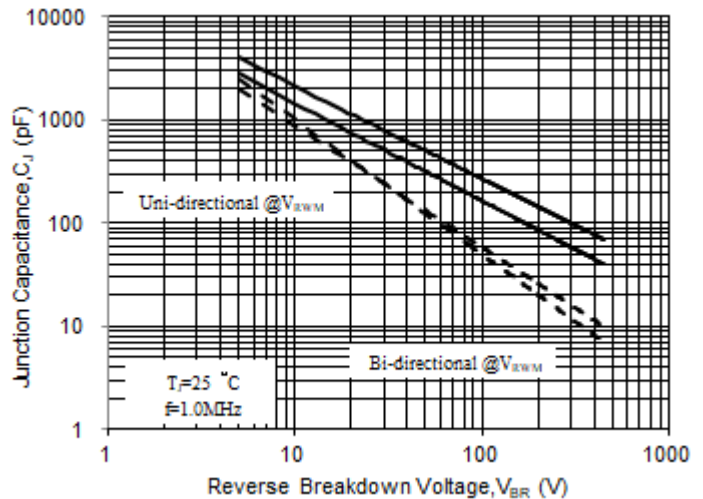
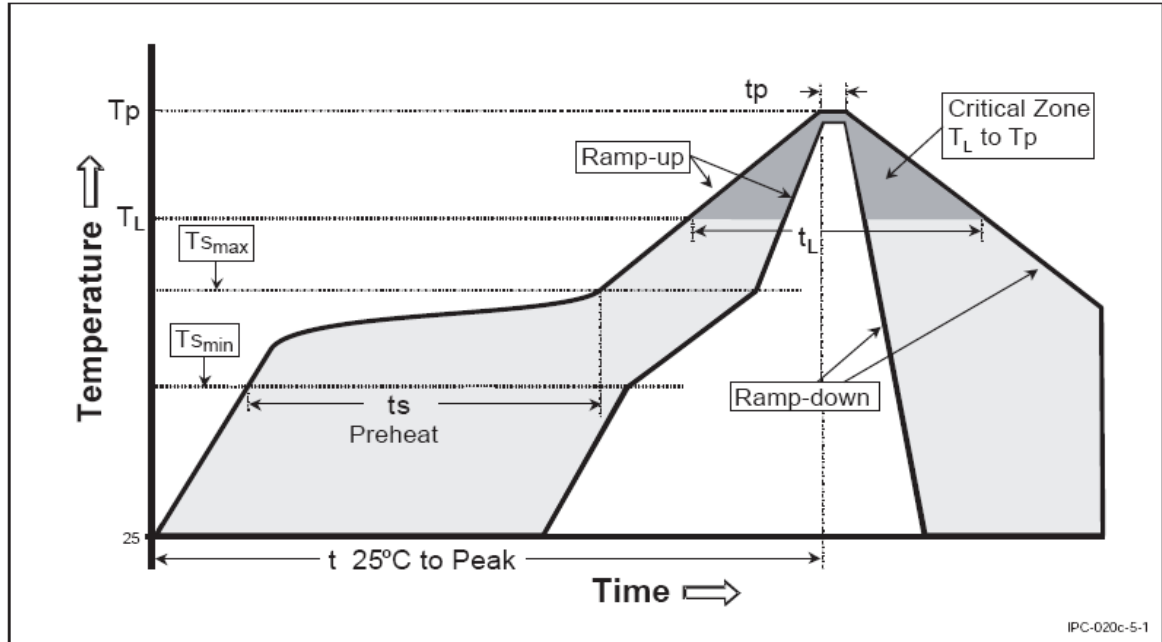


Fig. 6 - Typical Junction Capacitance



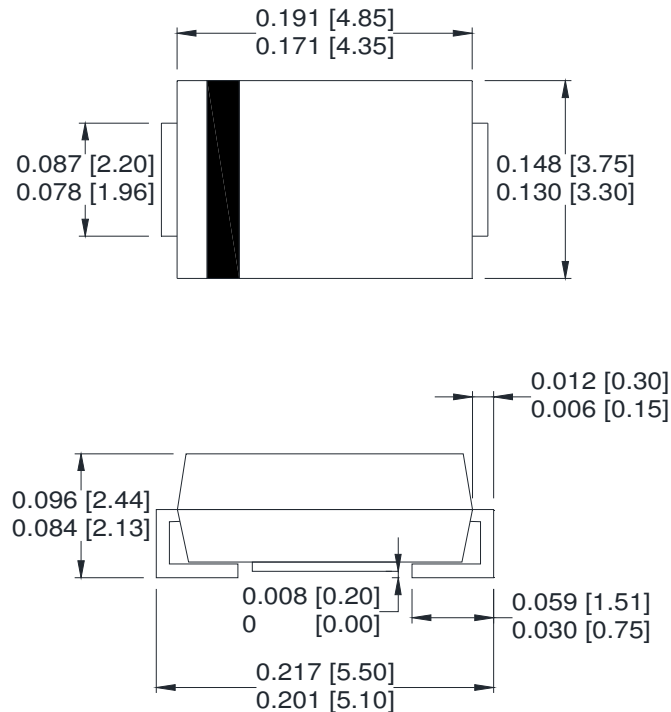
## 7. Reflow Soldering

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3° C/second max.
Preheat <ul style="list-style-type: none"> <li>– Temperature Min (T<sub>smin</sub>)</li> <li>– Temperature Max (T<sub>smax</sub>)</li> <li>– Time (t<sub>smin</sub> to t<sub>smax</sub>)</li> </ul>	150 °C 200 °C 60-120 seconds
Time maintained above: <ul style="list-style-type: none"> <li>– Temperature (T<sub>L</sub>)</li> <li>– Time (t<sub>L</sub>)</li> </ul>	217 °C 60-150 seconds
Peak/Classification Temperature (T <sub>p</sub> )	260 °C
Time within 5 °C of actual Peak Temperature (t <sub>p</sub> )	30 seconds
Ramp-Down Rate	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.



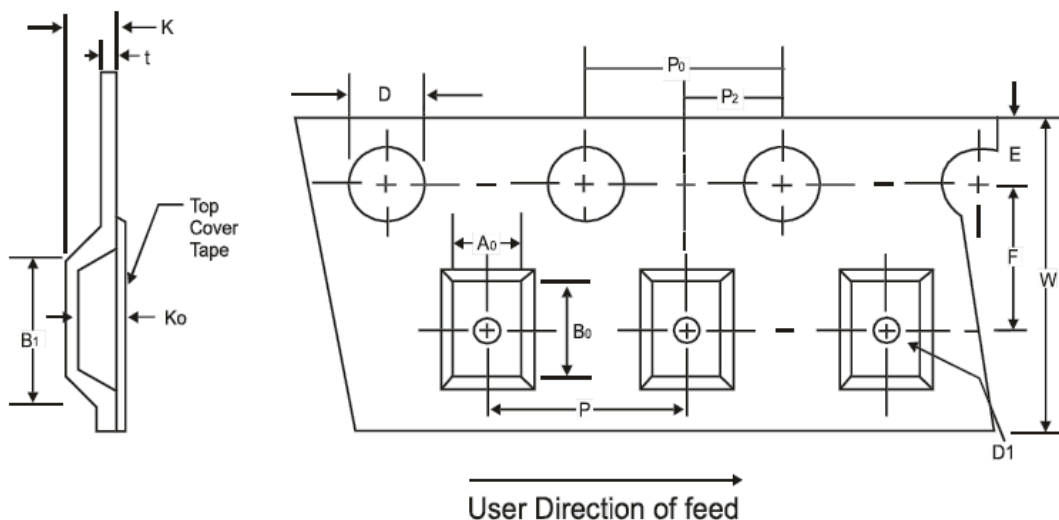
## 8. Outline Dimensions

SMB / DO-214AA

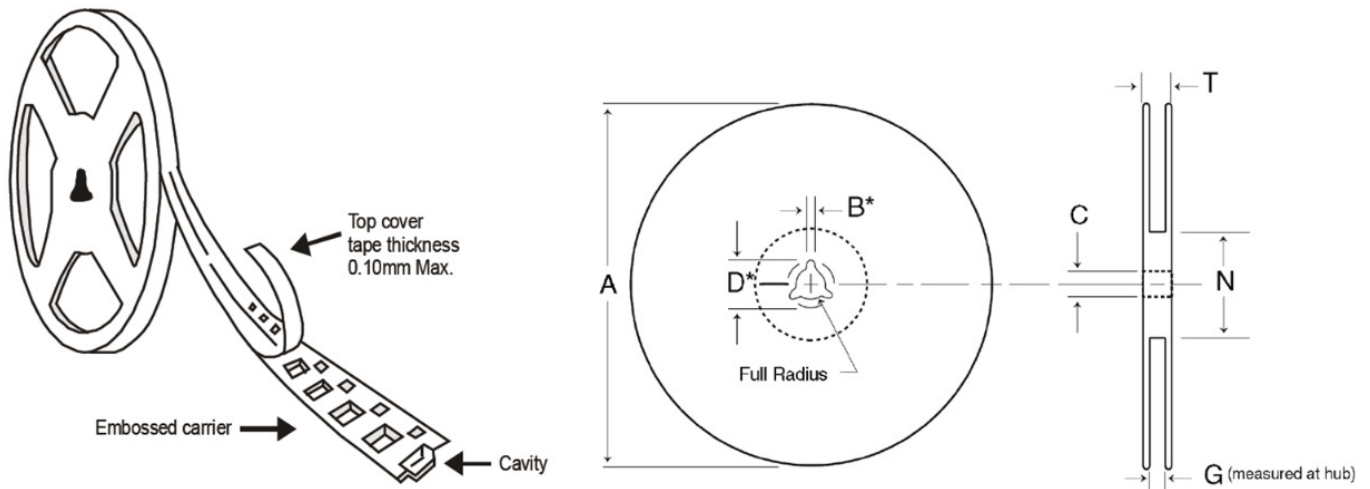


Dimensions: inch[mm]

## 9. Tape & Reel Information

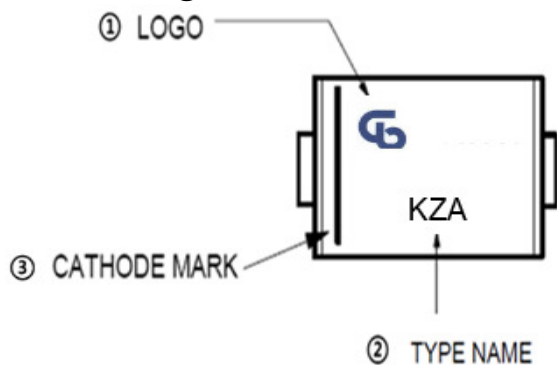


Symbol	W	D	E	P0	t	B1	D1	F	K	P2	P
DO-214AA	12.0±0.1	1.55±0.05	1.75±0.05	4.0±0.1	0.4	8.2	1.5	5.5±0.05	6.5	2.0±0.05	8.0±0.1
Unit : mm					max	max	min		max		



Symbol	Tape Size	A	B	C	D	N	G	T
DO-214AA Unit : mm	12	330±2.0 (13inch)	1.5 max	13±0.5	20.2 max	50 min	14.4 max	18.4 max

## 10. Marking Code



1. INPAQ LOGO
2. TYPE NAME (By Device Marking Code)
3. CATHODE MARK (For Uni-direction Products Only)

## 11. Order Information

Part Number	Quantity	Packaging Option
SMBJ-AM Series	3000 /reel	tape/13"reel

## 12. MSL Level

LEVEL 1