



LIGITEK

LIGITEK ELECTRONICS CO.,LTD.
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BAR DIGIT LED DISPLAY



Lead-Free Parts

LBD1G1/2/HG3Y-XX-PF

DATA SHEET

DOC. NO : QW0905-LBD1G1/2/HG3Y-XX-PF

REV. : A

DATE : 05 - Aug. - 2006



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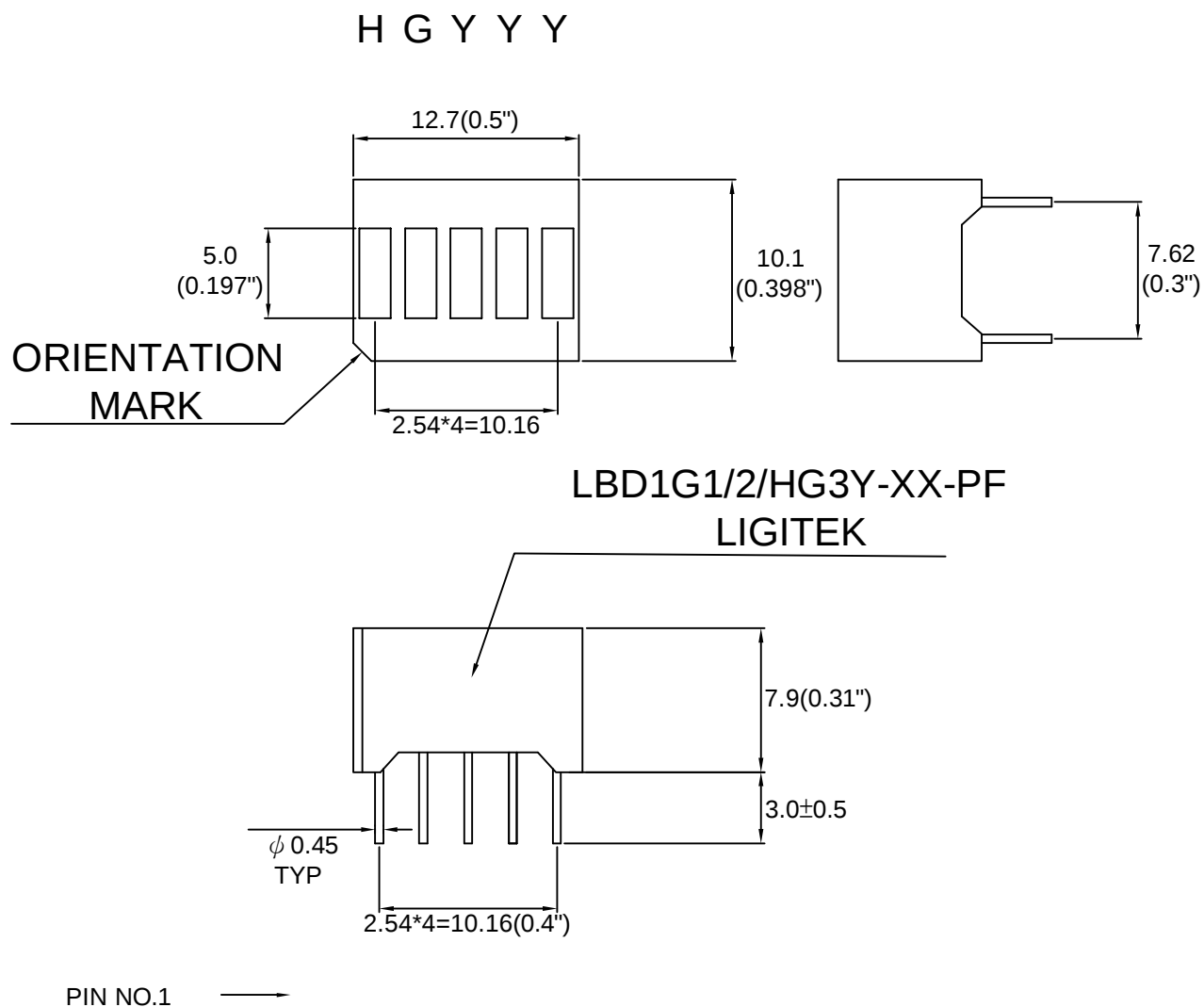
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PART NO. LBD1G1/2/HG3Y-XX-PF

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Package Dimensions

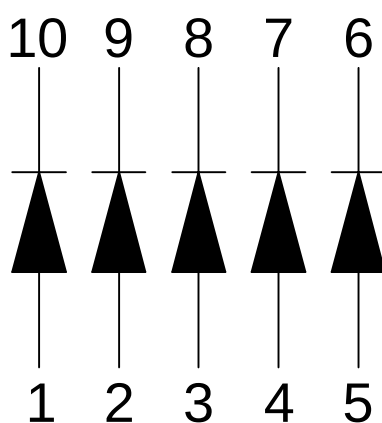


Note : 1.All dimension are in millimeters and (Inch) tolerance is $\pm 0.25\text{mm}$ unless otherwise noted.
2.Specifications are subject to change without notice.

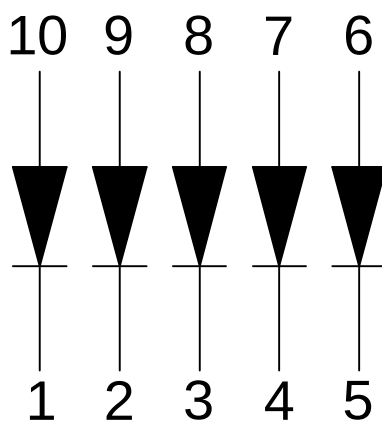


Internal Circuit Diagram

LBD1G1/HG3Y-XX-PF



LBD1G2/HG3Y-XX-PF



**Electrical Connection**

PIN NO.	LBD1G1/HG3Y-XX-PF		
1.	Anode	6.	Cathode
2.	Anode	7.	Cathode
3.	Anode	8.	Cathode
4.	Anode	9.	Cathode
5.	Anode	10.	Cathode

PIN NO.	LBD1G2/HG3Y-XX-PF		
1.	Cathode	6.	Anode
2.	Cathode	7.	Anode
3.	Cathode	8.	Anode
4.	Cathode	9.	Anode
5.	Cathode	10.	Anode



Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings			UNIT
		H	G	Y	
Forward Current Per Chip	IF	15	30	20	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	60	120	80	mA
Power Dissipation Per Chip	PD	40	100	60	mW
Reverse Current Per Any Chip	Ir	10	10	10	μA
Operating Temperature	Topr	-25 ~ +85			°C
Storage Temperature	Tstg	-25 ~ +85			°C
Solder Temperature 1/16 Inch Below Seating Plane For 3 Seconds At 260 °C					

Part Selection And Application Information(Ratings at 25°C)

PART NO	CHIP		common cathode or anode	λ P (nm)	$\Delta \lambda$ (nm)	Electrical					IV-M
	Material	Emitted				Vf(v)			Iv(mcd)		
						Min.	Typ.	Max.	Min.	Typ.	
LBD1G1/HG3Y-XX-PF	GaP	Red	Common Cathode	697	90	1.7	2.1	2.6	0.5	0.9	2:1
	GaP	Green			565	30	1.7	2.1	2.6	2.35	
LBD1G2/HG3Y-XX-PF	GaAsP/GaP	Yellow	Common Anode	585	35	1.7	2.1	2.6	1.75	3.05	

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.

2. The luminous intensity data did not including ±15% testing tolerance.

**Test Condition For Each Parameter**

Parameter	Symbol	Unit	Test Condition
Forward Voltage Per Chip	V _f	volt	I _f =20mA
Luminous Intensity Per Chip	I _v	mcd	I _f =10mA
Peak Wavelength	λ_p	nm	I _f =20mA
Spectral Line Half-Width	$\Delta \lambda$	nm	I _f =20mA
Reverse Current Any Chip	I _r	μA	V _r =5V
Luminous Intensity Matching Ratio	IV-M		



Typical Electro-Optical Characteristics Curve

H CHIP

Fig.1 Forward current vs. Forward Voltage

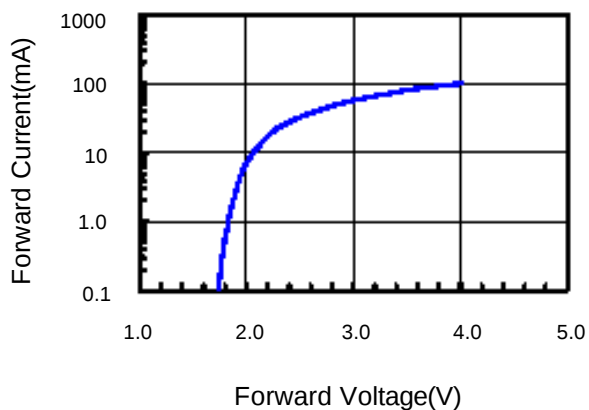


Fig.2 Relative Intensity vs. Forward Current

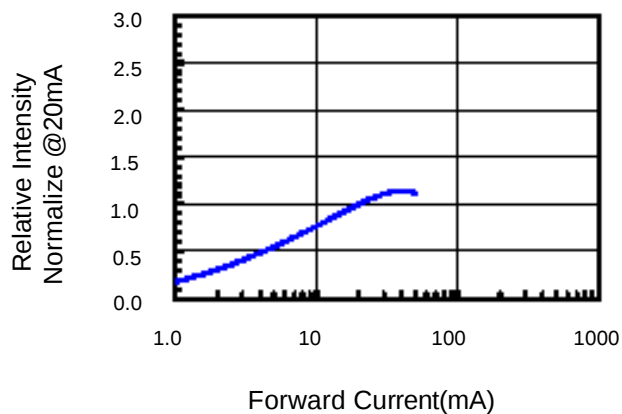


Fig.3 Forward Voltage vs. Temperature

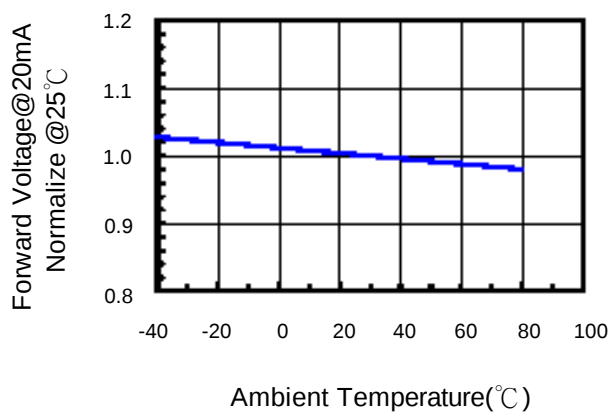


Fig.4 Relative Intensity vs. Temperature

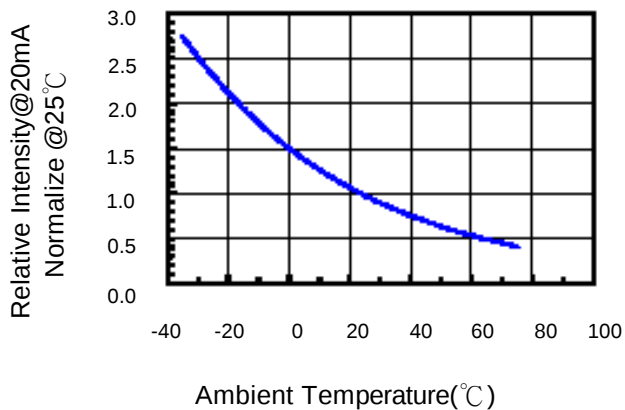
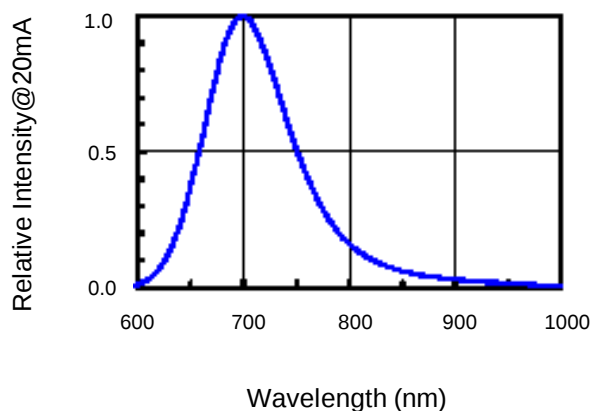


Fig.5 Relative Intensity vs. Wavelength





Typical Electro-Optical Characteristics Curve

G CHIP

Fig.1 Forward current vs. Forward Voltage

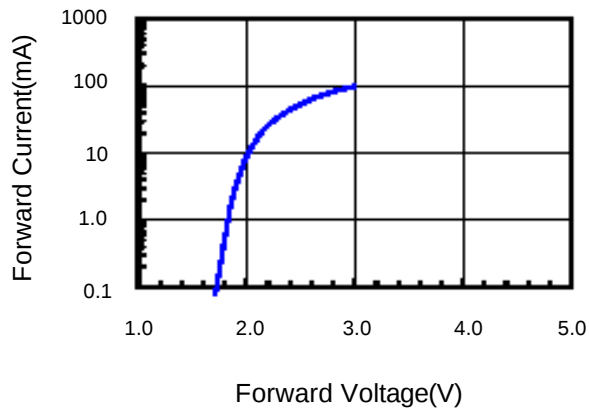


Fig.2 Relative Intensity vs. Forward Current

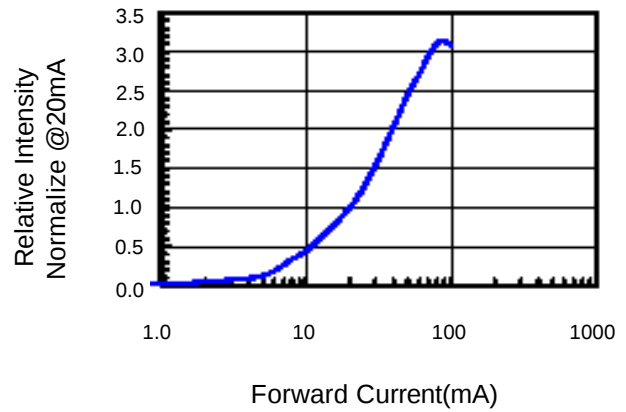


Fig.3 Forward Voltage vs. Temperature

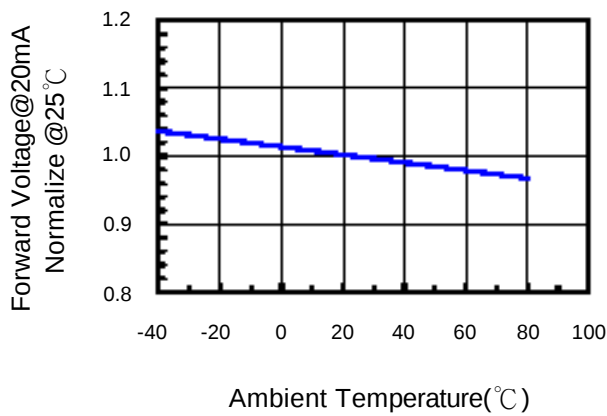


Fig.4 Relative Intensity vs. Temperature

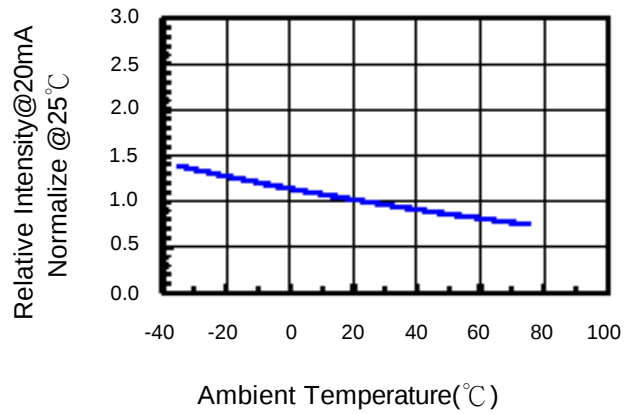
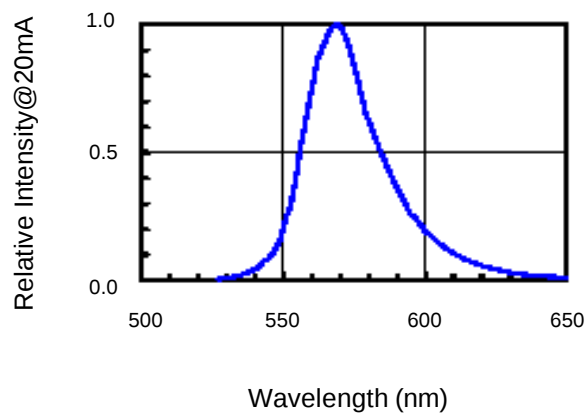


Fig.5 Relative Intensity vs. Wavelength





Typical Electro-Optical Characteristics Curve

Y CHIP

Fig.1 Forward current vs. Forward Voltage

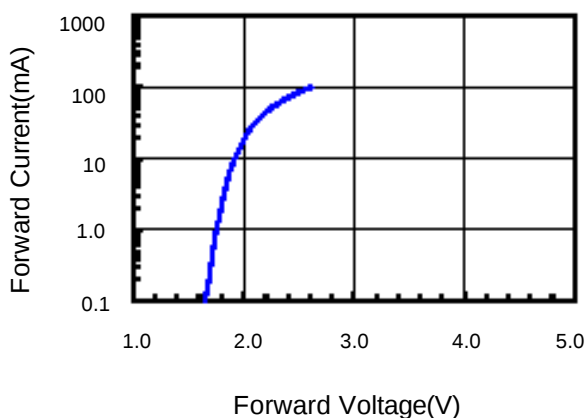


Fig.2 Relative Intensity vs. Forward Current

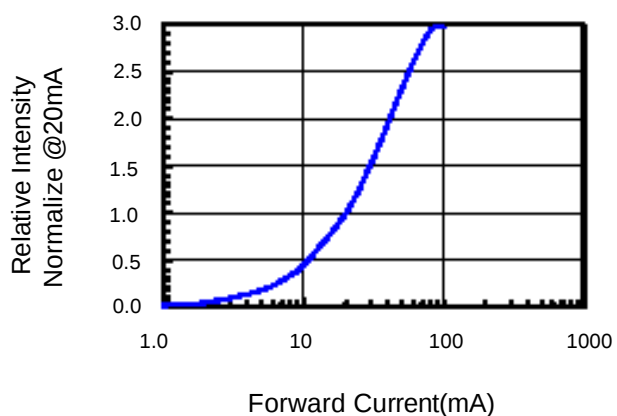


Fig.3 Forward Voltage vs. Temperature

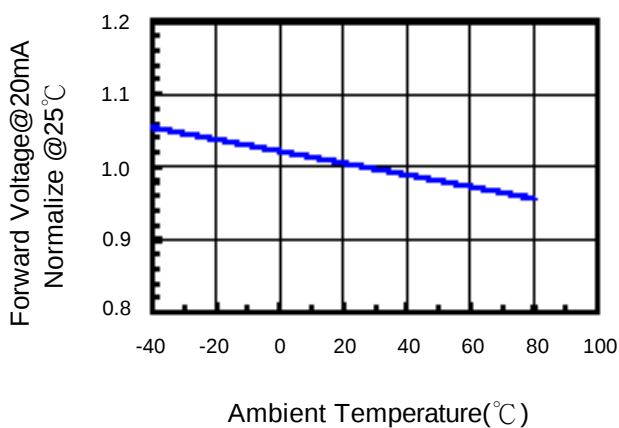


Fig.4 Relative Intensity vs. Temperature

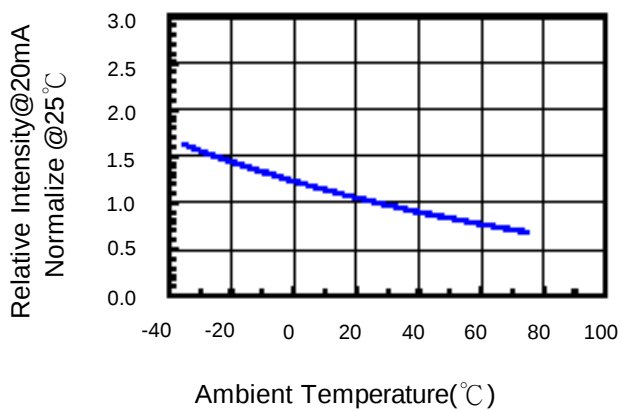
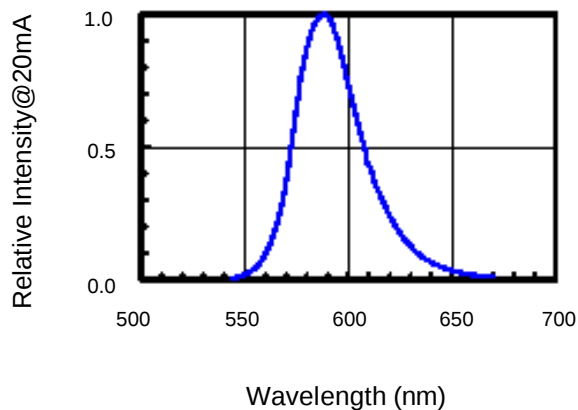


Fig.5 Relative Intensity vs. Wavelength



**Soldering Condition(Pb-Free)****1.Iron:**

Soldering Iron:30W Max

Temperature 350° C Max

Soldering Time:3 Seconds Max(One Time)

Distance:Solder Temperature 1/16 Inch Below Seating
Plane For 3 Seconds At 260° C**2.Wave Soldering Profile**

Dip Soldering

Preheat: 120° C Max

Preheat time: 60seconds Max

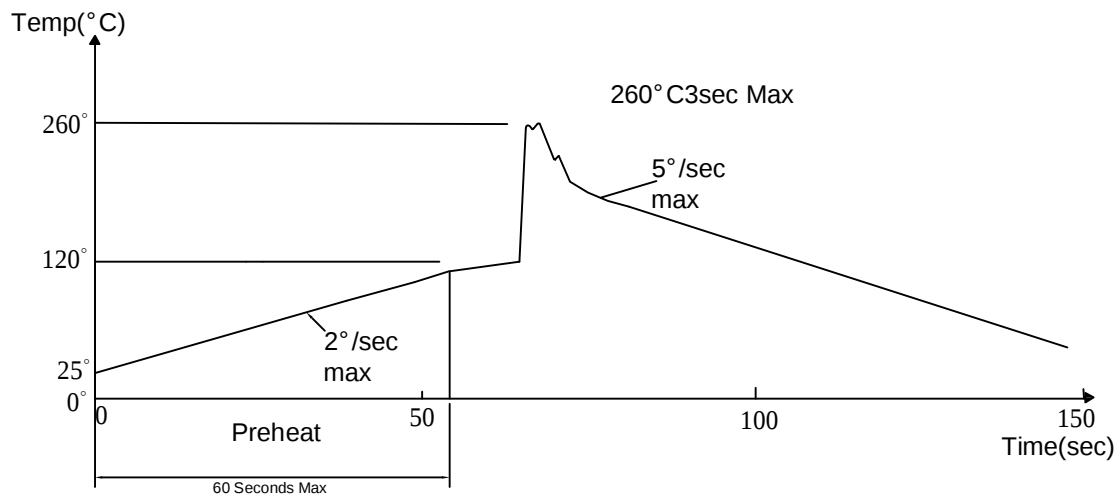
Ramp-up

2° C/sec(max)

Ramp-Down:-5° C/sec(max)

Solder Bath:260° C Max

Dipping Time:3 seconds Max

Distance:Solder Temperature 1/16 Inch Below Seating
Plane For 10 Seconds At 260° C

**Reliability Test:**

Test Item	Test Condition	Description	Reference Standard
Operating Life Test	1.Under Room Temperature 2.If=10mA 3.t=1000 hrs (-24hrs, +72hrs)	This test is conducted for the purpose of determining the resistance of a part in electrical and thermal stressed.	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1
High Temperature Storage Test	1.Ta=105 °C ±5 °C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of high temperature for hours.	MIL-STD-883:1008 JIS C 7021: B-10
Low Temperature Storage Test	1.Ta=-40 °C ±5 °C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.	JIS C 7021: B-12
High Temperature High Humidity Test	1.Ta=65 °C ±5 °C 2.RH=90 %~95 % 3.t=240hrs ±2hrs	The purpose of this test is the resistance of the device under tropical for hours.	MIL-STD-202:103B JIS C 7021: B-11
Thermal Shock Test	1.Ta=105 °C ±5 °C & -40 °C ±5 °C (10min) (10min) 2.total 10 cycles	The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
Solder Resistance Test	1.T.Sol=260 °C ±5 °C 2.Dwell time= 10 ±1sec.	This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire.	MIL-STD-202: 210A MIL-STD-750: 2031 JIS C 7021: A-1
Solderability Test	1.T.Sol=230 °C ±5 °C 2.Dwell time=5 ±1sec	This test intended to see soldering well performed or not.	MIL-STD-202: 208D MIL-STD-750: 2026 MIL-STD-883: 2003 JIS C 7021: A-2