

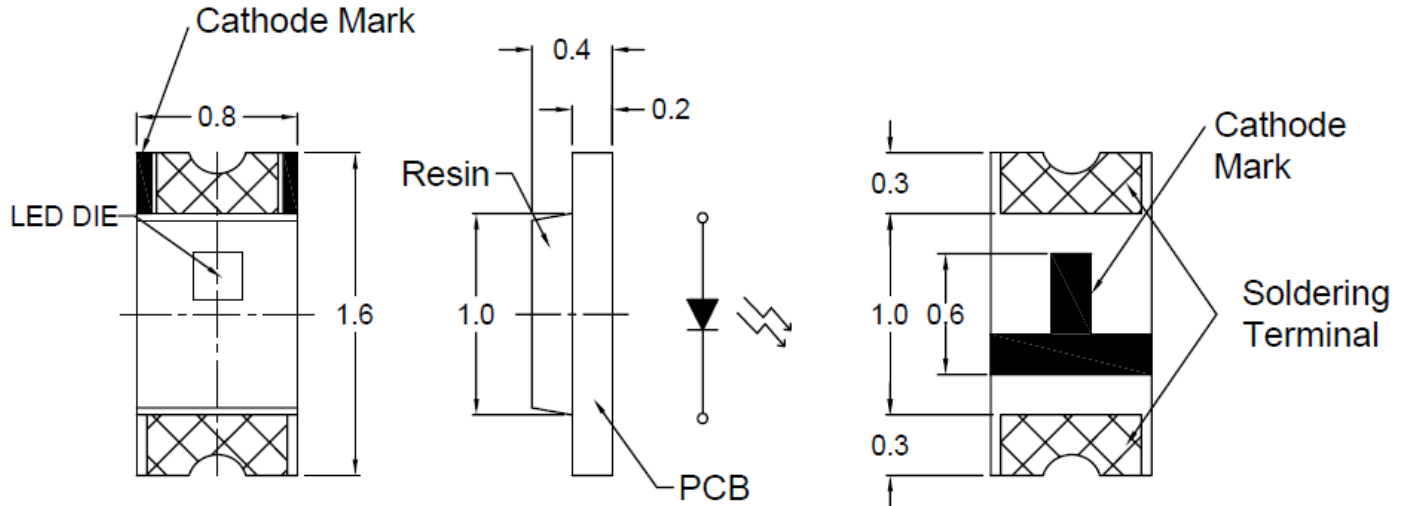


# American Opto Plus LED Corp.

## L196L-QYC-LC2

1.6 x 0.8 x 0.4mm Yellow SMD LED

### PACKAGE DIMENSION

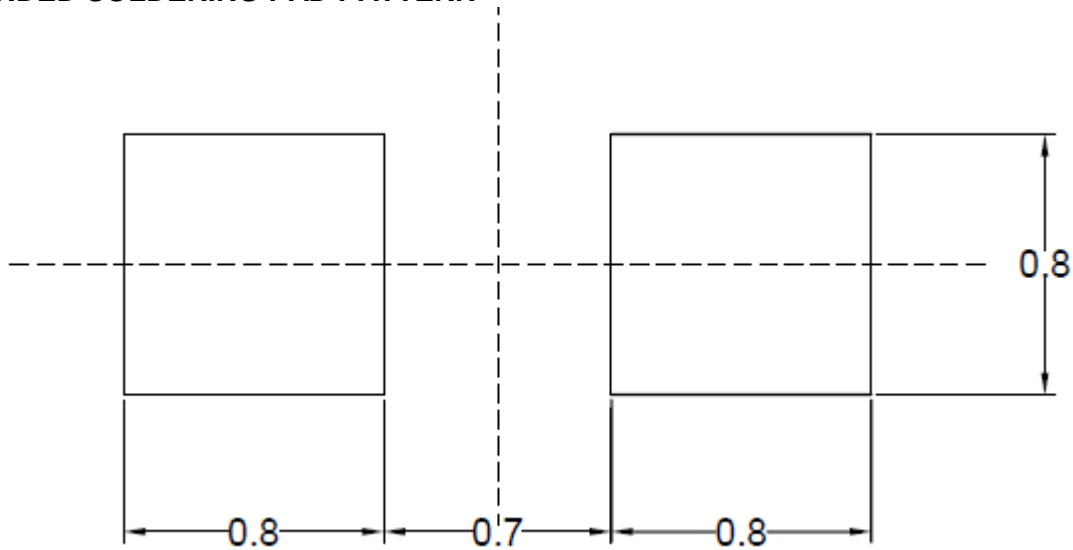


### Notes:

1. All dimension are in millimeter tolerance is  $\pm 0.1$ mm unless otherwise noted.
2. Specifications are subject to change without notice.

Material	Color	
	Emitted	Lens
AlGaInP	Yellow	Water Clear

### RECOMMENDED SOLDERING PAD PATTERN



### Notes:

1. The tolerances unless mentioned is  $\pm 0.1$ , angle  $\pm 0.5$ , unit = mm.



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### ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

Parameter	Symbol	Value	Unit
Forward Current	If	25	mA
Peak Forward Current Duty 1/10 @ 10KHz	Ifp	60	mA
Power Dissipation	Pd	60	mW
Reverse Current @ 5V	Ir	10	µA
Electrostatic Discharge	ESD	2000	V
Operating Temperature Range	Topr	-40~+85	°C
Storage Temperature Range	Tstg	-40~+100	°C

### OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Test Condition	Value			Unit
			Min	Typ	Max	
Luminous intensity	Iv	IF = 2mA	8	12.5	--	mcd
Spectral Line Half-width	Δλ		--	15	--	nm
Dominant Wavelength	λd		--	590	--	nm
Forward Voltage	Vf		1.5	--	2.4	V
Viewing angle	2θ ½		--	130	--	Deg

#### Notes:

1. The forward voltage data did not including ±0.1V testing tolerance.
2. The luminous intensity data did not including ±15% testing tolerance.
3. The dominant wavelength data did not including ±1nm testing tolerance.



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### LUMINOUS INTENSITY CLASSIFICATION

(If=2mA)

Bin Code	Min	Max	Unit
K	8	12.5	mcd
L	12.5	20	
M	20	32	

### DOMINANT WAVELENGTH CLASSIFICATION

(If=2mA)

Bin Code	Min	Max	Unit
16	587	589	nm
17	589	592	
18	592	595	

### FORWARD VOLTAGE CLASSIFICATION

(If=5mA)

Bin Code	Min	Max	Unit
1	1.5	1.6	V
2	1.6	1.8	
3	1.8	2.0	
4	2.0	2.2	
5	2.2	2.4	



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### ELECTRICAL-OPTICAL CHARACTERISTIC CURVES

(Ta=25°C)

Fig.1 Forward current vs. Forward Voltage

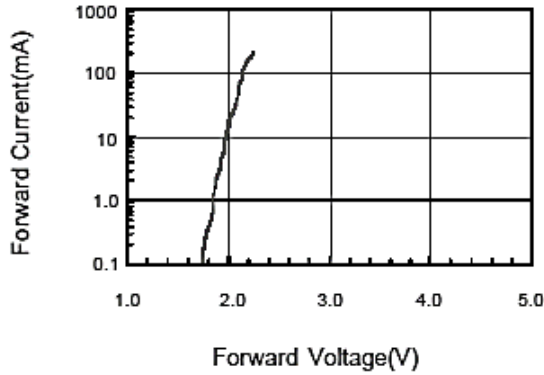


Fig.2 Relative Intensity vs. Forward Current

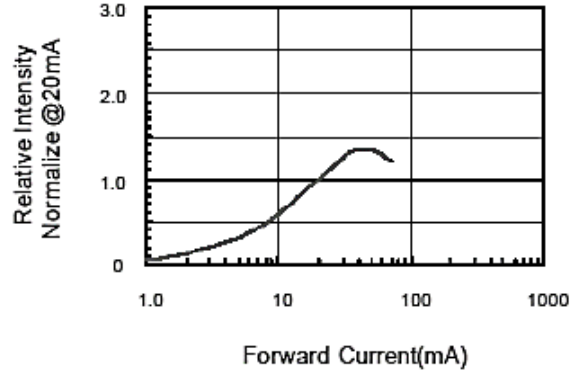


Fig.3 Forward Current vs. Temperature

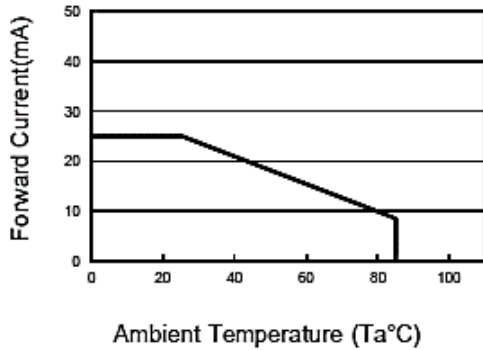


Fig.4 Relative Intensity vs. Temperature

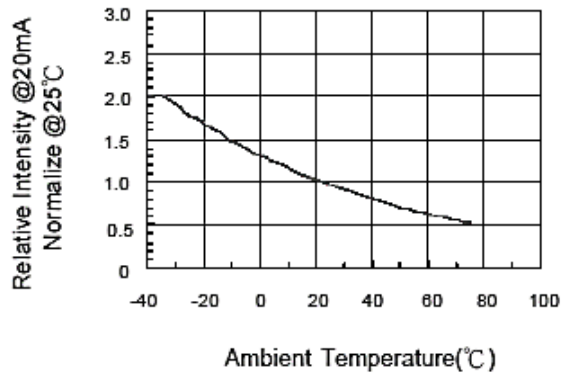


Fig.5 Relative Intensity vs. Wavelength

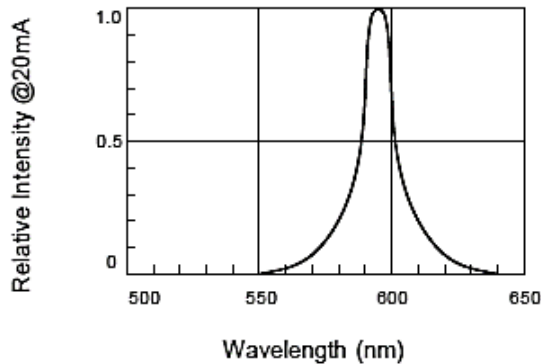
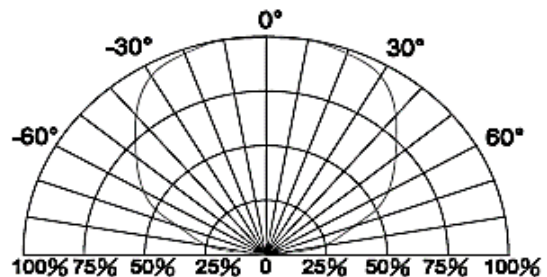


Fig.6 Directive Radiation



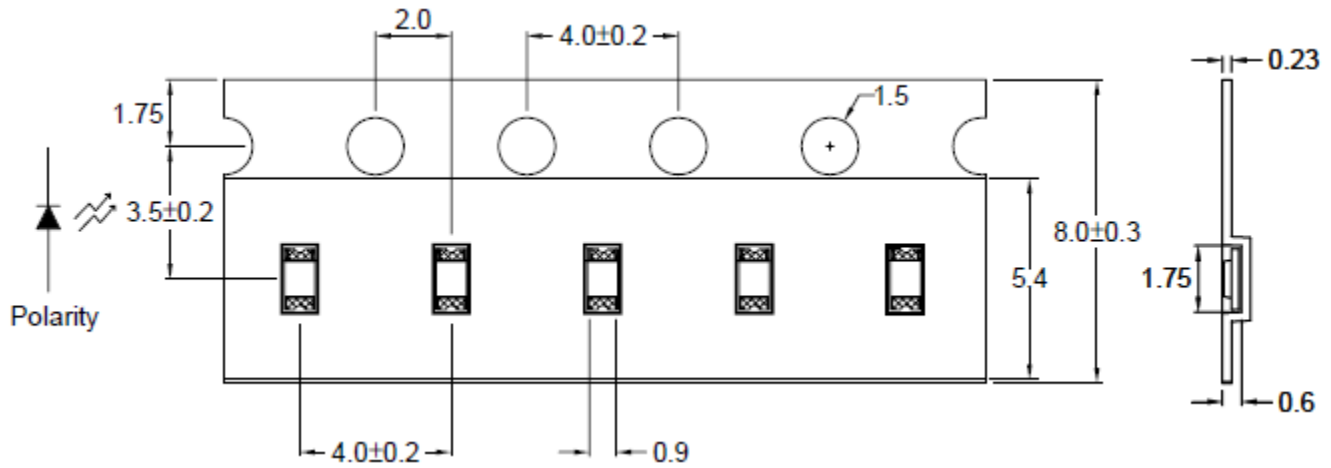


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## L196L-QYC-LC2

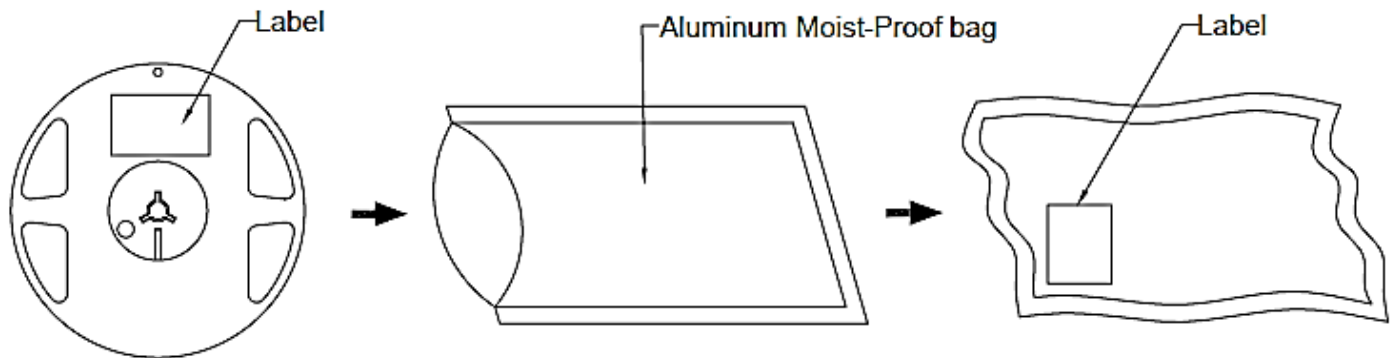
1.6 x 0.8 x 0.4mm Yellow SMD LED

### CARRIER TAPE DIMENSIONS



Note: The tolerances unless mentioned is  $\pm 0.1$ mm, Angle  $\pm 0.5$ , Unit=mm.

### PACKING SPECIFICATION



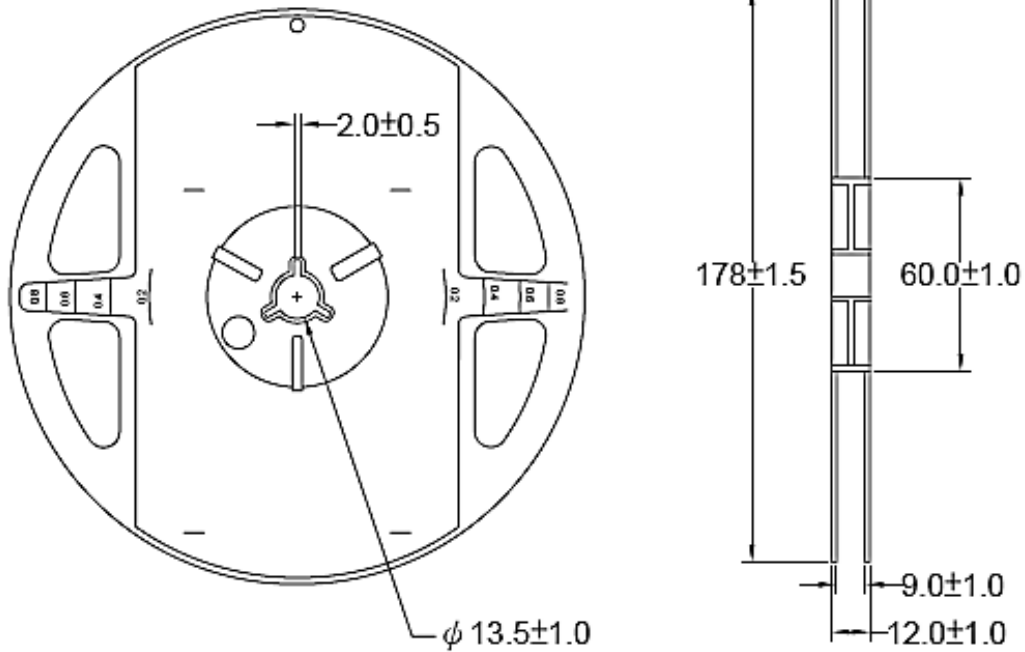


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## L196L-QYC-LC2

1.6 x 0.8 x 0.4mm Yellow SMD LED

### REEL DIMENSIONS



Description	Quantity/Reel
8.0mm tape, 7" reel	4000 PCS

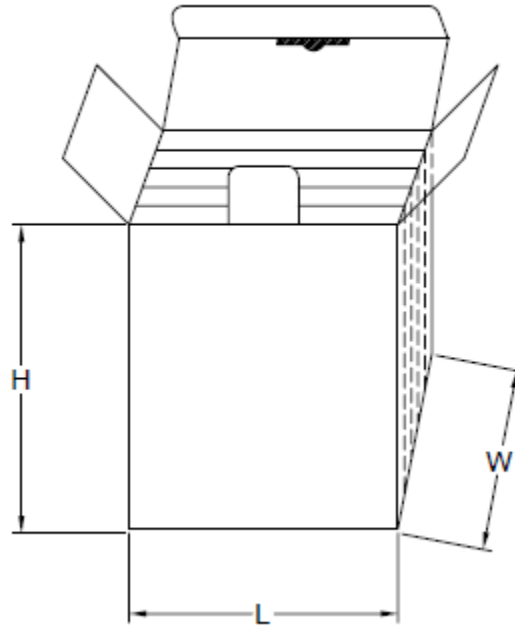


# American Opto Plus LED Corp.

## L196L-QYC-LC2

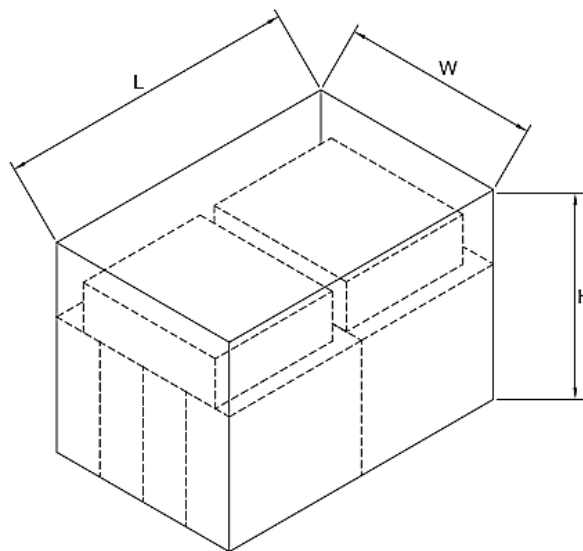
1.6 x 0.8 x 0.4mm Yellow SMD LED

### BOX EXPLANATION



Notes:

1. 5 bag/inner box
2. Carton size : L x W x H 23cm x 8.5cm x 26cm



Notes:

1. 10 inner boxes/carton
2. Carton size : L x W x H 58cm x 34cm x 35cm



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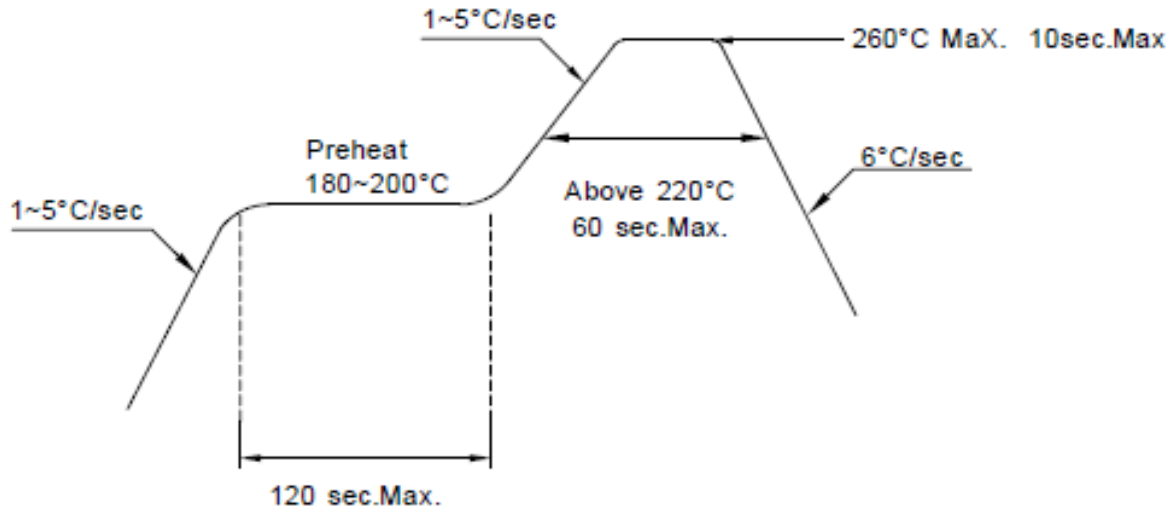
1.6 x 0.8 x 0.4mm Yellow SMD LED

### RECOMMENDED SOLDERING CONDITIONS

#### 1. Hand Solder

Basic spec is  $\leq 280^{\circ}\text{C}$  3 sec one time only

#### 2. PB-Free Reflow Solder



#### Note:

1. Reflow soldering should not be done more than two times.
2. When soldering, do not put stress on the LED during heating.
3. After soldering, do not warp the circuit board.



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### PRECAUTIONS FOR USE:

#### Storage time:

1. Calculated shelf life before opening is 18 months at  $<30^{\circ}\text{C}$  and  $<90\%$  relative humidity (RH).
2. After bag is opened, devices which will be subjected to reflow soldering or other high temperature process must be:
  - a. Assembled within one year in an environment of  $\leq 30^{\circ}\text{C}$  / 60% RH, or
  - b. Stored at ambient of 10% RH or less.
3. Devices are required baking before assembly if:
  - a. Humidity indicator card reads  $>10\%$  (for level 2a~5a) or  $>60\%$  (for level 2) at ambient temperature  $23\pm 5^{\circ}\text{C}$ .
  - b. If 2.a / 2.b doesn't meet.
4. If baking is required, devices should be baked for  $>72$  hours at  $60\pm 5^{\circ}\text{C}$  / 5% RH. Performing baking only once, and use the baked devices within 72 hours.

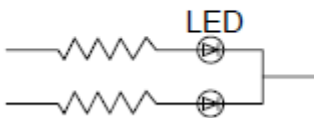
MSL LEVEL 2

#### Drive method:

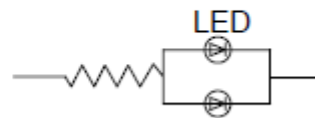
LED is current operated device, and therefore, require some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

#### Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

#### ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.



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### RELIABILITY TEST

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life Test	1.Ta=25°C 2.If=2mA 3.t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature Storage Test	1.Ta=100°C±5°C 2.t=1000 hrs (-24hrs,+72hrs)	22
	Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature High Humidity Storage Test	1.Ta=85°C 2.RH=85% 3.t=1000hrs(-24hrs,+72hrs)	22
Environmental Test	Thermal Shock Test	1.Ta=100°C±5°C ~ -40°C±5°C 20min/ 10sec / 20min 2.total 100 cycles	22
	Temperature Cycling	1.100°C±5°C ~ -40°C±5°C 30mins / 5mins / 30mins 2.100 Cyeles	22
	IR Reflow	1.T=260°C Max. 10sec.Max. 2. 6 Min	22