



# BRIGHT LED ELECTRONICS CORP.

## Specification for Approval

- DEVICE NUMBER: BL-ALS3001-RR
- CUSTOMER:

SAMPLES  
ATTACHED AREA

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2022/2/23	1.0	1.0	1.0	1.0	1.0	1.0	1.0	Initial Released

### FOR CUSTOMER'S APPROVAL STAMP OR SIGNATURE

APPROVED	PURCHASE	MANUFACTURE	QUALITY	ENGINEERING

## INFRARED RECEIVER MODULE

### ● Description

1. The BL-ALS3001-RR, an ambient light sensor is specifically designed for security lighting control. Due to the high rejection ratio of infrared radiation, the spectral response of the ambient light sensor is close to human eyes. The BL-ALS3001-RR features a good linearity of output current with respect to the ambient light illumination across the pre-designed sensing range. As shown in Figure 1, a dynamic and real-time voltage variation supplied by connecting the BL-ALS3001-RR in series with an external resistor offers a cost effective and easy way to equalize a corresponding ambient illumination level to control the security light switching on or off. The built-in dark current cancellation enables more high accuracy sensing over a wide temperature range, even at low illumination.

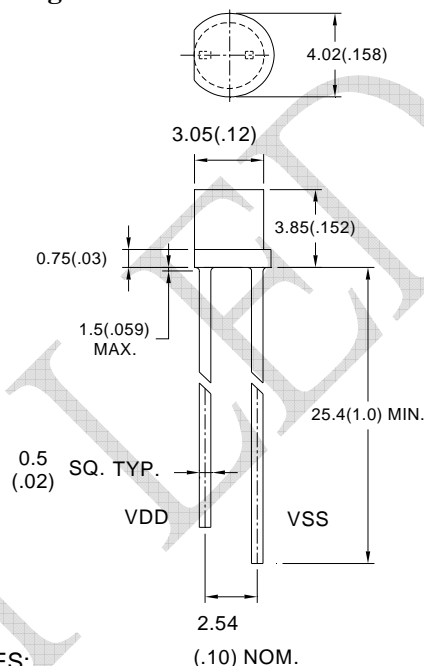
### ● Features

1. Close to the human eye's response
2. Good output linearity across pre-designed illumination range
3. Low sensitivity variation across various light sources
4. Guaranteed temperature performance, -40°C to 85°C
5. Wide supply voltage range: 2.5V to 5.5V
6. Package Size: Radial Lead Type - 30
7. ROHS compliant

### ● Applications:

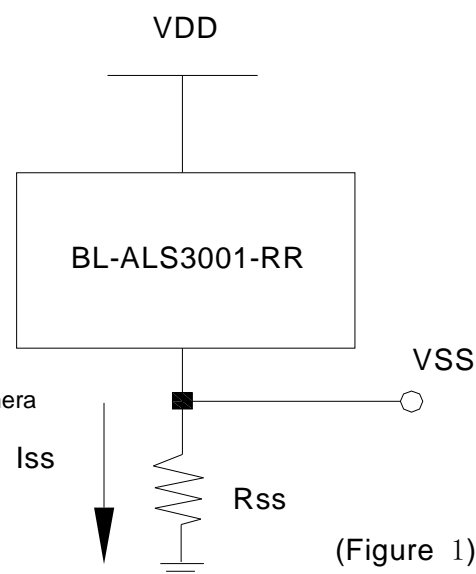
1. Security lighting control
2. Dawn/dusk or brightness/darkness sensing
3. Detection of ambient light to control display backlighting
  - Mobile devices-mobile phones, PDAs
  - Computing devices-TFT LCD monitor for notebook computer
  - Consumer devices-TFT LCD TV, plasma TV, video camera, digital still camera
4. Automatic residential and commercial lighting management
5. Automatic contrast enhancement for electronic signboard
6. Ambient light monitoring device for daylight and artificial light

### ● Package Dimensions:



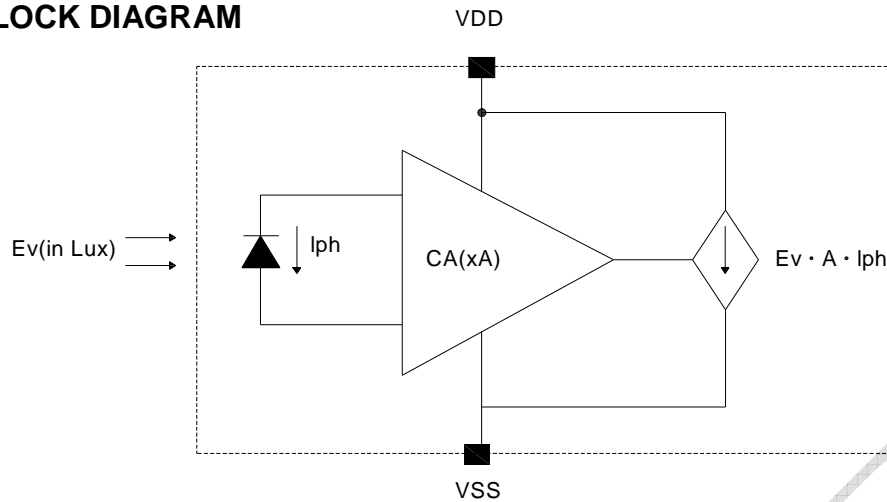
### NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25\text{mm}$  (0.01") unless otherwise specified.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.



(Figure 1)

## ● BLOCK DIAGRAM



## ● PAD Assignment Requirement

PAD Name	I/O	Descriptions
VDD	Power	Power supply terminal
VSS	Power	Output terminal of the amplified photocurrent

## ● Absolute Maximum Ratings(Ta =25℃ unless otherwise specified)

Symbol	parameter	Min	Typ	Max	Unit
Tstg	Storage temperature	-40	-	+100	℃
Topr	Operating temperature	-40	-	+85	℃
VDD	Supply voltage	-0.3	-	10	V
Iss	Output current <sup>*1</sup>	-	-	10	mA

**Note:** <sup>\*1</sup> The maximum output current is limited internally and depends on the series resistor Rss

## ● Recommended Operating Conditions (Ta=25℃ unless otherwise specified)

Symbol	parameter	Min	Typ	Max	Unit
Topr	Operating temperature	-40	-	+85	℃
VDD	Supply voltage	1.5	-	5.5	V
VDD-VSS	Operating voltage	1.5	-	VDD-0.8	V
Iss	Output current	-	-	7	mA

## ● Electrical and Optical Characteristics

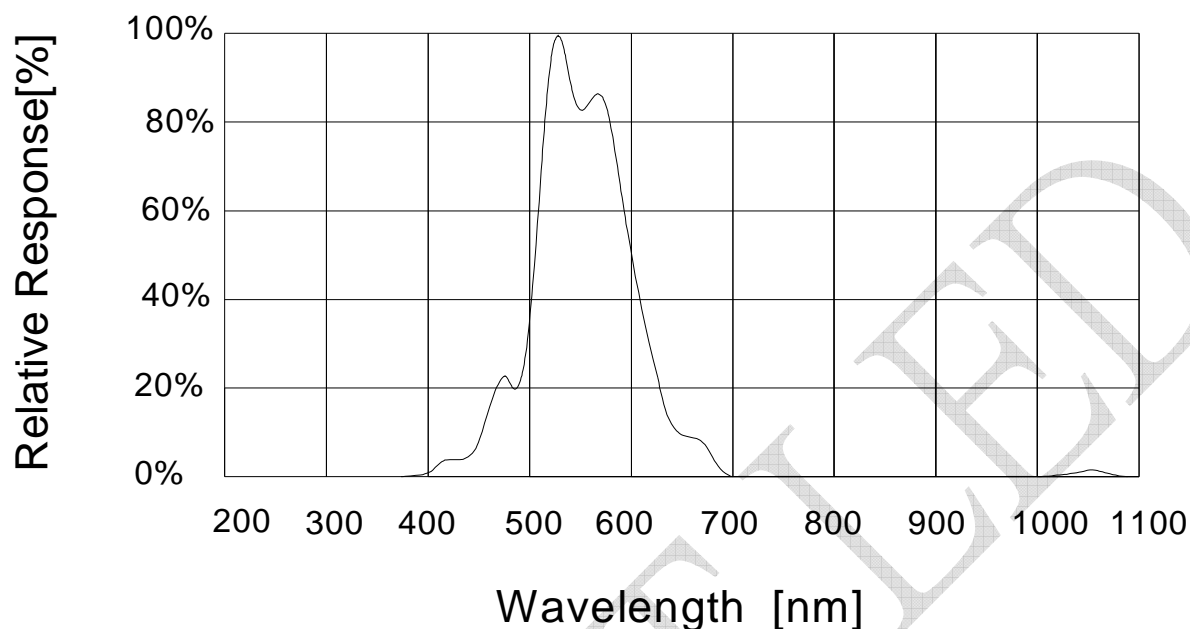
Parameter	Symbol	Test Conditions	Ratings			Unit
			Min.	Typ.	Max.	
Min. Operating voltage	VDD-VSS	I <sub>ss</sub> =250uA	—	2.0	—	V
		I <sub>ss</sub> =100uA	—	1.5	—	V
Output current	I <sub>ss2</sub>	E <sub>v</sub> =100Lx <sup>[1]</sup> , VDD=5.0V	88.25	120	150.75	uA
Photocurrent Ratio	I <sub>ss3</sub> /I <sub>ss2</sub>		0.9	1.0	1.1	
Dark Current Equivalent Lux		E <sub>v</sub> =0Lx, T <sub>a</sub> =25°C, VDD=3.0V	—	—	0.01	Lux
		E <sub>v</sub> =0Lx, T <sub>a</sub> =85°C, VDD=3.0V	—	0.11	—	Lux
Peak Spectral Response	ē <sub>p</sub>	—	—	550	—	nm
Power Supply Rejection Ratio	PSRR	E <sub>v</sub> =100Lx <sup>[1]</sup> , VDD=2.5V~4.5v	—	2.17	—	%/v

Note

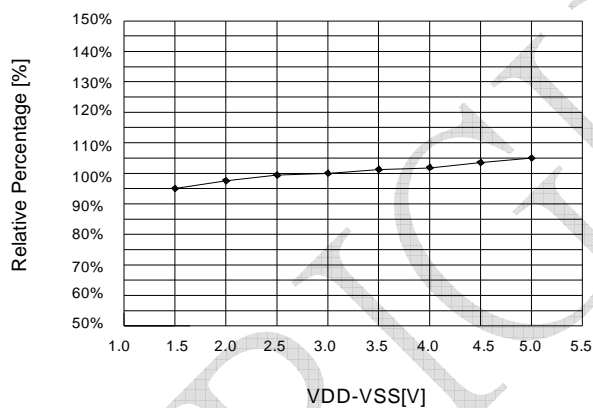
[1]. Fluorescent light is used as light source. White LED is substituted in mass production.

## ● Typical Characteristic Curves

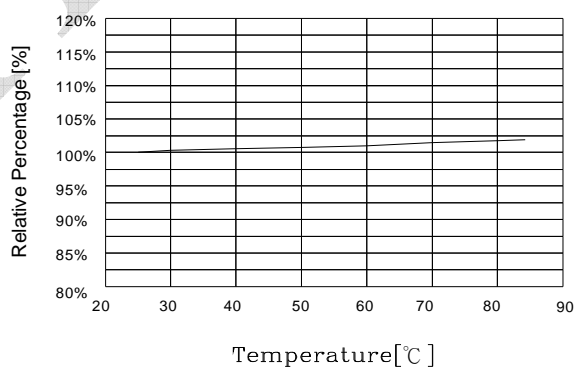
### Spectral Response



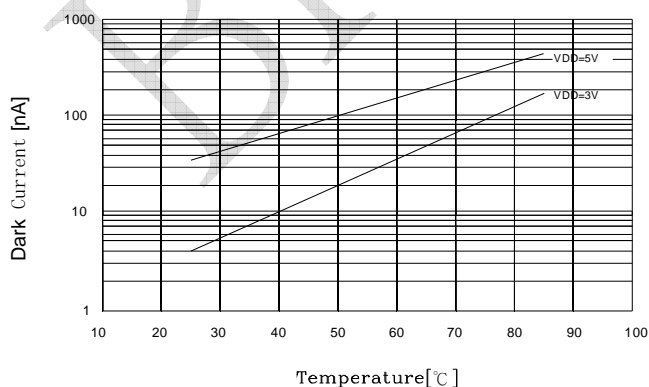
Output Current vs. Operating Voltage



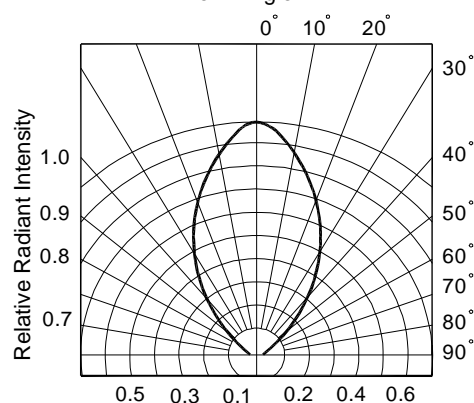
Output Current vs. Temperature



Dark Current vs. Temperature



View Angle



## ● Recommended method of storage

Storage is recommended as soon as the bag has been opened prevent moisture absorption. The following conditions (prevent moisture :level 3) should be observed, if bags are not available:

Storage temperature 10°C to 30°C

Storage humidity ≤60%RH max.

Storage Time ≤ 168hr max.

## ● Moisture-Proof Package

To avoid moisture absorption by the resin, the product should be stored under the following conditions;

Temperature:  $23 \pm 5^\circ\text{C}$

Relative humidity :60%(max)

Moisture Sensitivity level:3

Baking is required if the devices have been store unopened for more than six months.

## ● ESD Precaution

Proper storage and handing procedures should be followed to prevent ESD damage to the devices especially when they are removed from the Anti-static bag. Electro – Static Sensitive Devices warning labels are on the packing.

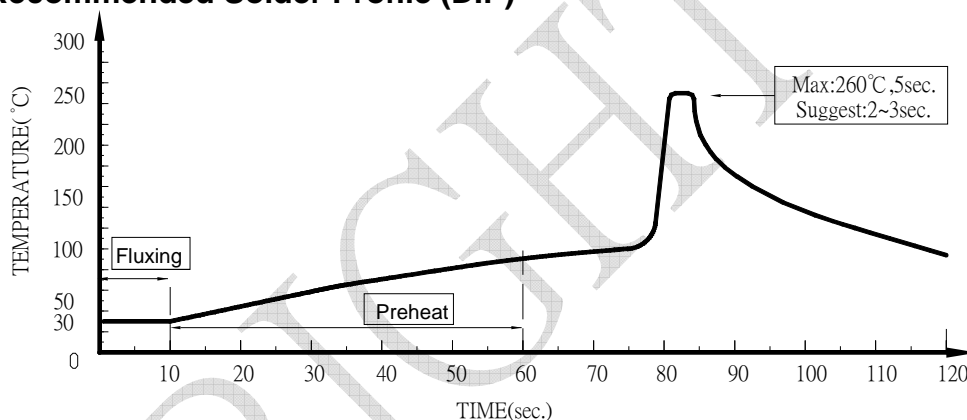
## ● Make any necessary soldering correction manually

Temperature : no more than  $350^\circ\text{C}$  (25W for soldering iron)

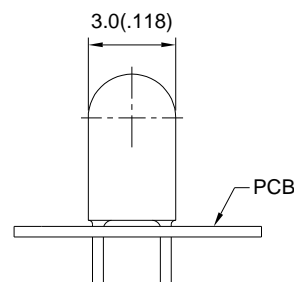
Time : Max. 5s; Suggested 2-3s.

Note : Do not do this more than once for each PIN.

## ● Recommended Solder Profile (DIP)



1. Please avoid any external stress applied to the lead-frames and epoxy while the LEDs are at high temperature, especially during soldering
2. DIP soldering and hand soldering should not be done more than one time.
3. After soldering, avoid the epoxy lens from mechanical shock or vibration until the LEDs are back to room temperature.
4. Avoid rapid cooling during temperature ramp-down process
5. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

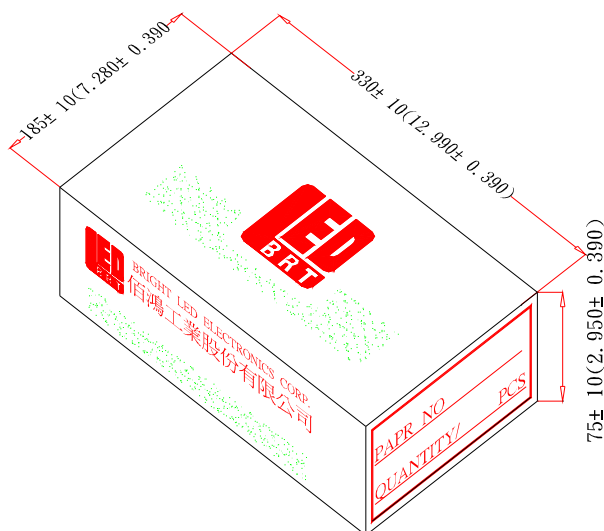


## ● IRON Soldering

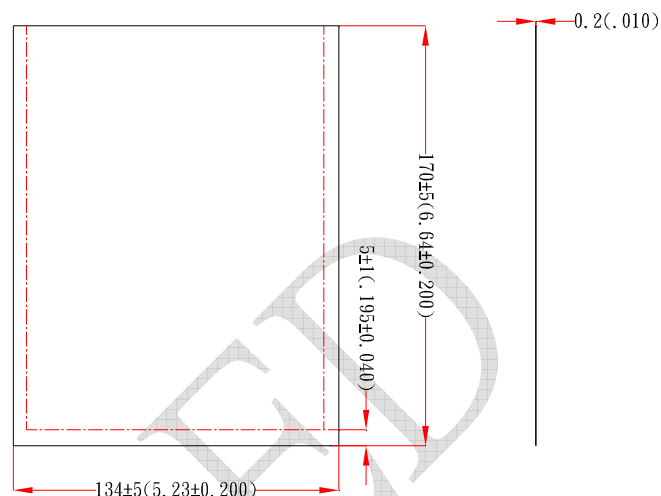
A : Max :  $350^\circ\text{C}$  Within 3 sec. One time only.

B : The products of 3mm without flange, welding condition of flat plate PCB Max :  $350^\circ\text{C}$  Within 2 sec. One time only

## ● Tapping and packaging specifications(Units: mm)



## ● Packaging Bag Dimensions

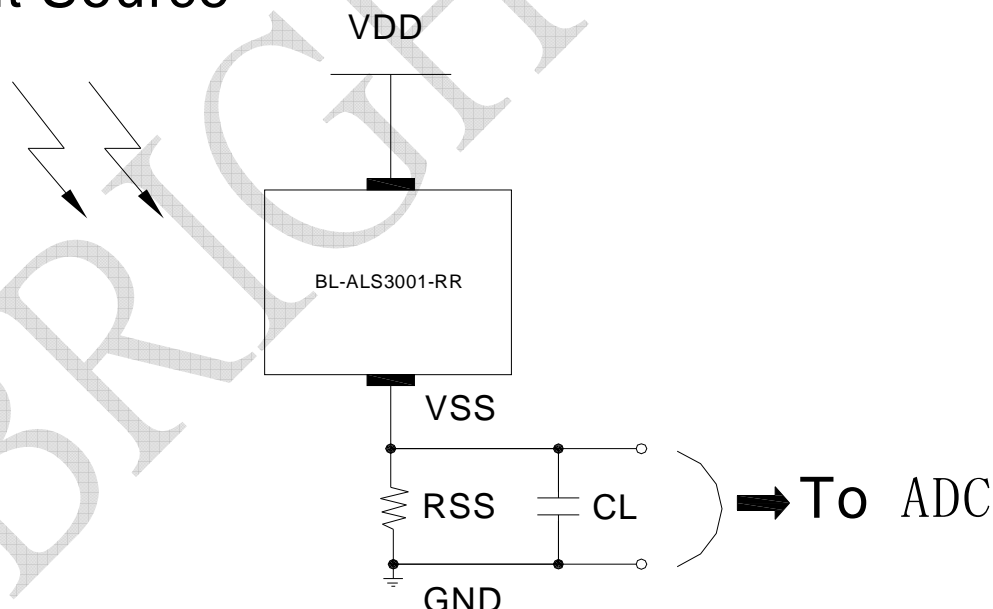


### Notes:

- 1、500pcs per bag, 5Kpcs per box.
- 2、All dimensions are in millimeters(inches).
- 3、Specifications are subject to change without notice.

## ● Converting Photocurrent to Voltage

### Light Source



- 1.The output voltage (VSS) is the product of photocurrent (IPH) and loading resistor (RSS).
- 2.A right loading resistor should be chosen to meet the requirement of maximum ambient light ,and the out saturation voltage: $VSS(max.)=ISS(max.) \times RSS < VSS(saturation)=VDD-0.8V$ .
- 3.To avoid 60Hz ripple from fluorescent lamps, we suggest that the time constant must be greater than 0.5 second: $RSS \times CL > 0.5$ (empirical data).



● Output current Bin Limits (VDD =5V)

BIN CODE	Min.( uA)	Max.(uA)
1	88.25	94.5
2	94.5	107.0
3	107.0	132.0
4	132.0	144.5
5	144.5	150.75

NOTES:Tolerance of measurement of Radiant Intensity :±15%