



LIGITEK ELECTRONICS CO.,LTD.
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SURFACE MOUNT LED TAPE AND REEL



Lead-Free Parts

LPT9S53

DATA SHEET

DOC. NO : QW0905-LPT9S53

REV. : A

DATE : 04 - Jun. - 2015

Features:

1. Top view LED.
2. white SMT package.
3. Leadframe package with individual 2 pin.
- 4.High photo sensitivity
- 5.Soldering methods:IR reflow soldering.
- 6.Fast response time

Descriptions:

The LPT9S53 high speed silicon NPN epitaxial planar phototransistor in a compact surface-mountable package. It's compatible with automatic placement equipment and can withstand IR reflow, vapor phase reflow , and wave solder processes.

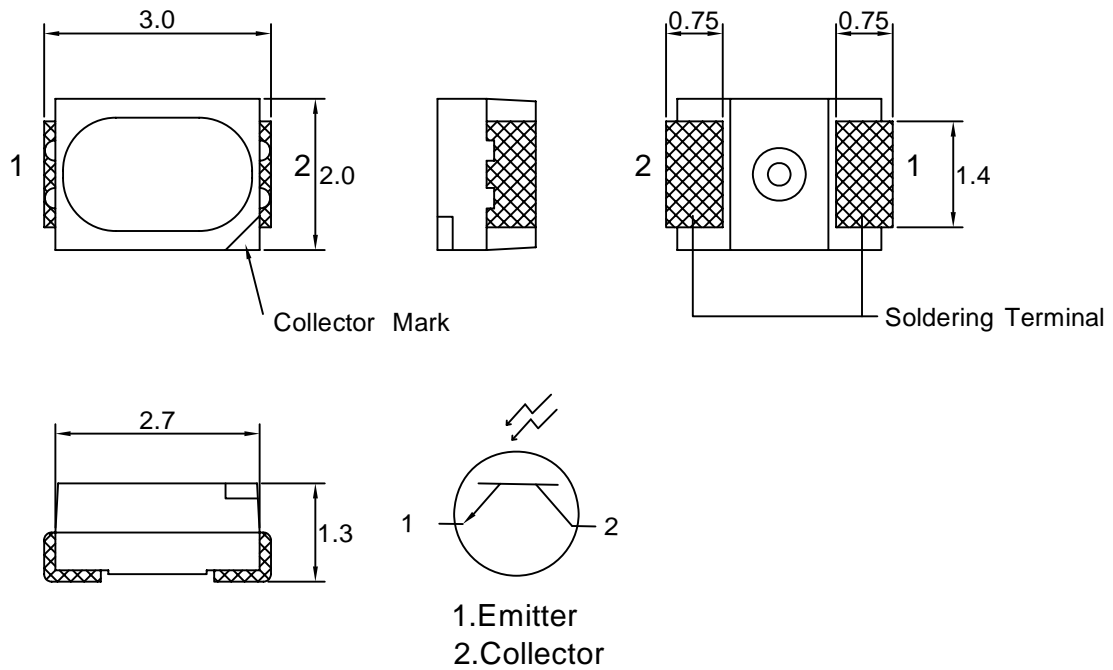
Applications:

1. Telecommunication: indicator and backlighting in telephone and fax.
2. Counters and sorter
3. Switch lights.

Device Selection Guide:

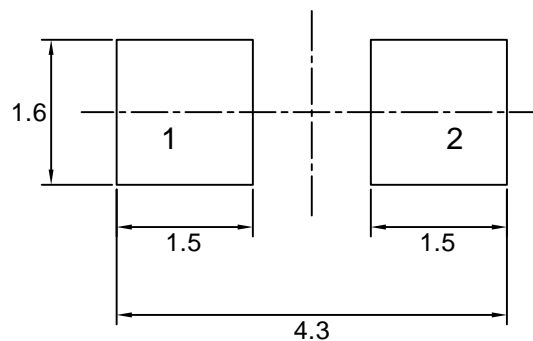
PART NO	MATERIAL	Lens Color
LPT9S53	Silicon	Water Clear

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
Collector-Emitter Voltage	V _{CEO}	30	V
Emitter-Collector-Voltage	V _{ECO}	5	V
Collector Current	I _C	20	mA
Electrostatic Discharge	ESD	2000	V
Operating Temperature	T _{opr}	- 25~ + 85	°C
Storage Temperature	T _{stg}	- 40 ~ + 85	°C
Power Dissipation at(or below) 25°C Free Air Temperature	P _c	75	mW

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

Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	30	----	----	V	I _E =100 μA E _e =0mw/cm ²
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5.0	----	----	V	I _E =100 μA E _e =0mw/cm ²
Collector-Emitter Saturation Voltage	V _{CE(sat)}	----	----	0.4	V	I _c =2mA E _e =1mw/cm ²
Rise Time	T _r	----	15	----	μs	V _{CE} =5V I _C =1mA R _L =1KΩ
Fall Time	T _f	----	15	----	μs	
Collector Dark Current	I _{CEO}	----	----	100	nA	V _{CE} =20V E _e =0mw/cm ²
On State Collector Current	I _{p(on)}	0.5	1.5	----	mA	V _{CE} =5V E _e =1mw/cm ² λ P=940nm

Collector Current Classification

BIN	Ion-pt(mA) at 5V	
	Min	Max
15	0.5	1
16	1	2
17	2	4

Typical Electro-Optical Characteristics Curve

Fig1. Spectral Sensitivity

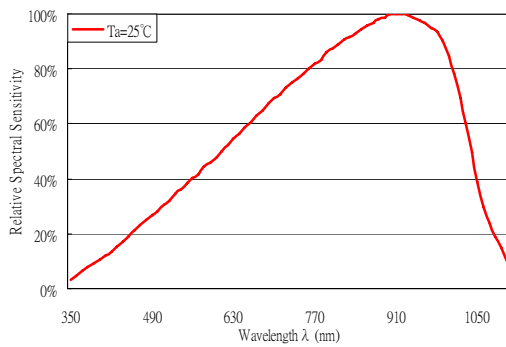


Fig2. Collector Power Dissipation VS. Ambient Temperature

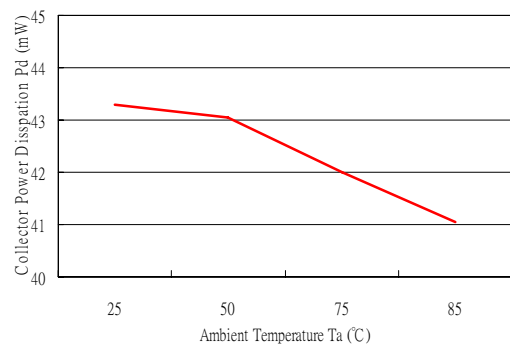


Fig3. Collector Current vs. Irradiance

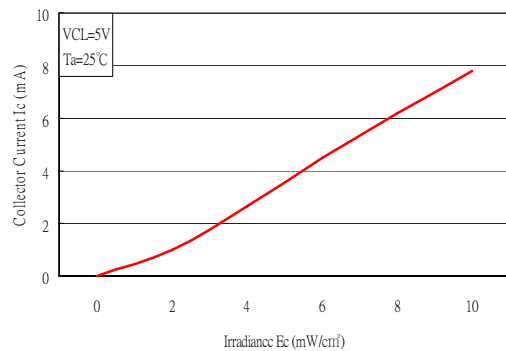
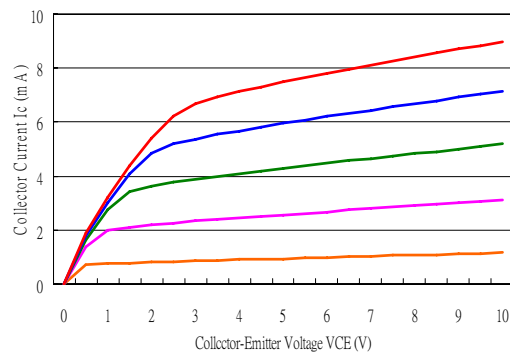
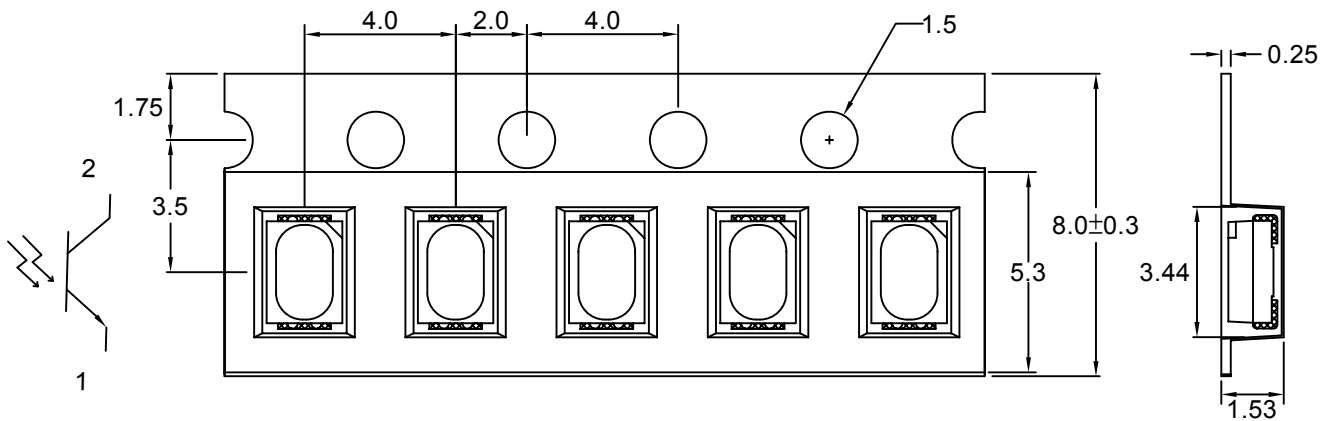


Fig4. Collector Current vs. Collector-Emitter voltage

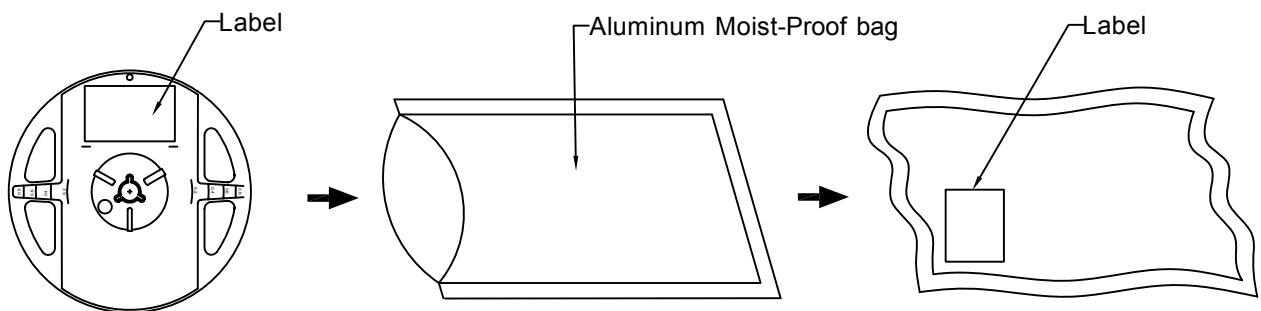


Carrier Type Dimensions




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

• Packing Specifications



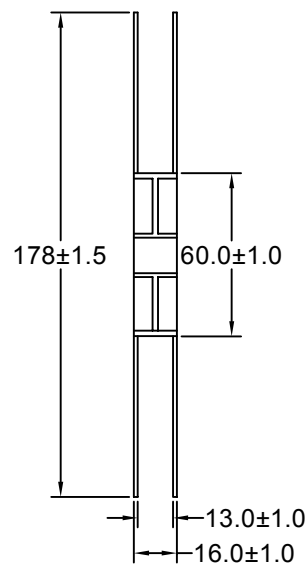
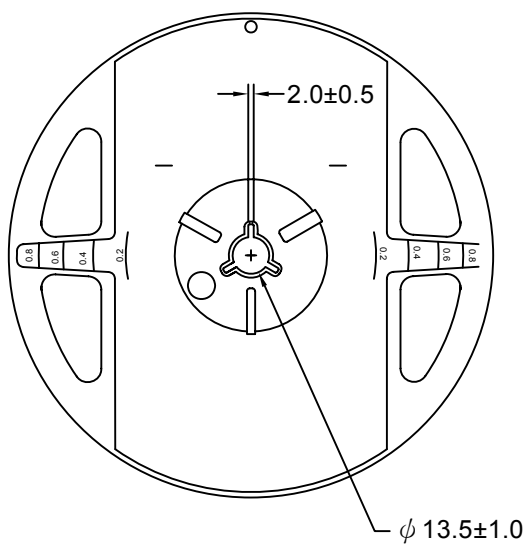
Part No.	Description	Quantity/Reel
LPT9S53	8.0mm tape,7"reel	2000 PCS

Label Explanation

	LIGITEK ELECTRONICS CO., LTD.
PART :	LPT9S53
LOT :	GS11550168
QTY(PCS):	2000
BIN/HUE :	16

BIN : On State Collector Current

Reel Dimensions



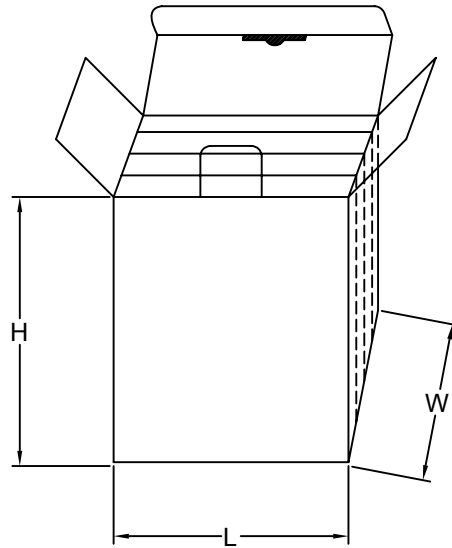
PART NO. LPT9S53

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Box Explanation

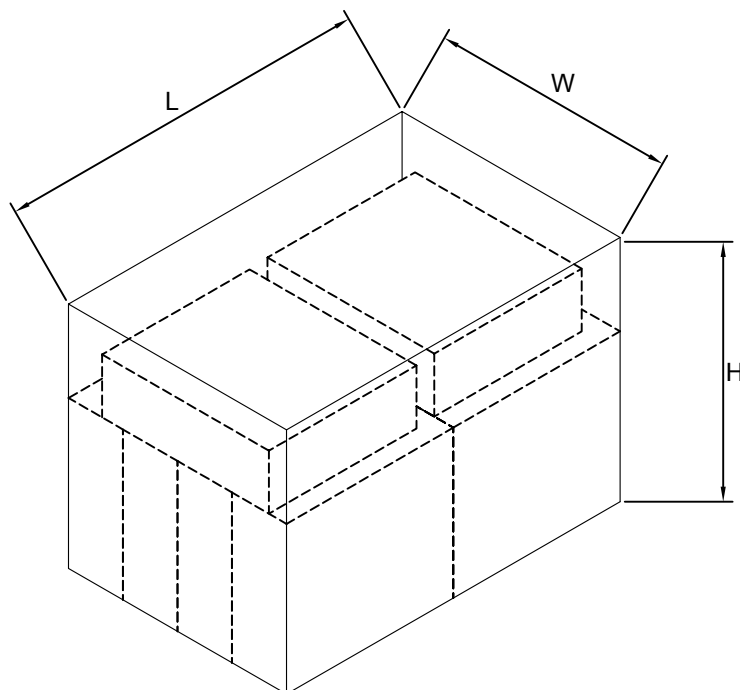
1. 5 BAG / INNER BOX

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



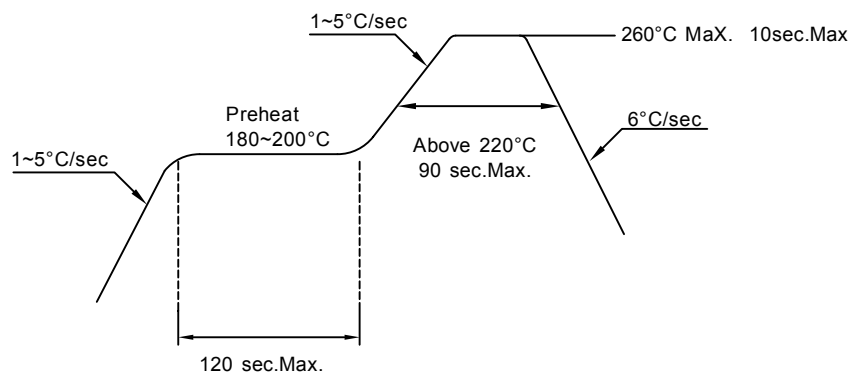
3. 10 INNER BOXES / CARTON

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



Recommended Soldering Conditions**1. Hand Solder**

Basic spec is $\leq 320^{\circ}\text{C}$ 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 LEDs during heating.
- 3.After soldering,do not warp the circuit board.

Precautions For Use:**Storage time:**

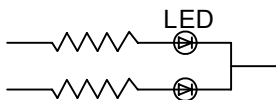
- 1.The operation of Temperatures and RH are : $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$,RH60%.
- 2.Once the package is opened, the products should be used within a week.
Otherwise, they should be kept in a damp proof box with descanting agent.
Considering the tape life, we suggest our customers to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

Drive Method:

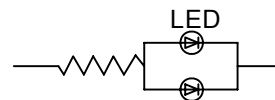
LED is a current operated device, and therefore, requirer some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forwr d 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=20mA 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= 10Max.	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=20mA	-	U.S.L x1.2
Reverse Current	Ir	Vr=5V	-	U.S.L x2.0
Luminous Intensity	Iv	If=20mA	L.S.L x 0.5	-

Note:

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

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