

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

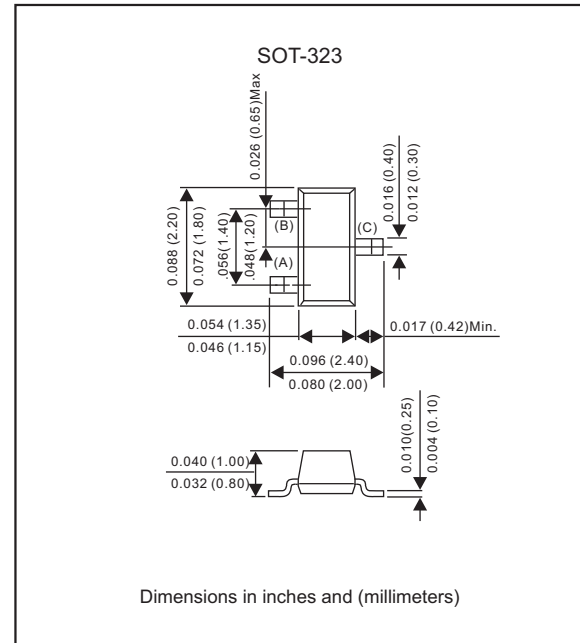
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**BAS16W/BAV70W/BAW56W/BAV99W/BAL99W****200mW Surface Mount  
Switching Diode- 75V****Features**

- 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)

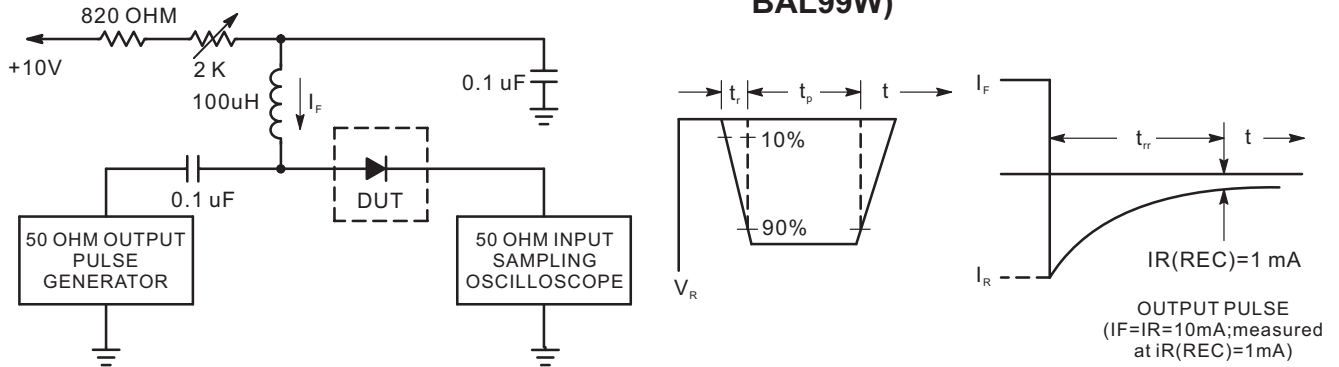
PARAMETER		Symbol	BAS16W	BAV70W	BAW56W	BAV99W	BAL99W	UNIT
Maximum Reverse Voltage		V <sub>R</sub>	75					V
Maximum Forward Current		I <sub>F</sub>	200			215		mA
Maximum Peak Forward Surge Current		I <sub>FM</sub>	500					mA
Total Device Dissipation FR-5	Board* <sup>1</sup> , T <sub>A</sub> = 25°C	P <sub>D</sub>	200					mW
	Derate Above 25°C		1.6					mW/°C
Maximum Thermal Resistance Junction to Ambient (Note 1)		R <sub>θJA</sub>	625					°C/W
Total Device Dissipation	Substrate* <sup>2</sup> , T <sub>A</sub> = 25°C	P <sub>D</sub>	300					mW
	Derate Above 25°C		2.4					mW/°C
Maximum Thermal Resistance Junction to Ambient (Note 2)		R <sub>θJA</sub>	417					°C/W
Operating Junction Temperature Range		T <sub>J</sub>	-65 to +150					°C
Storage Temperature Range		T <sub>STG</sub>	-65 to +150					°C
Maximum Reverse Voltage Leakage Current	at V <sub>R</sub> = 75V	I <sub>R</sub>	1.0	-	-	-	-	μAdc
	at V <sub>R</sub> = 70V		-	2.5	2.5	2.5	2.5	
	at V <sub>R</sub> = 25V, T <sub>J</sub> =150°C		30.0	60.0	30.0	30.0	30.0	
	at V <sub>R</sub> = 75V, T <sub>J</sub> =150°C		50.0	-	-	-	-	
	at V <sub>R</sub> = 70V, T <sub>J</sub> =150°C		-	100.0	50.0	50.0	50.0	
Typical Diode Capacitance(V <sub>R</sub> = 0V, f = 1.0MHz)		C <sub>D</sub>	2.0	1.5	2.0	1.5	1.5	pF
Maximum Reverse Recovery Time(I <sub>F</sub> = I <sub>R</sub> = 10mA, V <sub>R</sub> = 5.0Vdc, I <sub>R</sub> (REC) = 1.0mAdc, R <sub>L</sub> = 100 <sub>OHM</sub> )		t <sub>rr</sub>	6.0					ns
Maximum Forward Voltage	at I <sub>F</sub> = 1.0mAdc	V <sub>F</sub>	715					mV
	at I <sub>F</sub> = 10mAdc		855					
	at I <sub>F</sub> = 50mAdc		1000					
	at I <sub>F</sub> = 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/BAV70W/BAW56W/BAV99W BAL99W)



Power Derating Curve

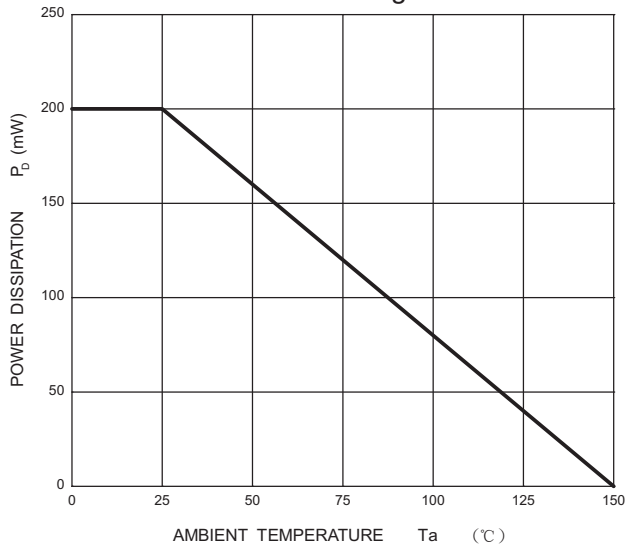


FIG.1-TYPICAL FORWARD CHARACTERISTICS

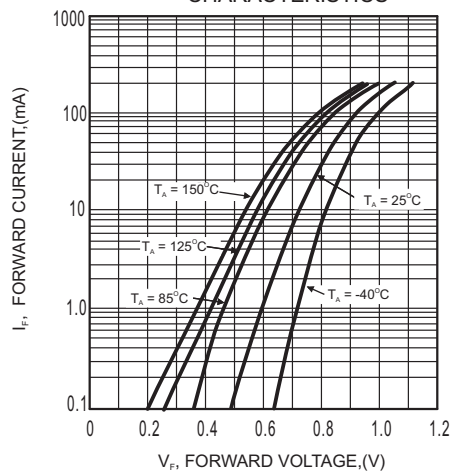
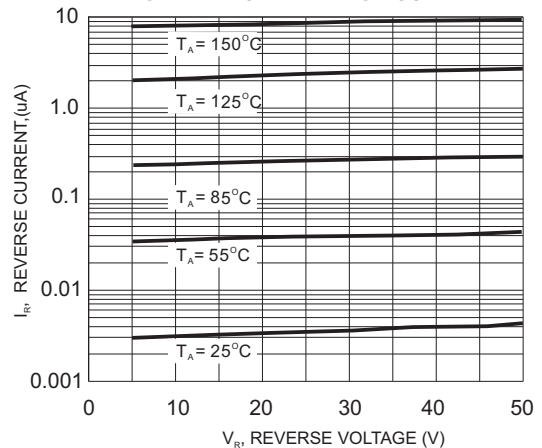


FIG.2 - TYPICAL LEAKAGE CURRENT



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

FIG.3 - DIODE CAPACITANCE (BAS16W)

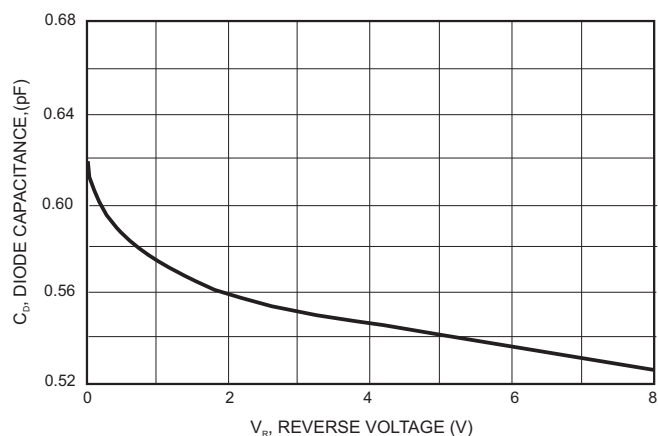


FIG.4 - DIODE CAPACITANCE (BAV70W)

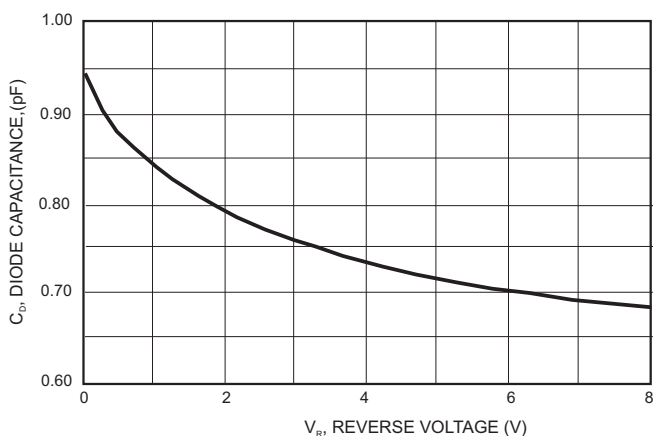


FIG.5 - DIODE CAPACITANCE (BAW56W)

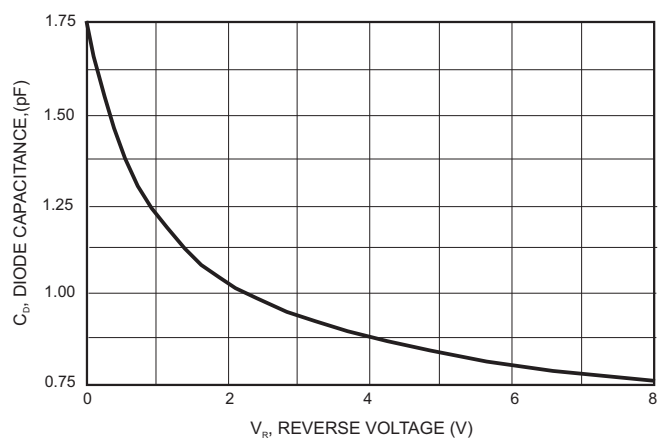


FIG.6 - DIODE CAPACITANCE (BAV99W)

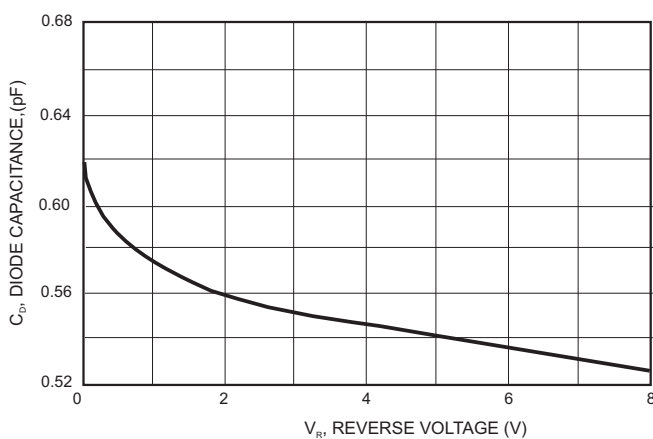
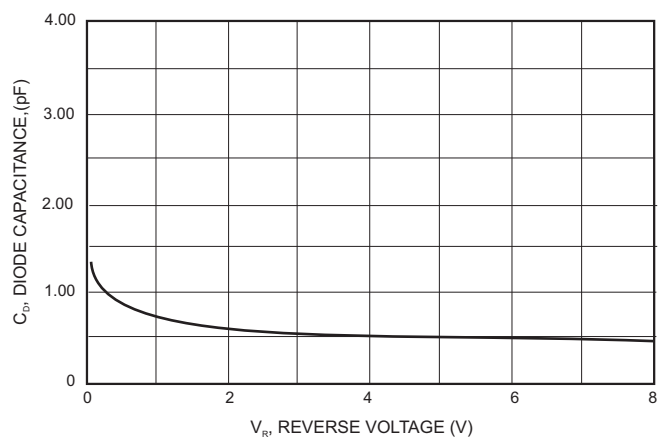
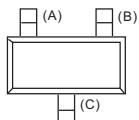
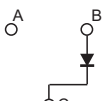
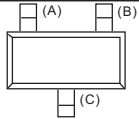
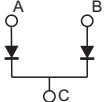
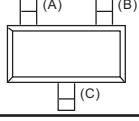
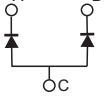
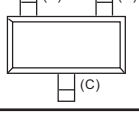
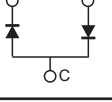
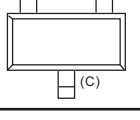
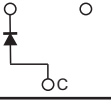


FIG.7 - DIODE CAPACITANCE (BAL99W)

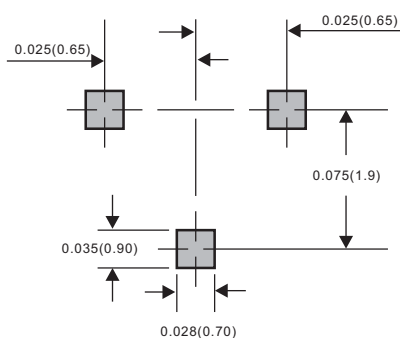


**BAS16W/BAV70W/BAW56W/BAV99W/BAL99W****Pinning information**

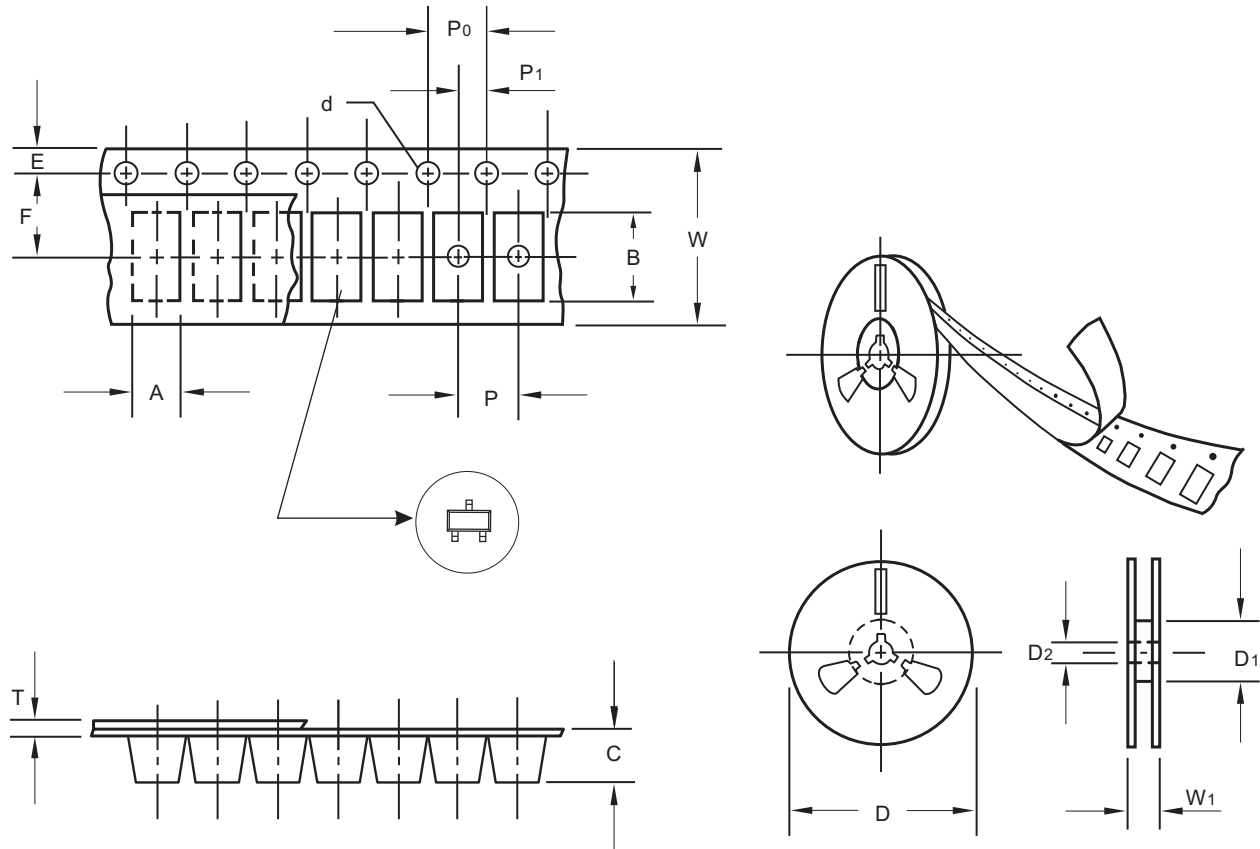
Type number	Marking code	Simplified outline	Symbol
BAS16W	A6		
BAV70W	A4, JA		
BAW56W	A1, JC		
BAV99W	A7, JB		
BAL99W	JF		

**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

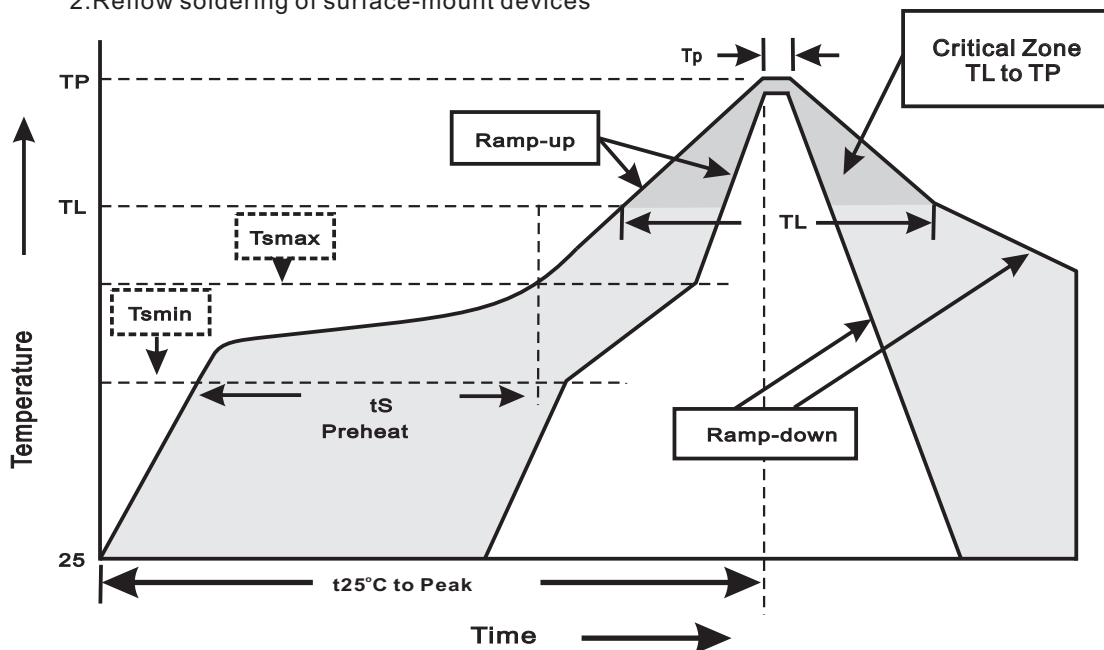
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

**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°C/sec
Preheat -Temperature Min( $T_{smin}$ ) -Temperature Max( $T_{smax}$ ) -Time(min to max)( $t_s$ )	150°C 200°C 60~120sec
$T_{smax}$ 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/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	$-55^{\circ}\text{C}$ 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 $175^{\circ}\text{C}$ for 1000 hrs.	MIL-STD-750D METHOD-1031