

# APPROVAL SHEET

Customer : \_\_\_\_\_

Customer Part Number : P4SMAJ-AU\_SERIES

PanJit Part Number : P4SMAJ-AU\_SERIES

Issue Date : 1/8/2021

Approver Signature :

APPROVED BY : Way Su \_\_\_\_\_

PREPARED BY : Ivy Deng \_\_\_\_\_



**PANJIT International Inc.**

TEL : 886-7-6213121 FAX : 886-7-6213129

No.24, Gang Shan North Rd., Gang Shan Dist.,

Kaohsiung City 82063, Taiwan



**TABLE OF CONTENTS**

1.DATA SHEET

PAGE 1

2.MARKING

PAGE 7

3.TAPING

PAGE 8-9

4.PACKING

PAGE 10

5.HIGH RELIABILITY TEST SPEC.

PAGE 15



# P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**Voltage** 5~70 V **Power** 400 W

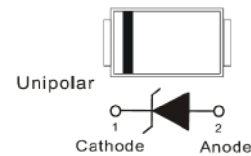
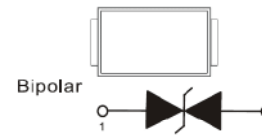
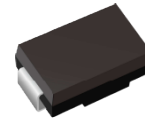
### Features

- ISO10605(C=330 pF,R=330Ω): ± 30kV Air, ± 30kV Contact
- HBM ≥ ± 8 kV & CDM ≥ ± 2 kV
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: Molded plastic, SMA
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0024 ounces, 0.068 grams

SMA



### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
Peak Pulse Power Dissipation(tp=10/1000us)	P <sub>PP</sub> <sup>(1)(2)</sup>	400	W
Power Dissipation on Infinite Heat Sink at T <sub>L</sub> =50°C	P <sub>D</sub>	3.3	W
Peak Forward Surge Current(8.3ms single half sine-wave)	I <sub>FSM</sub>	40	A
Peak Pulse Current on tp=10/1000us waveform <sup>(Fig.2)</sup>	I <sub>PPM</sub> <sup>(1)</sup>	See table 1	A
ISO10605(C=330pF, R=330Ω) (Air)	V <sub>ESD</sub>	±30	kV
ISO10605(C=330pF, R=330Ω) (Contact)		±30	
Typical Thermal Resistance Junction to Ambient	R <sub>θJA</sub> <sup>(3)</sup>	70	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	-55~150	°C
Storage Temperature Range	T <sub>STG</sub>	-55~150	°C



## P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series

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

Part Number		V <sub>RWM</sub>	V <sub>BR</sub>			I <sub>R</sub>		V <sub>C@I<sub>PP</sub></sub>		Marking Code	
			Min.	Max.	I <sub>T</sub>	@V <sub>RWM</sub>	uA				
UNI	BI	V	V	V	mA	UNI	BI	V	A	UNI	BI
400W Transient Voltage Suppressor											
P4SMAJ5.0A-AU	P4SMAJ5.0CA-AU	5	6.4	7	10	800	1600	9.2	43.5	HE	TE
P4SMAJ6.0A-AU	P4SMAJ6.0CA-AU	6	6.67	7.37	10	800	1600	10.3	38.8	HG	TG
P4SMAJ6.5A-AU	P4SMAJ6.5CA-AU	6.5	7.22	7.98	10	500	1000	11.2	35.7	HK	TK
P4SMAJ7.0A-AU	P4SMAJ7.0CA-AU	7	7.78	8.6	10	200	400	12	33.3	HM	TM
P4SMAJ7.5A-AU	P4SMAJ7.5CA-AU	7.5	8.33	9.21	1	100	200	12.9	31	HP	TP
P4SMAJ8.0A-AU	P4SMAJ8.0CA-AU	8	8.89	9.83	1	50	100	13.6	29.4	HR	TR
P4SMAJ8.5A-AU	P4SMAJ8.5CA-AU	8.5	9.44	10.4	1	10	20	14.4	27.7	HT	TT
P4SMAJ9.0A-AU	P4SMAJ9.0CA-AU	9	10	11.1	1	5	5	15.4	26	HV	TV
P4SMAJ10A-AU	P4SMAJ10CA-AU	10	11.1	12.3	1	5	5	17	23.5	HX	TX
P4SMAJ11A-AU	P4SMAJ11CA-AU	11	12.2	13.5	1	1	1	18.2	22	HZ	TZ
P4SMAJ12A-AU	P4SMAJ12CA-AU	12	13.3	14.7	1	1	1	19.9	20.1	IE	UE
P4SMAJ13A-AU	P4SMAJ13CA-AU	13	14.4	15.9	1	1	1	21.5	18.6	IG	UG
P4SMAJ14A-AU	P4SMAJ14CA-AU	14	15.6	17.2	1	1	1	23.2	17.2	IK	UK
P4SMAJ15A-AU	P4SMAJ15CA-AU	15	16.7	18.5	1	1	1	24.4	16.4	IM	UM
P4SMAJ16A-AU	P4SMAJ16CA-AU	16	17.8	19.7	1	1	1	26	15.3	IP	UP
P4SMAJ17A-AU	P4SMAJ17CA-AU	17	18.9	20.9	1	1	1	27.6	14.5	IR	UR
P4SMAJ18A-AU	P4SMAJ18CA-AU	18	20	22.1	1	1	1	29.2	13.7	IT	UT
P4SMAJ20A-AU	P4SMAJ20CA-AU	20	22.2	24.5	1	1	1	32.4	12.3	IV	UV
P4SMAJ22A-AU	P4SMAJ22CA-AU	22	24.4	26.9	1	1	1	35.5	11.2	IX	UX
P4SMAJ24A-AU	P4SMAJ24CA-AU	24	26.7	29.5	1	1	1	38.9	10.3	IZ	UZ
P4SMAJ26A-AU	P4SMAJ26CA-AU	26	28.9	31.9	1	1	1	42.1	9.5	JE	VE
P4SMAJ28A-AU	P4SMAJ28CA-AU	28	31.1	34.4	1	1	1	45.4	8.8	JG	VG
P4SMAJ30A-AU	P4SMAJ30CA-AU	30	33.3	36.8	1	1	1	48.4	8.3	JK	VK
P4SMAJ33A-AU	P4SMAJ33CA-AU	33	36.7	40.6	1	1	1	53.3	7.5	JM	VM
P4SMAJ36A-AU	P4SMAJ36CA-AU	36	40	44.2	1	1	1	58.1	6.9	JP	VP
P4SMAJ40A-AU	P4SMAJ40CA-AU	40	44.4	49.1	1	1	1	64.5	6.2	JR	VR
P4SMAJ43A-AU	P4SMAJ43CA-AU	43	47.8	52.8	1	1	1	69.4	5.7	JT	VT
P4SMAJ45A-AU	P4SMAJ45CA-AU	45	50	55.3	1	1	1	72.7	5.5	JV	VV
P4SMAJ48A-AU	P4SMAJ48CA-AU	48	53.3	58.9	1	1	1	77.4	5.2	JX	VX
P4SMAJ51A-AU	P4SMAJ51CA-AU	51	56.7	62.7	1	1	1	82.4	4.9	JZ	VZ



## P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series

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

Part Number		V <sub>RWM</sub>	V <sub>BR</sub>			I <sub>R</sub>		V <sub>C@IPP</sub>		Marking Code	
			Min.	Max.	I <sub>T</sub>	@V <sub>RWM</sub>	uA				
UNI	BI	V	V	V	mA	UNI	BI	V	A	UNI	BI
400W Transient Voltage Suppressor											
P4SMAJ54A-AU	P4SMAJ54CA-AU	54	60	66.3	1	1	1	87.1	4.6	RE	WE
P4SMAJ58A-AU	P4SMAJ58CA-AU	58	64.4	71.2	1	1	1	93.6	4.3	RG	WG
P4SMAJ60A-AU	P4SMAJ60CA-AU	60	66.7	73.7	1	1	1	96.8	4.1	RK	WK
P4SMAJ64A-AU	P4SMAJ64CA-AU	64	71.1	78.6	1	1	1	103	3.9	RM	WM
P4SMAJ70A-AU	P4SMAJ70CA-AU	70	77.8	86	1	1	1	113	3.5	RP	WP

Note:

1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>=25°C per Fig.2
2. Mounted on 5mm<sup>2</sup> copper pads to each terminal
3. Mounted on a FR4 PCB, single-sided copper, mini pad



# P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series

## TYPICAL CHARACTERISTIC CURVES

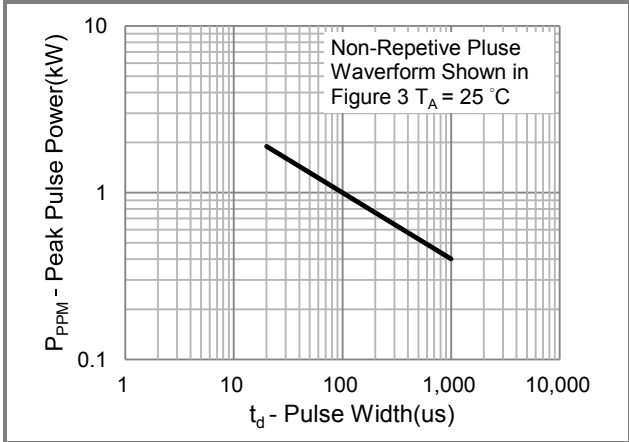


Fig.1 Pulse Power Rating Curve

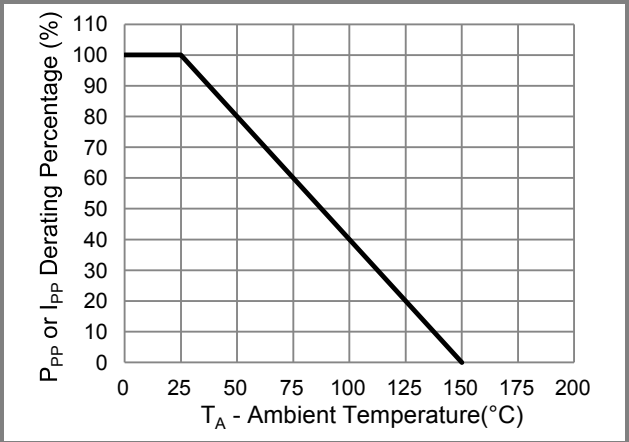


Fig.2 Derating Curve

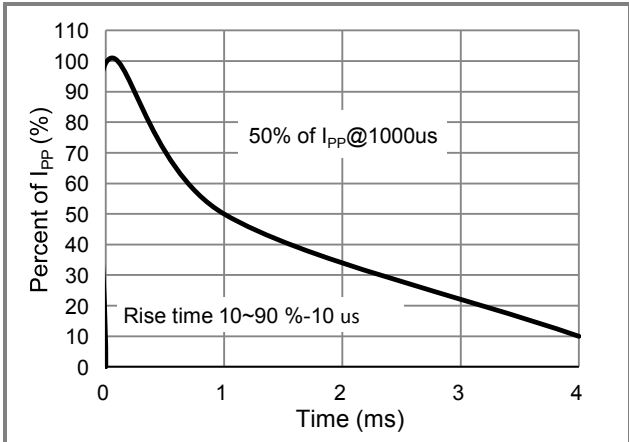


Fig.3 10/1000us Pulse Waveform

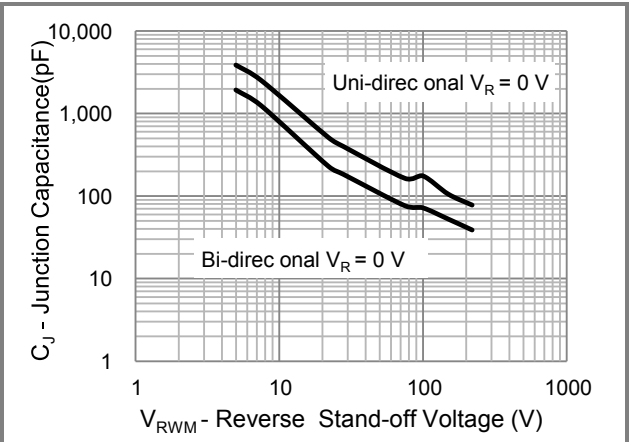


Fig.4 Typical Capacitance

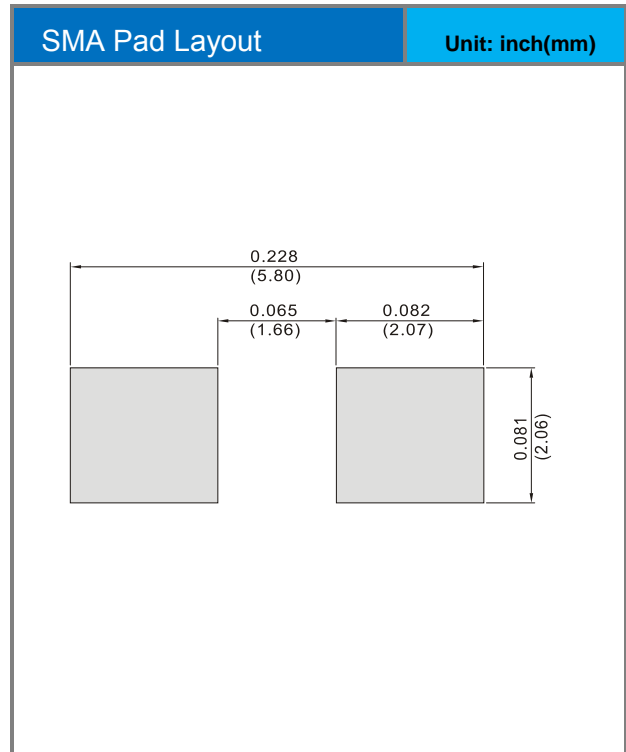
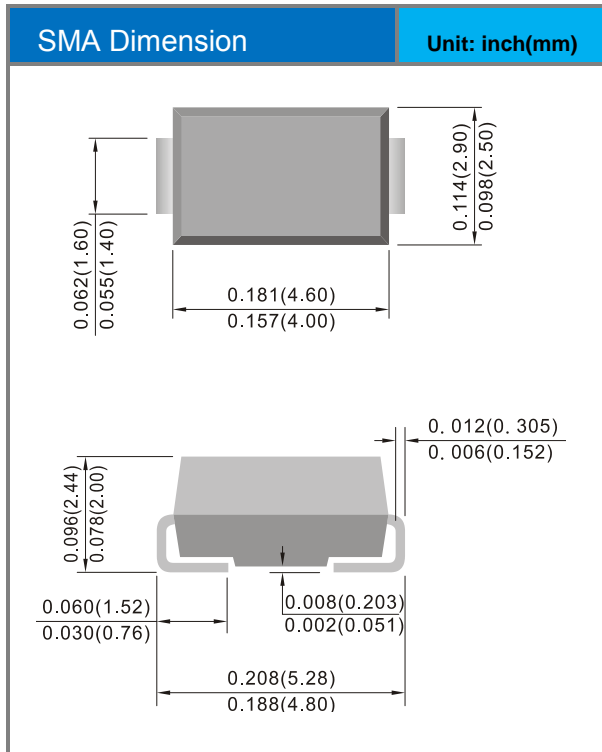


## P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series

### Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
P4SMAJxxxx-AU_R2_000A1	SMA	7.5K pcs / 13" reel	See Table	Halogen free

### Packaging Information & Mounting Pad Layout





## **P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series**

### **Disclaimer**

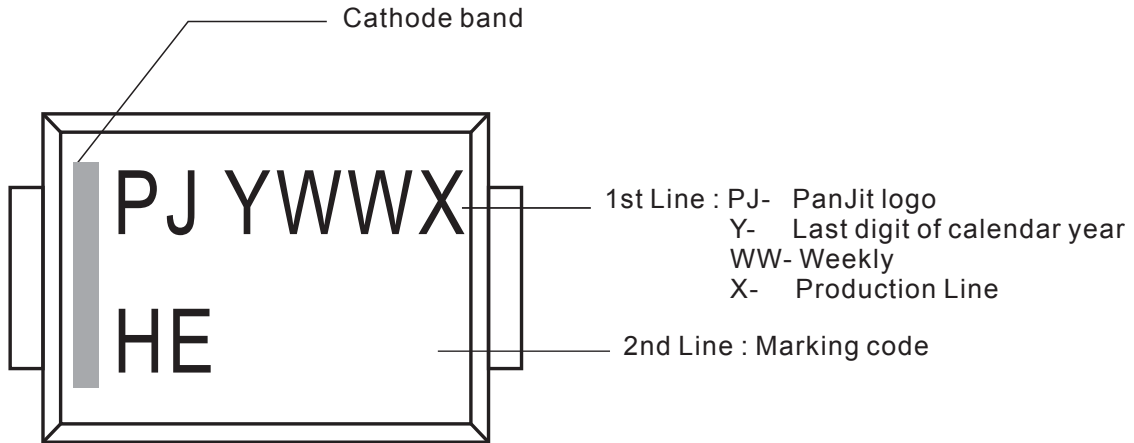
- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.



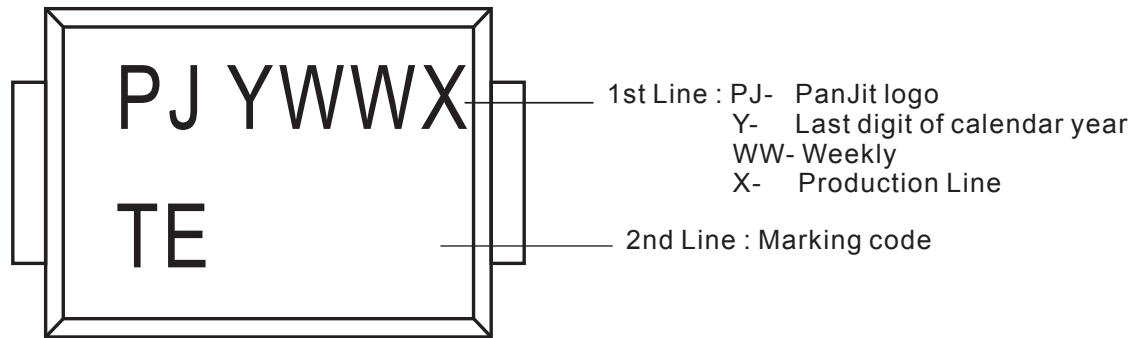


## 2. MARKING

Unipolar

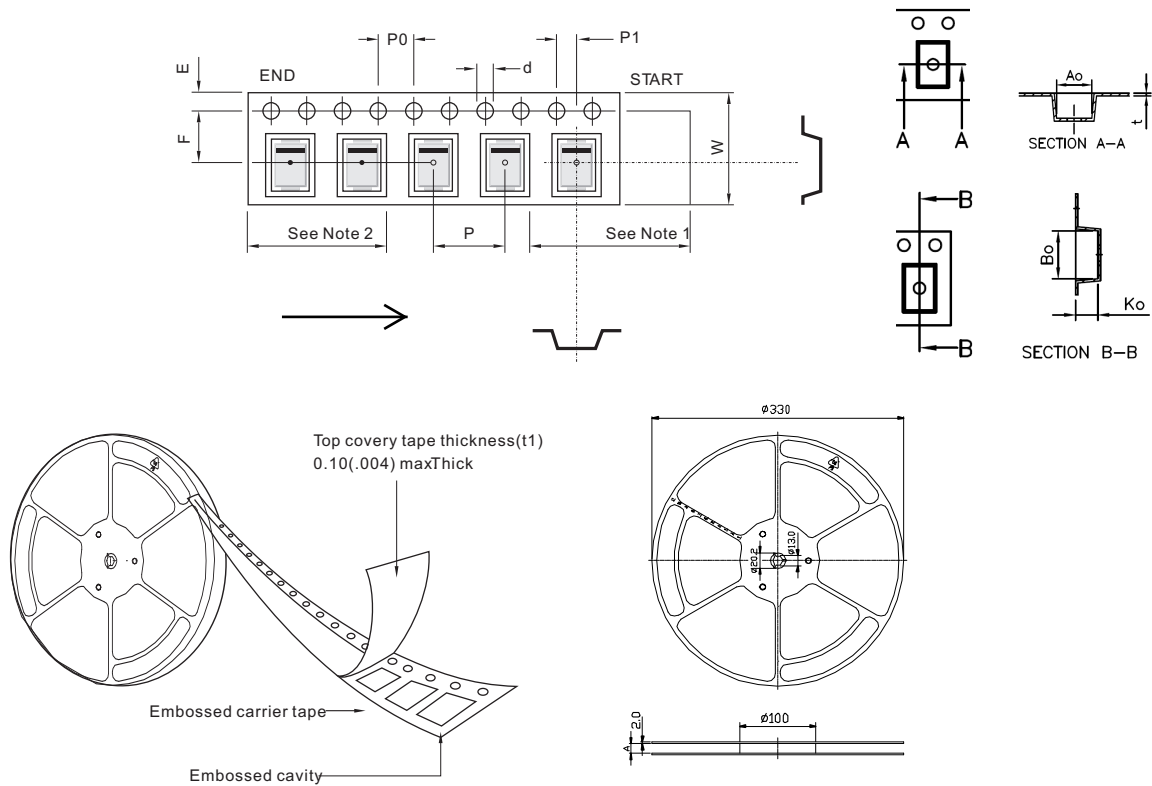


Bipolar





### 3. UNIPOLAR TAPING



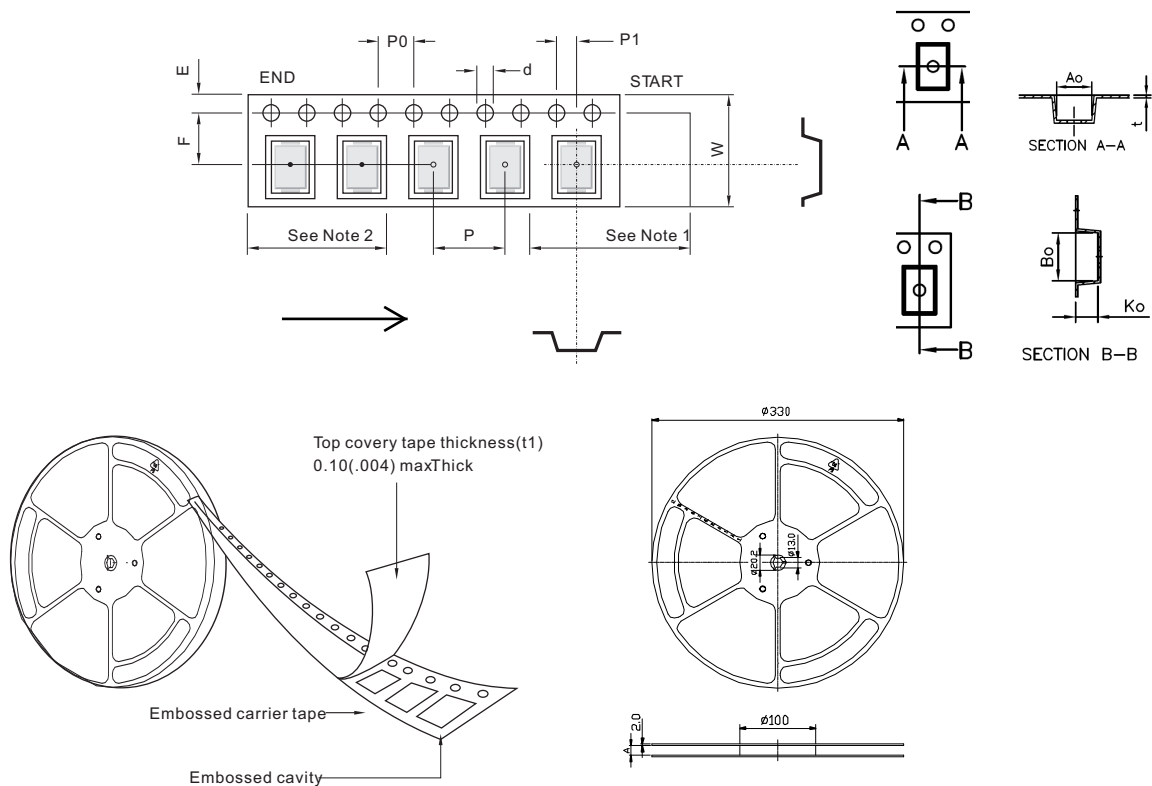
SYMBOL	mm(inch)	SYMBOL	mm(inch)	SYMBOL	mm(inch)
TYPE SIZE	12.00 (0.472)	TYPE SIZE	12.00 (0.472)	TYPE SIZE	16.00 (0.630)
Package	SMA/SMA(W)	Package	SMB	Package	SMC
d	1.55 ± 0.05 (0.06 ± 0.002)	d	1.55 ± 0.05 (0.06 ± 0.002)	d	1.50 ± 0.10 (0.06 ± 0.004)
E	1.75 ± 0.10 (0.069 ± 0.004)	E	1.75 ± 0.10 (0.069 ± 0.004)	E	1.75 ± 0.10 (0.069 ± 0.004)
F	5.50 ± 0.10 (0.217 ± 0.004)	F	5.50 ± 0.05 (0.217 ± 0.002)	F	7.50 ± 0.10 (0.290 ± 0.004)
P	4.00 ± 0.10 (0.158 ± 0.004)	P	8.00 ± 0.10 (0.315 ± 0.004)	P	8.00 ± 0.10 (0.315 ± 0.004)
Po	4.00 ± 0.10 (0.158 ± 0.004)	Po	4.00 ± 0.10 (0.158 ± 0.004)	Po	4.00 ± 0.10 (0.158 ± 0.004)
P1	2.00 ± 0.10 (0.079 ± 0.004)	P1	2.00 ± 0.05 (0.079 ± 0.002)	P1	2.00 ± 0.10 (0.079 ± 0.004)
P1	2.00 ± 0.05 (0.079 ± 0.002)	W	12.0 ± 0.30 (0.472 ± 0.012)	W	16+0.3/-0.1 (0.63+0.012/-0.004)
W	12.0 ± 0.30 (0.472 ± 0.012)	Ao	3.81 ± 0.10 (0.150 ± 0.004)	Ao	6.07 ± 0.10 (0.240 ± 0.004)
W	12.0 ± 0.10 (0.472 ± 0.004)	t	0.29 ± 0.02 (0.011 ± 0.001)	t	0.32 ± 0.02 (0.013 ± 0.001)
Ao	2.72 ± 0.10 (0.107 ± 0.004)	Bo	5.74 ± 0.10 (0.226 ± 0.004)	Bo	8.31 ± 0.10 (0.327 ± 0.004)
Ao	2.85 ± 0.10 (0.112 ± 0.004)	Ko	2.41 ± 0.10 (0.100 ± 0.004)	Ko	2.34 ± 0.10 (0.092 ± 0.004)
t	0.29 ± 0.02 (0.011 ± 0.001)	A	12.4+2/-0 (0.488+0.079/-0)	A	12.4+2/-0 (0.488+0.079/-0)
t	0.25 ± 0.05 (0.010 ± 0.002)	A	16.4+2/-0 (0.646+0.079/-0)	A	16.4+2/-0 (0.646+0.079/-0)
t	0.23 ± 0.02 (0.010 ± 0.001)				
Bo	5.32 ± 0.10 (0.209 ± 0.004)				
Bo	5.40 ± 0.10 (0.213 ± 0.004)				
Ko	2.45 ± 0.10 (0.100 ± 0.004)				
A	12.4+2/-0 (0.488+0.079/-0)				
A	16.4+2/-0 (0.646+0.079/-0)				

**Note:**

1. There shall be a leader of 400 mm minimum of cover tape and carrier tape with empty compartments.
2. There shall be a trailer of 160 mm minimum of cover tape and carrier tape with empty compartments.
3. Devices are packed in accordance with EIA standard EIA-481 and specifications given above.



### 3. BIPOLAR TAPING



SYMBOL	mm(inch)	SYMBOL	mm(inch)	SYMBOL	mm(inch)
TYPE SIZE	12.00 (0.472)	TYPE SIZE	12.00 (0.472)	TYPE SIZE	16.00 (0.630)
Package	SMA/SMA(W)	Package	SMB	Package	SMC
d	1.55 ± 0.05 (0.06 ± 0.002)	d	1.55 ± 0.05 (0.06 ± 0.002)	d	1.50 ± 0.10 (0.06 ± 0.004)
E	1.75 ± 0.10 (0.069 ± 0.004)	E	1.75 ± 0.10 (0.069 ± 0.004)	E	1.75 ± 0.10 (0.069 ± 0.004)
F	5.50 ± 0.10 (0.217 ± 0.004)	F	5.50 ± 0.05 (0.217 ± 0.002)	F	7.50 ± 0.10 (0.290 ± 0.004)
P	4.00 ± 0.10 (0.158 ± 0.004)	P	8.00 ± 0.10 (0.315 ± 0.004)	P	8.00 ± 0.10 (0.315 ± 0.004)
Po	4.00 ± 0.10 (0.158 ± 0.004)	Po	4.00 ± 0.10 (0.158 ± 0.004)	Po	4.00 ± 0.10 (0.158 ± 0.004)
P1	2.00 ± 0.10 (0.079 ± 0.004)	P1	2.00 ± 0.05 (0.079 ± 0.002)	P1	2.00 ± 0.10 (0.079 ± 0.004)
P1	2.00 ± 0.05 (0.079 ± 0.002)	W	12.0 ± 0.30 (0.472 ± 0.012)	W	16+0.3/-0.1 (0.63+0.012/-0.004)
W	12.0 ± 0.30 (0.472 ± 0.012)	Ao	3.81 ± 0.10 (0.150 ± 0.004)	Ao	6.07 ± 0.10 (0.240 ± 0.004)
W	12.0 ± 0.10 (0.472 ± 0.004)	t	0.29 ± 0.02 (0.011 ± 0.001)	t	0.32 ± 0.02 (0.013 ± 0.001)
Ao	2.72 ± 0.10 (0.107 ± 0.004)	Bo	5.74 ± 0.10 (0.226 ± 0.004)	Bo	8.31 ± 0.10 (0.327 ± 0.004)
Ao	2.85 ± 0.10 (0.112 ± 0.004)	Ko	2.41 ± 0.10 (0.100 ± 0.004)	Ko	2.34 ± 0.10 (0.092 ± 0.004)
t	0.29 ± 0.02 (0.011 ± 0.001)	A	12.4+2/-0 (0.488+0.079/-0)	A	12.4+2/-0 (0.488+0.079/-0)
t	0.25 ± 0.05 (0.010 ± 0.002)	A	16.4+2/-0 (0.646+0.079/-0)	A	16.4+2/-0 (0.646+0.079/-0)
t	0.23 ± 0.02 (0.010 ± 0.001)				
Bo	5.32 ± 0.10 (0.209 ± 0.004)				
Bo	5.40 ± 0.10 (0.213 ± 0.004)				
Ko	2.45 ± 0.10 (0.100 ± 0.004)				
A	12.4+2/-0 (0.488+0.079/-0)				
A	16.4+2/-0 (0.646+0.079/-0)				

**Note:**

1. There shall be a leader of 400 mm minimum of cover tape and carrier tape with empty compartments.
2. There shall be a trailer of 160 mm minimum of cover tape and carrier tape with empty compartments.
3. Devices are packed in accordance with EIA standard EIA-481 and specifications given above.



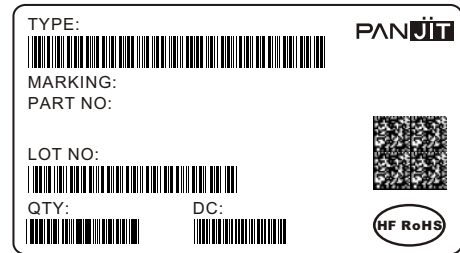
# 4. PACKING

## REEL PACKING

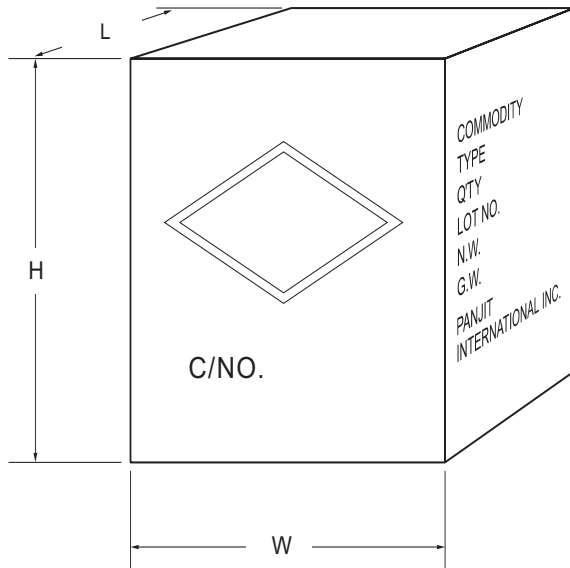


Quantity per Reel:

### LABEL TYPE

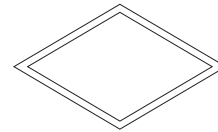


## CARTON



Box Dimensions : mm  
Quantity per Box:

### SHIPPING MARK



C/NO.  
PRODUCT COUNTRY

### SIDE MARK

COMMODITY:  
TYPE:  
Q'TY:  
LOT NO.  
N.W.  
G.W.  
PANJIT  
INTERNATIONAL INC.

Line	Package	Packing	Size	Quantity	Inner box size LxWxH (m/m)	Carton Quantity	Carton size LxWxH (m/m)
SMD	SMA	T/R	7"	1,800	188x188x67	10box/72K	390x220x370
	SMB	T/R		800	188x188x67	10box/32K	390x220x370
	SMC	T/R		800	188x188x67	10box/24K	390x220x370
	SMA(W)	T/R	13"	1,800	188x188x67	8box/100.8K	390x240x420
	SMA	T/R		7,500	350x337x44	8box/120K	375x360x390
	SMB	T/R		3,000	350x337x44	8box/48K	375x360x390
	SMC	T/R		3,000	350x337x44	7box/42K	375x360x390
	SMA(W)	T/R		7,500	350x337x44	10box/150K	355x355x400



**Packing Specifications**

Package	Reel Size	Reel	Carton	Carton Size	Approx. Gross Weight
	(inch)	(pcs)	(EA)	(mm)	(kg)
Reel Packing					
DFN0603	7	10,000	800,000	390 x 270 x 400	9.0
DFN0603-2L	7	10,000	800,000	390 x 270 x 400	9.0
DFN 2L	7	8,000	640,000	390 x 270 x 400	8.6
DFN 3L	7	8,000	640,000	390 x 270 x 400	8.6
DFN1006-2L	7	10,000	800,000	390 x 270 x 400	5.0
DFN1006-3L	7	10,000	800,000	390 x 270 x 400	5.0
DFN1010-6L	7	5,000	400,000	455 x 270 x 440	8.8
DFN1608-2L	7	3,000	240,000	390 x 270 x 400	9.7
DFN1610-2L	7	3,000	240,000	390 x 270 x 400	9.7
DFN2020-6L	7	3,000	240,000	455 x 270 x 440	12.3
DFN2020B-6L	7	3,000	240,000	455 x 270 x 440	12.3
DFN2020-8L	7	3,000	240,000	455 x 270 x 440	11.2
DFN2510-10L	7	5,000	400,000	390 x 270 x 400	10.5
	13	12,000	144,000	375 x 360 x 213	6.4
DFN3030B-8L	7	3,000	240,000	455 x 270 x 440	10.5
DFN3333-8L	13	5,000	80,000	375 x 360 x 422	10.5
DFN3333B-8L	13	5,000	80,000	375 x 360 x 422	10.5
DFN3810-9L	7	3,000	120,000	390 x 240 x 420	4.4
DFN5060-8L	13	3,000	48,000	375 x 360 x 422	14.19
DFN5060B-8L	13	3,000	48,000	375 x 360 x 422	14.19
DFN5515-14L	7	3,000	240,000	390 x 270 x 400	12.9
SOP-8	13	2,500	40,000	375 x 360 x 422	7.4
SOD-923	7	8,000	640,000	390 x 270 x 400	7.7
SOD-523	7	5,000	400,000	390 x 270 x 400	9.1
	13	12,000	144,000	375 x 360 x 230	5.4
SOD-323HE	7	5,000	400,000	390 x 270 x 400	11.9
	13	12,000	144,000	375 x 360 x 230	8.3
SOD-323	7	5,000	400,000	390 x 270 x 400	9.4
	13	12,000	144,000	375 x 360 x 230	5.9
SOD-123HE	7	3,000	240,000	390 x 270 x 400	12.4
	13	10,000	120,000	375 x 360 x 230	8.1
SOD-123FL	7	3,000	240,000	390 x 270 x 400	10.6
	13	10,000	120,000	375 x 360 x 230	7.2
SOD-123	7	3,000	240,000	390 x 270 x 400	9.9
	13	10,000	120,000	375 x 360 x 230	6.5
SOT-143	7	3,000	240,000	390 x 270 x 400	9.0
SOT-723	7	8,000	640,000	455 x 270 x 440	10.5
SOT-563	7	4,000	320,000	390 x 270 x 400	10
	13	10,000	120,000	375 x 360 x 230	5.2
SOT-553	7	4,000	320,000	390 x 270 x 400	9.4
	13	10,000	120,000	375 x 360 x 230	5.2
SOT-523	7	4,000	320,000	390 x 270 x 400	10
SOT-363	7	3,000	240,000	390 x 270 x 400	9.3
	13	10,000	120,000	375 x 360 x 230	7.1
SOT-353	7	3,000	240,000	390 x 270 x 400	10
	13	10,000	120,000	375 x 360 x 230	7.2
SOT-323	7	3,000	240,000	390 x 270 x 400	7.9
	13	12,000	144,000	375 x 360 x 230	6.1
SOT-23 6L	7	3,000	240,000	390 x 270 x 400	14.5
	13	10,000	120,000	375 x 360 x 230	7.9
SOT-23 6L-1	7	3,000	240,000	390 x 270 x 400	14.9
	13	10,000	120,000	375 x 360 x 230	8.1
SOT-23 5L	7	3,000	240,000	390 x 270 x 400	14.5
	13	10,000	120,000	375 x 360 x 230	7.9
SOT-23	7	3,000	240,000	390 x 270 x 400	9.8
	13	12,000	144,000	375 x 360 x 230	7
SOT-223	13	2,500	40,000	375 x 360 x 422	14.96
SOT-89 (ESD)	7	1,000	80,000	455 x 270 x 440	15.64



**Packing Specifications**

Package	Reel Size	Reel	Carton	Carton Size	Approx. Gross Weight
	(inch)	(pcs)	(EA)	(mm)	(kg)
Reel Packing					
SMAF	7	3,000	120,000	390 x 240 x 420	10.9
	13	10,000	160,000	375 x 360 x 422	14.1
SMAF-C	7	3,000	120,000	390 x 240 x 420	10.9
	13	10,000	160,000	375 x 360 x 422	14.1
SMBF	7	1,500	60,000	390 x 240 x 420	9.6
	13	5,000	80,000	375 x 360 x 422	15.6
SMA(W)	7	1,800	100,800	390 x 240 x 420	13
	13	7,500	150,000	355 x 355 x 400	20.45
SMAS	7	2,300	128,800	390x 240x 420	11.5
	13	9,500	190,000	355x 355 x 400	16.1
SMA/DO-214AC	7	1,800	72,000	390 x 220 x 370	9.98
	13	7,500	120,000	375 x 360 x 390	17.35
SMB/DO-214AA	7	800	32,000	390 x 220 x 370	7.69
	13	3,000	48,000	375 x 360 x 390	13.23
SMC/DO-214AB	7	800	24,000	390 x 220 x 370	10.79
	13	3,000	42,000	375 x 360 x 390	17.98
SC-59 (ESD)	7	3,000	240,000	455 x 270 x 440	9.9
DO-41	13	5,000	25,000	340 x 340 x 410	11.04
DO-15	13	4,000	20,000	340 x 340 x 410	11.39
DO-201AD / DO-201AE	13	1,250	6,250	340 x 340 x 410	9.2
DO-218AC / DO-218AB	13	600	24,000	375 x 360 x 230	10.25
P-600	13	800	4,000	340 x 340 x 410	9.85
DO-34	15	10,000	50,000	365 x 370 x 410	10.1
DO-35	15	10,000	50,000	365 x 370 x 410	11.2
DO-41G	15	5,000	25,000	365 x 370 x 410	10.9
MICRO-MELF	7	2,500	200,000	390 x 270 x 400	9.3
	13	10,000	200,000	355 x 355 x 400	11.5
QUADRO-MELF	7	2,500	200,000	390 x 270 x 400	13.3
	13	10,000	200,000	355 x 355 x 400	14.9
MINI-MELF/LL-34	7	2,500	200,000	390 x 270 x 400	12.7
	13	10,000	200,000	355 x 355 x 400	14.6
MELF/DL-41	7	1,500	84,000	390 x 270 x 400	18.3
	13	5,000	100,000	355 x 355 x 400	23.5
MDI	13	3,000	48,000	375 x 360 x 390	14.71
MICRO DIP/TDI	7	1,000	40,000	390 x 240 x 420	9.5
	13	4,000	64,000	375 x 360 x 422	17
MBF	13	5,000	80,000	375 x 360 x 390	15.9
SDIP	13	1,500	21,000	375 x 360 x 390	14.31
TO-277	7	1,500	60,000	390 x 240 x 420	12.2
	13	5,000	80,000	375 x 360 x 422	19.1
TO-277A	13	5,000	80,000	375 x 360 x 422	18.52
TO-277B	13	5,000	80,000	375 x 360 x 422	20.6
TO-252	13	3,000	42,000	375 x 360 x 390	18.8
TO-252AA	13	3,000	48,000	375 x 360 x 422	24.16
TO-263/D <sup>2</sup> PAK	13	800	6,400	375 x 360 x 390	14.45



**Packing Specifications**

Package	Box	Inner Box Size	Carton	Carton Size	Approx. Gross Weight
	(EA)	(mm)	(EA)	(mm)	(kg)
Bulk Packing					
DO-41	1,000	198 x 84 x 20	50,000	459 x 214 x 256	19.3
DO-15	1,000	200 x 85 x 25	40,000	459 x 214 x 256	20.7
DO-201AD / DO-201AE	500	200 x 85 x 40	12,500	459 x 214 x 256	15.95
P-600	100	208 x 82 x 40	2,500	459 x 214 x 256	6.83
DO-34	2,000	240 x 90 x 100	120,000	410 x 268 x 345	14.5
DO-35	2,000	240 x 90 x 100	120,000	410 x 268 x 345	17.1
DO-41G	1,000	240 x 90 x 100	60,000	410 x 268 x 345	18.5
TO-220AC	2,000	540 x 145 x 85	8,000	555 x 306 x 200	21.76
ITO-220AC	2,000	540 x 145 x 85	8,000	555 x 306 x 200	19.34
TO-220AB	2,000	540 x 145 x 85	8,000	555 x 306 x 200	22
ITO-220AB	2,000	540 x 145 x 85	8,000	555 x 306 x 200	19.58
ITO-220AB-F	2,000	540 x 145 x 82	8,000	555 x 306 x 188	22
TO-251AA	8,000	555 x 145 x 87	32,000	570 x 306 x 203	23.87
TO-251AB	8,000	555 x 145 x 95	32,000	572 x 306 x 218	18.64
TO-263/D <sup>2</sup> PAK	2,000	540 x 145 x 85	8,000	555 x 306 x 200	18.7
GBP	500	225 x 160 x 35	7,500	500 x 250 x 195	13.3
GBU	250	220 x 120 x 43	5,000	510 x 235 x 245	21.5
GBL	300	240 x 120 x 35	6,000	510 x 260 x 200	15
GBJ	200	200 x 145 x 42	3,000	455 x 220 x 240	14.5
KBPF	500	225 x 160 x 35	7,500	500 x 250 x 195	13.3
KBL	200	257 x 125 x 50	3,000	415 x 275 x 300	17.5
KBU	200	274 x 150 x 60	3,000	470 x 290 x 330	23.7
KBJ	200	306 x 108 x 42	2,000	322 x 246 x 252	15
KBJ-P	200	220 x 176 x 45	2,000	375 x 230 x 260	15.05
D3K	500	210 x 155 x 30	7,500	480 x 225 x 170	11.6
TO-3P/TO-247AD	-	-	1,500	530 x 243 x 100	13.9
TO-247AD 2L / TO-3PL	-	-	1,500	530 x 255 x 110	12.2



**Packing Specifications**

Package	Tape Space	Ammo	Inner Box Size	Carton	Carton Size	Appox. Gross Weight
	(mm)	(pcs)	(mm)	(EA)	(mm)	(kg)
Ammunition Packing						
DO-41	52	5,000	255 x 75 x 150	40,000	339 x 276 x 330	15.9
	52	3,000	255 x 73 x 95	24,000	333 x 281 x 218	8.9
DO-15	52	3,000	255 x 75 x 150	24,000	339 x 276 x 330	13.25
	52	1,500	255 x 73 x 95	18,000	339 x 276 x 330	8.64
DO-201AD / DO-201AE	52	1,250	255 x 75 x 150	10,000	339 x 276 x 330	13.36
	52	750	255 x 75 x 95	9,000	339 x 276 x 330	11.62
P-600	52	400	255 x 75 x 150	3,200	339 x 276 x 330	8.1
DO-34	52	5,000	248 x 80 x 75	100,000	410 x 268 x 345	13.1
	26	5,000	248 x 80 x 48	150,000	410 x 268 x 345	15.3
DO-35	52	5,000	248 x 80 x 75	100,000	410 x 268 x 345	15.7
	26	5,000	248 x 80 x 48	150,000	410 x 268 x 345	17.5
DO-41G	52	2,500	248 x 80 x 75	50,000	410 x 268 x 345	16.4
	26	2,500	248 x 80 x 48	75,000	410 x 268 x 345	17.8



# 5.HIGH RELIABILITY TEST SPEC

## Automotive Reliability Test Item and Condition

NO.	TEST ITEM	TEST CONDITION	REFERENCED DOCUMENT	TESTTER	LOT QUALITY LEVEL
1	Pre Condition (PC) SMD Qualification part for TC、AC、H3TRB、 IOL、RSH	1. TCT -55~+150 5Cycle 2. Bake 125 +5/-0 °C 24hrs 3. Humidity 85°C / 85%RH 168hr 4. Reflow 3 Times	JESD22 A-113	1. TEMPERATURE CYCLE TESTER 2. HIGH TEMPERATURE BAKE BOX 3. HUMIDITY CHAMBER 4. HOT REFLOW TESTER	5 Item Total 338 pcs ACCEPT FOR 0 FAILURE ONLY.
2	HIGH TEMPERATURE REVERSE BIAS (H.T.R.B)	Ta= for data sheet Tj Temperature±5°C VR=100%VR(CUSTOMER SPEC.) DC supply 1,000hrs	JESD22 A-108	1. DC POWER SUPPLY 2. HIGH TEMPERATURE BAKE BOX	S.s=77 ACCEPT FOR 0 FAILURE ONLY.
3	HIGH TEMPERATURE GATE BIAS (H.T.G.B)	Ta= for data sheet Tj Temperature±5°C VR=100%VR(CUSTOMER SPEC.) DC supply 1,000hrs	JESD22 A-108	1. DC POWER SUPPLY 2. HIGH TEMPERATURE BAKE BOX	S.s=77 ACCEPT FOR 0 FAILURE ONLY.
4	TEMPERATURE CYCLING (TCT)	Ta= -55+0/-10°C 10min(Min) Ta= +150+15/-0°C 10min(Min) Transfer time less than 1min. The load should reach temp. within 15mins 1,000cycles	JESD22 A-104	TEMPERATURE CYCLE TESTER	S.s=77 ACCEPT FOR 0 FAILURE ONLY.
5	AUTOCLAVE (AC)	Ta= 121°C P= 15psig Relative Humidity = 100% 96hrs	JESD22 A-102	PCT TESTER KSON PCT-A	S.s=77 ACCEPT FOR 0 FAILURE ONLY.
6	HIGH HUMIDITY HIGH TEMP REVERSE BIAS (H3TRB)	Ta=85°C +/-2°C RH=85%+/-5% VR=80%VB(CUSTOMER SPEC.) Max=100V DC supply 1,000hrs	JESD22 A-101	1. HUMIDITY CHAMBER 2. DC POWER SUPPLY	S.s=77 ACCEPT FOR 0 FAILURE ONLY.
7	INTERMITTENT OPERATIONAL LIFE (IOL)	Δ Tj≥ 100°C supply POWER ON: at least 2 min POWER OFF: 2 min 15,000Cycles	MIL-STD-750 METHOD 1037	1. DC POWER SUPPLY 2. TIMER	S.s=77 ACCEPT FOR 0 FAILURE ONLY.
8	ESD CHARACTERIZATION -HBM	100 pF / 1.5 KΩ +/- 3Cycle	AEC-Q101-001	NOISKEN ESS-6008 TESTER	S.s=30 ACCEPT FOR 0 FAILURE ONLY.
9	ESD CAPACITIVE DISCHARGE MODEL -CDM		AEC-Q101-005	ORYX ORION	S.s=30 ACCEPT FOR 0 FAILURE ONLY.
10	RESISTANCE TO SOLDER HEAT (RSH)	TEMPERATURE OF SOLDER POT = 260±5°C TIME FOR DIPPING IN SOLDER = 10+2/-0 SEC	JESD22 B-106	SOLDER FURNACE TAIYO POT-100C	S.s=30 ACCEPT FOR 0 FAILURE ONLY.
11	SOLDERABILITY (SD)	TEMPERATURE OF SOLDER POT = 245 ±5°C TIME FOR DIPPING IN SOLDER = 5 ±0.5 SEC	J-STD-002	SOLDER FURNACE TAIYO POT-100C	S.s=10 ACCEPT FOR 0 FAILURE ONLY.
12	THERMAL RESISTANCE (TR)		JESD24-3、 24-4、24-6 as appropriate	PTJ-6002A TESTER	S.s=10 ACCEPT FOR 0 FAILURE ONLY.

Remark :

1. Precondition prior to TC. AC. H3TRB. IOL. RSH.
2. HTGB only for MOSFET.
3. IOL only for Diode. No need for MOSFET. TVS. ZENER. BJT.