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SURFACE MOUNT LED TAPE AND REEL



Lead-Free Parts

79-LWKG9S53-HS-T60-A02

## DATA SHEET

DOC. NO : QW0905-79-LWKG9S53-HS-T60-A02

REV. : B

DATE : 29 - Apr. - 2014

**Features:**

1. Top view white LED.
2. white SMT package.
3. Leadframe package with individual 2 pin.
4. Wide viewing angle.
5. Soldering methods: IR reflow soldering.
6. Feature of the device: more light due to higher optical efficiency; extremely wide viewing angle; ideal for backlighting and coupling in light guide.

**Descriptions:**

The LWK9S53 SMD has wide viewing angle, low power consumption and white LEDs are devices which are materialized by combing blue LEDs and special phosphors. This feature makes the LED ideal for light guide application.

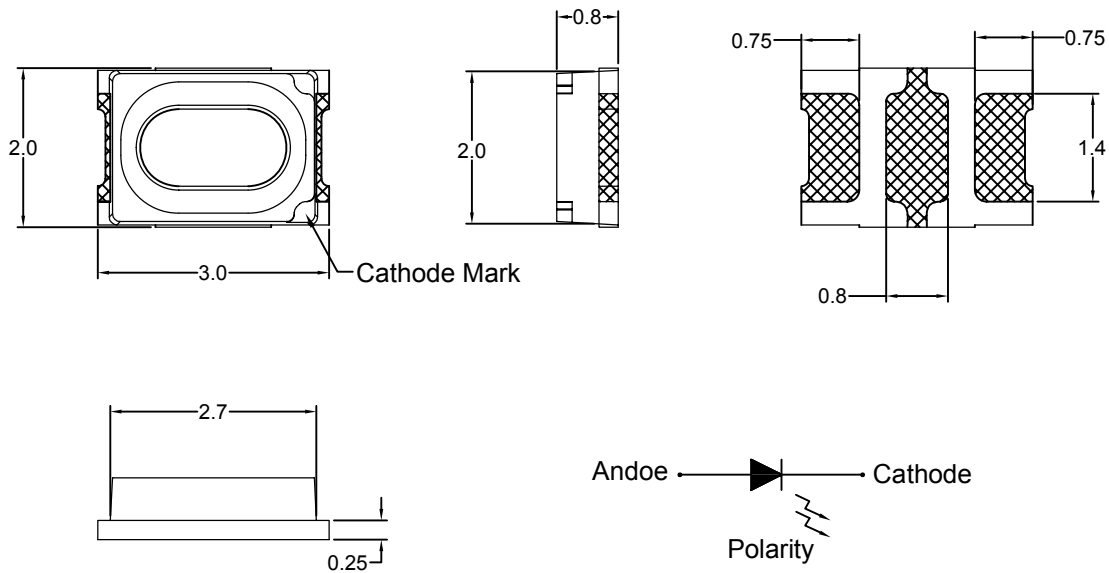
**Applications:**

1. LCD back light.
2. Mobile phones.
3. Indicators.
4. Switch lights.

**Device Selection Guide:**

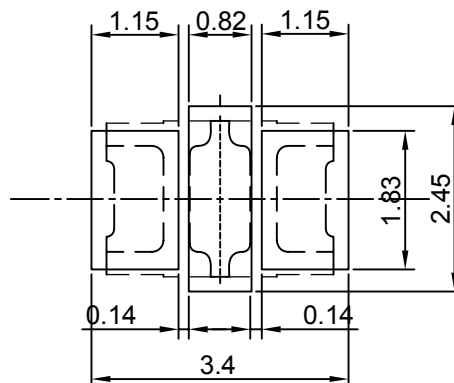
PART NO	MATERIAL	COLOR	
		Emitted	Lens
79-LWKG9S53-HS-T60-A02	InGaN	Pink	Yellow Diffused

## Package Dimensions



Note : 1.All dimension are in millimeter tolerance is  $\pm 0.2\text{mm}$  unless otherwise noted.  
2.Specifications are subject to change without notice.

## Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Unit=mm.

### Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
Forward Current	IF	60	mA
Peak Forward Current Duty 1/10@10KHz	IFP	100	mA
Power Dissipation	PD	216	mW
Reverse Current @5V	Ir	50	μA
Electrostatic Discharge	ESD	500	V
Operating Temperature	Topr	- 20 ~ + 80	°C
Storage Temperature	Tstg	- 30 ~ + 100	°C
LED junction Temperature	Tj	125	°C

### Typical Electrical & Optical Characteristics (Ta=25 °C)

Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Luminous Intensity	Iv	2	4	----	lm	IF=60mA
Chromaticity Coordinates	X	0.3710	----	0.4383	----	IF=60mA
	Y	0.2775	----	0.3182	----	IF=60mA
Forward Voltage	V <sub>F</sub>	2.8	----	3.7	V	IF=60mA
Viewing Angle	2θ 1/2	----	120	----	deg	IF=60mA

Note : 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 color coordinates measurement allowance is ±0.01 testing tolerance

### Luminous Intensity Classification

BIN CODE	Iv(lm) at60mA	
	Min.	Max.
F2D	2	4
F4D	4	6
F6D	6	8
F8D	8	10
F10D	10	12

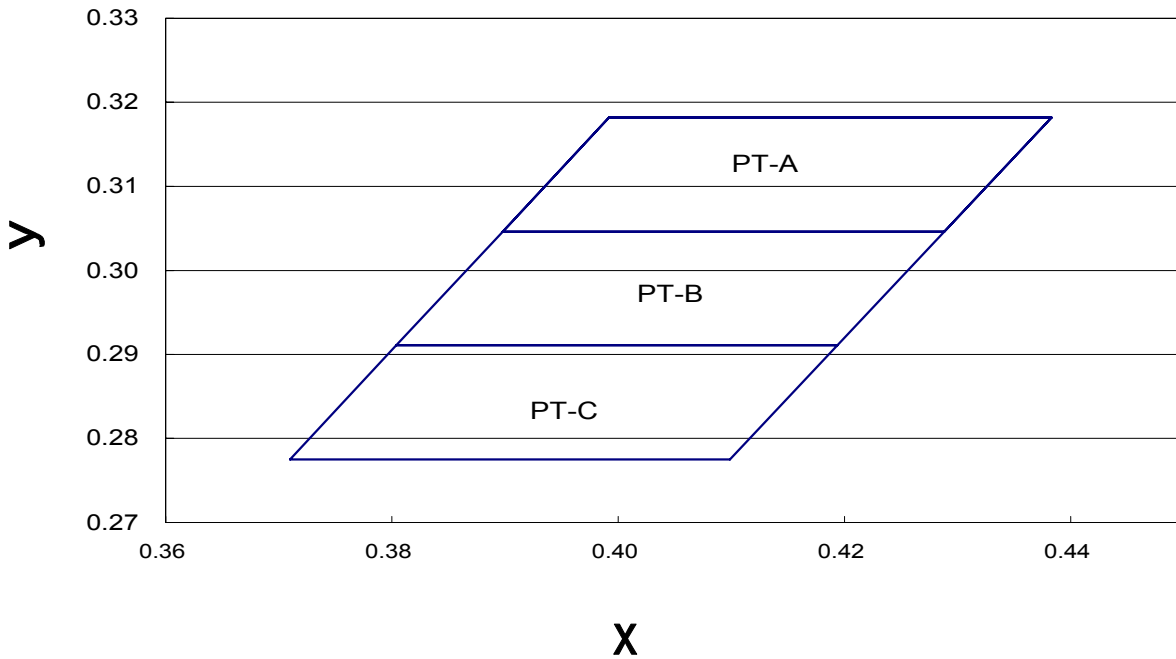
### Forward Voltage Classification

BIN CODE	Vf(v) at60mA	
	Min.	Max.
1	2.8	2.9
2	2.9	3.0
3	3.0	3.1
4	3.1	3.2
5	3.2	3.3
6	3.3	3.4
7	3.4	3.5
8	3.5	3.6
9	3.6	3.7

**Chromaticity Coordinates Specifications For Bin Grading**

Color Coordiante at 60mA								
BIN CODE	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
PT-A	0.3992	0.3182	0.4383	0.3182	0.4288	0.3046	0.3898	0.3046
PT-B	0.3898	0.3046	0.4288	0.3046	0.4194	0.2911	0.3804	0.2911
PT-C	0.3804	0.2911	0.4194	0.2911	0.4099	0.2775	0.371	0.2775

**CIE Chromaticity Diagram**



**Typical Electro-Optical Characteristics Curve**

Fig.1 Forward current vs. Forward Voltage

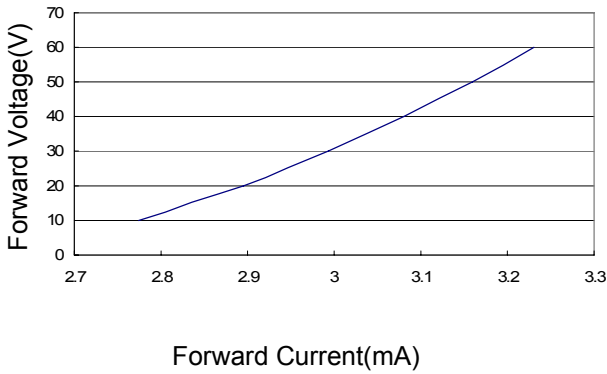


Fig.2 Forward current vs. Luminous Intensity

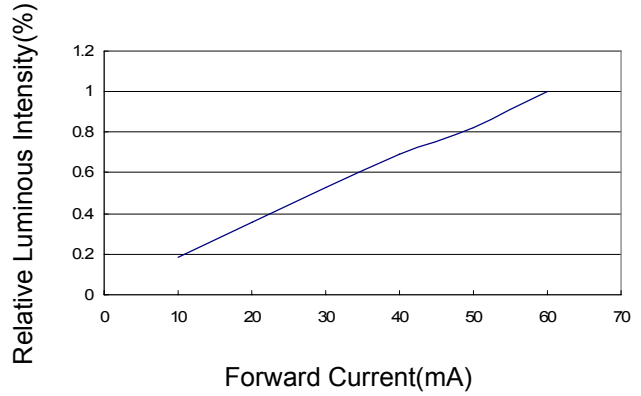


Fig.3 Directivity Radiation

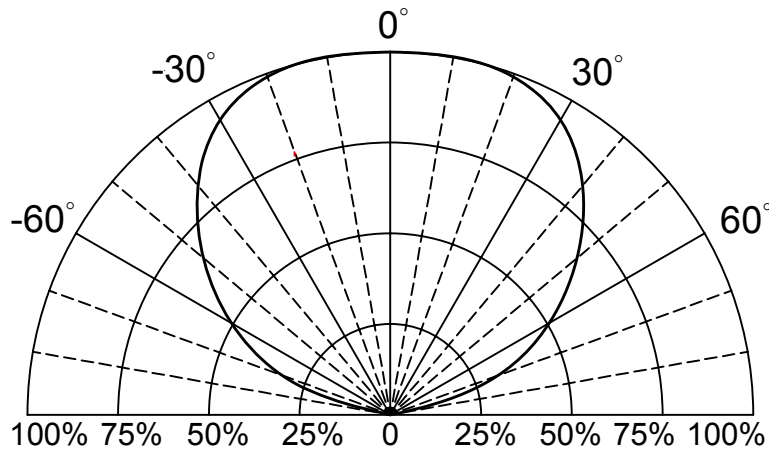
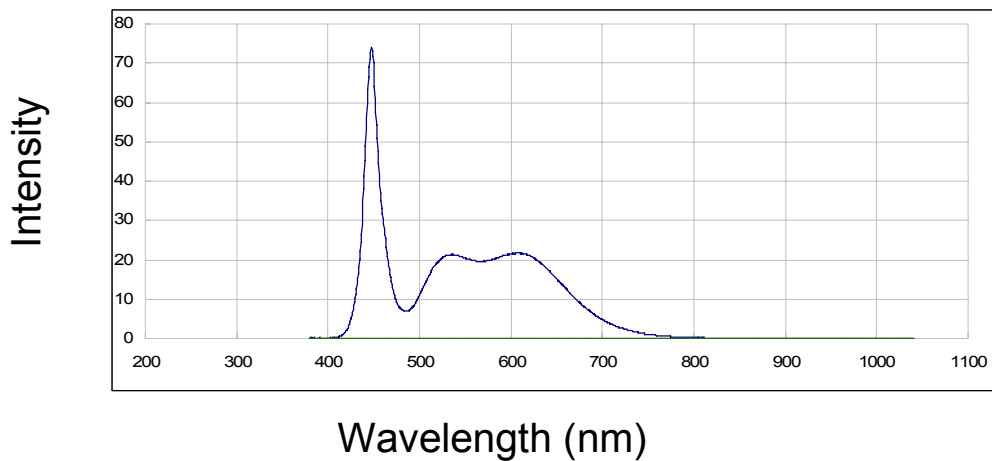


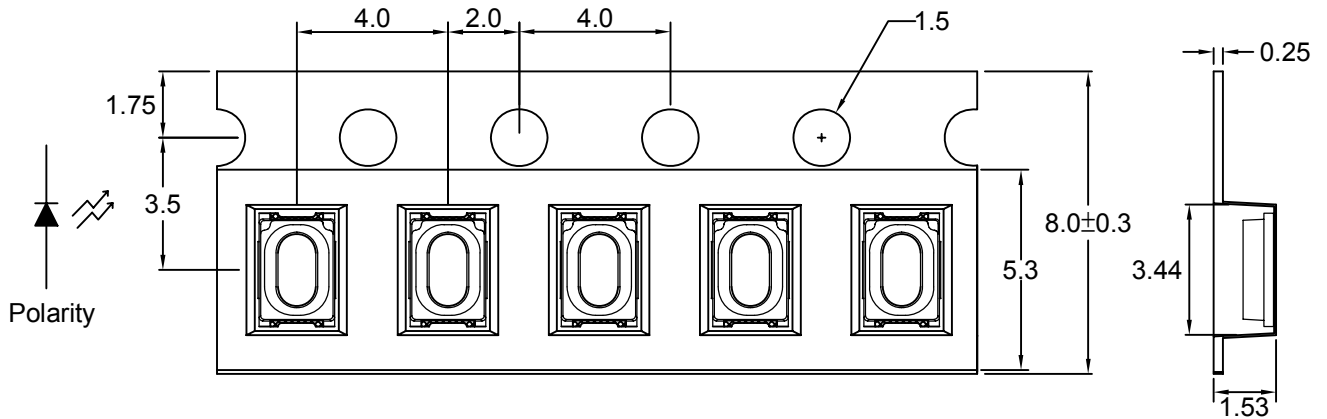
Fig.5 Luminous Spectrum (Ta=25 °C)

**SPECTRAL RADIANCE**



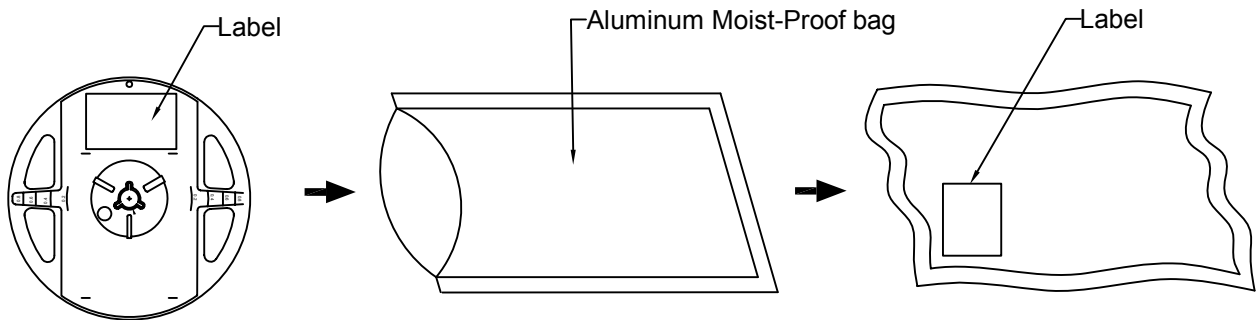


### Carrier Type Dimensions





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

#### • Packing Specifications



Part No.	Description	Quantity/Reel
79-LWKG9S53-HS-T60-A02	8.0mm tape,7"reel	2000 PCS

## Label Explanation

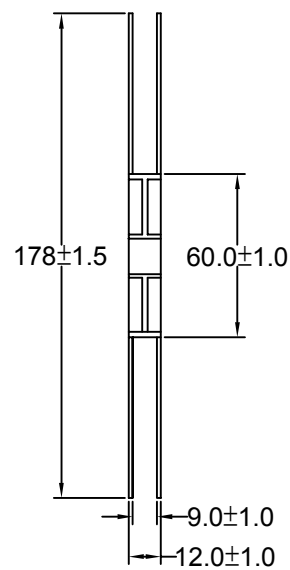
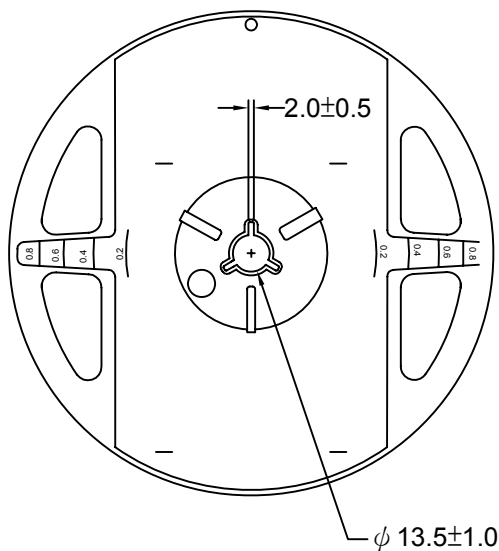
	LIGITEK ELECTRONICS CO., LTD.	
		
	PART :	79-LWKG9S53-HS-T60-A02
	LOT :	GS11410168
	QTY(PCS):	2000
BIN/HUE :	F4D/PT-A	VF:3-3.1

BIN : Luminous Flux

HUE : Chromaticity Coordinates  
(CIE\_x , CIE\_y)

VF : Forward Voltage

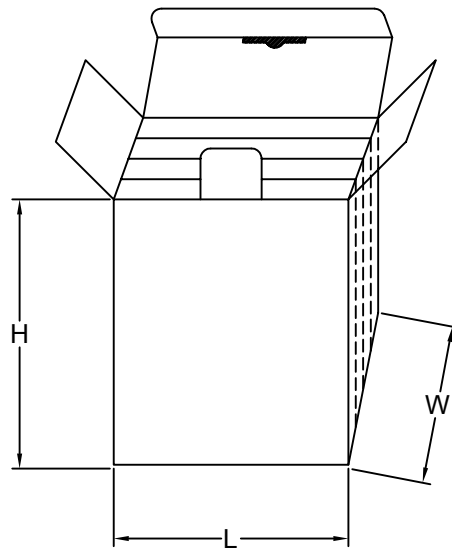
## Reel Dimensions



## Box Explanation

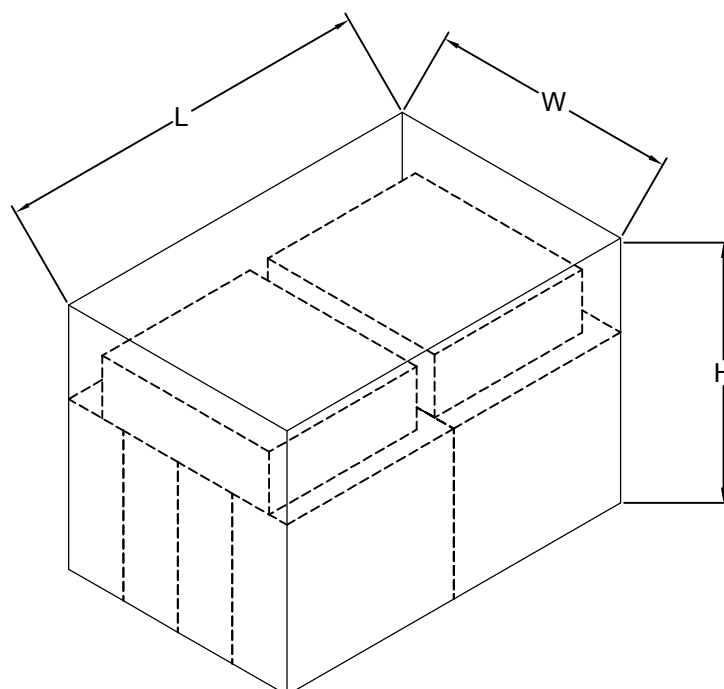
1. 5 BAG / INNER BOX

2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



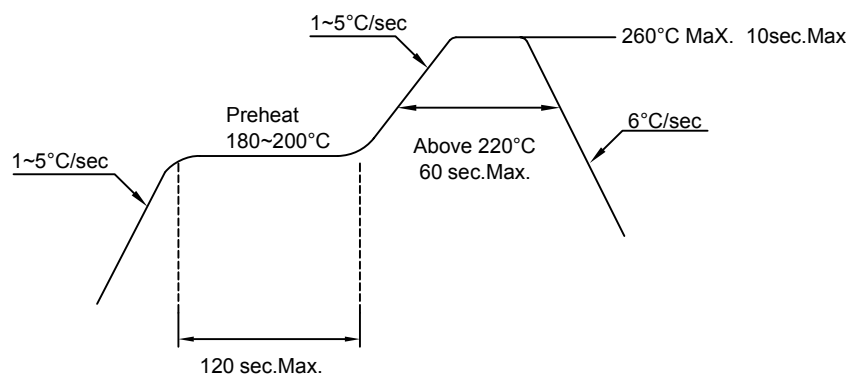
3. 10 INNER BOXES / CARTON

4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm



**Recommended Soldering Conditions****1. Hand Solder**

Basic spec is  $\leq 320\phi J$  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 LEDs during heating.
- 3.After soldering,do not warp the circuit board.

**Precautions For Use:****Storage time:**

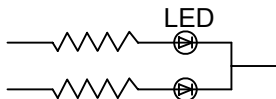
- 1.The operation of Temperatures and RH are : 5 °C~35°C,RH60%.
- 2.Once the package is opened, the products should be used within a week.  
Otherwise, they should be kept in a damp proof box with descanting agent.  
Considering the tape life, we suggest our customers to use our products within a year(from production date).
- 3.If opened more than one week in an atmosphere 5 °C ~ 35°C ,RH60%, they should be treated at 60°C±5 °C for 15hrs.

**Drive Method:**

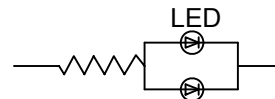
LED is a current operated device, and therefore, requires some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

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.

**Reliability Test:**

(1)Test items and results

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life Test	1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating. 2.If=60mA 3.t=1000 hrs	22
	High Temperature Storage Test	1.Ta=105°C±5°C 2.t=500 hrs	22
	Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs	22
	High Temperature High Humidity Storage Test	1.IR-Reflow In-Board, 2 Times 2.Ta=85°C±5°C 3.RH=90%~95% 4.t=500hrs±2hrs	22
Environmental Test	Thermal Shock Test	1.IR-Reflow In-Board,2 times 2.Ta=105°C±5°C & -40°C±5°C (30min) (30min) 3.total 100 cycles	22
	Reflow Soldering Test	1.T.Sol=260°C±5°C 2.Dwell Time= 10 Max.	22
	Temperature Cycling	1.105°C ~ 25°C ~ -40°C 30mins 15mins 30mins 2.100 Cyeles	22

(2)Criteria for judging the damage

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	Vf	If=60mA	-	U.S.L x1.2
Reverse Current	Ir	Vr=5V	-	U.S.L x2.0
Luminous Intensity	Iv	If=60mA	L.S.L x 0.5	-

Note:

1.U.S.L.:Upper Standard Level.

2.L.S.L.:Lower Standard Level.