

**10W High Power 5050 RGBW LED  
Technical Data Sheet**

**Part No.: DL-PCB5050RGBW-10W**

# Double Light

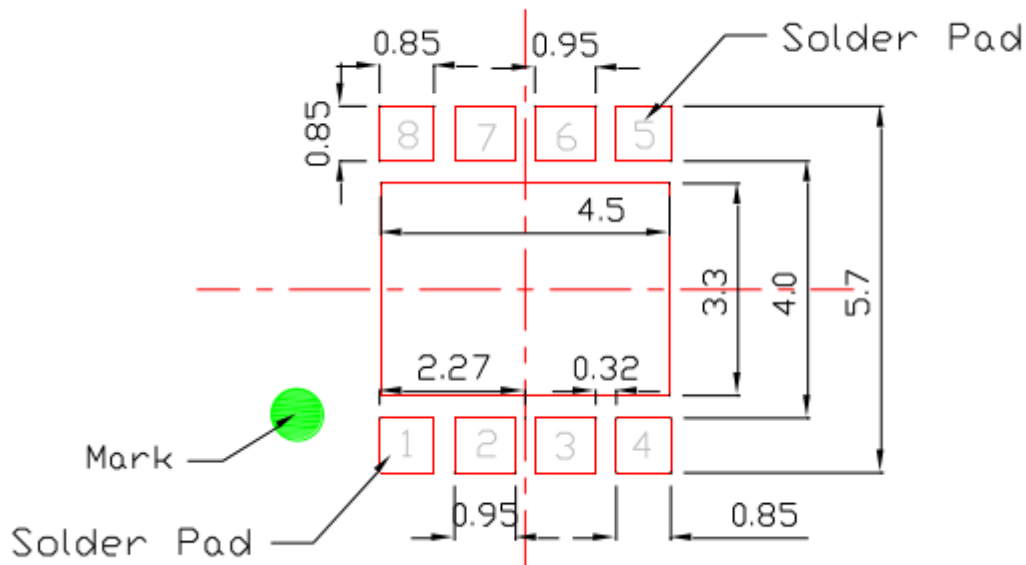
## ◆ Features:

1. Small package with high efficiency
2. Long operating life.
3. Available in white, green, blue, red, yellow, Amber
4. View angle: 120°.
5. Low voltage DC operated.
6. The product itself will remain within RoHS compliant Version.
7. ESD protection.

## ◆ Applications:

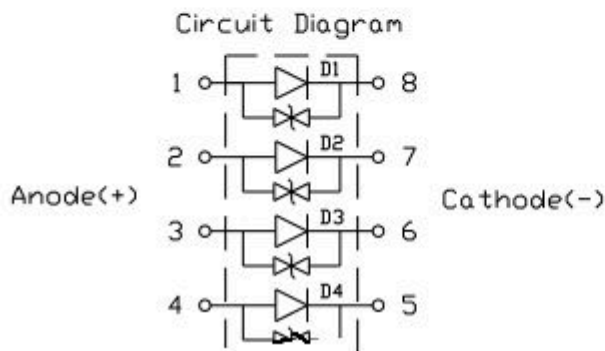
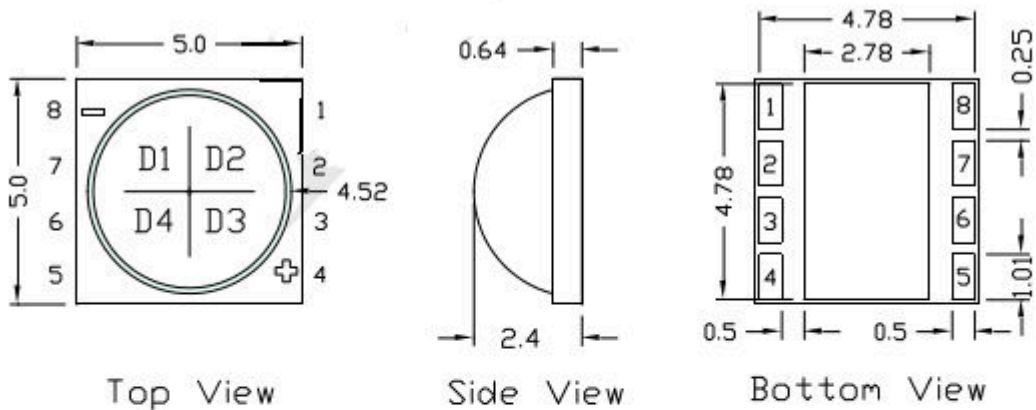
1. Reading lights (car, bus, aircraft).
2. Portable (flashlight, bicycle).
3. Mini\_accent/Uplighters/Downlighters/Orientation.
4. Bollards/Security/Garden.
5. Cove/Undershelf/Task.
6. Automotive rear combination lamps.
7. Traffic signaling/Beacons/ Rail crossing and Wayside.
8. Indoor/Outdoor Commercial and Residential Architectural.
9. Edge\_lit signs (Exit, point of sale).
10. LCD Backlights/Light Guides.

## ◆ Solder Pad



# Double Light

## ◆ Mechanical Dimensions



Color  
 D1 : Red  
 D2 : Green  
 D3 : Blue  
 D4 : White

Part No.	Chip Material		Lens Color	Source Color
DL-PCB5050RGBW-10W	D1	AlGaInP	Water Clear	Hyper Red
	D2	InGaN		Pure Green
	D3	InGaN		Blue
	D4	InGaN		White

Notes:

1. The marked is cathode.
2. All dimensions are in millimeters.
3. Tolerance is  $\pm 0.25$  mm (.010") unless otherwise noted.
4. Specifications are subject to change without notice.

# Double Light

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

Parameters	Symbol	MAX	Unit	
Power Dissipation	PD	Hyper Red	2000	mW
		Pure Green	3000	
		Blue	3000	
		White	3000	
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	Hyper Red	700	mA
		Pure Green	700	
		Blue	700	
		White	700	
Continuous Forward Current	IF	Hyper Red	350	mA
		Pure Green	350	
		Blue	350	
		White	350	
Reverse Voltage	VR	5	V	
Electrostatic Discharge (HBM)	ESD	Hyper Red	5000	V
		Pure Green	5000	
		Blue	5000	
		White	5000	
Operating Temperature Range	Topr	-40°C to +85°C		
Storage Temperature Range	Tstg	-40°C to +100°C		
Soldering Temperature	Tsld	260°C for 5 Seconds		

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## Electrical Optical Characteristics at Ta=25℃

Parameters	Symbol	Emitting Color	Min.	Typ.	Max.	Unit	Test Condition
Luminous Flux	$\Phi$	Hyper Red	--	57	---	lm	IF=350mA
		Pure Green	---	112	---		
		Blue	---	20	---		
		White	---	140	---		
Luminous Flux	$\Phi$	Hyper Red	--	108	---	lm	IF=700mA
		Pure Green	---	175	---		
		Blue	---	35	---		
		White	---	240	---		
Viewing Angle	$2\theta_{1/2}$	Hyper Red	---	120	---	Deg	IF=350/700mA
		Pure Green	---	120	---		
		Blue	---	120	---		
		White	---	120	---		
Peak Emission Wavelength	$\lambda_p$	Hyper Red	---	632	---	nm	IF=350/700mA
		Pure Green	---	520	---		
		Blue	---	468	---		
		White	---	6500	---	k	
Dominant Wavelength	$\lambda_d$	Hyper Red	---	624	---	nm	IF=350/700mA
		pure Green	---	525	---		
		Blue	---	470	---		
		White	---	6500	---	k	
Forward Voltage	VF	Hyper Red	1.80	2.40	2.80	V	IF=350/700mA
		Pure Green	3.00	3.30	3.80		
		Blue	3.00	3.30	3.80		
		White	3.00	3.30	3.80		

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## ◆ Reliability Test Items And Conditions:

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

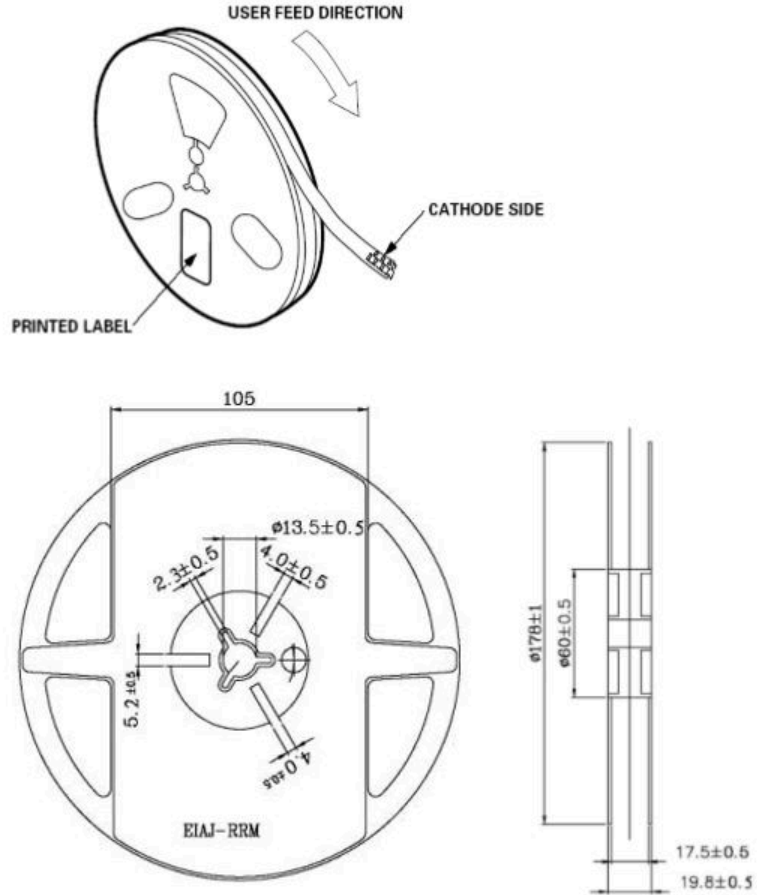
Confidence level: 90%.

LTPD: 10%.

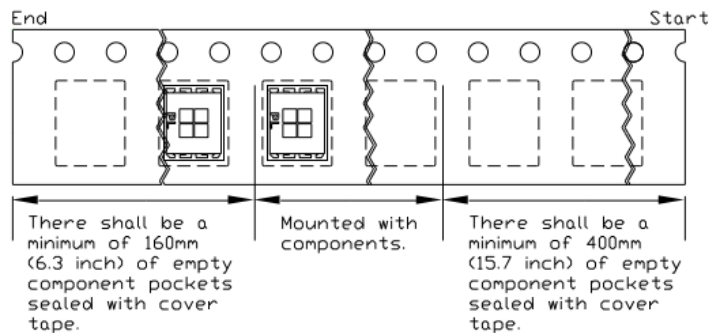
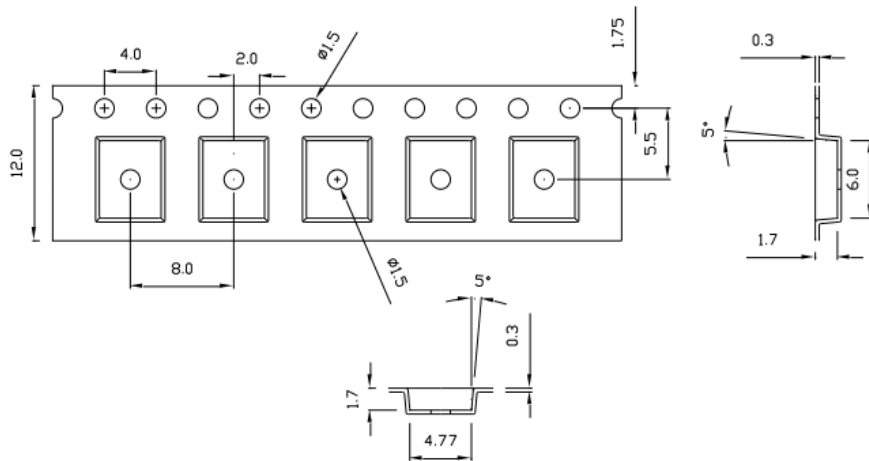
No.	Item	Test Conditions	Test Hours/ Cycles	Sample Sizes	Failure Judgment Criteria	Ac/ Re
1	Reflow Soldering	TEMP.: 260°C±5°C 5secs	6mins	22pcs	$IR \cong U*2$ $Ee \cong L*0.8$ $VF \cong U*1.2$  U: Upper Specification Limit L: Lower Specification Limit	0/1
2	Temperature Cycle	H: +100°C 15mins ┆ 5 mins ┆ L: -40°C 15mins	50Cycles	22pcs		0/1
3	Thermal Shock	H: +100°C 15mins ┆ 10mins ┆ L: -10°C 5mins	50Cycles	22pcs		0/1
4	High Temperature Storage	TEMP.: +100°C	1000hrs	22pcs		0/1
5	Lower Temperature Storage	TEMP.: -40°C	1000hrs	22pcs		0/1
6	DC Operating Life	V <sub>CE</sub> =5V	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85°C / 85% R.H.	1000hrs	22pcs		0/1

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## ◆ Reel Dimensions:



Loaded quantity 250/500 per reel.



# Double Light

## ◆ Precautions for Use:

### 1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift may cause enormous current change and burn out failure would happen.

### 2. Storage

- a) Do not open moisture proof bag before the products are ready to use.
- b) Before opening the package, the Infrareds should be kept at 30°C or less and 90%RH or less.
- c) The Infrared LED should be used within a year.
- d) After opening the package, the Infrareds should be kept at 30°C or less and 70%RH or less.
- e) The Infrared LED should be used within 168 hours (7 days) after opening the package.
- f) If the moisture absorbent material (silicone gel) has faded away or the Infrareds have exceeded the storage time, baking treatment should be performed using the following conditions.
- g) Pre-curing treatment: 60±5°C for 24 hours.

### 3. Thermal Management

- a) Because the Infrared LED is a high power dissipation device, special and sufficient consideration in thermal management design must be made to optimize the thermal performance.
- b) Heat sink design is implemented in the device for an additional thermal connection. Since the device is capable of SMT process, tin must be spread both heat sink and solder pads areas to dissipate the heat.
- c) A high thermal conductivity substrate, such as Aluminum or Copper plate etc, must be applied for external thermal management. It is strongly recommended that the outer heat sink or PCB dimension per Infrared LED can not be less than 25 x 25 x 1 (L x W x H) mm. The materials for outer heat sink can be FR4 on Aluminum, MCPCB, or FPC on Aluminum.
- d) Special thermal designs are also recommended to take in outer heat sink design, such as FR4 PCB on Aluminum with thermal vias or FPC on Aluminum with thermal conductive adhesive, etc.
- e) Sufficient thermal management must be conducted, or the die junction temperature will be over the limit under large electronic driving and Infrared LED lifetime will decrease critically.

### 4. Soldering Condition

- a) Reflow soldering should not be done more than two times.
- b) While soldering, do not put stress on the Infrareds during heating.
- c) After soldering, do not warp the circuit board.

### 5. Soldering Iron

- a) For prototype builds or small series production runs it is possible to place and solder the LED by hand.
- b) Dispensing thermal conductive glue or grease on the substrates and follow its curing spec. Press Infrared housing to closely connect Infrared and substrate.
- c) It is recommended to hand solder the leads with a solder tip temperature of 280°C for less than 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal.
- d) Be careful because the damage of the product is often started at the time of the hand solder.