

3W High Power White LED
Technical Data Sheet

Part No.: DL-HP10W57-3WP

Double Light

◆ Features:

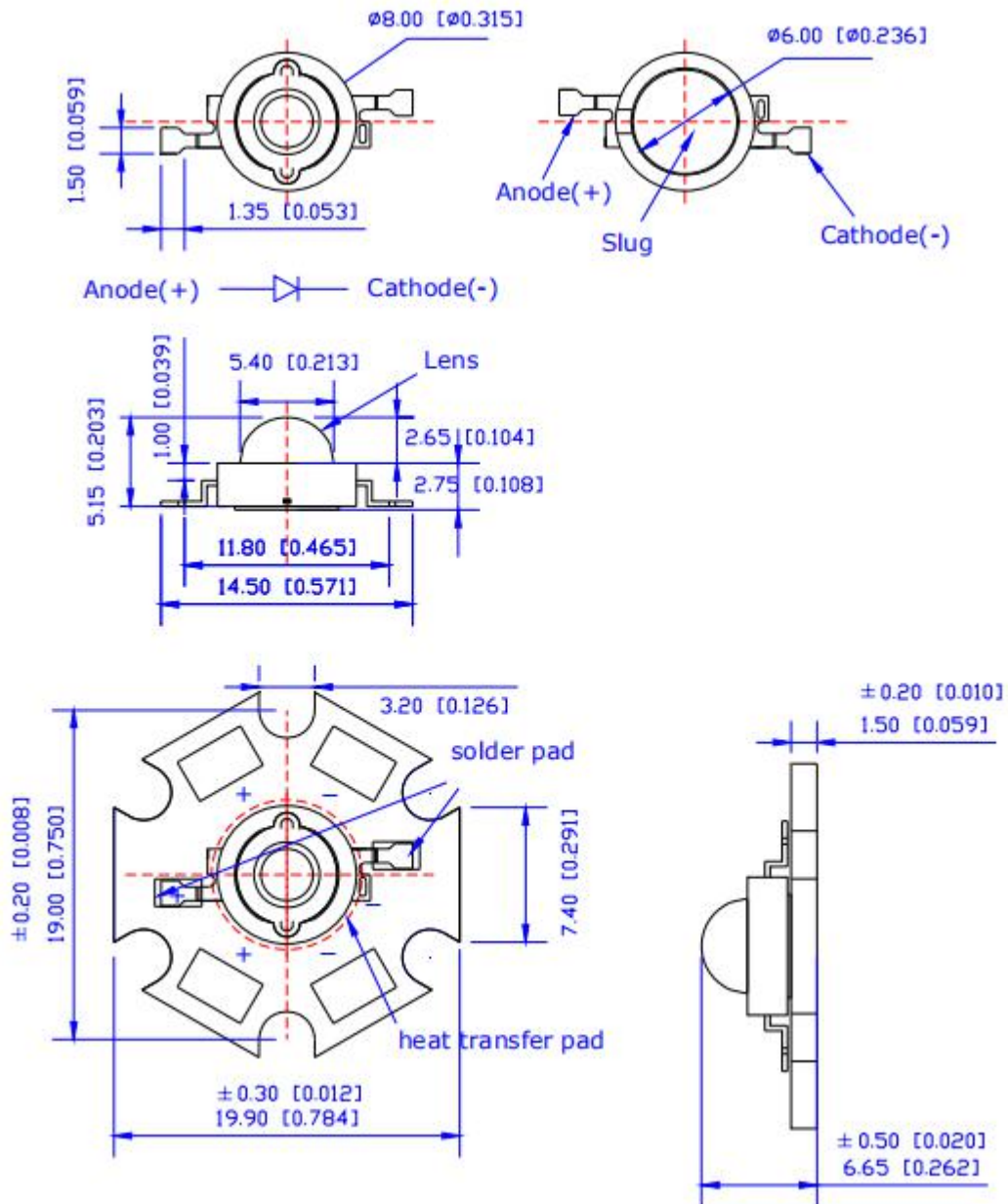
1. Small package with high efficiency
2. Long operating life.
3. Available in white, green, blue, red, yellow, Amber
4. View angle: 120°.
5. Low voltage DC operated.
6. The product itself will remain within RoHS compliant Version.
7. ESD protection.

◆ 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.

Double Light

◆ Mechanical Dimensions



| Part No. | Chip Material | Lens Color | Source Color |
|----------------|---------------|----------------|--------------|
| DL-HP10W57-3WP | InGaN | White Diffused | White |

Notes:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.25 mm (.010") unless otherwise noted.
3. Specifications are subject to change without notice.

Double Light

◆ Absolute Maximum Ratings at Ta=25°C

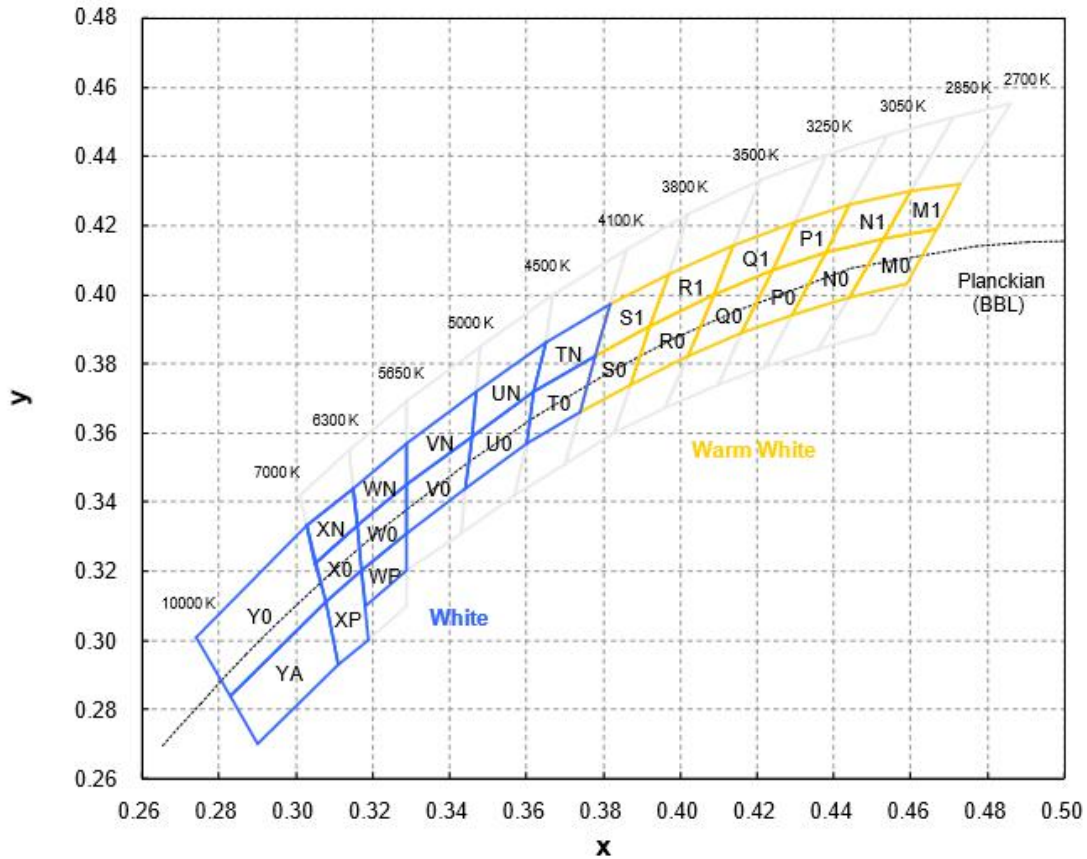
| Parameters | Symbol | Max. | Unit |
|--------------------------------------------------------------|--------|---------------------|------|
| Power Dissipation | PD | 3500 | mW |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width) | IFP | 1000 | mA |
| Forward Current | IF | 700 | mA |
| Reverse Voltage | VR | 5 | V |
| Electrostatic Discharge (HBM) | ESD | 1000 | V |
| Operating Temperature Range | Topr | -10°C to +70°C | |
| Storage Temperature Range | Tstg | -20°C to +80°C | |
| Soldering Temperature | Tsld | 260°C for 5 Seconds | |

Electrical Optical Characteristics at Ta=25°C

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|-------------------|----------------|------|------|------|---------|----------------|
| Luminous Flux | Φ | 240 | --- | 260 | lm | If=350mA |
| Viewing Angle | $2\theta(1/2)$ | --- | 120 | --- | Deg | If=350mA |
| Color Temperature | TC | 5000 | --- | 6000 | K | If=350mA |
| Forward Voltage | VF | 2.80 | 3.40 | 3.80 | V | If=350mA |
| Reverse Current | IR | --- | --- | 10 | μ A | VR=5V |

Double Light

◆ CIE Chromaticity Diagram:



Color Bin Limits

| Bin Code | x | y | Typ. CCT (K) | Bin Code | x | y | Typ. CCT (K) |
|----------|-------|-------|--------------|----------|-------|-------|--------------|
| T0 | 0.378 | 0.382 | 4300 | WN | 0.329 | 0.345 | 5970 |
| | 0.374 | 0.366 | | | 0.316 | 0.333 | |
| | 0.360 | 0.357 | | | 0.315 | 0.344 | |
| | 0.362 | 0.372 | | | 0.329 | 0.357 | |
| TN | 0.382 | 0.397 | 4300 | WP | 0.329 | 0.331 | 5970 |
| | 0.378 | 0.382 | | | 0.329 | 0.320 | |
| | 0.362 | 0.372 | | | 0.318 | 0.310 | |
| | 0.365 | 0.386 | | | 0.317 | 0.320 | |
| U0 | 0.362 | 0.372 | 4750 | X0 | 0.308 | 0.311 | 6650 |
| | 0.360 | 0.357 | | | 0.305 | 0.322 | |
| | 0.344 | 0.344 | | | 0.316 | 0.333 | |
| | 0.346 | 0.359 | | | 0.317 | 0.320 | |
| UN | 0.365 | 0.386 | 4750 | XN | 0.305 | 0.322 | 6650 |
| | 0.362 | 0.372 | | | 0.303 | 0.333 | |
| | 0.346 | 0.359 | | | 0.315 | 0.344 | |
| | 0.347 | 0.372 | | | 0.316 | 0.333 | |
| V0 | 0.329 | 0.331 | 5320 | XP | 0.308 | 0.311 | 6650 |
| | 0.329 | 0.345 | | | 0.317 | 0.320 | |
| | 0.346 | 0.359 | | | 0.319 | 0.300 | |
| | 0.344 | 0.344 | | | 0.311 | 0.293 | |
| VN | 0.329 | 0.345 | 5320 | Y0 | 0.308 | 0.311 | 8000 |
| | 0.329 | 0.357 | | | 0.283 | 0.284 | |
| | 0.347 | 0.372 | | | 0.274 | 0.301 | |
| | 0.346 | 0.359 | | | 0.303 | 0.333 | |
| W0 | 0.329 | 0.345 | 5970 | YA | 0.308 | 0.311 | 8000 |
| | 0.329 | 0.331 | | | 0.311 | 0.293 | |
| | 0.317 | 0.320 | | | 0.290 | 0.270 | |
| | 0.316 | 0.333 | | | 0.283 | 0.284 | |

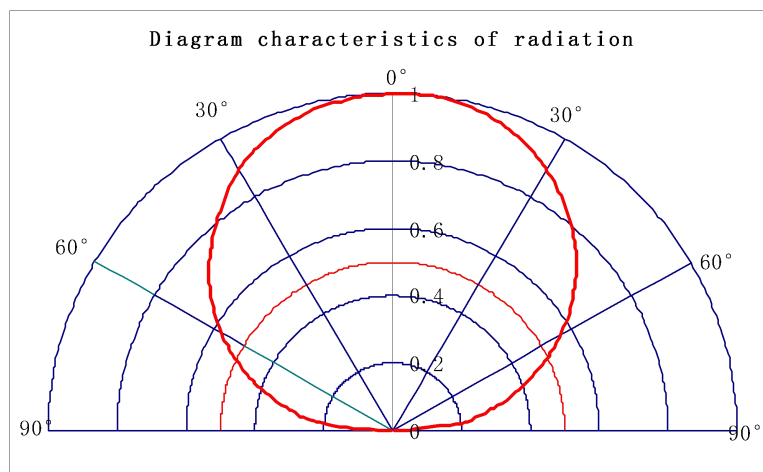
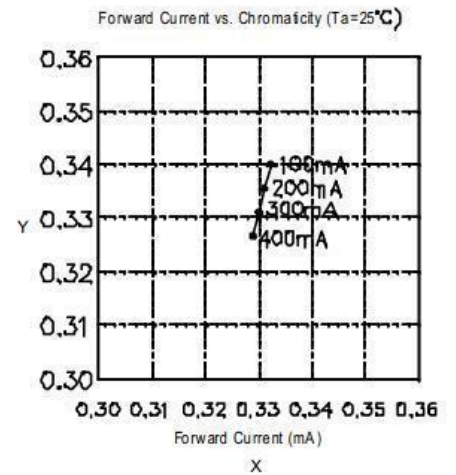
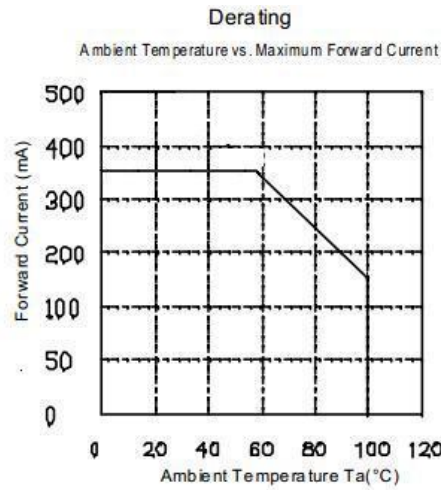
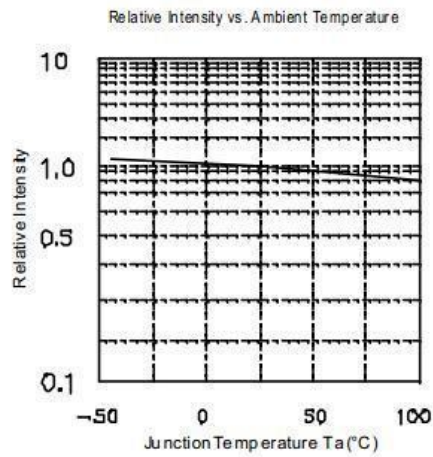
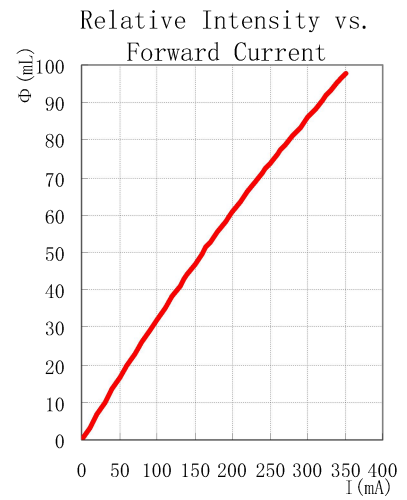
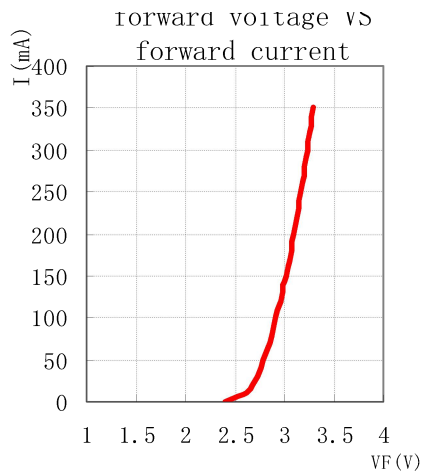
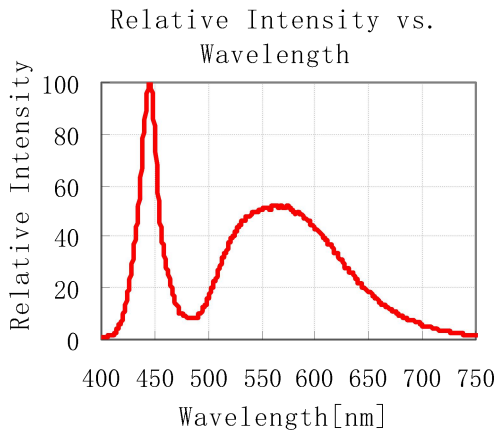
● Tolerance on each color bin (x, y) is ± 0.01

Note: Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all colors.

Double Light

◆ Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)



Double Light

◆ 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 _{CE} =5V | 1000hrs | 22pcs | | 0/1 |
| 7 | High Temperature/ High Humidity | 85°C / 85% R.H. | 1000hrs | 22pcs | | 0/1 |

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.