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SURFACE MOUNT LED TAPE AND REEL

Pb
Lead-Free Parts

LWK9S53-HC-T150-X-DXXX

DATA SHEET

DOC. NO : QW0905-LWK9S53-HC-T150-X-DXXX

REV. : A

DATE : 02 - Oct. - 2013

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DCC

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 phos phors.This feature makes the LED ideal for light guide application.

Applications:

1. LCD back light.

2. Mobile phones.

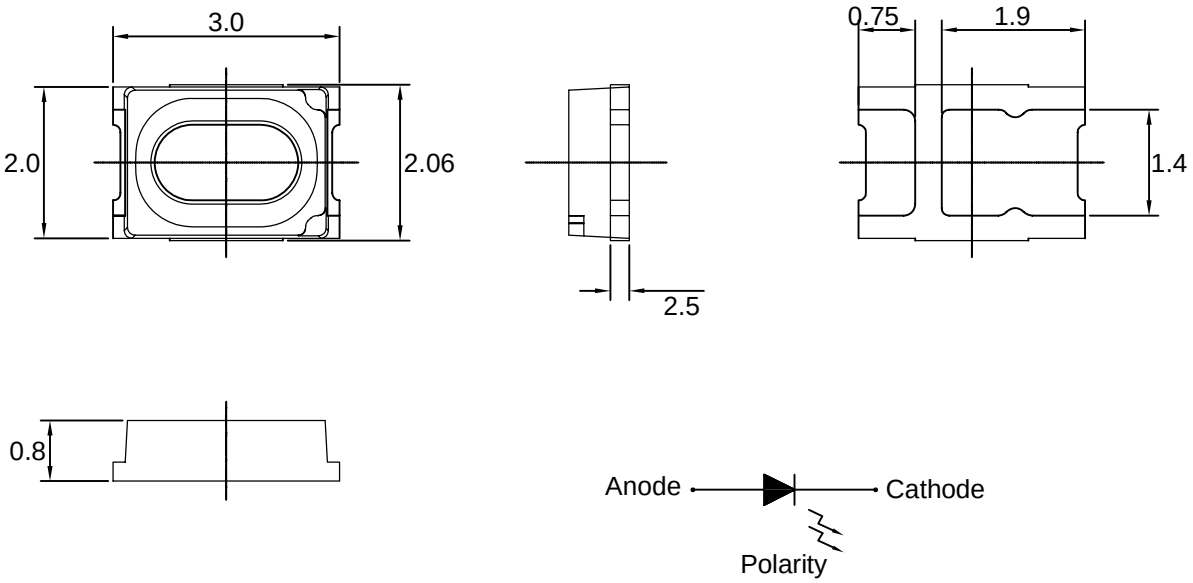
3. Indicators.

4. Switch lights.

Device Selection Guide:

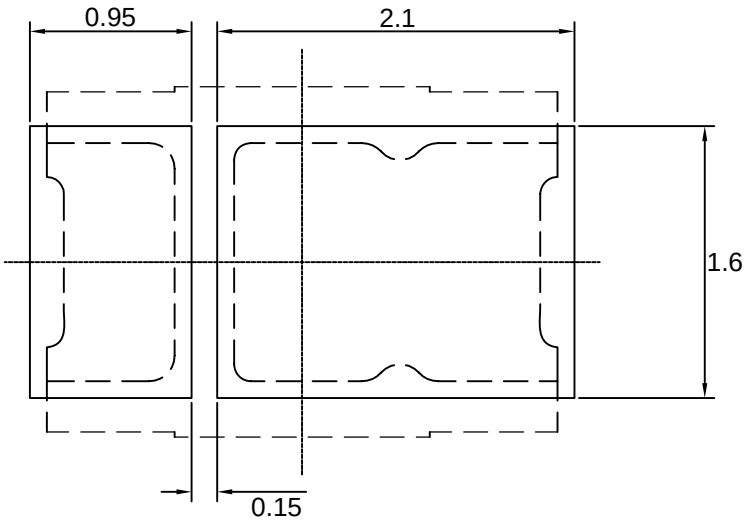
PART NO	MATERIAL	COLOR	
		Emitted	Lens
LWK9S53-HC-T150-X-DXXX	InGaN	White	Yellow Diffused

Package Dimensions



Note : 1.All dimension are in millimeter tolerance is ±0.2mm unless otherwise noted.
2.Specifications are subject to change without notice.

Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is ±0.1mm,Unit=mm.

Absolute Maximum Ratings at Ta=25℃

Parameter	Symbol	Ratings	UNIT
Forward Current	I_F	150	mA
Peak Forward Current Duty 1/10@10KHz	I_{FP}	300	mA
Power Dissipation	PD	0.5	W
Reverse Current @5V	Ir	10	μA
Electrostatic Discharge	ESD	500	V
Operating Temperature	T_{opr}	- 20 ~ + 80	℃
Storage Temperature	Tstg	- 30 ~ + 100	℃

Typical Electrical & Optical Characteristics (Ta=25℃)

Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Chromaticity Coordinates	X	0.3207	----	0.4562	----	IF=150mA
	Y	0.3243	----	0.4260	----	IF=150mA
Forward Voltage	V_F	2.8	----	3.8	V	IF=150mA
Viewing Angle	2θ 1/2	----	120	----	deg	IF=150mA

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 measurememt allowance is ±0.01 testing tolerance.

Product List

Part No.	CCT	CRI	Luminous Intensity(lm)at150mA		
		Min.	Min.	Typ.	Max.
LWK9S53-HC-T150-C-D702	5700K	70	55	65	----
LWK9S53-HC-T150-N-D701	4000K	70	55	65	----
LWK9S53-HC-T150-W-D702	3000K	70	50	60	----
LWK9S53-HC-T150-C-D802	5700K	80	50	60	----
LWK9S53-HC-T150-N-D801	4000K	80	50	60	----
LWK9S53-HC-T150-W-D802	3000K	80	45	55	----

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 measurememt allowance is ±0.01 testing tolerance.
4.CRI is measured with an accuracy of± 3.0.

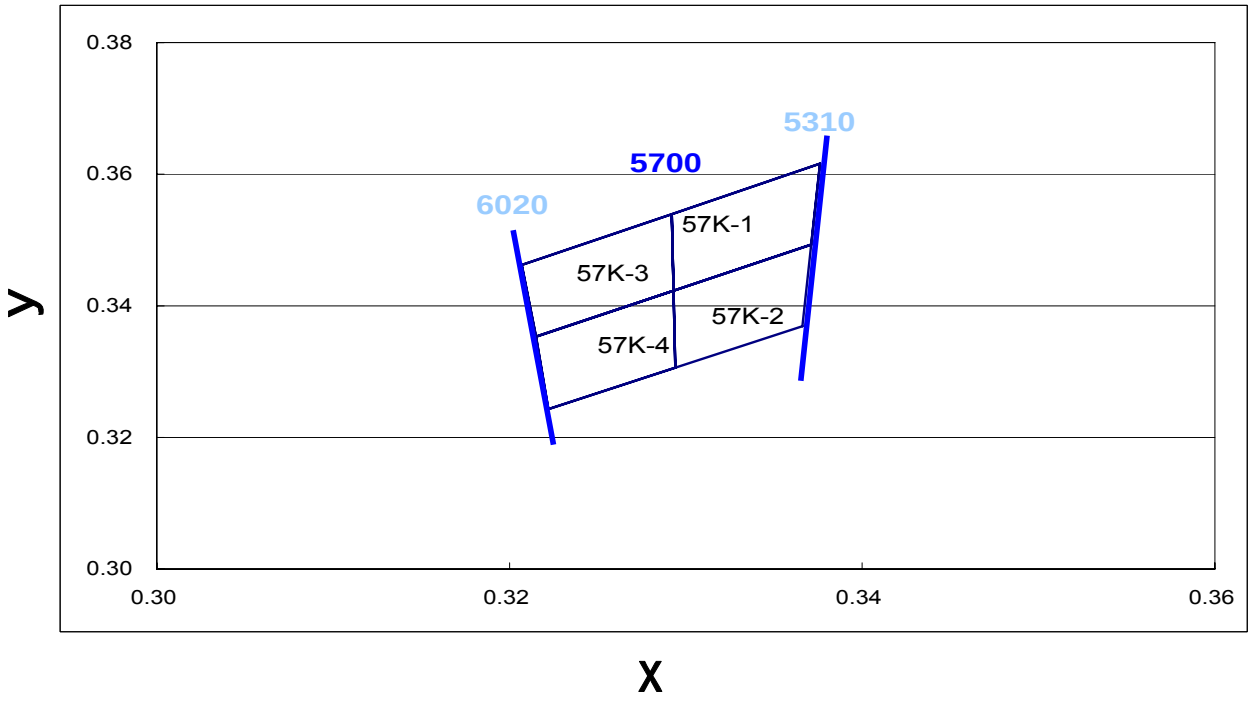
Luminous Intensity Classification

BIN CODE	Iv(lm) at150mA	
	Min.	Max.
F45V	45	50
F50V	50	55
F55V	55	60
F60V	60	65
F65V	65	70

Forward Voltage Classification

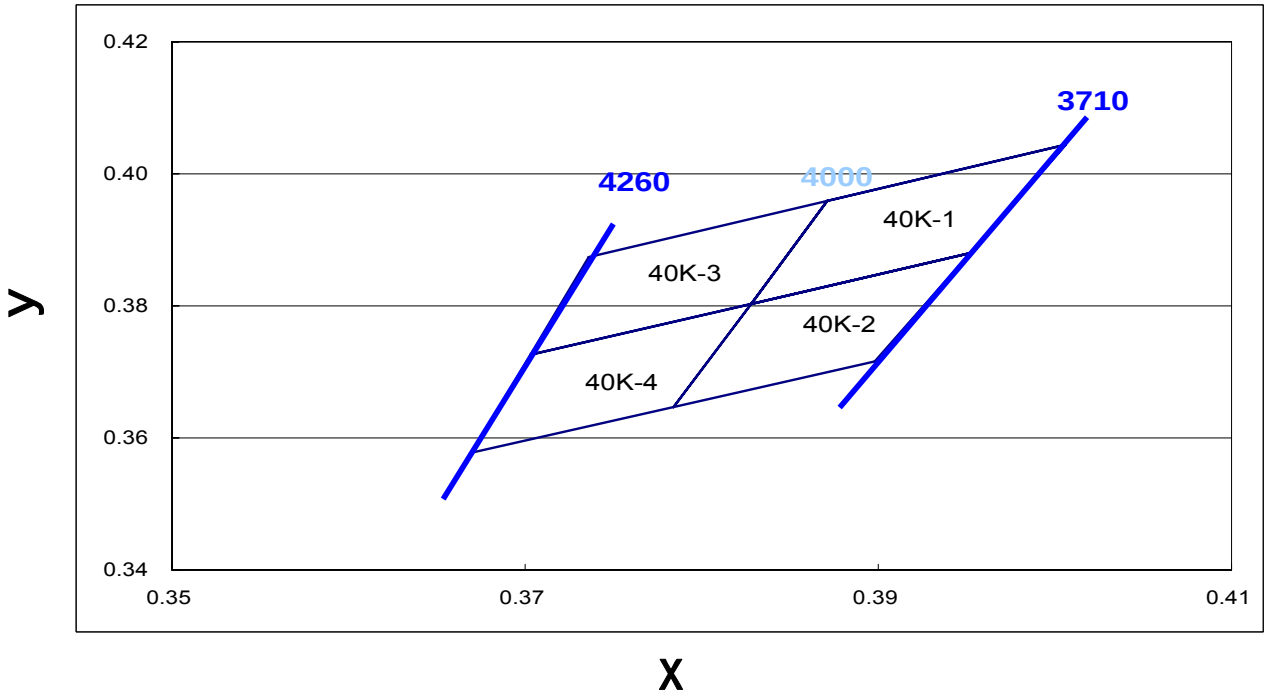
BIN CODE	Vf(v) at150mA	
	Min.	Max.
1	2.8	2.9
2	2.9	3.0
3	3.0	3.1
4	3.1	3.2
5	3.2	3.3
6	3.3	3.4
7	3.4	3.5
8	3.5	3.6
9	3.6	3.7
10	3.7	3.8

Bins Code of C chromaticity coordinates



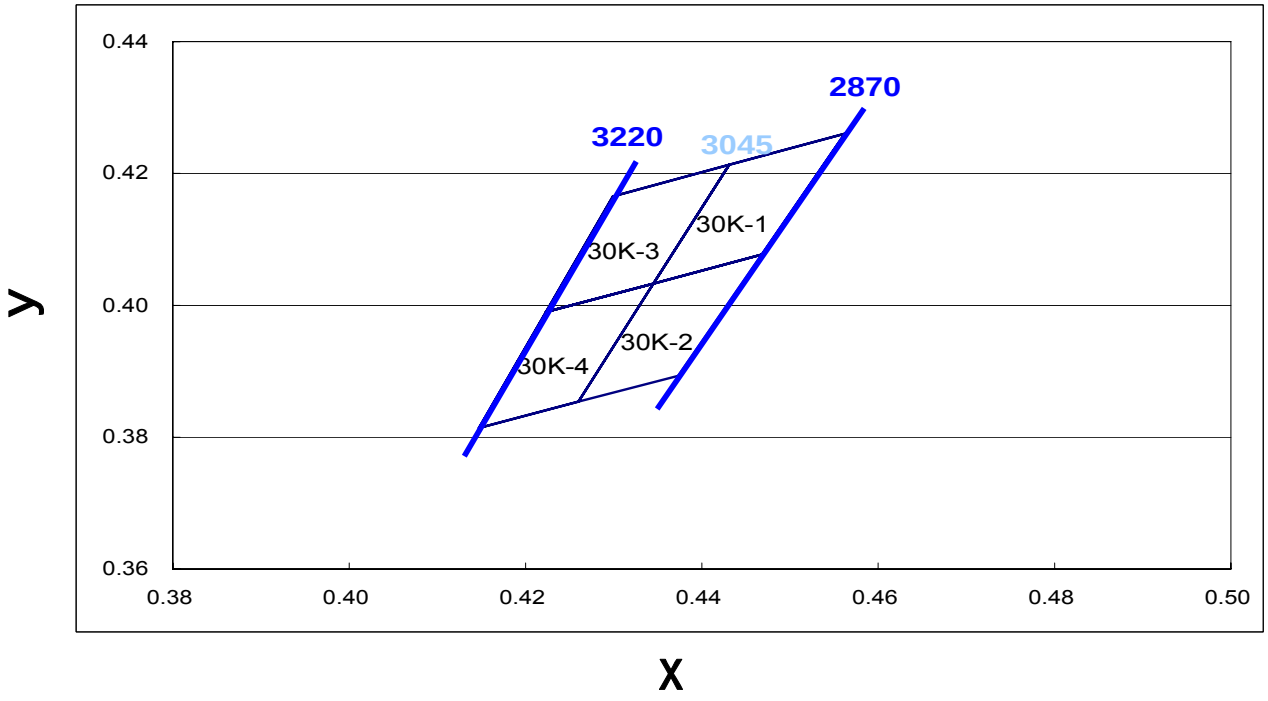
Color Coordiante at 150mA									
CCT(K)	BIN CODE	1		2		3		4	
		X	Y	X	Y	X	Y	X	Y
5700K	57K-1	0.3376	0.3616	0.3292	0.3539	0.3293	0.3423	0.3371	0.3493
	57K-2	0.3371	0.3493	0.3293	0.3423	0.3294	0.3306	0.3366	0.3369
	57K-3	0.3292	0.3539	0.3207	0.3462	0.3215	0.3353	0.3293	0.3423
	57K-4	0.3293	0.3423	0.3215	0.3353	0.3222	0.3243	0.3294	0.3306

Bins Code of N chromaticity coordinates



Color Coordiante at 150mA									
CCT(K)	BIN CODE	1		2		3		4	
		X	Y	X	Y	X	Y	X	Y
4000K	40K-1	0.4006	0.4044	0.3871	0.3959	0.3828	0.3803	0.3952	0.388
	40K-2	0.3952	0.388	0.3828	0.3803	0.3784	0.3647	0.3898	0.3716
	40K-3	0.3871	0.3959	0.3736	0.3874	0.3703	0.3726	0.3828	0.3803
	40K-4	0.3828	0.3803	0.3703	0.3726	0.367	0.3578	0.3784	0.3647

Bins Code of W chromaticity coordinates



Color Coordiante at 150mA									
CCT(K)	BIN CODE	1		2		3		4	
		X	Y	X	Y	X	Y	X	Y
3000K	30K-1	0.4562	0.426	0.4431	0.4213	0.4345	0.4033	0.4468	0.4077
	30K-2	0.4468	0.4077	0.4345	0.4033	0.426	0.3854	0.4373	0.3893
	30K-3	0.4431	0.4213	0.4299	0.4165	0.4223	0.399	0.4345	0.4033
	30K-4	0.4345	0.4033	0.4223	0.399	0.4147	0.3814	0.426	0.3854

Typical Electro-Optical Characteristics Curve

Fig.1 Forward current vs. Forward Voltage

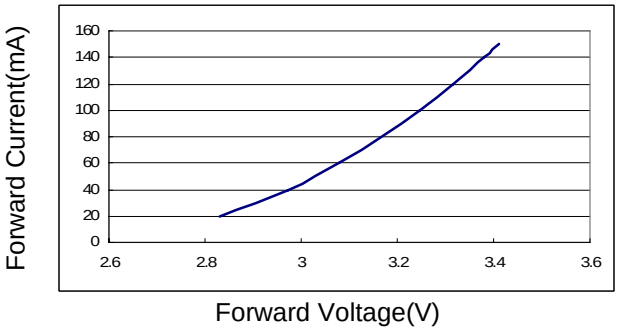


Fig.3 Max. Driving Forward Current VS. Soldering Temperature

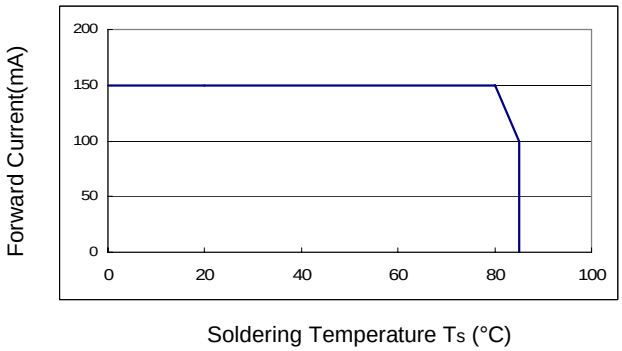


Fig.2 Forward current vs.Luminous Intensity

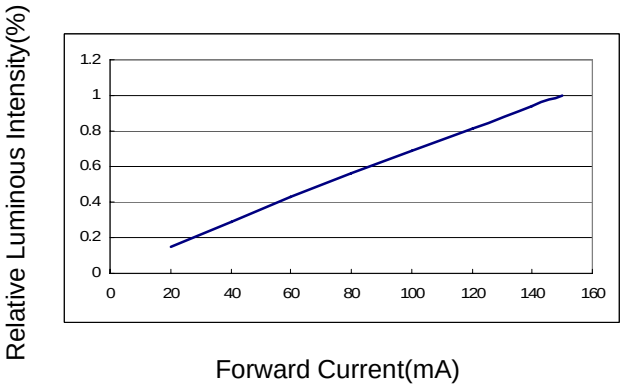


Fig.4 Directivity Radiation

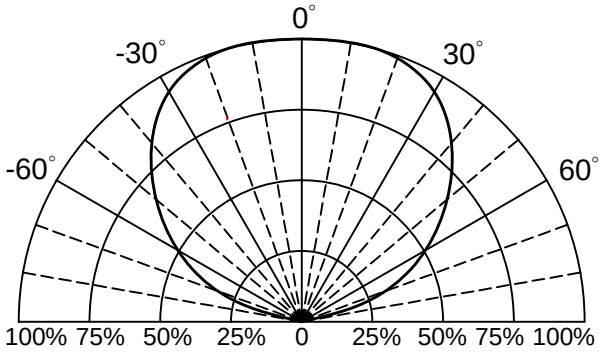
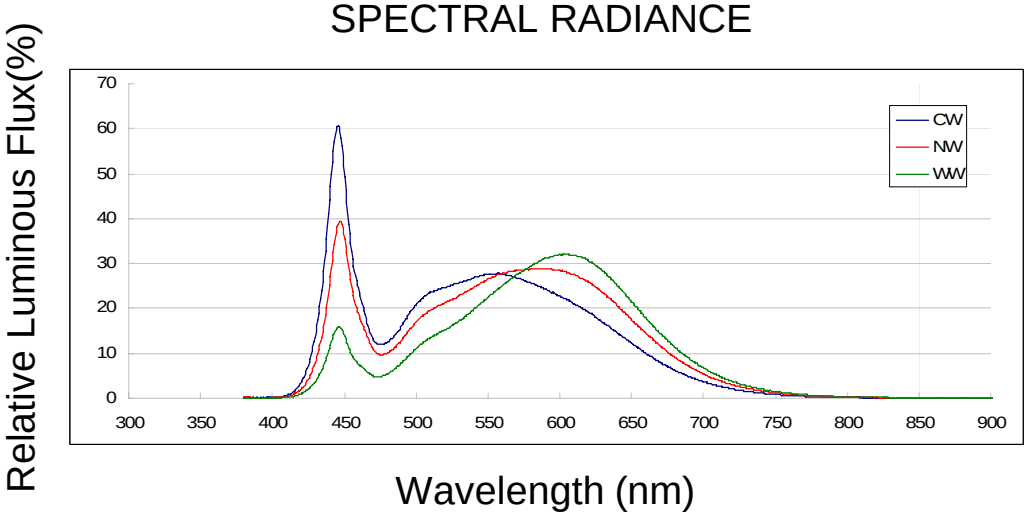
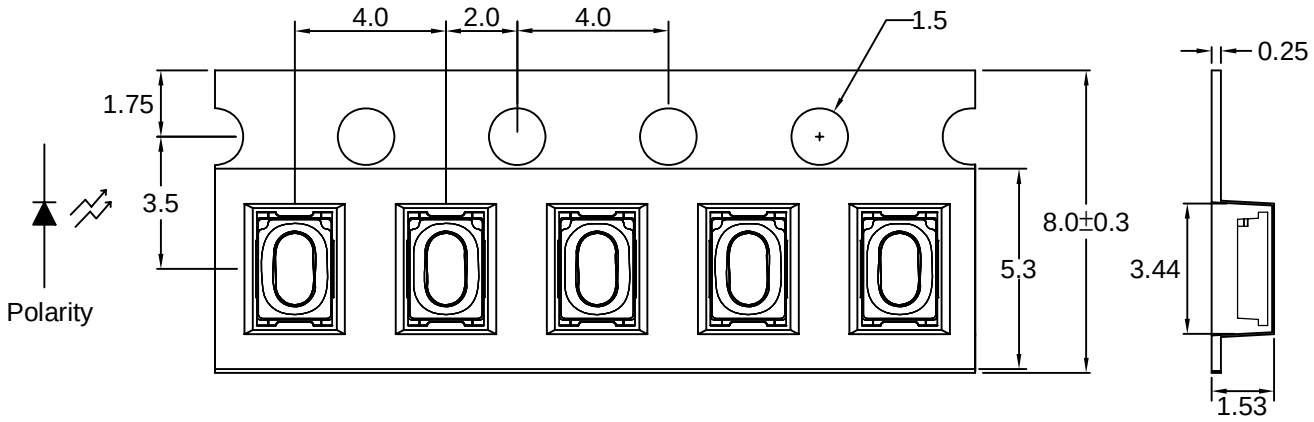


Fig.5 Luminous Spectrum(Ta=25°C)

SPECTRAL RADIANCE

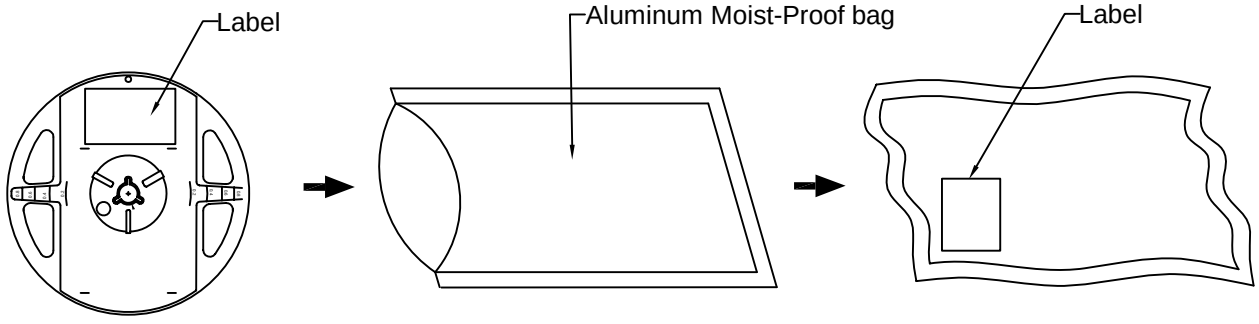


Carrier Type Dimensions



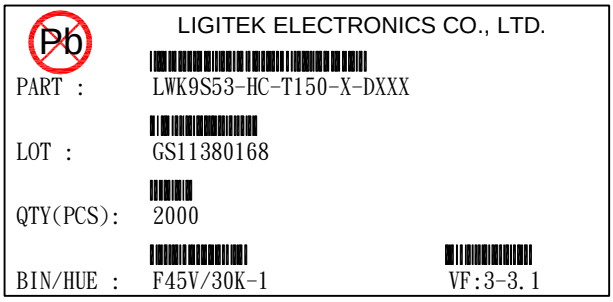
Note : The tolerances unless mentioned is ±0.1mm,Angle± 0.5. Unit=mm.

• Packing Specifications



Part No.	Description	Quantity/Reel
LWK9S53-HC-T150-X-DXXX	8.0mm tape,7"reel	2000 PCS

Label Explanation

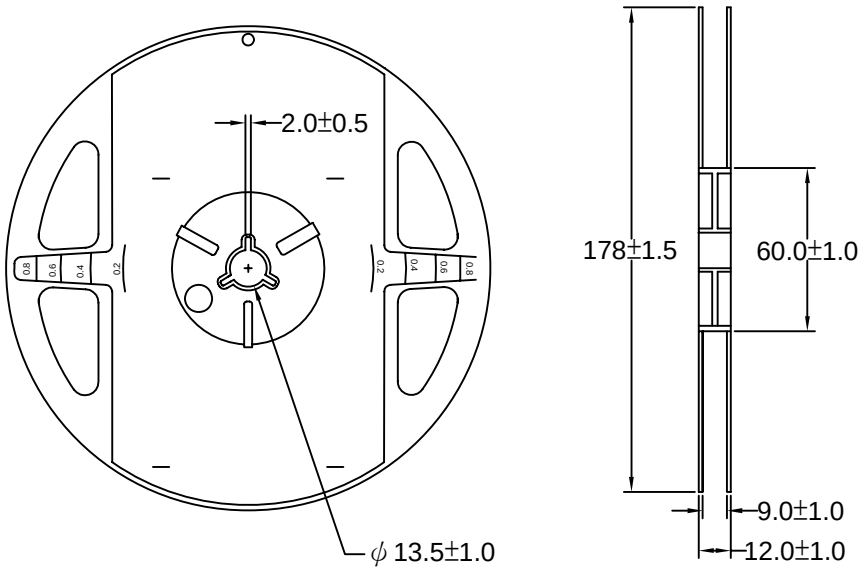


BIN : Luminous Flux

HUE : Chromaticity Coordinates
(CIE_x , CIE_y)

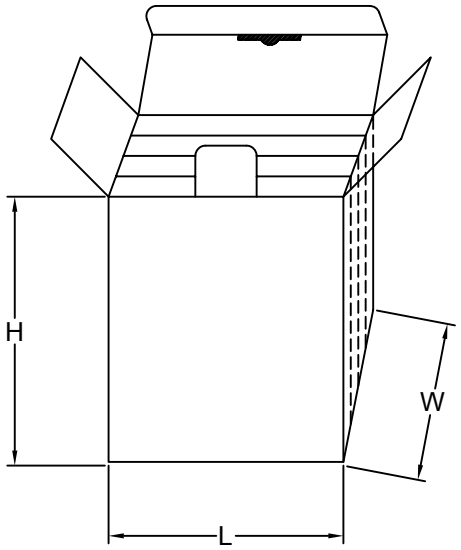
3 - 3.1 : Forward Voltage

Reel Dimensions

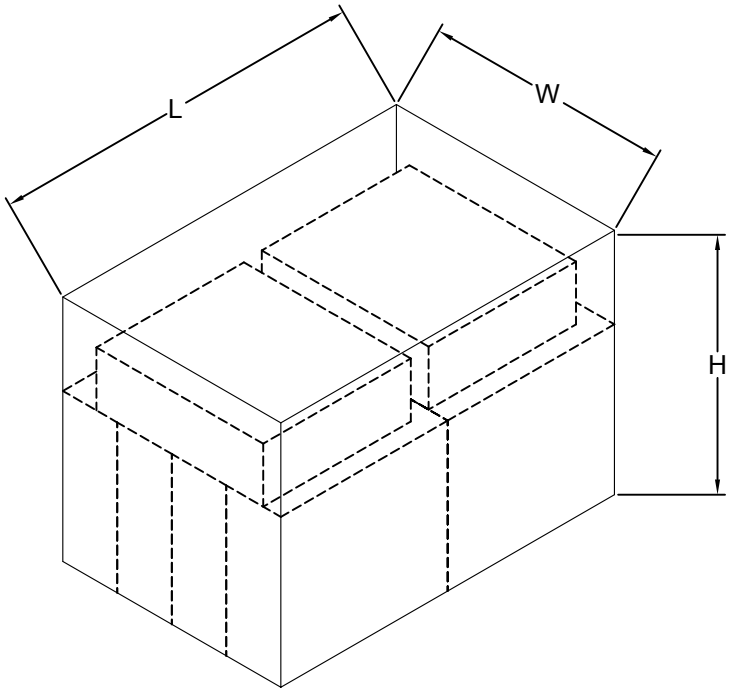


Box Explanation

1. 4 BAG / INNER BOX
2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



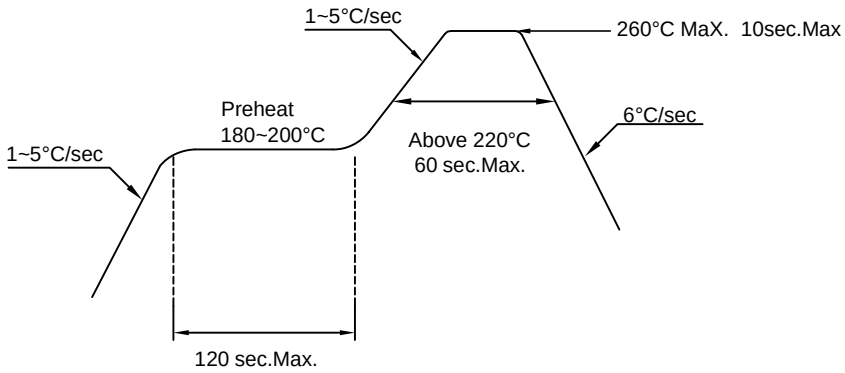
3. 10 INNER BOXES / CARTON
4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm



Recommended Soldering Conditions

1. Hand Solder
Basic spec is ≦ 280℃ 3 sec one time only.

3. 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℃~35℃,RH60%.

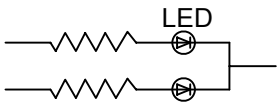
2.Once the package is opened, the products should be used within a week.
Otherwise, they should be kept in a damp proof box with descanting agent.
Considering the tape life, we suggest our customers to use our products within a year(from production date).

3.If opened more than one week in an atmosphere 5℃ ~ 35℃,RH60%,
they should be treated at 60℃±5 ℃fo r 15hrs.

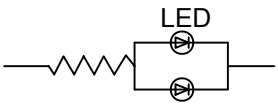
Drive Method:

LED is a current operated device, and therefore, requirer 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 forwrd 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-electrosatic glove is recommended when handing 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=150mA 3.t=1000 hrs	22
	High Temperature Storage Test	1.Ta=105℃±5℃ 2.t=500 hrs	22
	Low Temperature Storage Test	1.Ta=-40℃±5℃ 2.t=1000 hrs	22
	High Temperature High Humidity Storage Test	1.IR-Reflow In-Board, 2 Times 2.Ta=85℃±5℃ 3.RH=90%~95% 4.t=500hrs±2hrs	22
Environmental Test	Thermal Shock Test	1.IR-Reflow In-Board,2 times 2.Ta=105℃±5℃ & -40℃±5℃ (30min) (30min) 3.total 100 cycles	22
	Reflow Soldering Test	1.T.Sol=260℃±5℃ 2.Dwell Time= 10Max.	22
	Temperature Cycling	1.105℃ ~ 25℃ ~ -40℃ 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=150mA	-	U.S.L x1.2
Reverse Current	Ir	Vr=5V	-	U.S.L x2.0
Luminous Intensity	Iv	If=150mA	L.S.L x 0.7	-

Note:
1.U.S.L.:Upper Standard Level.
2.L.S.L.:Lower Standard Level.