

# ВЫВОДНОЙ СВЕТОДИОД КРУГЛЫЙ

**ARL-10003RGBW-B-7color Fast**

## FEATURES

- Electricity control IC embedded.
- Fancy, fun, hottest in the market.
- Lens size with 5/8/10 mm options.
- Viewing angles 40°.
- Operating voltage range: DC 3–5 V.
- Blinking frequency: 1.8 Hz.
- Frequency tolerance:  $\pm 20\%$ .
- RoHS compliant.

## DESCRIPTIONS

- New trend creations.
- Low energy consumptions.
- Low maintenance costs.
- High application design flexibility.
- High reliability.

## APPLICATIONS

- Toys / sports utilities.
- Miniature key chains.
- Effect lights.
- Display / decoration lights.
- Electronic displays and signals.
- Interior decoration lights.
- Indicator lights.
- Solar energy lights / garden lights.

## DEVICE SELECTION GUIDE

| LED Part No.                       | CHIP           |               | Lens Color            |
|------------------------------------|----------------|---------------|-----------------------|
|                                    | Material       | Emitted Color |                       |
| <b>ARL-10003RGBW-B-7color Fast</b> | <b>AlGaInP</b> | <b>Red</b>    | <b>White Diffused</b> |
|                                    | <b>InGaN</b>   | <b>Green</b>  |                       |
|                                    | <b>InGaN</b>   | <b>Blue</b>   |                       |



10 mm



DIFFUSED



RGB



### USAGE NOTES:

The ultra bright LED is an electrostatic insensitive device, so static electricity and surge will damage the LED.

It is required to wear a wrist-band when handling the LED.

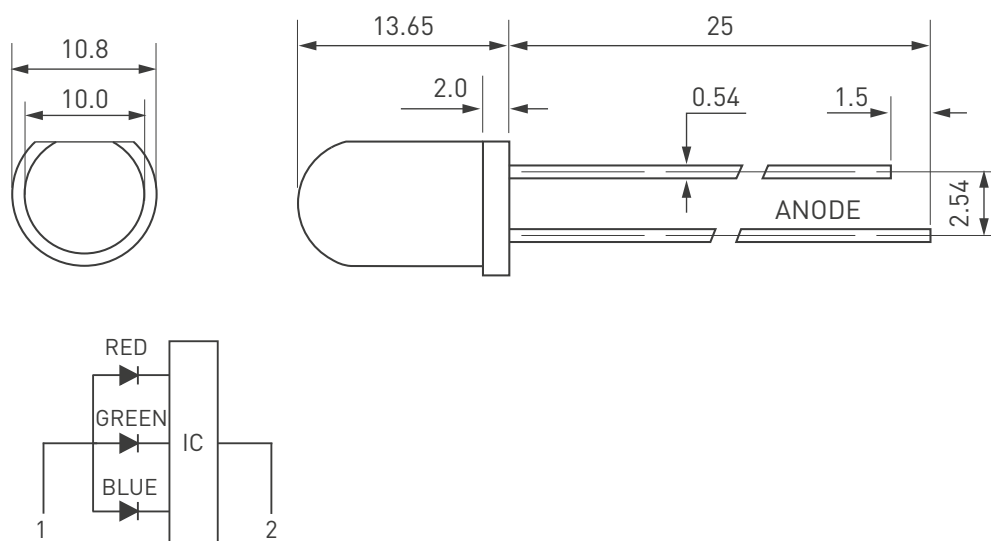
All device, equipment, machinery, desk and ground must be properly grounded.

When using LED, it must use a protective resistor in series with DC current about 20 mA.



**ATTENTION!**  
**ELECTROSTATIC SENSITIVE DEVICES.**  
OBSERVE PRECAUTIONS FOR HANDLING.

## PACKAGE DIMENSIONS



Unit: mm.

### Notes:

Other dimensions are in millimeters, tolerance is 0.25 mm except being specified.

Protruded resin under flange is 1.5 mm Max LED.

Bare copper alloy is exposed at tie-bar portion after cutting.

## ABSOLUTE MAXIMUM RATING ( $T_A = +25^\circ\text{C}$ )

| Parameter             | Symbol    | Absolute Maximum Rating | Unit |
|-----------------------|-----------|-------------------------|------|
| Forward Pulse Current | $I_{FPM}$ | 100                     | mA   |
| Forward Current       | $I_{FM}$  | 30                      | mA   |
| Reverse Voltage       | $V_R$     | 5                       | V    |
| Operating Temperature | $T_{opr}$ | -40... +80              | °C   |
| Storage Temperature   | $T_{stg}$ | -40... +100             | °C   |
| Soldering Heat (5s)   | $T_{sol}$ | 260                     | °C   |

## ELECTRO-OPTICAL CHARACTERISTICS $(T_A = +25^\circ\text{C})$

| Parameter                | Symbol            | Device | Min. | Typ. | Max. | Unit | Test Condition       |
|--------------------------|-------------------|--------|------|------|------|------|----------------------|
| Luminous Intensity       | I <sub>v</sub>    | Red    | —    | 300  | 400  | mcd  | I <sub>f</sub> =20mA |
|                          |                   | Green  | —    | 300  | 400  |      |                      |
|                          |                   | Blue   | —    | 300  | 400  |      |                      |
| Viewing Angle            | 2θ <sub>1/2</sub> | Red    | —    | 40   | —    | Deg  | (Note 1)             |
|                          |                   | Green  |      |      |      |      |                      |
|                          |                   | Blue   |      |      |      |      |                      |
| Peak Emission Wavelength | λ <sub>p</sub>    | Red    | —    | 630  | —    | nm   | I <sub>f</sub> =20mA |
|                          |                   | Green  | —    | 525  | —    |      |                      |
|                          |                   | Blue   | —    | 470  | —    |      |                      |
| Spectral Line Half-Width | Δλ                | Red    | —    | 20   | —    | nm   | I <sub>f</sub> =20mA |
|                          |                   | Green  | —    | 35   | —    |      |                      |
|                          |                   | Blue   | —    | 20   | —    |      |                      |
| Forward Voltage          | V <sub>F</sub>    | Red    | —    | 2.2  | 2.6  | V    | I <sub>f</sub> =20mA |
|                          |                   | Green  | —    | 3.5  | 4.0  |      |                      |
|                          |                   | Blue   | —    | 3.5  | 4.0  |      |                      |
| Cycle                    | S                 |        | —    | 5    | —    | SEC  | I <sub>f</sub> =20mA |

### Note:

1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

2. θ<sub>1/2</sub> is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

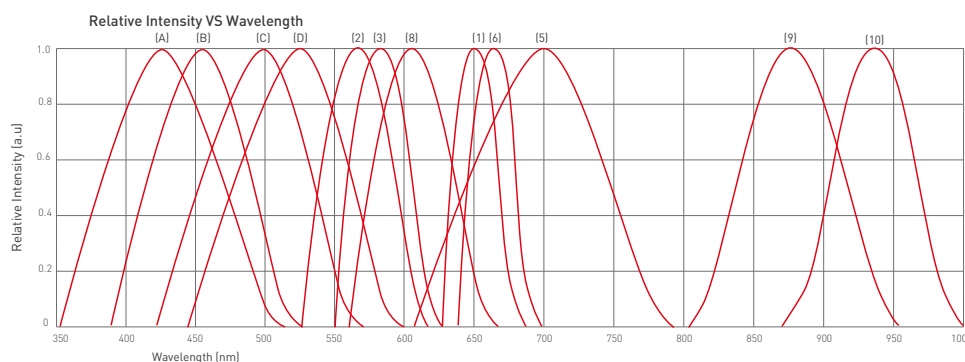
## TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURVES

| Item                               | Test Conditions                                     | Test Hours/Cycle | Sample Size | Ac/Re |
|------------------------------------|-----------------------------------------------------|------------------|-------------|-------|
| Solder Heat                        | temp: 260 °C                                        | 5 sec            | 76 PCS      | 0/1   |
| Temperature Cycle                  | H: +85 °C — 30 min<br>f 5 min<br>L: -55 °C — 30 min | 50 cycles        | 76 PCS      | 0/1   |
| Thermal Shock                      | H: +100 °C — 5 min<br>f 10 set<br>L: -10 °C — 5 min | 50 cycles        | 76 PCS      | 0/1   |
| High Temperature Storage           | Temp: 100 °C                                        | 1000 HRS         | 76 PCS      | 0/1   |
| Low Temperature Storage            | Temp: -55 °C                                        | 1000 HRS         | 76 PCS      | 0/1   |
| DC Operating Life                  | Temp: 25 °C<br>I <sub>f</sub> =20mA                 | 1000 HRS         | 76 PCS      | 0/1   |
| High Temperature/<br>Higt Humidity | 85 °C/ 85% RH                                       | 1000 HRS         | 76 PCS      | 0/1   |

## FLASHING MODE

Seven Color[R,G,B,RG,GB,RB,RGB] Flash in turn; one fadeout, another fade-in at one time.

# TYPICAL ELECTRICAL-OPTICAL CHARACTERISTICS CURVES



- (1) GaAsP/GaAs 655nm/Red
- (2) Gap 568nm/Yellow Green
- (3) GaAsP/Gap585nm Yellow
- (4) GaAsP/Gap 635nm/ Hi-Eff Red
- (5) Gap 700nm/ Bright Red
- (6) GaAlAs/GaAs 660nm/ Super Red
- (8) GaAsP/GaP 610nm/ Orange
- (9) GaAlAs 880nm
- (10) GaAs/GaAs&GaAlAs/GaAs 940nm
- (A) GaN 430nm/Blue
- (B) InGaN 470nm/Blue
- (C) InGaN502nm/Bluish Green
- (D) InGaN525nm/Pure Green

