

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 _____



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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

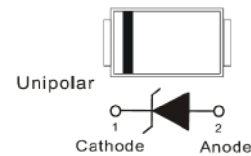
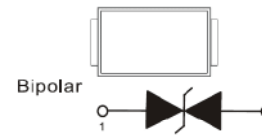
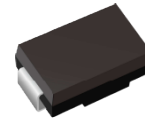
Features

- 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_A=25°C unless otherwise noted)

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



P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series

Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number		V _{RWM}	V _{BR}			I _R		V _{C@I_{PP}}		Marking Code	
			Min.	Max.	I _T	@V _{RWM}	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_A=25°C unless otherwise noted)

Part Number		V _{RWM}	V _{BR}			I _R		V _{C@IPP}		Marking Code	
			Min.	Max.	I _T	@V _{RWM}	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_A=25°C per Fig.2
2. Mounted on 5mm² 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

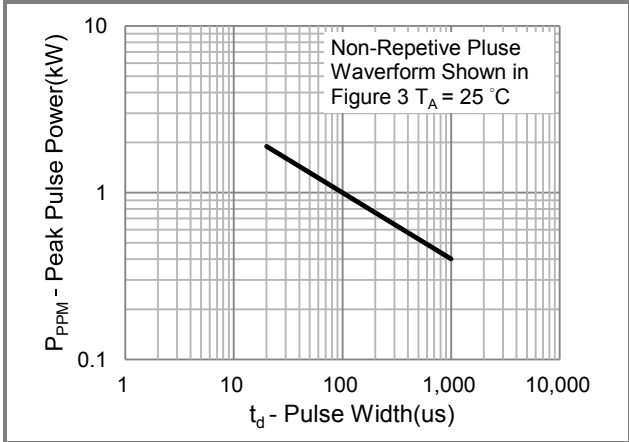


Fig.1 Pulse Power Rating Curve

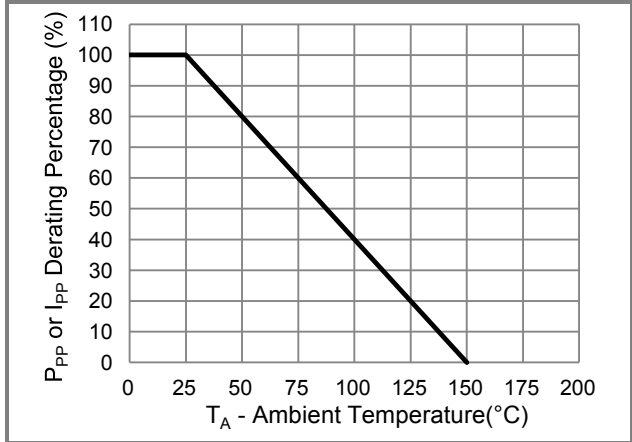


Fig.2 Derating Curve

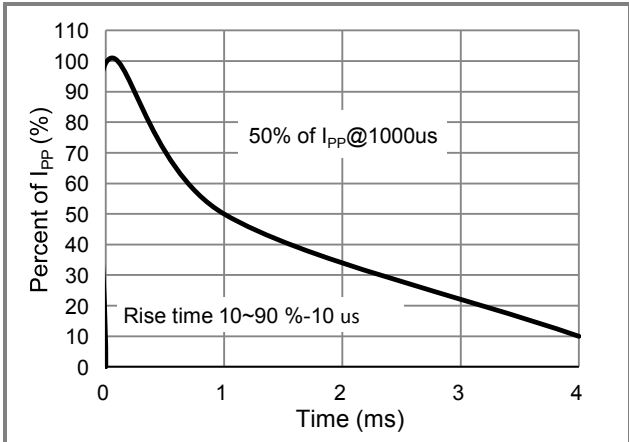


Fig.3 10/1000us Pulse Waveform

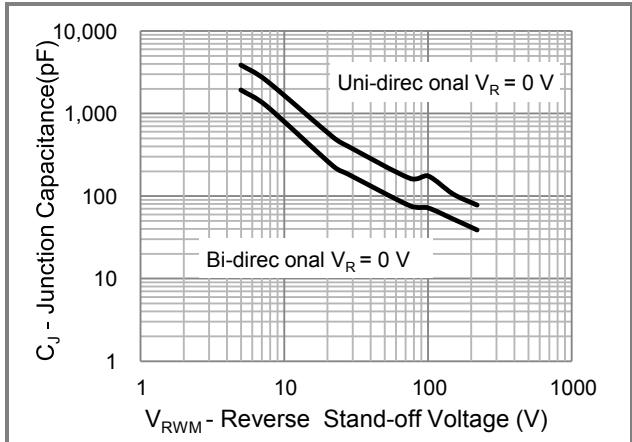


Fig.4 Typical Capacitance

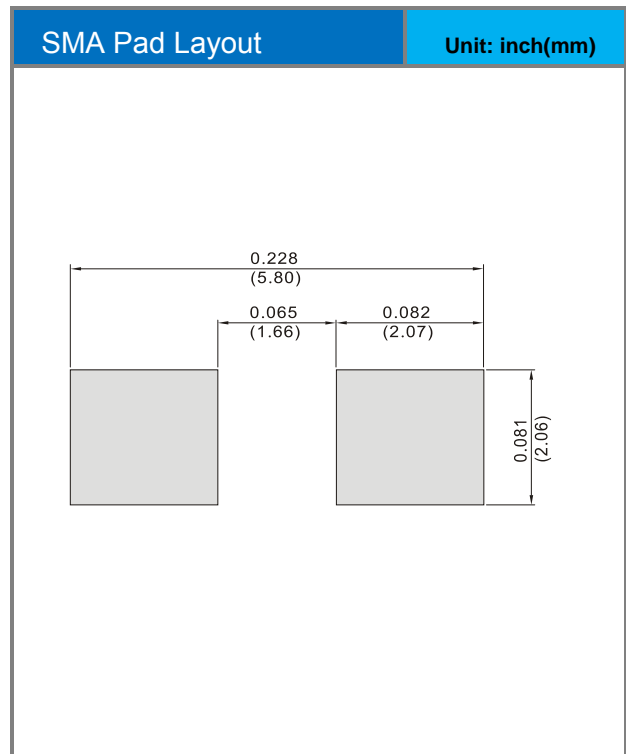
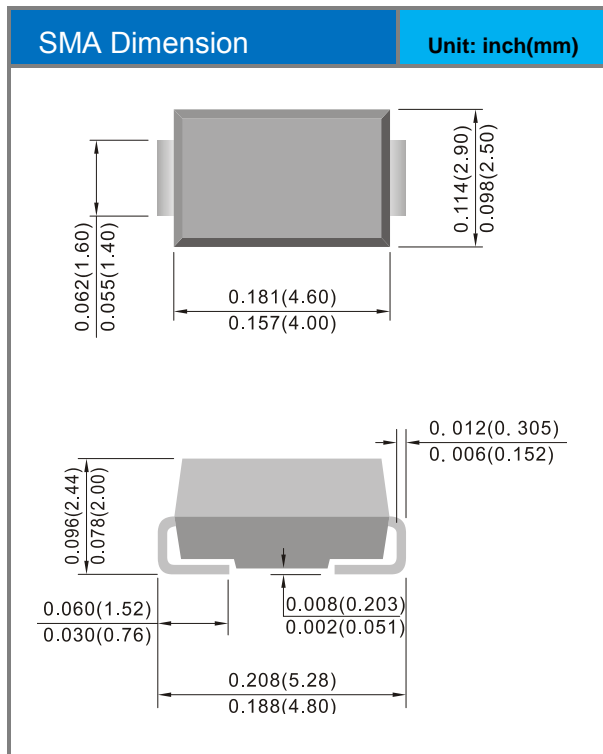


P4SMAJ5.0A-AU ~ P4SMAJ70CA-AU Series

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

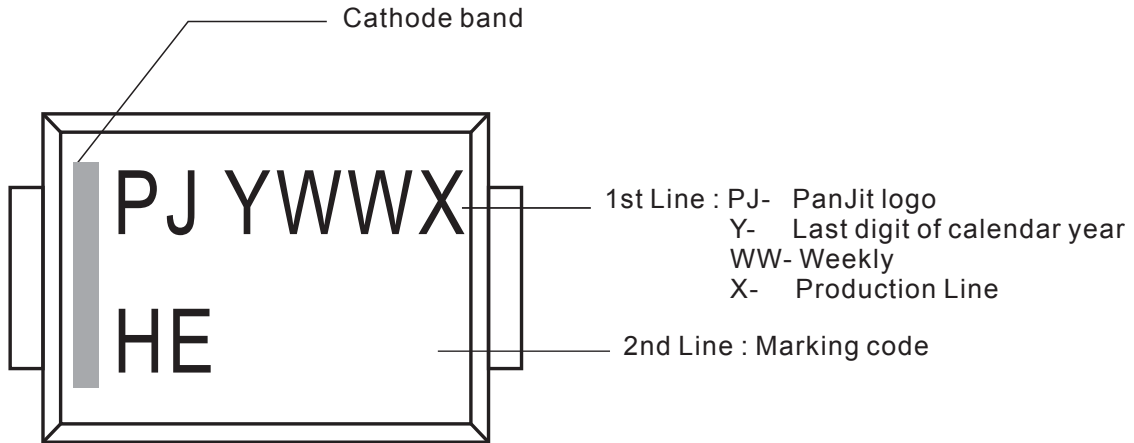
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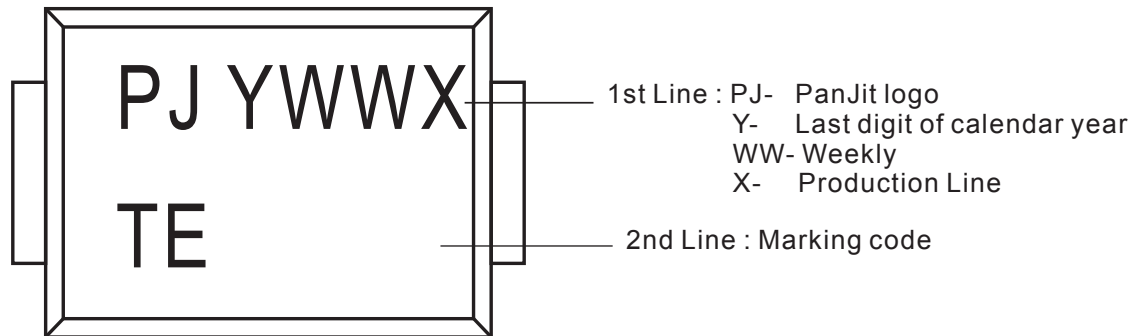


2. MARKING

Unipolar

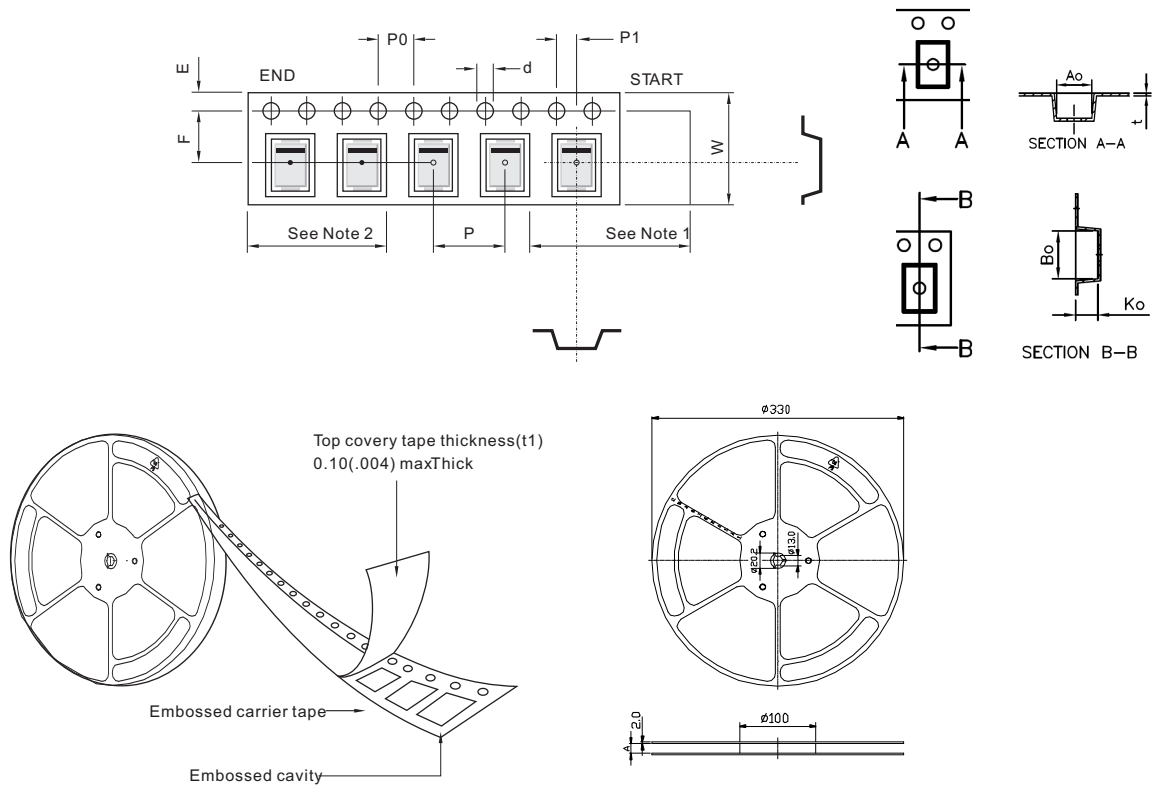


Bipolar





3. UNIPOLAR TAPING



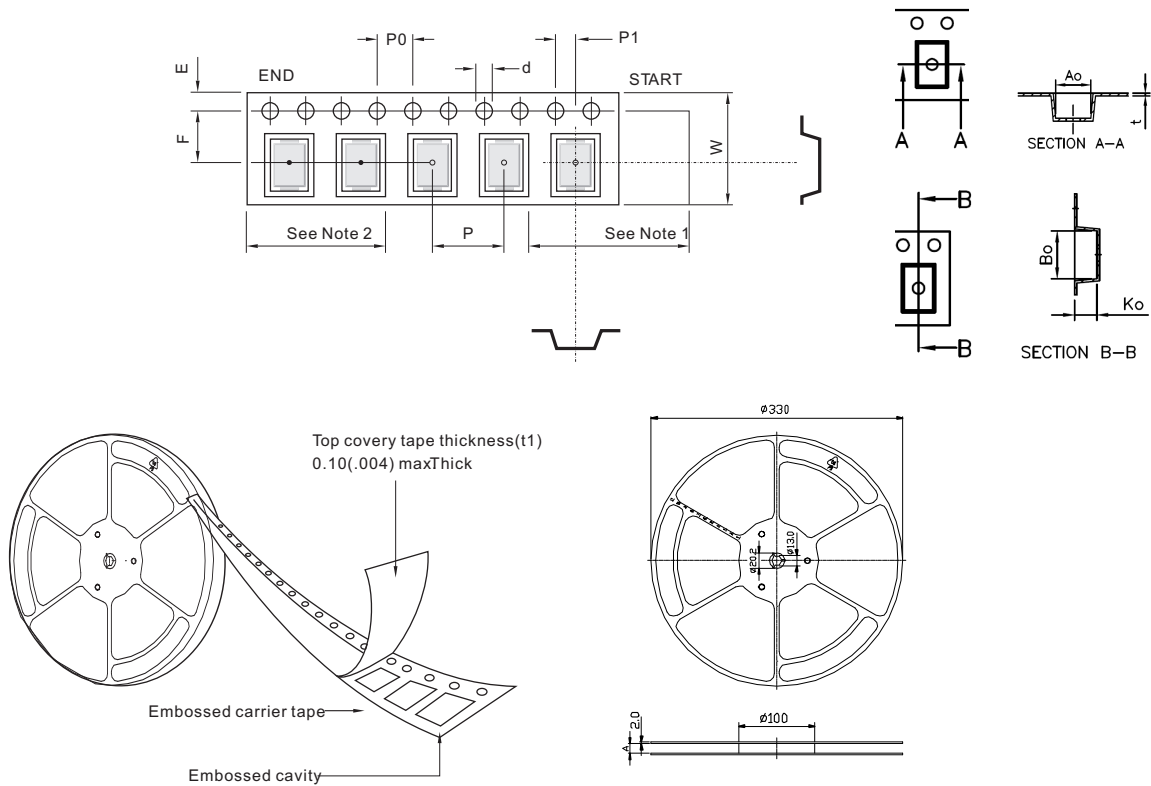
SYMBOL	mm(inch)	SYMBOL	mm(inch)	SYMBOL	mm(inch)
TYPE SIZE	12.00 (0.472)	TYPE SIZE	12.00 (0.472)	TYPE SIZE	16.00 (0.630)
Package	SMA/SMA(W)	Package	SMB	Package	SMC
d	1.55 ± 0.05 (0.06 ± 0.002)	d	1.55 ± 0.05 (0.06 ± 0.002)	d	1.50 ± 0.10 (0.06 ± 0.004)
E	1.75 ± 0.10 (0.069 ± 0.004)	E	1.75 ± 0.10 (0.069 ± 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.



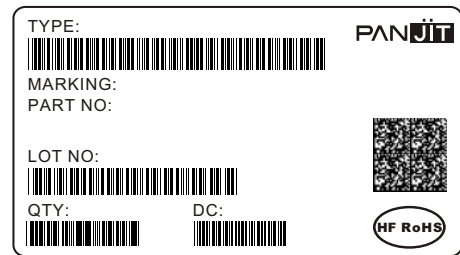
4. PACKING

REEL PACKING

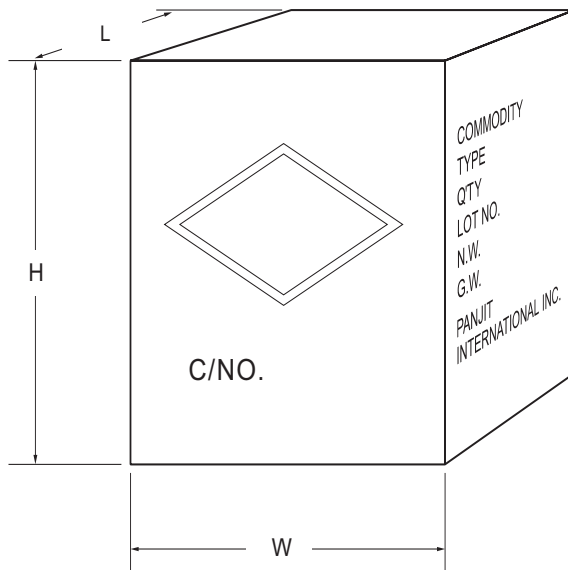


Quantity per Reel:

LABEL TYPE

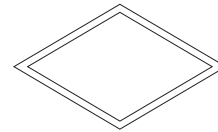


CARTON



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 ² 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 ² 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.

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