

BAS16W/BAV70W/BAW56W/BAV99W/BAL99W**List**

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BAS16W/BAV70W/BAW56W/BAV99W/BAL99W

200mW Surface Mount Switching Diode- 75V

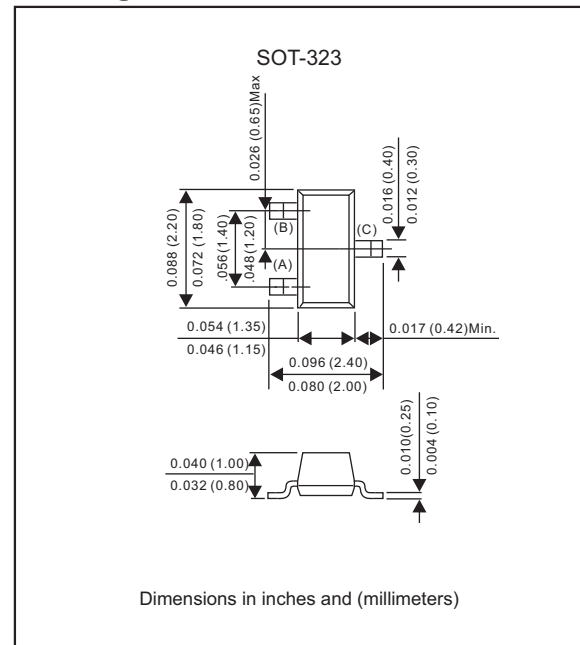
Features

- Fast speed switching.
- For general purpose switching application.
- High conductance.
- Silicon epitaxial planar chip.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. BAS16W-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



Maximum ratings and Electrical Characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

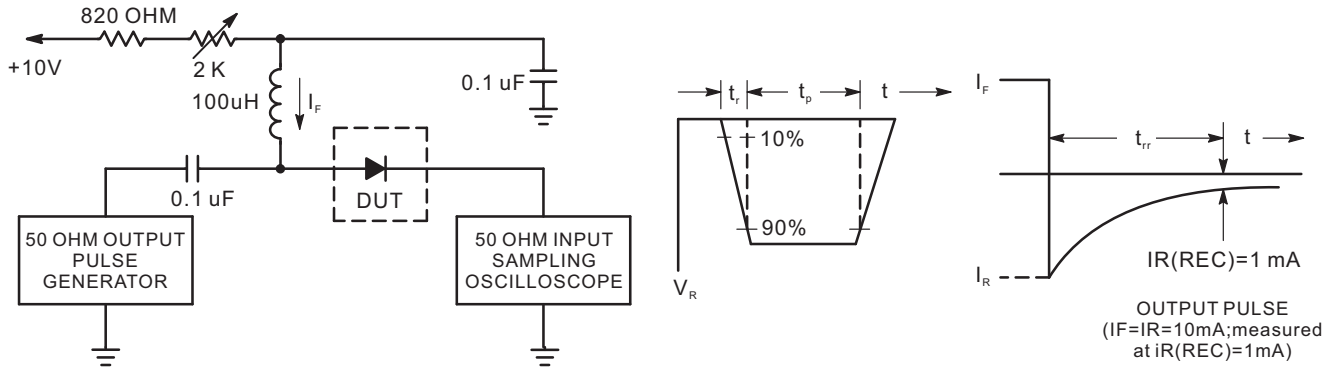
PARAMETER		Symbol	BAS16W	BAV70W	BAW56W	BAV99W	BAL99W	UNIT
Maximum Reverse Voltage		V _R	75					V
Maximum Forward Current		I _F	200			215		mA
Maximum Peak Forward Surge Current		I _{FM}	500					mA
Total Device Dissipation FR-5 Board* ¹ , T _A = 25°C Derate Above 25°C	P _D	200					mW	
		1.6					mW/°C	
Maximum Thermal Resistance Junction to Ambient (Note 1)	R _{θJA}	625					°C/W	
Total Device Dissipation Substrate* ² , T _A = 25°C Derate Above 25°C	P _D	300					mW	
		2.4					mW/°C	
Maximum Thermal Resistance Junction to Ambient (Note 2)	R _{θJA}	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 at V _R = 70V at V _R = 25V, T _J = 150°C at V _R = 75V, T _J = 150°C at V _R = 70V, T _J = 150°C	I _R	1.0	-	-	-	-	μAdc	
		-	2.5	2.5	2.5	2.5		
		30.0	60.0	30.0	30.0	30.0		
		50.0	-	-	-	-		
		-	100.0	50.0	50.0	50.0		
Typical Diode Capacitance(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 at I _F = 10mAdc at I _F = 50mAdc at I _F = 150mAdc	V _F	715					mV	
		855						
		1000						
		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/BAV70W/BAW56W/BAV99W/BAL99W)



- Notes : 1. A2.0 Kohm variable resistor adjusted for a forward Current (I_F) of 10mA.
2. Input pulse is adjusted so $I_R(\text{peak})$ is equal to 10 mA.
3. $t_p \gg t_{rr}$.

Recovery Time Equivalent Test Circuit

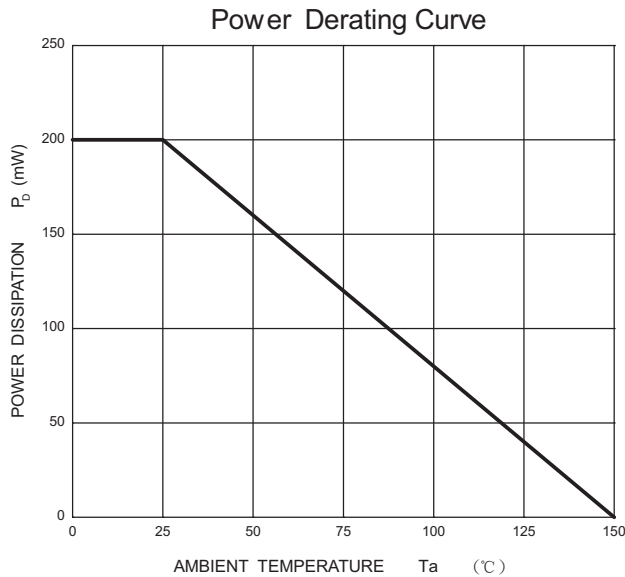


FIG.1-TYPICAL FORWARD CHARACTERISTICS

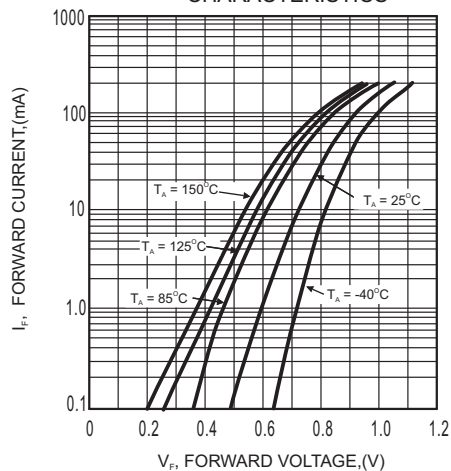
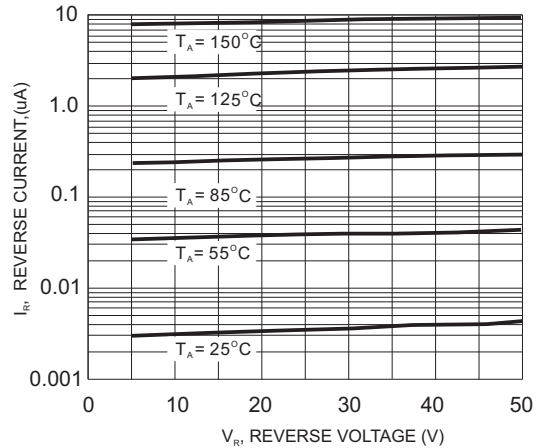


FIG.2 - TYPICAL LEAKAGE CURRENT



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

FIG.3 - DIODE CAPACITANCE (BAS16W)

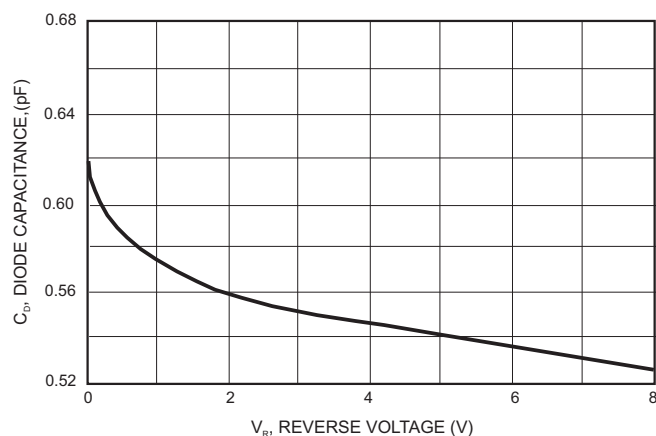


FIG.4 - DIODE CAPACITANCE (BAV70W)

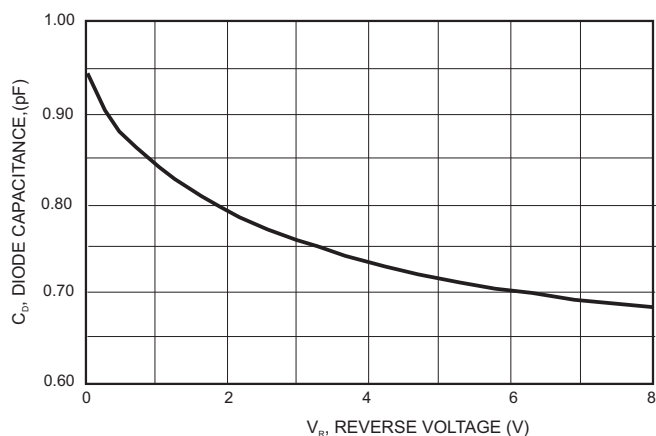


FIG.5 - DIODE CAPACITANCE (BAW56W)

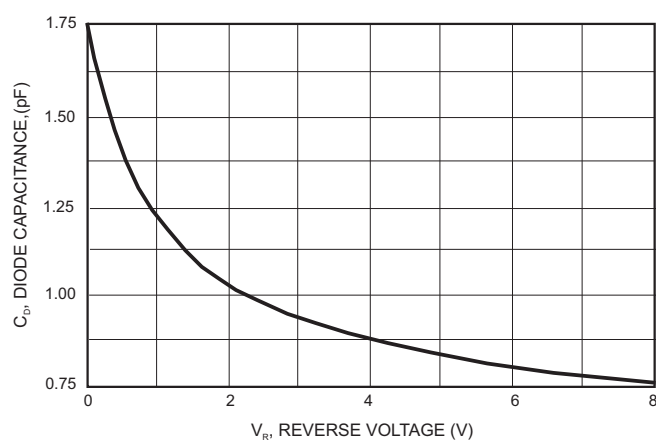


FIG.6 - DIODE CAPACITANCE (BAV99W)

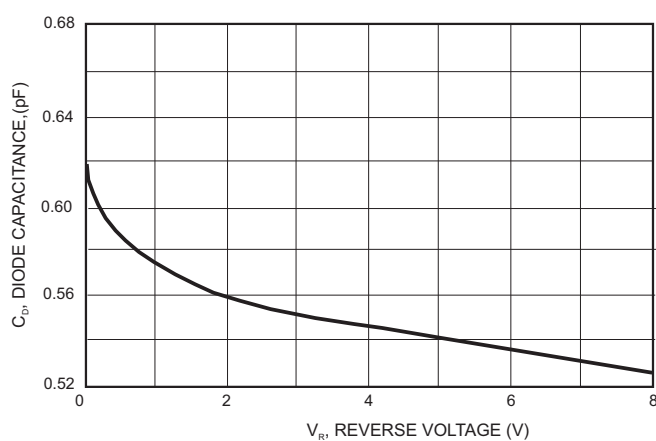
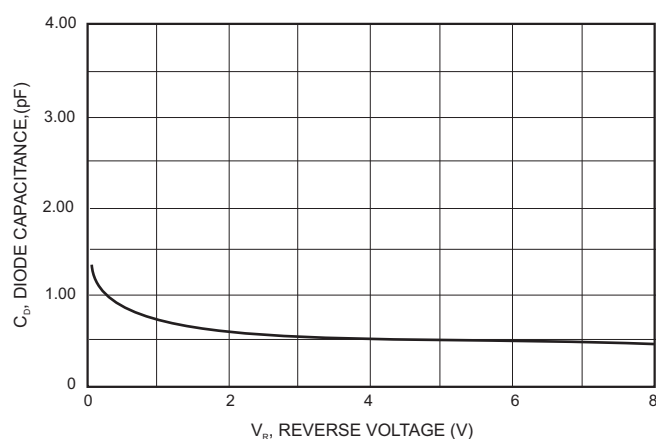
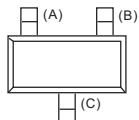
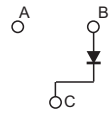
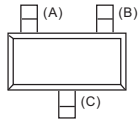
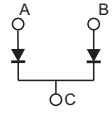
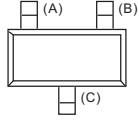
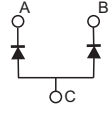
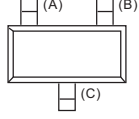
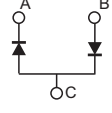
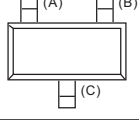
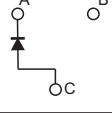


FIG.7 - DIODE CAPACITANCE (BAL99W)

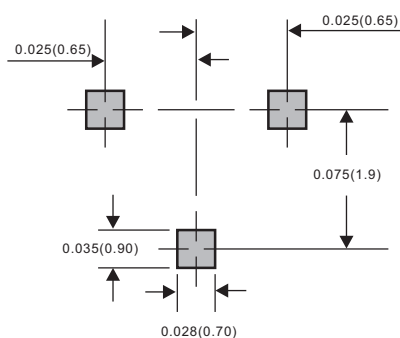


BAS16W/BAV70W/BAW56W/BAV99W/BAL99W**Pinning information**

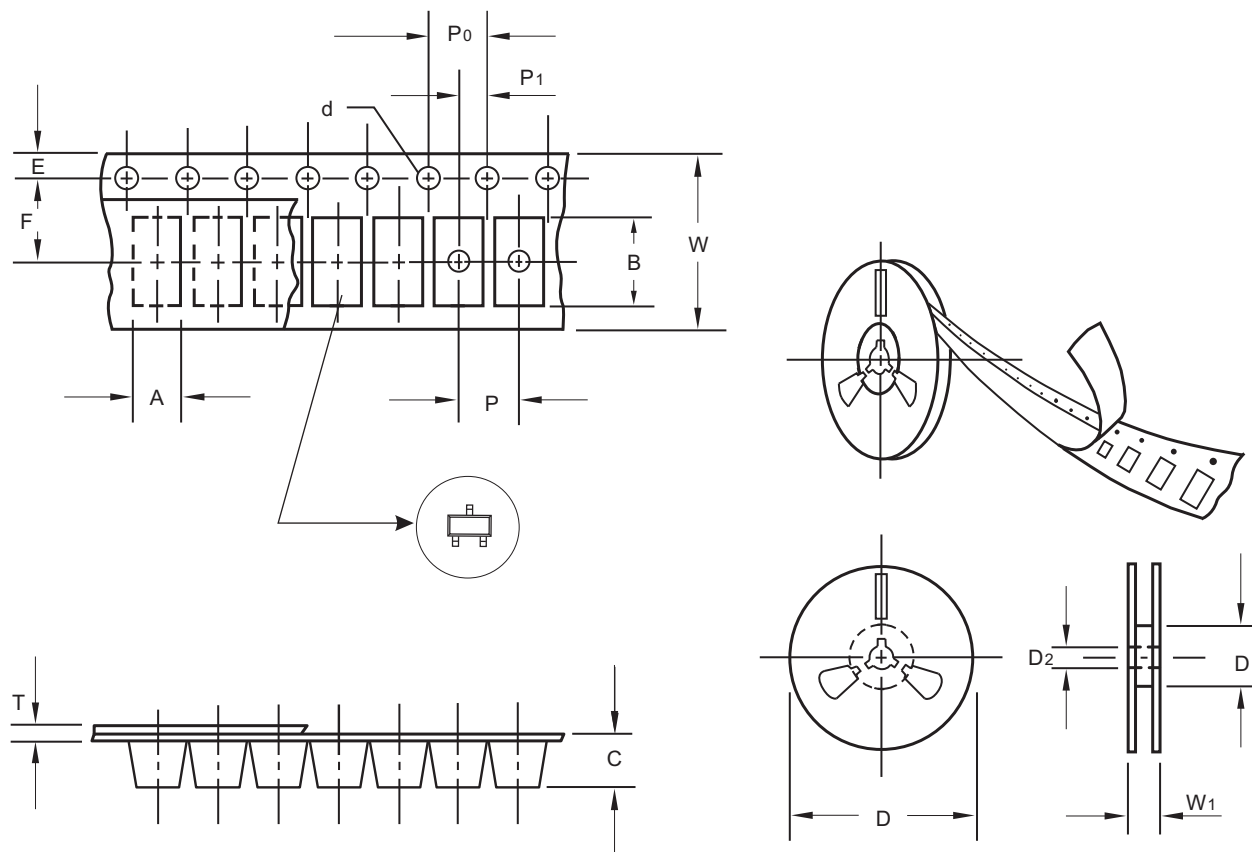
Type number	Marking code	Simplified outline	Symbol
BAS16W	A6		
BAV70W	A4, JA		
BAW56W	A1, JC, KJC		
BAV99W	A7, JB		
BAL99W	JF		

Suggested solder pad layout

SOT-323



Dimensions in inches and (millimeters)

BAS16W/BAV70W/BAW56W/BAV99W/BAL99W**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	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
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	11.40

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

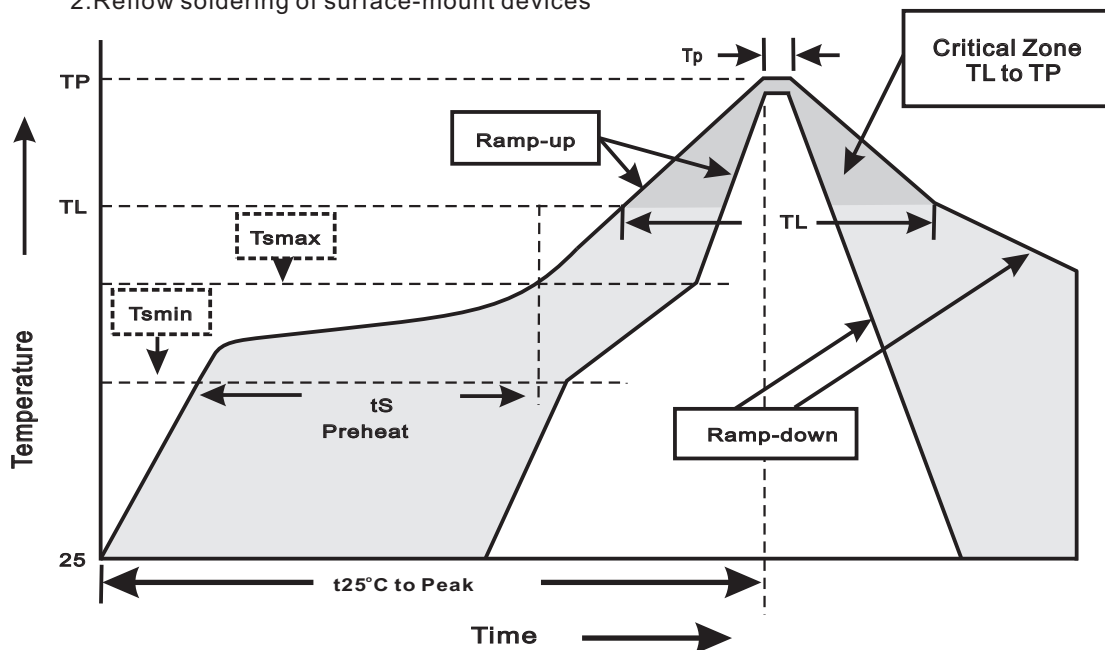
BAS16W/BAV70W/BAW56W/BAV99W/BAL99W

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)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C $60\sim 120\text{sec}$
T_{smax} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C $60\sim 260\text{sec}$
Peak Temperature(T_P)	$255^{\circ}\text{C}-0/+5^{\circ}\text{C}$
Time within 5°C of actual Peak Temperature(t_P)	$10\sim 30\text{sec}$
Ramp-down Rate	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

BAS16W/BAV70W/BAW56W/BAV99W/BAL99W**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$ immerse body into solder $1/16''\pm1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R=80\%$ rate at $T_J=150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A=25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A=121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	Peak Forward Surge Current	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031