BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/ BAV99W-Q1/BAL99W-Q1

List

BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/ BAV99W-Q1/BAL99W-Q1

200mW Surface Mount Switching Diode- 75V

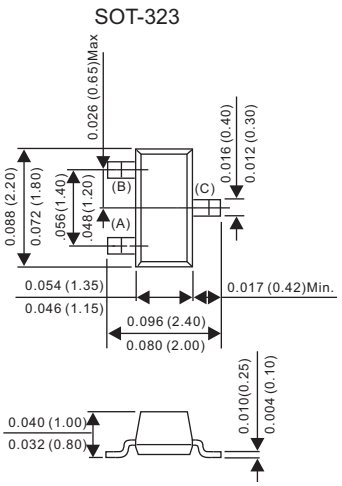
Features

- Fast speed switching.
- For general purpose switching application.
- High conductance.
- Silicon epitaxial planar chip.
- Lead-free parts meet RoHS requirments.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free parts, ex. BAS16W-Q1-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.006 gram

Package outline



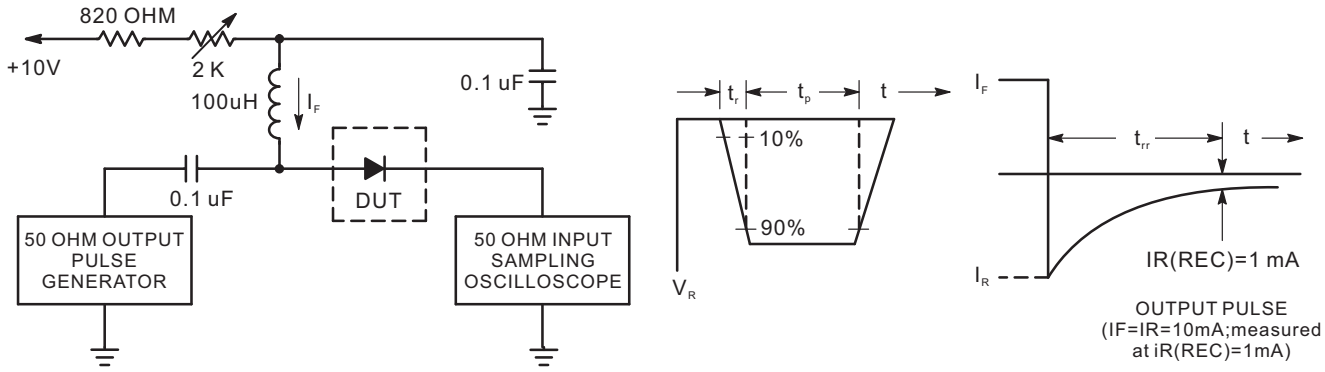
Dimensions in inches and (millimeters)

Maximum ratings and Electrical Characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER		Symbol	BAS16W-Q1	BAV70W-Q1	BAW56W-Q1	BAV99W-Q1	BAL99W-Q1	UNIT
Maximum Reverse Voltage		V_R	75					V
Maximum Forward Current		I_F	200			215		mA
Maximum Peak Forward Surge Current		I_{FM}	500					mA
Total Device Dissipation FR-5	Board*1, T_A = 25°C	P_D	200					mW
	Derate Above 25°C		1.6					mW/°C
Maximum Thermal Resistance Junction to Ambient (Note 1)		$R_{\theta JA}$	625					°C/W
Total Device Dissipation	Substrate*2, T_A = 25°C	P_D	300					mW
	Derate Above 25°C		2.4					mW/°C
Maximum Thermal Resistance Junction to Ambient (Note 2)		$R_{\theta JA}$	417					°C/W
Operating Junction Temperature Range		T_J	-65 to +150					°C
Storage Temperature Range		T_{STG}	-65 to +150					°C
Maximum Reverse Voltage Leakage Current	at V_R = 75V	I_R	1.0	-	-	-	-	μAdc
	at V_R = 70V		-	2.5	2.5	2.5	2.5	
	at V_R = 25V, T_J =150°C		30.0	60.0	30.0	30.0	30.0	
	at V_R = 75V, T_J =150°C		50.0	-	-	-	-	
	at V_R = 70V, T_J =150°C		-	100.0	50.0	50.0	50.0	
Typical Diode Capacition(V_R = 0V, f = 1.0MHz)		C_D	2.0	1.5	2.0	1.5	1.5	pF
Maximum Reverse Recovery Time (I_F = I_R = 10mA,V_R = 5.0Vdc, I_R(REC) = 1.0mAdc, R_L = 100$_{OHM}$)		t_{rr}	6.0					ns
Maximum Forward Voltage	at I_F = 1.0mAdc	V_F	715					mV
	at I_F = 10mAdc		855					
	at I_F = 50mAdc		1000					
	at I_F = 150mAdc		1250					

Notes:
*1 FR-5=1.0x0.75x0.062 in
*2 Alumina=0.4x0.3x0.024 in 99.5% Alumina

Rating and characteristic curves for each diode (BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/BAV99W-Q1/BAL99W-Q1)



Notes : 1. A2.0 Kohm variable resistor adjusted for a forward Current (IF) of 10mA.
2. Input pulse is adjusted so IR(peak) is equal to 10 mA.
3. tp >> trr.

Recovery Time Equivalent Test Circuit

Power Derating Curve

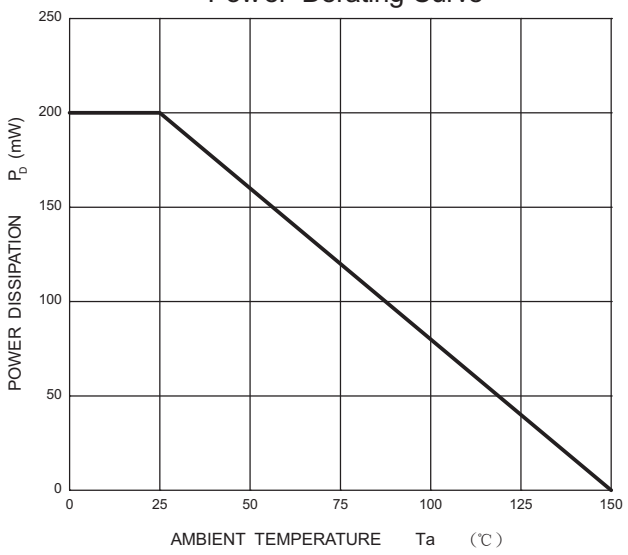


FIG.1-TYPICAL FORWARD CHARACTERISTICS

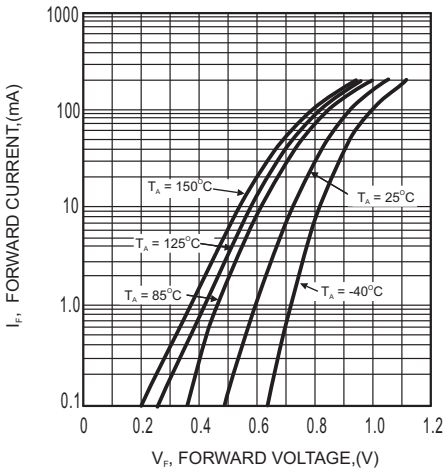
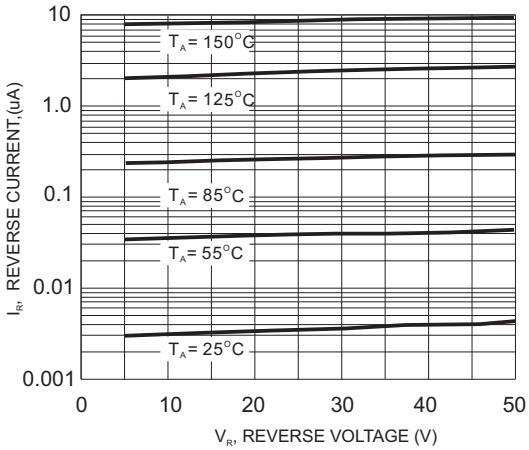


FIG.2 - TYPICAL LEAKAGE CURRENT



Rating and characteristic curves for each diode (BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/BAV99W-Q1/BAL99W-Q1)

FIG.3 - DIODE CAPACITANCE (BAS16W-Q1)

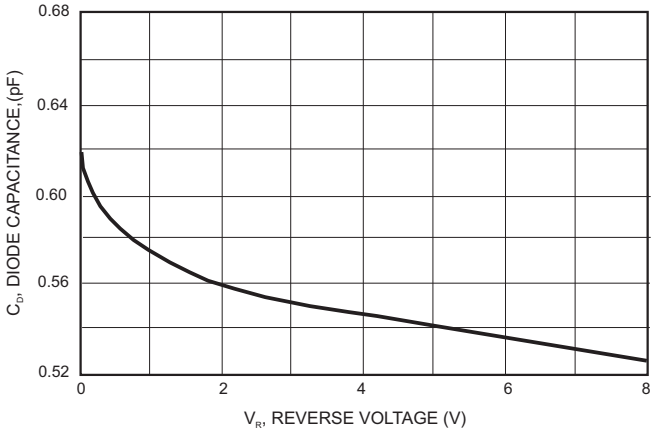


FIG.4 - DIODE CAPACITANCE (BAV70W-Q1)

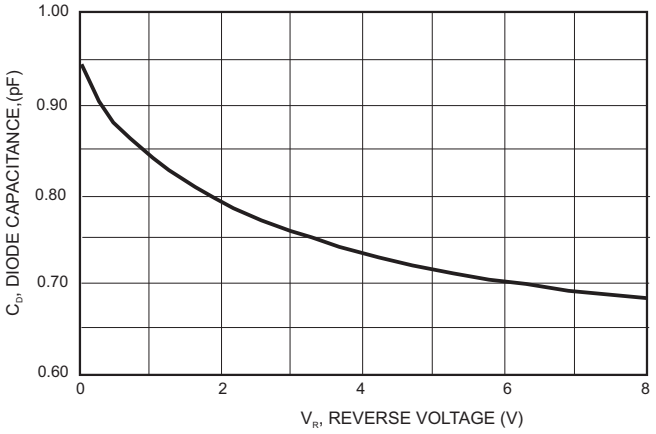


FIG.5 - DIODE CAPACITANCE (BAW56W-Q1)

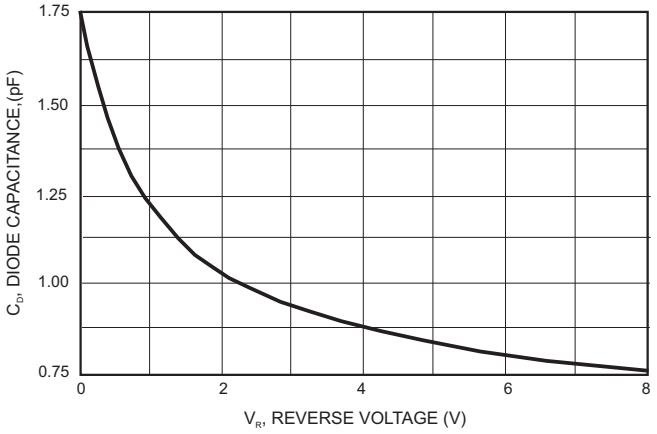


FIG.6 - DIODE CAPACITANCE (BAV99W-Q1)

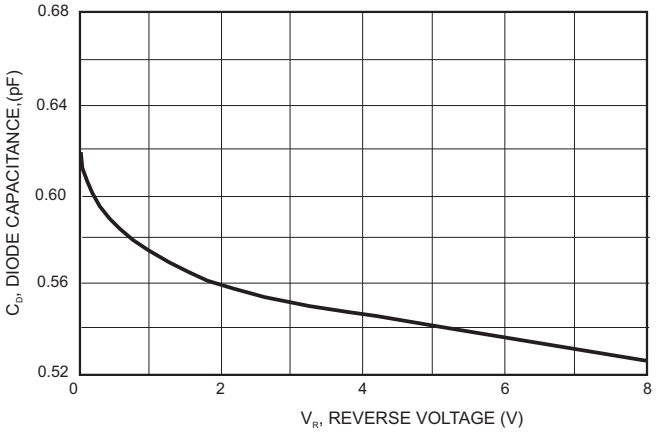
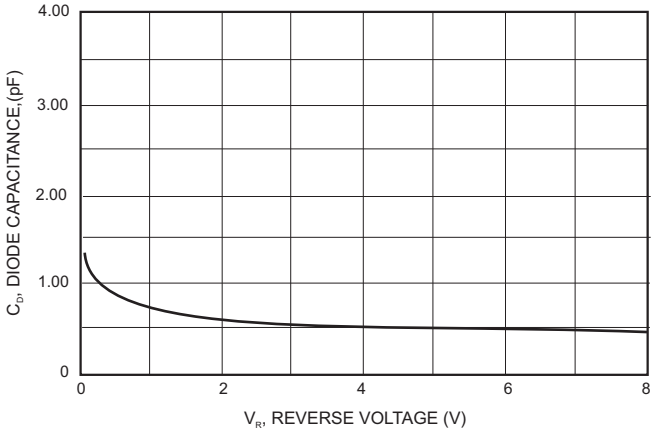
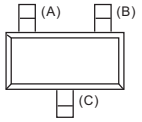
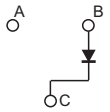
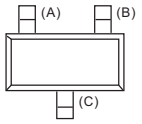
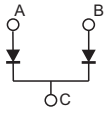
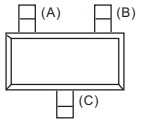
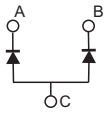
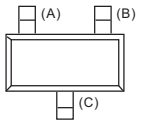
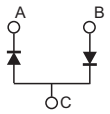
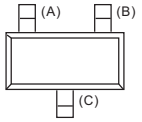
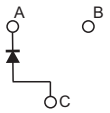


FIG.7 - DIODE CAPACITANCE (BAL99W-Q1)



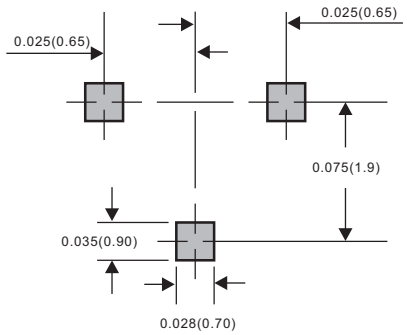
BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/ BAV99W-Q1/BAL99W-Q1

Pinning information

Type number	Marking code	Simplified outline	Symbol
BAS16W-Q1	A6		
BAV70W-Q1	A4, JA		
BAW56W-Q1	A1, JC,KJC		
BAV99W-Q1	A7, JB		
BAL99W-Q1	JF		

Suggested solder pad layout

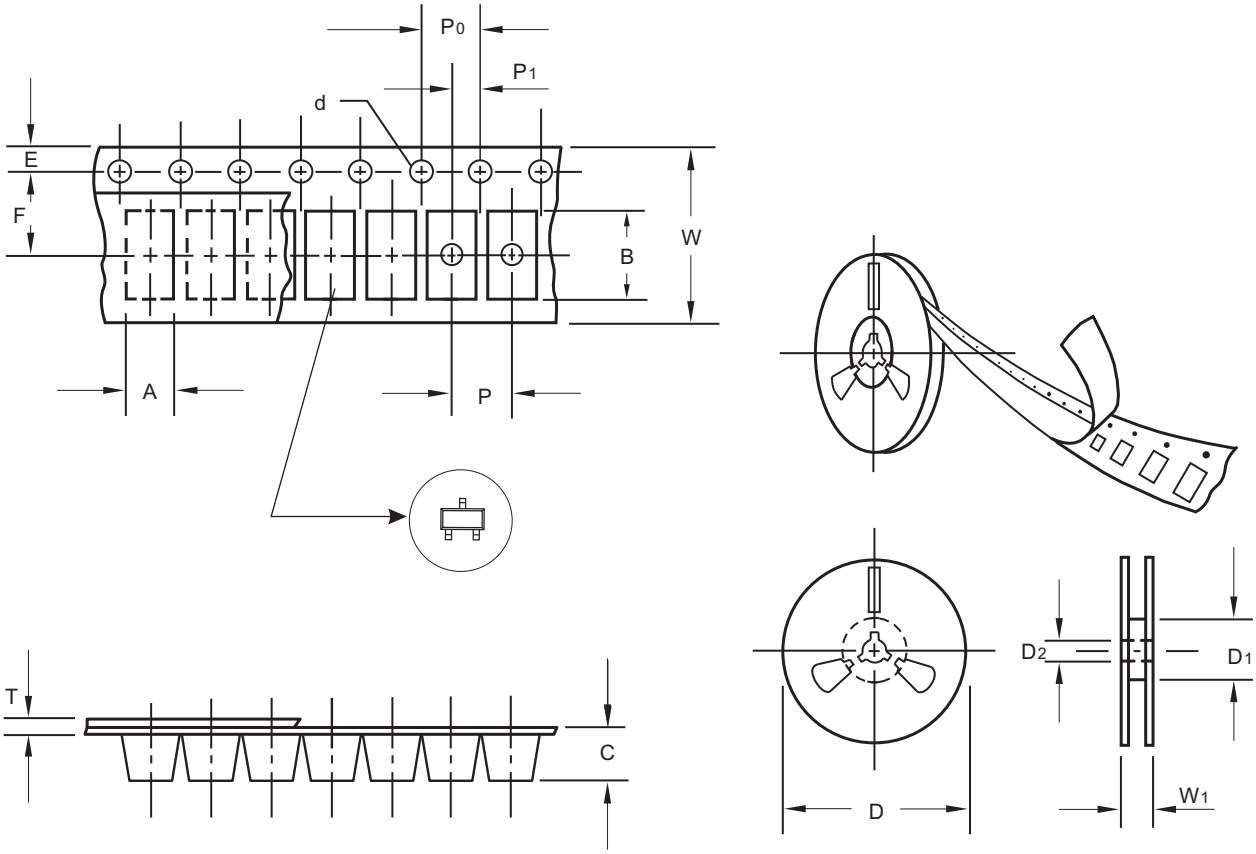
SOT-323



Dimensions in inches and (millimeters)

BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/ BAV99W-Q1/BAL99W-Q1

Packing information



unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	2.36
Carrier length	B	0.1	2.40
Carrier depth	C	0.1	1.20
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

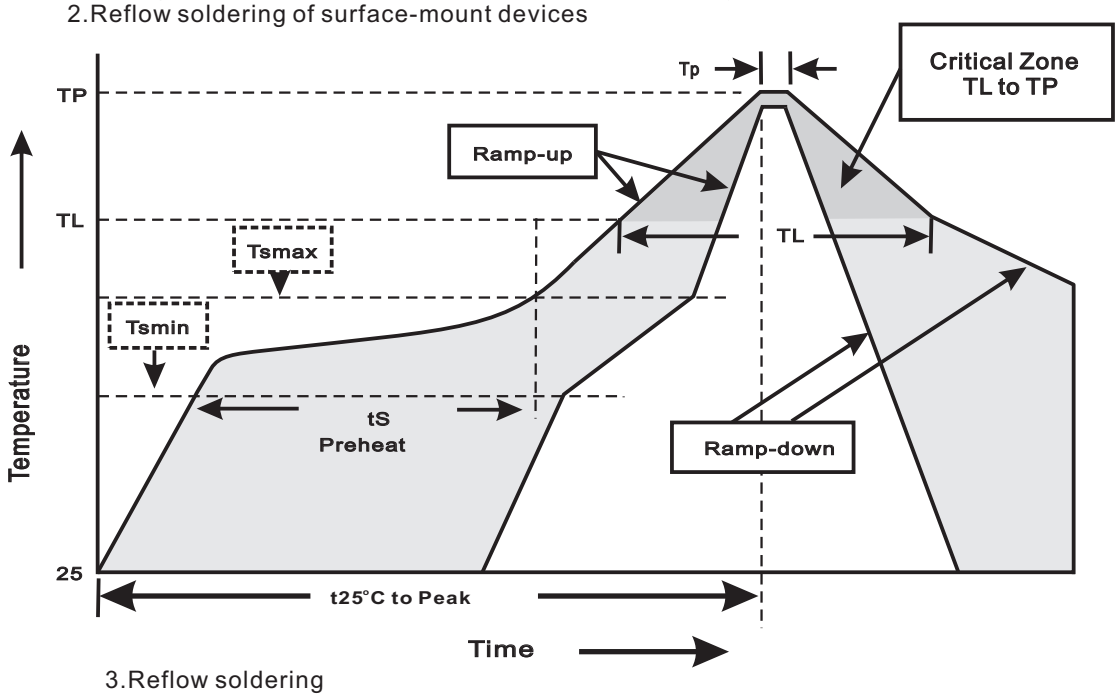
BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/ BAV99W-Q1/BAL99W-Q1

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-323	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

BAS16W-Q1/BAV70W-Q1/BAW56W-Q1/ BAV99W-Q1/BAL99W-Q1

High reliability test capabilities

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125℃+168hrs@85℃ /85%RH+3xIR@260℃+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. Operation Life	Ta=25℃, Rated Current（Io=Iomax.）Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (Tj=Tjmax.)Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta=125℃ Test Duration：1000hrs	JESD22 A-103
5. Temperature Cycle	-55℃（15min） to 150℃（15min）Test Cycles：1000cycles	JESD22 A-104
6. Autoclave	P=2atm Ta=121℃ RH=100% Test Duration:96hrs	JESD22 A-102
7. Intermittent Operational Life	Ta=25℃,On/Io Max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5℃ for 5sec	J-STD-002
9. Moisture Resistance	Ta=85℃/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5℃ for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85℃, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101