

B0520LW-Q1/B0530W-Q1/B0540W-Q1**List**

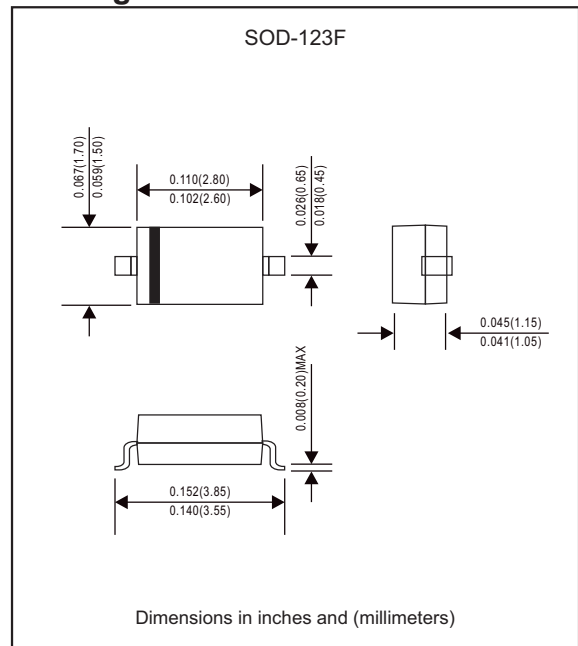
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B0520LW-Q1/B0530W-Q1/B0540W-Q1**0.5A Surface Mount Schottky
Barrier Rectifiers 20-40V****Features**

- Small surface mounting type
- Low forward voltage
- Guard ring construction for transient protection
- High conductance
- Lead-free parts meet RoHS requirements
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free parts, ex. B0520LW-Q1-H

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123F
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.010 gram

Package outline**Maximum ratings** (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

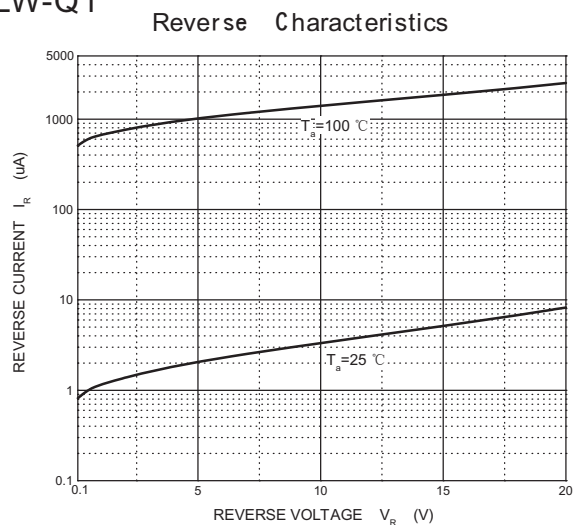
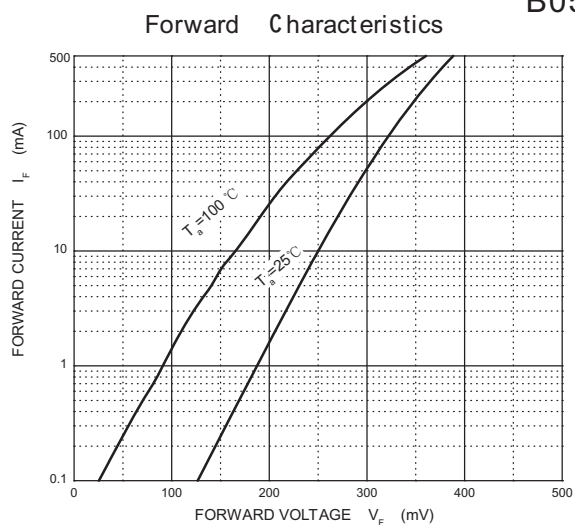
PARAMETER	SYMBOLS	B0520LW-Q1	B0530W-Q1	B0540W-Q1	UNIT
Peak repetitive peak reverse voltage	V_{RRM}				
Working peak reverse voltage	V_{RWM}	20	30	40	Volts
DC blocking voltage	V_R				
RMS voltage	V_{RMS}	14	21	28	Volts
Average rectified output current	I_O	0.5			Amps
Non-repetitive peak forward surge current @ $t=8.3\text{ms}$	I_{FSM}	5.5			Amps
Power dissipation	P_D	500			mW
Typical thermal resistance junction to ambient	$R_{\theta JA}$	250			$^{\circ}\text{C/W}$
Operating junction temperature range	T_J	-55 to +125			$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150			$^{\circ}\text{C}$

Electrical characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

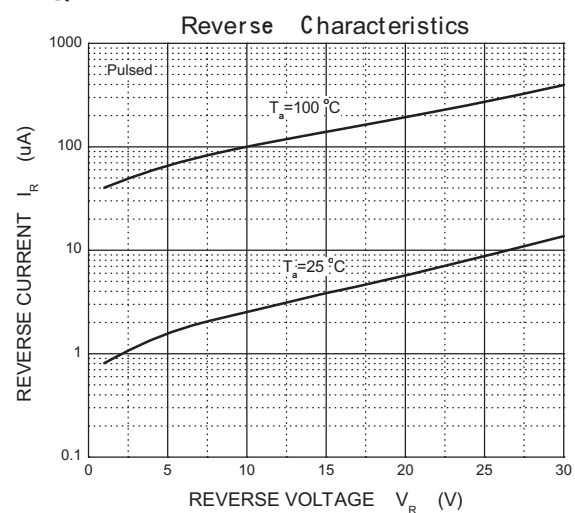
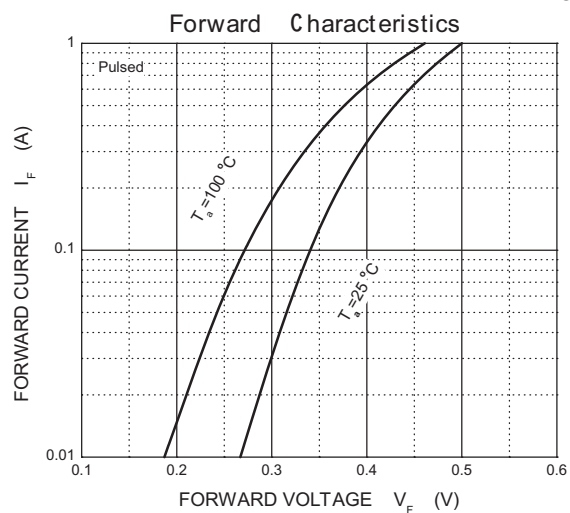
PARAMETER	SYMBOLS	MIN.	TYP.	MAX.	UNIT
Reverse breakdown voltage	$V_{(BR)R}$	20			V
B0520LW-Q1 $I_R=250\mu\text{A}$		30			
B0530W-Q1 $I_R=200\mu\text{A}$		40			
B0540W-Q1 $I_R=20\mu\text{A}$					
Forward voltage	V_F			0.330	V
B0520LW-Q1 $I_F=0.1\text{A}$				0.375	
B0530W-Q1 $I_F=0.1\text{A}$				0.390	
B0520LW-Q1 $I_F=0.5\text{A}$				0.430	
B0530W-Q1 $I_F=0.5\text{A}$				0.510	
B0540W-Q1 $I_F=0.5\text{A}$				0.620	
B0540W-Q1 $I_F=1.0\text{A}$					
Reverse leakage current	I_R			75	μA
B0520LW-Q1 $V_R=10\text{V}$				20	
B0530W-Q1 $V_R=15\text{V}$				250	
B0520LW-Q1 $V_R=20\text{V}$				10	
B0540W-Q1 $V_R=20\text{V}$				130	
B0530W-Q1 $V_R=30\text{V}$				20	
B0540W-Q1 $V_R=40\text{V}$					
Capacitance between terminals at $f=1\text{MHz}$	C_T		170	-	pF
B0520LW-Q1 $V_R=0\text{V}$			170	-	
B0530W-Q1 $V_R=0\text{V}$			-	170	
B0540W-Q1 $V_R=0\text{V}$					

Rating and characteristic curves

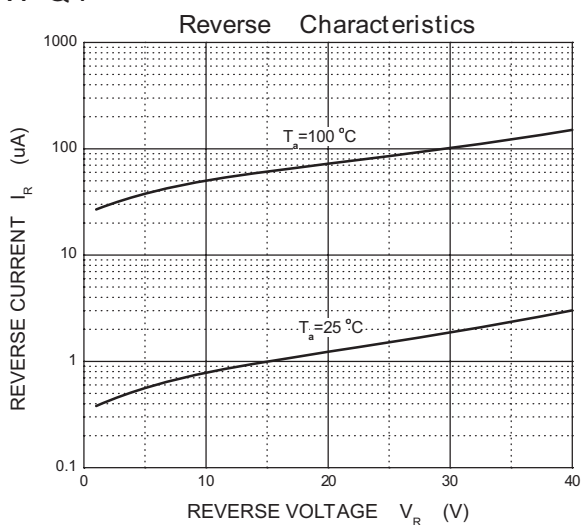
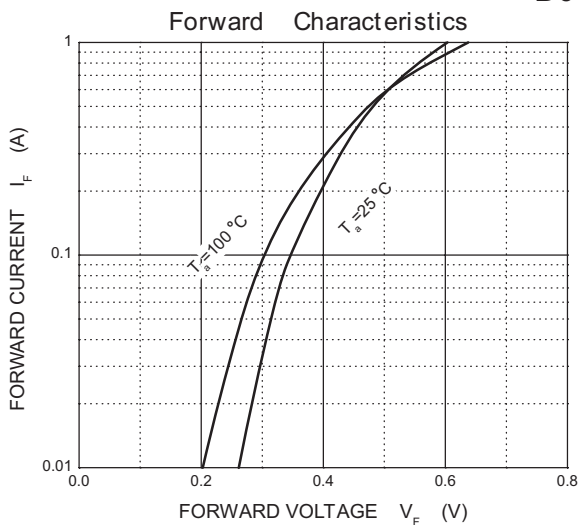
B0520LW-Q1



B0530W-Q1



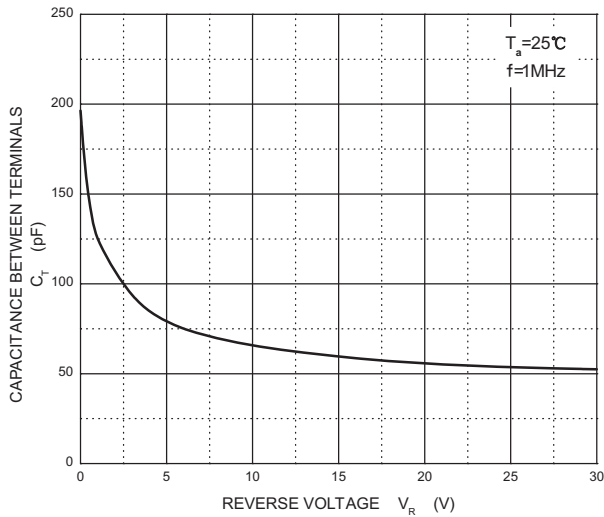
B0540W-Q1



Rating and characteristic curves

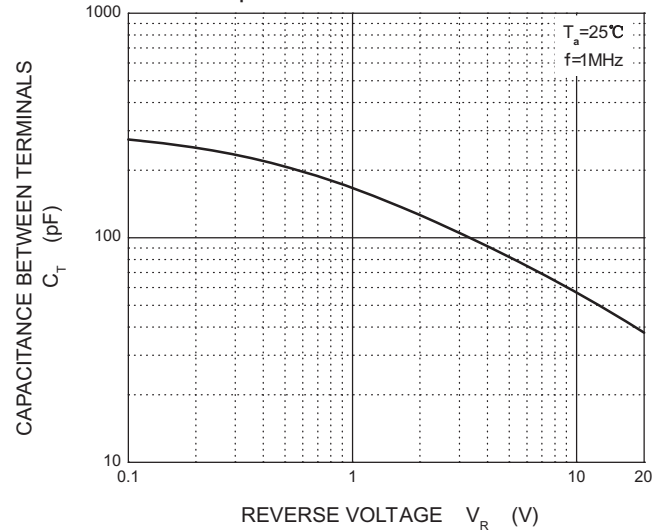
B0520LW-Q1

Capacitance Characteristics



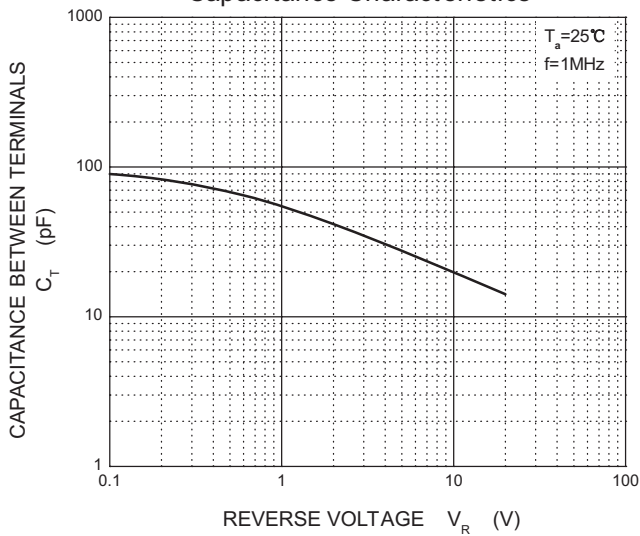
B0530W-Q1

Capacitance Characteristics

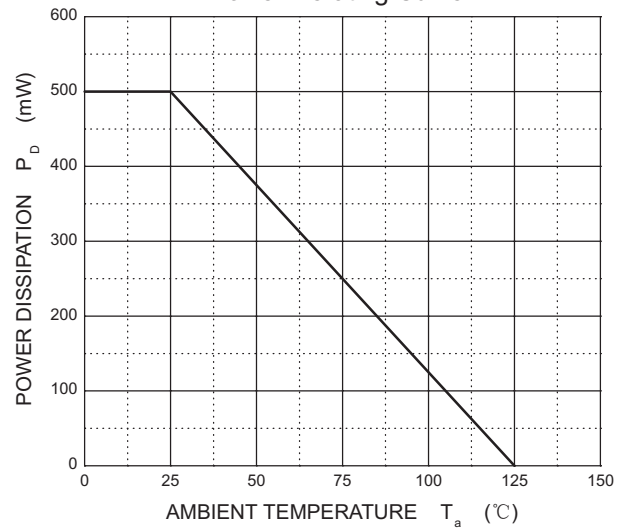


B0540W-Q1

Capacitance Characteristics



Power Derating Curve

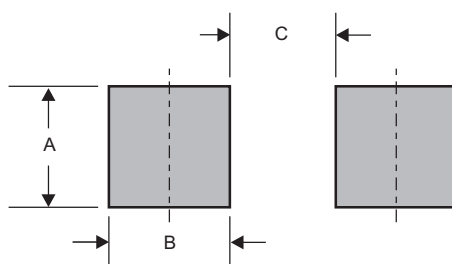


B0520LW-Q1/B0530W-Q1/B0540W-Q1**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

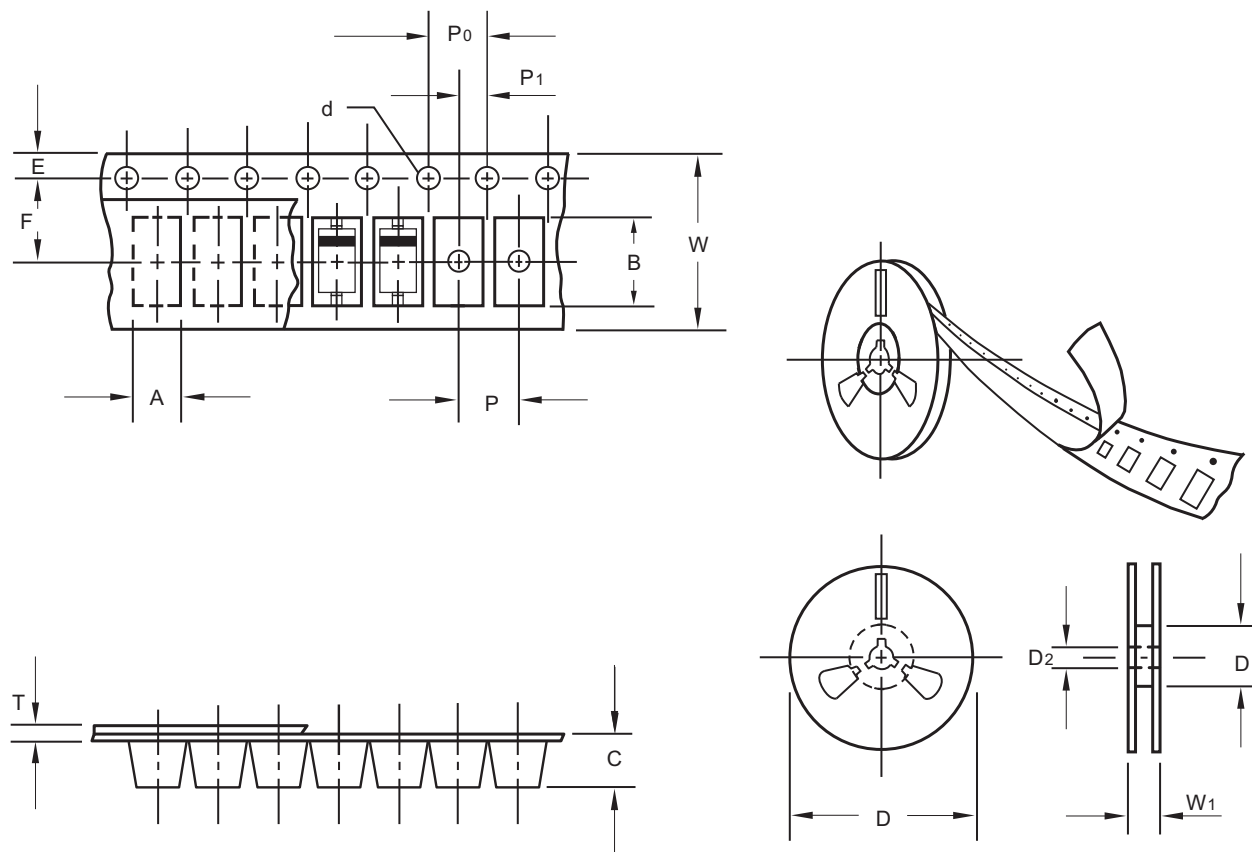
Marking

Type number	Marking code
B0520LW-Q1	SD,SJ
B0530W-Q1	SE,SK
B0540W-Q1	SF,SL

Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123F	0.048 (1.22)	0.036 (0.91)	0.093 (2.36)

B0520LW-Q1/B0530W-Q1/B0540W-Q1**Packing information**

unit:mm

Item	Symbol	Tolerance	SOD-123F
Carrier width	A	0.1	1.85
Carrier length	B	0.1	3.95
Carrier depth	C	0.1	1.57
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.3

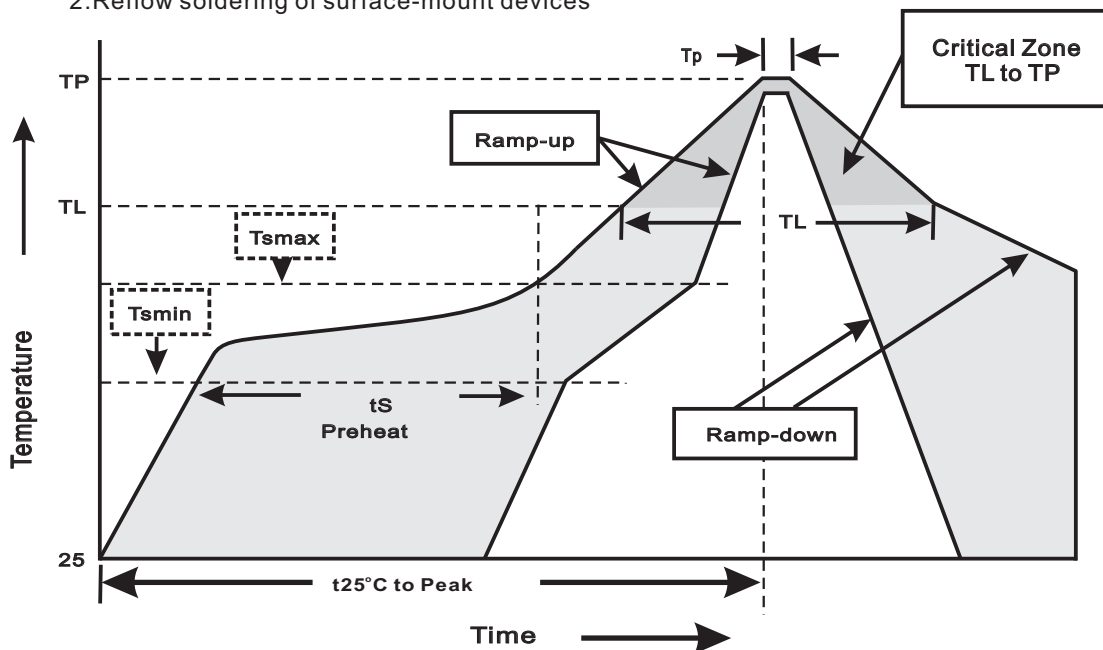
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

B0520LW-Q1/B0530W-Q1/B0540W-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)
SOD-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*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(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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

B0520LW-Q1/B0530W-Q1/B0540W-Q1**High reliability test capabilities**

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. High Temperature Reverse Bias	$V_{BR}=V_{BR\ Nom}*80\%$ ($T_j=150^\circ\text{C}$) Test Duration:1000hrs	JESD22-A108
3. High Temperature Storage Life	$T_a=125^\circ\text{C}$ Test Duration: 1000hrs	JESD22 A-103
4. Temperature Cycle	-55°C (15min) to 150°C (15min) Test Cycles: 1000cycles	JESD22 A-104
5. Autoclave	$P=2\text{atm}$ $T_a=121^\circ\text{C}$ $RH=100\%$ Test Duration:96hrs	JESD22 A-102
6. Solderability	$245\pm5^\circ\text{C}$ for 5sec	J-STD-002
7. Moisture Resistance	$T_a=85^\circ\text{C}/85\%$ Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
8. Resistance To Solder Heat	$260\pm5^\circ\text{C}$ for 10sec	JESD22 B-106
9. High Temperature High Humidity Reverse Bias	$T_a=85^\circ\text{C}$, 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