

1.50mm Height Top View  
White Chip LED  
Technical Data Sheet

Part No.: DL-TOP5050W65-02W

# Double Light

## ◆ Features:

1. P-LCC package.
2. Lead frame package with individual 6 pins.
3. Available on tape and reel (12mm Tape).
4. White SMT package.
5. Super luminosity white LED.
6. Built in 3 LED chips.
7. The Chips can be controlled separately.
8. Optical indicator.
9. Colorless clear window.
10. Ideal for backlight and light pipe application.
11. Inter reflector.
12. Low current (2mA) operation.
13. High performance.
14. Wide viewing angle.
15. Suitable for vapor-phase reflow, infrared reflow and wave solder processes.
16. Computable with automatic placement equipment.
17. The product itself will remain within RoHS complaint Version.

## ◆ Descriptions:

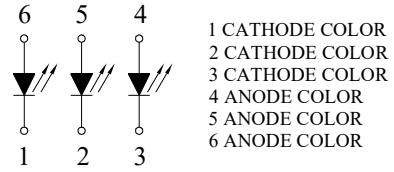
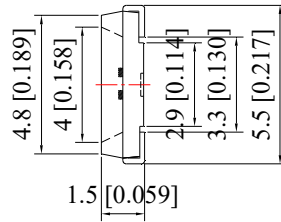
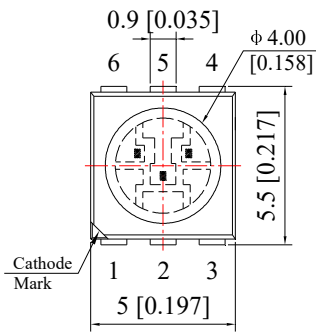
1. The 5050 is available in soft orange, green, blue and yellow. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector, this feature makes the SMT TOP LED ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

## ◆ Applications:

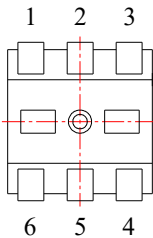
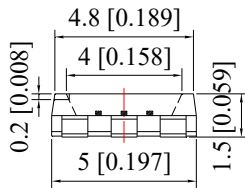
1. Automotive: Backlight in dashboards and switches.
2. Telecommunication: Indicator and backlight in telephone and fax.
3. Indicator and backlight for audio and video equipment.
4. Indicator and backlight in office and family equipment.
5. Flat backlight for LCD's, switches and symbols.
6. Light pipe application.
7. General use.

# Double Light

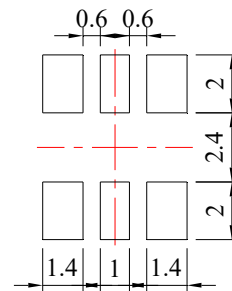
## ◆ Package Dimension:



### Polarity



### Recommended Soldering Pad dimensions



Unit: mm  
Tolerance:  $\pm 0.10\text{mm}$

Part No.	Chip Material	Lens Color	Source Color
DL-TOP5050W65-02W	InGaN	Yellow Diffused	White

### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.10$  mm (.004") unless otherwise specified.
3. Specifications are subject to change without notice.

# Double Light

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

Parameters	Symbol	Max	Unit
Power Dissipation	PD	205	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	100	mA
Continuous Forward Current	IF	25	mA
Reverse Voltage	VR	5	V
Derating Linear From 30°C		0.07	mA/°C
Operating Temperature Range	Topr	-40°C to +80°C	
Storage Temperature Range	Tstg	-40°C to +85°C	
Soldering Temperature	Tsld	260°C for 5 Seconds	

## Electrical Optical Characteristics at Ta=25°C

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity *	$\phi$	24	26	---	lm	IF=60mA (Note 1)
Viewing Angle *	$2\theta_{1/2}$	---	120	---	Deg	IF=60mA (Note 2)
Chromaticity Coordinates	x	---	0.32	---		IF=60mA (Note 3)
	y	---	0.33	---		
Color Temperature	CCT	5000	6,500	7000	K	IF=60mA
Forward Voltage	VF	3.00	3.30	----	V	IF=60mA
Reverse Current	IR	---	---	10	$\mu$ A	$V_R=5V$

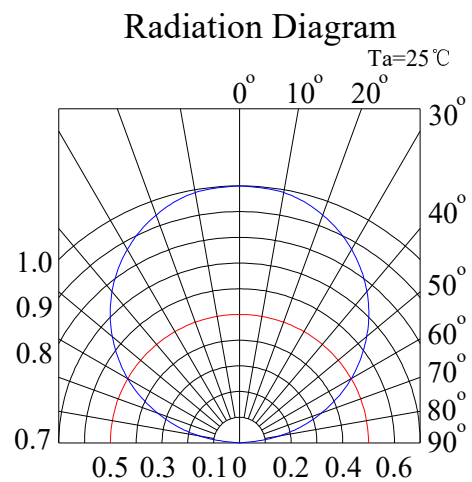
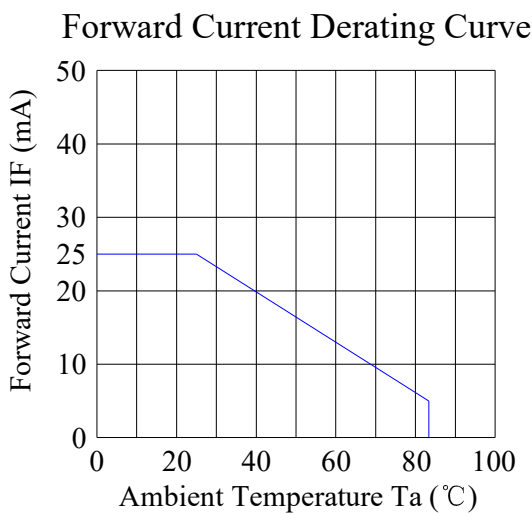
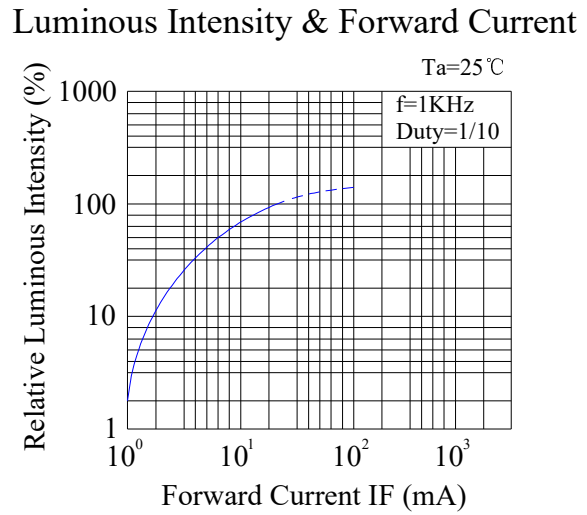
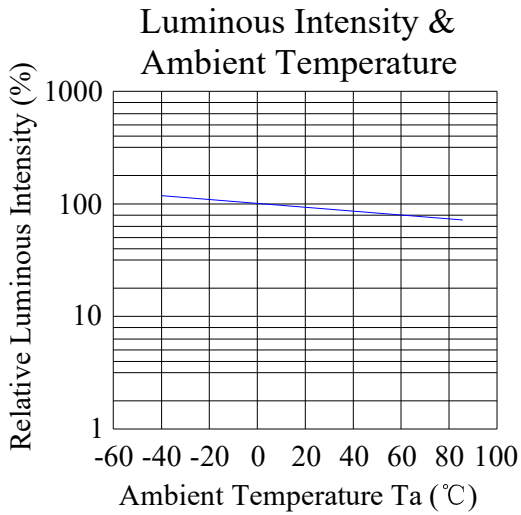
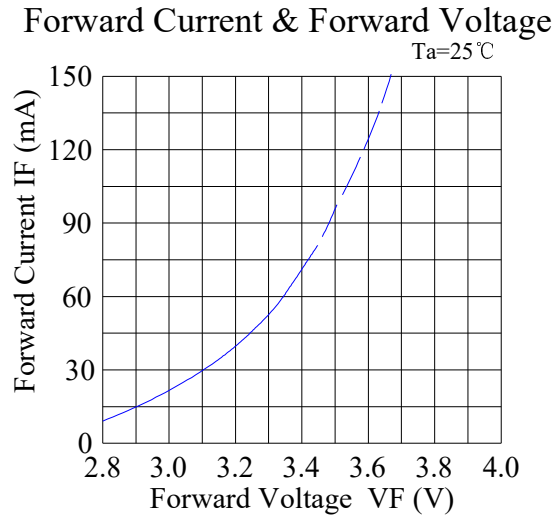
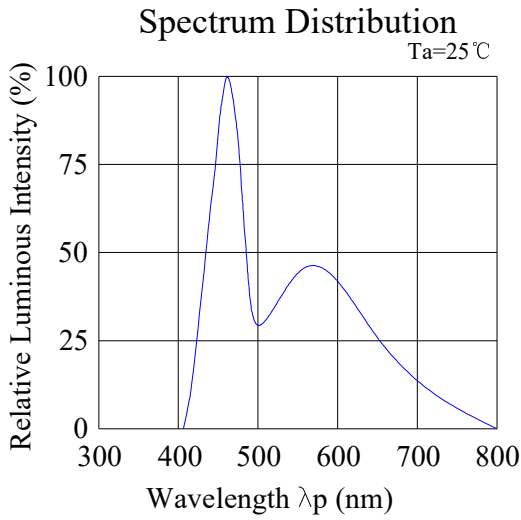
### Notes:

- Luminous Intensity Measurement allowance is  $\pm 10\%$ .
- $\theta_{1/2}$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- It use many parameters that correspond to the CIE 1931 2°. X, Y, and Z are CIE 1931 2° values of Red, Green and Blue content of the measurement.

# Double Light

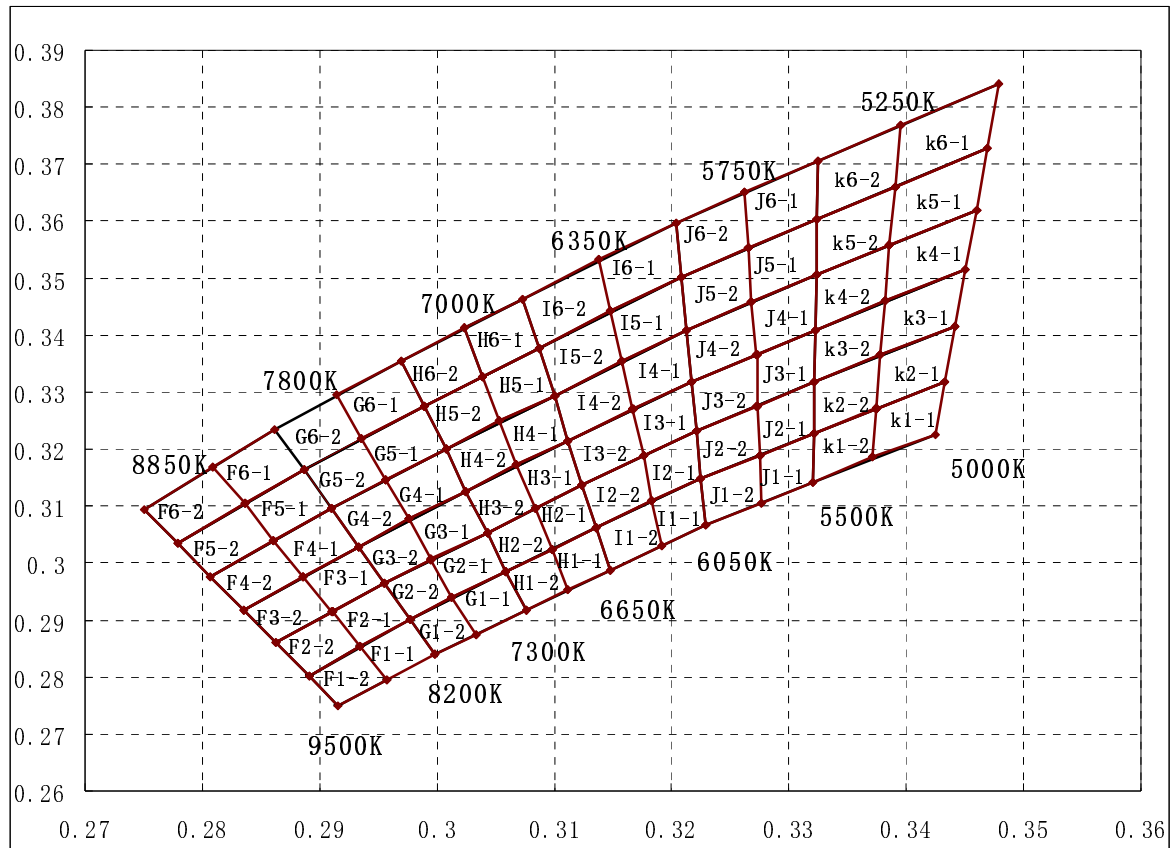
## ◆ Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)



# Double Light

## CIE Chromaticity Diagram:



## Chromaticity Coordinates Specifications for Bin Rank

CCT 6500K								
Region	CIE X	CIE Y	Region	CIE X	CIE Y	Region	CIE X	CIE Y
I1	0.3225	0.3147	I2	0.3221	0.3231	I3	0.3217	0.3318
	0.3136	0.3061		0.3124	0.3136		0.3112	0.3214
	0.3148	0.2987		0.3136	0.3061		0.3124	0.3136
	0.3229	0.3066		0.3225	0.3147		0.3221	0.3231
I4	0.3213	0.3408	I5	0.3208	0.3501	I6	0.3204	0.3597
	0.31	0.3294		0.3087	0.3377		0.3073	0.3463
	0.3112	0.3214		0.31	0.3294		0.3087	0.3377
	0.3217	0.3318		0.3213	0.3408		0.3208	0.3501
H1	0.3136	0.3061	H2	0.3124	0.3136	H3	0.3112	0.3214
	0.3059	0.2985		0.3043	0.3054		0.3025	0.3126
	0.3076	0.2917		0.3059	0.2985		0.3043	0.3054
	0.3148	0.2987		0.3136	0.3061		0.3124	0.3136
H4	0.31	0.3294	H5	0.3087	0.3377	H6	0.3073	0.3463
	0.3008	0.32		0.2989	0.3276		0.297	0.3354
	0.3025	0.3126		0.3008	0.32		0.2989	0.3276
	0.3112	0.3214		0.31	0.3294		0.3087	0.3377

# Double Light

## ◆ Reliability Test Items And Conditions:

The reliability of products shall be satisfied with items listed below:

Confidence level: 90%.

LTPD: 10%.

### 1) Test Items and Results:

No.	Test Item	Test Hours/Cycles	Test Conditions	Sample Size	Ac/Re
1	Resistance to Soldering Heat	6 Min	Tsld=260±5°C, Min. 5sec	25pcs	0/1
2	Thermal Shock	300 Cycles	H: +100°C 5min 10 sec L: -10°C 5min	25pcs	0/1
3	Temperature Cycle	300 Cycles	H: +100°C 15min 5min L: -40°C 15min	25pcs	0/1
4	High Temperature Storage	1000Hrs.	Temp: 100°C	25pcs	0/1
5	DC Operating Life	1000Hrs.	IF=150mA	25pcs	0/1
6	Low Temperature Storage	1000Hrs.	Temp: -40°C	25pcs	0/1
7	High Temperature/ High Humidity	1000Hrs.	85°C/85%RH	25pcs	0/1

### 2) Criteria for Judging the Damage:

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min	Max
Forward Voltage	VF	IF = 150mA	---	F.V.*)×1.1
Reverse Current	IR	VR=5V	---	F.V.*)×2.0
Luminous Intensity	IV	IF = 150mA	F.V.*)×0.7	---

\*) F.V.: First Value.

# Double Light

## ◆ Please read the following notes before using the product:

### 1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

### 2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 30°C or less and 90%RH or less.

2.3 The LEDs should be used within a year.

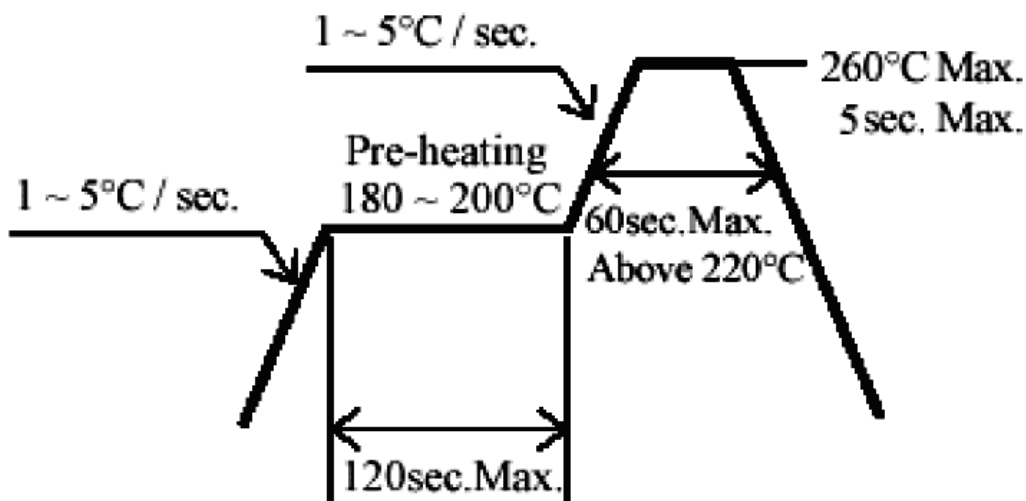
2.4 After opening the package, the LEDs should be kept at 30°C or less and 70%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

2.6 If the moisture adsorbent material (silica gel) has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5°C for 24 hours.

### 3. Soldering Condition

3.1 Pb-free solder temperature profile.



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

3.4 After soldering, do not warp the circuit board.

### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260°C for 5 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

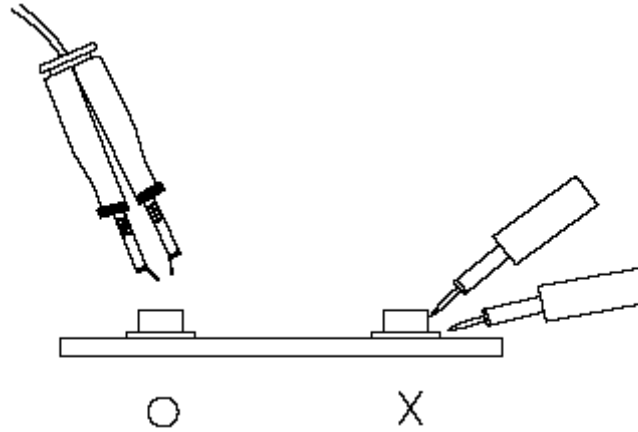
### 5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether



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the characteristics of the LEDs will or will not be damaged by repairing.



### 6. Caution in ESD

Static Electricity and surge damages the LED. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.