

# 承認書

## APPROVAL SHEET

Date / 日期 2022 年 09 月 15 日

Version / 版本 A

Customer / 客戶 \_\_\_\_\_

Part No. / 料號 LS65040001

Model No. / 品名 SLD-650nm-3.5mW-70°C-3528

Customer Approval Signature / 客戶承認簽名

Date / 日期

Approved By 核准	Confirmed By 確認	Issued By 承辦
Schiller	Dragon	Sara Hsu



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QR-SA-0005-02B

### ■ Features

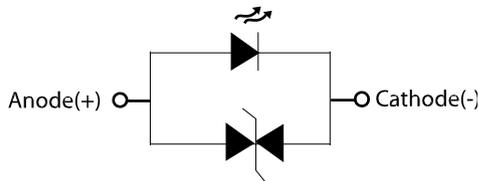
1. Package: Ag Plated 2 pad design package with silicone resin
2. Dimension: 3.5 mmx2.8 mmx0.8 mm
3. Peak wavelength at 25°C: 650nm(typ.)
4. Standard optical power output: 3.5mW(typ.)
5. Single mode lasing

### ■ Applications

1. Medical application

### ■ External dimensions(Unit: mm)

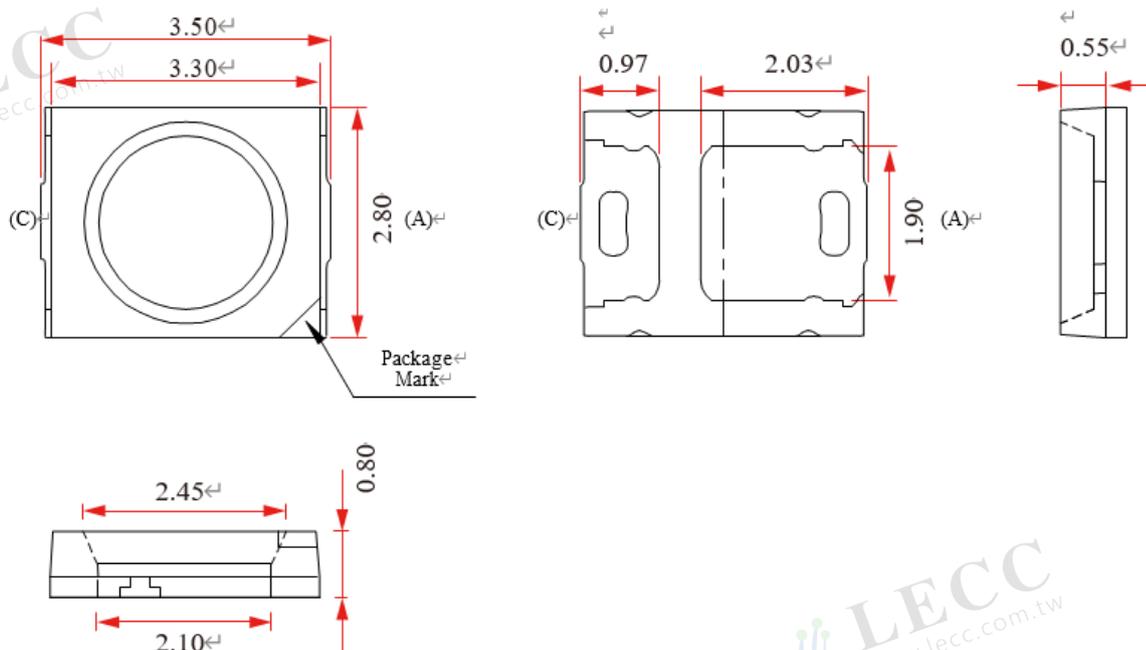
#### Circuit



#### Notes:

1. All dimensions are measured in mm.
2. Tolerance :  $\pm 0.1$  mm

### ■ External dimensions(Unit: mm)



**■ Absolute Maximum Ratings( $T_J = 25^\circ\text{C}$ )**

Parameter	Symbol	Rating	Unit
Optical Output	$P_o$	3.5	mW
Forward Current	$I_F$	25	mA
Operating Temperature	$T_{op}$	-10~+70	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40~+85	$^\circ\text{C}$
Junction Temperature	$T_j$	85	$^\circ\text{C}$

Notes: Proper current derating must be observed to maintain junction temperature below the maximum at all time.

**■ Electrical and Optical Characteristics( $T_J = 25^\circ\text{C}$ )**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Threshold Current	$I_{th}$	-	-	12	25	mA	
Operating Current	$I_{op}$	$P_o=3.5\text{mW}$	-	17	25	mA	
Operating Voltage	$V_{op}$	$P_o=3.5\text{mW}$	-	2.2	2.6	Volts	
Slope Efficiency	$\eta$	$P_o=1.5\sim 3.5\text{mW}$	0.7	1	-	mW/mA	
Beam Divergence (FWHM)	Parallel	$\theta_{//}$	$P_o=3.5\text{mW}$	5	7.5	12	deg
	Perpendicular	$\theta_{\perp}$	$P_o=3.5\text{mW}$	30	36	42	deg
Lasing Wavelength	$\lambda$	$P_o=3.5\text{mW}$	640	650	660	nm	

©  $\theta_{//}$  and  $\theta_{\perp}$  are defined as the angle within which the intensity is 50% of the peak value.

**■ Radiometric Power Characteristic ( $I_F=17\text{mA}$   $T_J=25^\circ\text{C}$ )**

Symbol	Group	Min. Radiometric Power(mW)	Max. Radiometric Power(mW)	Order Code
PO	A25	2.5	3.0	
	A30	3.0	3.5	
	A35	3.5	4.0	
	A40	4.0	4.5	
	A45	4.5	5.0	
	A50	5.0	5.5	
	A55	5.5	6.0	

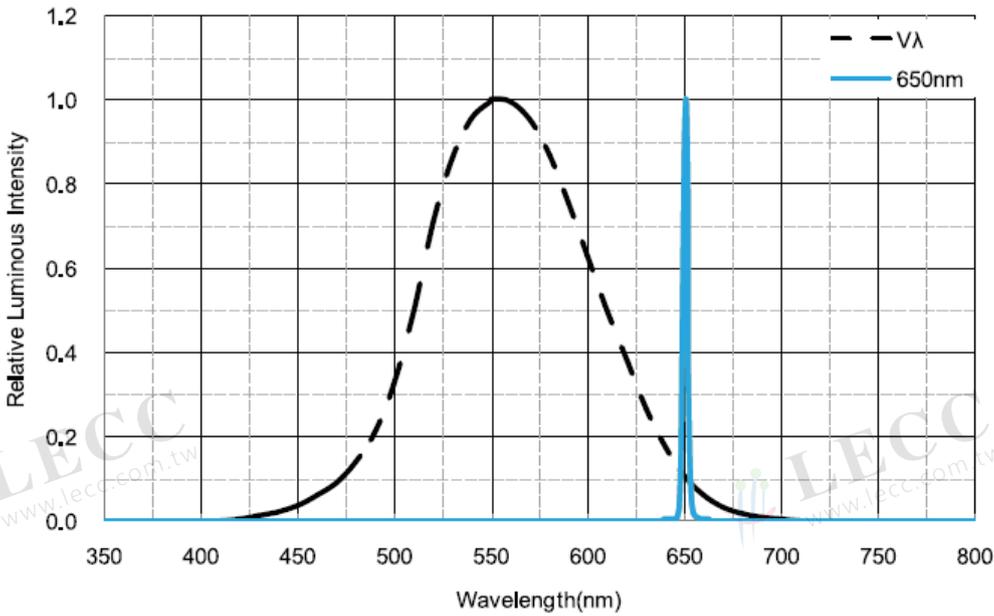
Notes: The Radiometric Power performance is guaranteed within published operating conditions. maintains a tolerance of  $\pm 10\%$  on Radiometric Power measurements.

**■ Voltage Bin Structure ( $I_F=17\text{mA}$   $T_J=25^\circ\text{C}$ )**

Symbol	Group	Min. Voltage (V)	Max. Voltage (V)	Order Code
$V_F$	V21	2.0	2.1	
	V22	2.1	2.2	
	V23	2.2	2.3	
	V24	2.3	2.4	
	V25	2.4	2.5	
	V26	2.5	2.6	

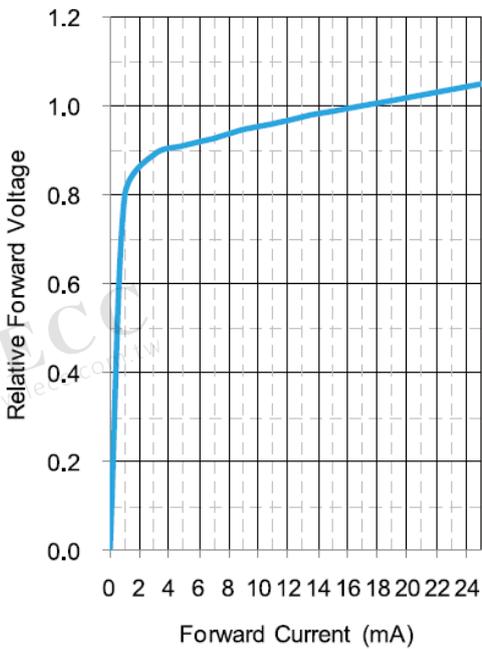
Notes: Forward voltage measurement allowance is  $\pm 0.06\text{V}$ .

■ Typical characteristic curves ( $I_F=17\text{mA}$   $T_J=25^\circ\text{C}$ )



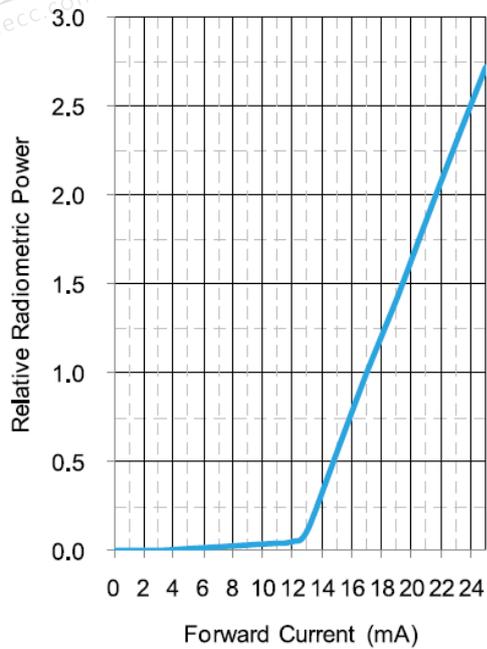
**Relative Forward Voltage**

$V_F/V_F(17\text{ mA}) = f(V_F); T_J = 25^\circ\text{C}$



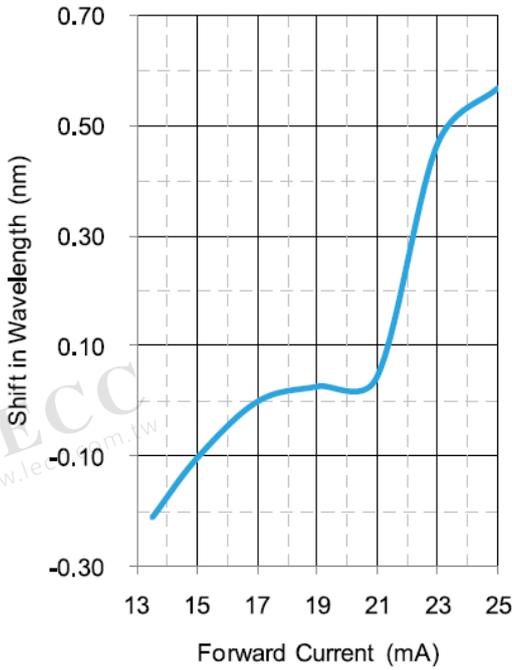
**Relative Radiometric Power**

$I_r/I_r(17\text{ mA}) = f(I_r); T_J = 25^\circ\text{C}$



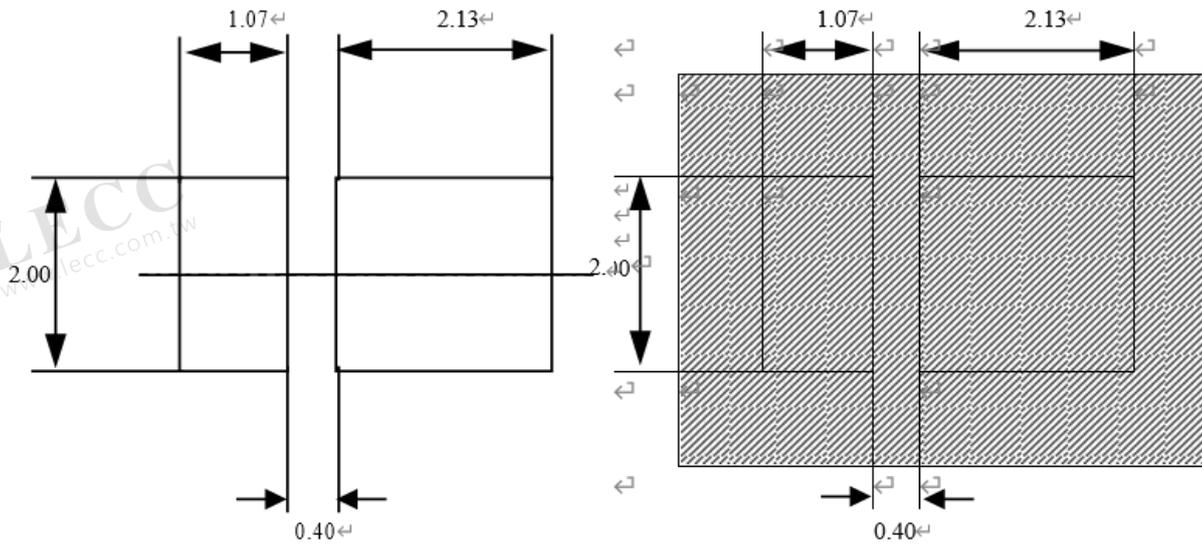
## Shift in Peak Wavelength

$$\Delta\lambda_{\text{peak}} = \lambda_{\text{peak}} - \lambda_{\text{peak}} (17 \text{ mA}); T_j = 25^\circ\text{C}$$



## ■ Mechanical Dimensions

### Recommended Solder Pad



Pad design for improved heat dissipation

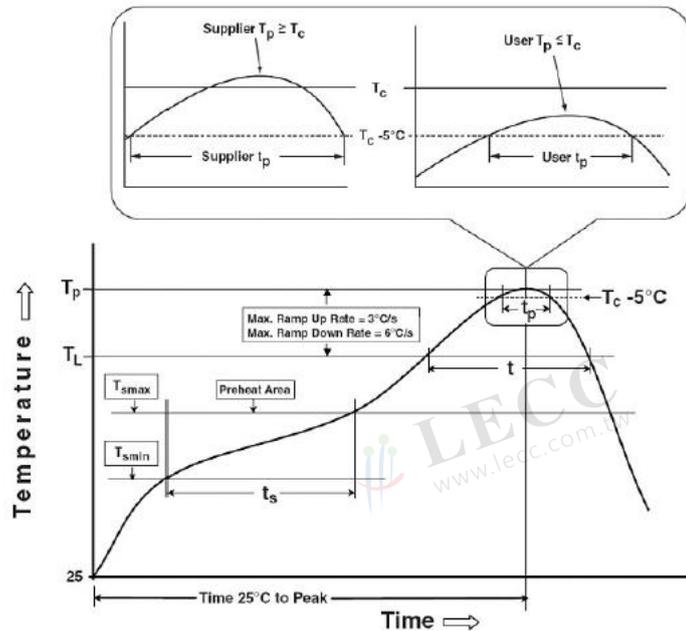
 Solder resist

Notes:

1. All dimensions are measured in mm.
2. Tolerance :  $\pm 0.1$  mm

## ■ Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



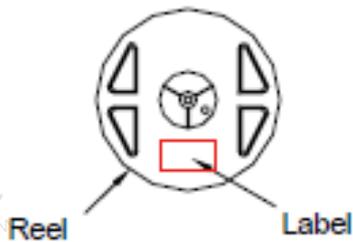
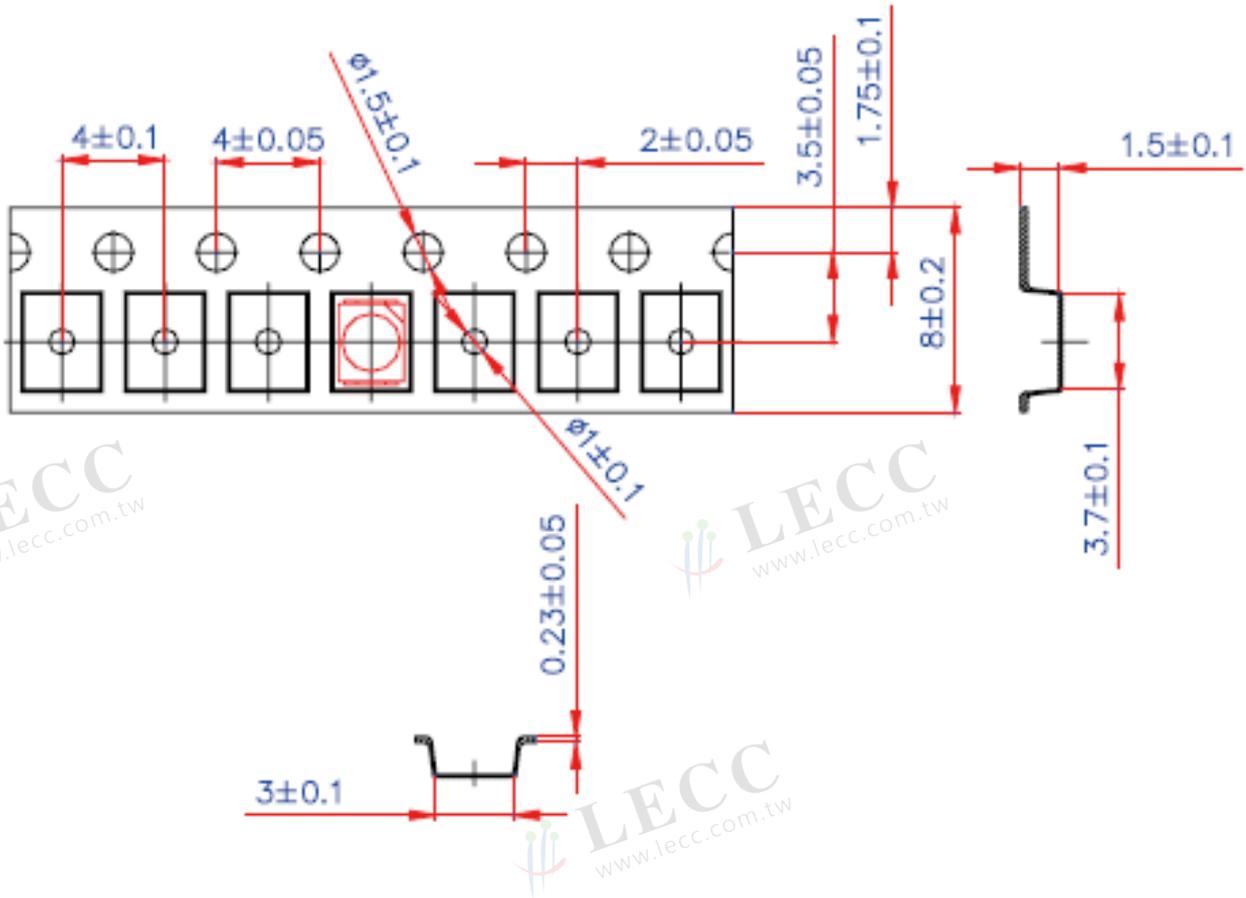
Reflow Profiles

### Classification Reflow Profiles

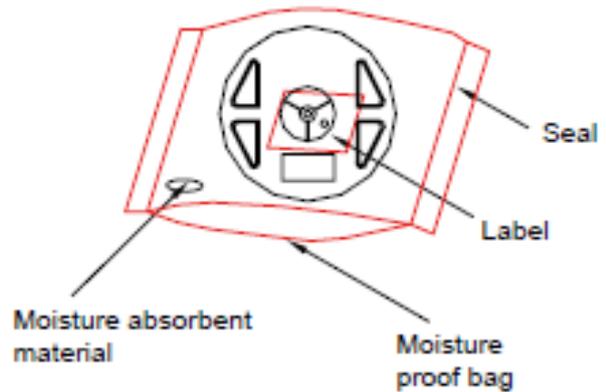
Profile Feature	Pb-Free Assembly
Preheat & Soak Temperature min (T <sub>smin</sub> ) Temperature max (T <sub>smax</sub> ) Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	80 °C 110 °C 60-120 seconds
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	2 °C/second max.
Liquidous temperature (T <sub>L</sub> ) Time at liquidous (t <sub>L</sub> )	138 °C 20-50 seconds
Peak package body temperature (T <sub>p</sub> )	155 °C ~160 °C
Classification temperature (T <sub>C</sub> )	160 °C
Time (t <sub>p</sub> ) within 5 °C of the specified classification temperature (T <sub>C</sub> )	30 seconds
Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	3°C/second max.
Time 25°C to peak temperature	8 minutes max.



■ Product Packaging Information



Taping reel dimensions



Package & label

Item	Quantity	Total	Dimensions(mm)
Reel	4,000pcs	4,000pcs	R=178
Starting with 250pcs empty, and 150pcs empty at the last			

