

ROHM introduces a new ultra-compact side-emitting (side view) infrared LED, CSL1501RW. The device is ideal for head-mounted displays, industrial headsets, and VR/MR/AR (xR, virtual reality) gaming systems.

In recent years, VR/MR/AR technology, which has emerged following the continuing advancement of IoT, is being increasingly adopted in headsets and head-mounted displays within a variety of gaming systems. The ability to simulate 3D space and project data in the real world has expanded the market for VR/MR/AR applications in the industrial sector as well.

Parallelly, increasing application functionality has led to the use of infrared LEDs for eye tracking together with accelerometers commonly installed for detecting body movement.

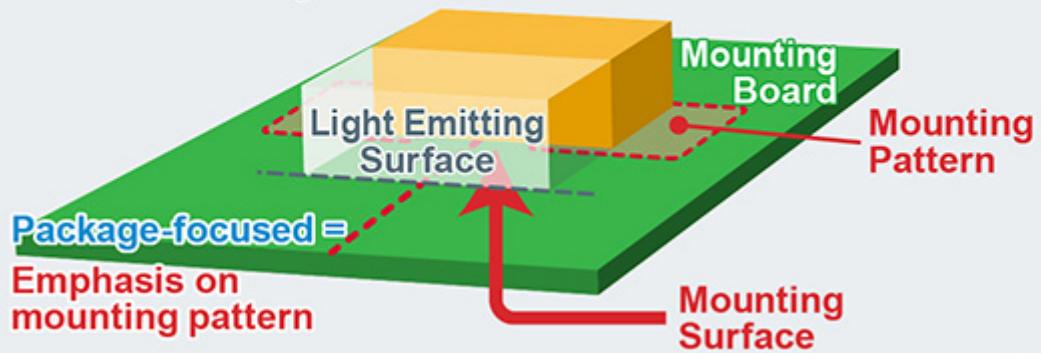
In response, ROHM now offers a new ultra-miniature side-firing infrared LED optimized for today's needs – expanding its market-proven PICOLED™ series of ultra-compact chip LEDs, ideal for compact mobile devices and wearables,

The CSL1501RW delivers a peak wavelength of 860nm in an industry-small (1.0x0.55mm, t=0.5mm) side-view design that emits light parallel to the mounting surface, providing exceptional design flexibility. In addition, ROHM leverages its strengths in element manufacturing to improve luminous efficiency and reduce power consumption by over 20%. The device serves as a light source for eye tracking in VR/MR/AR applications that require greater performance.

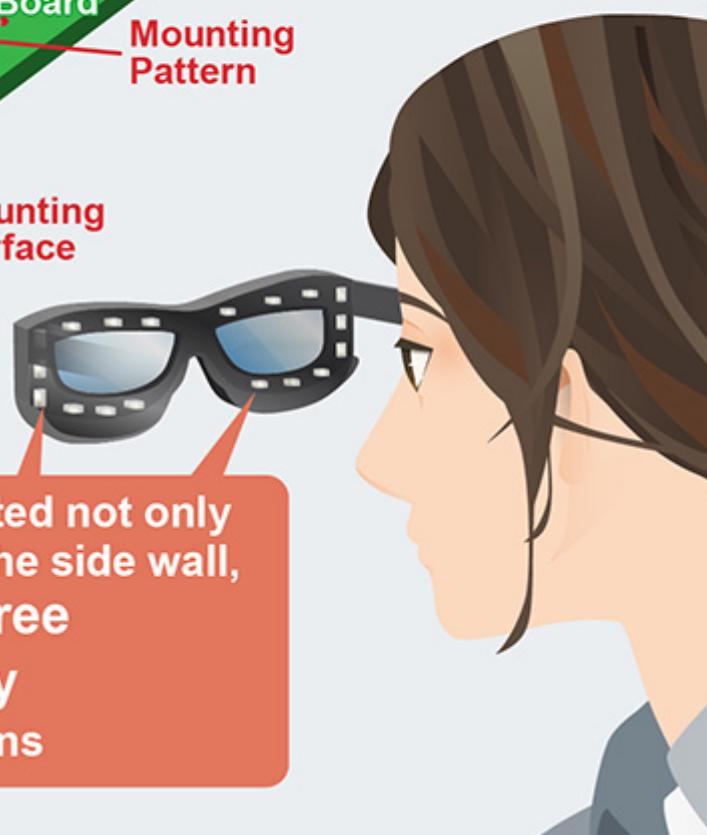


## Application Image

### LED Mounting Schematic

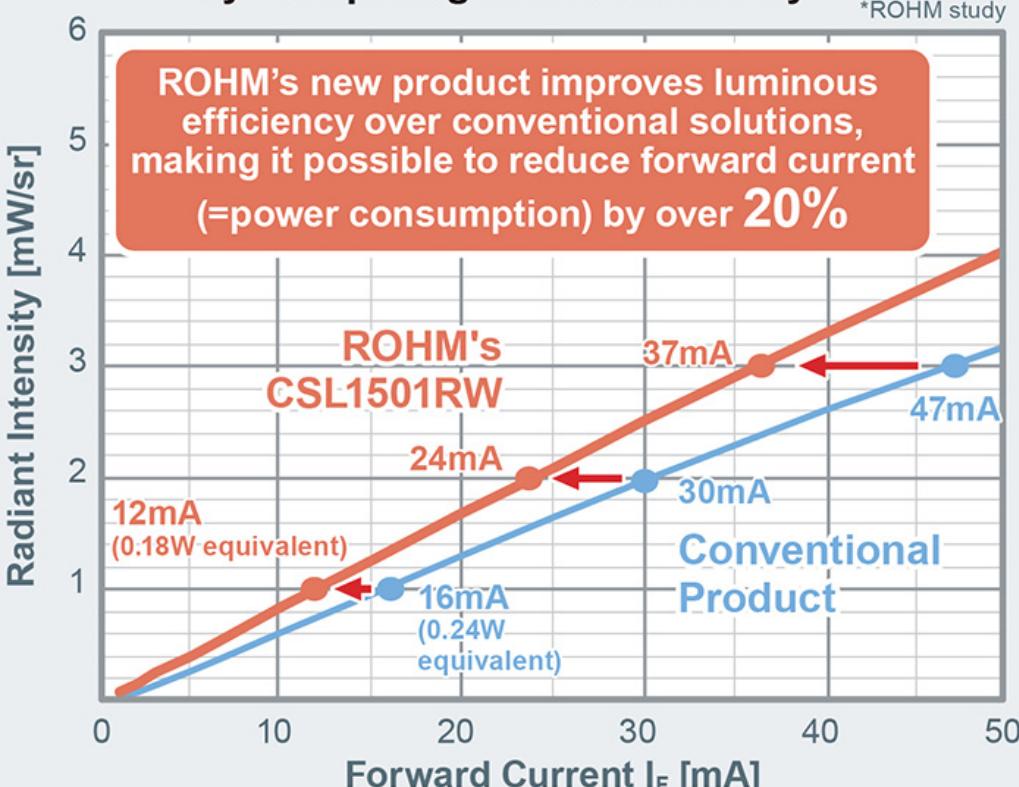


**Side-emitting LEDs can be mounted not only on the lens surface, but also on the side wall, providing a high degree of design flexibility in VR/MR/AR applications**



### Effects of Reducing Power Consumption by Comparing Radiant Intensity

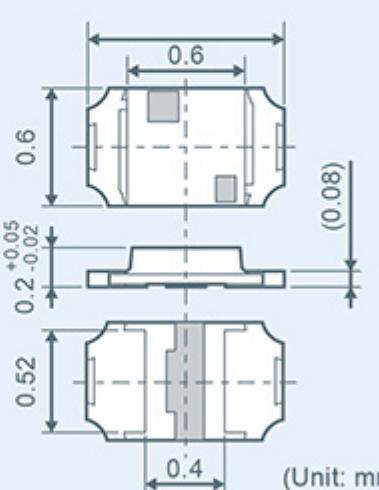
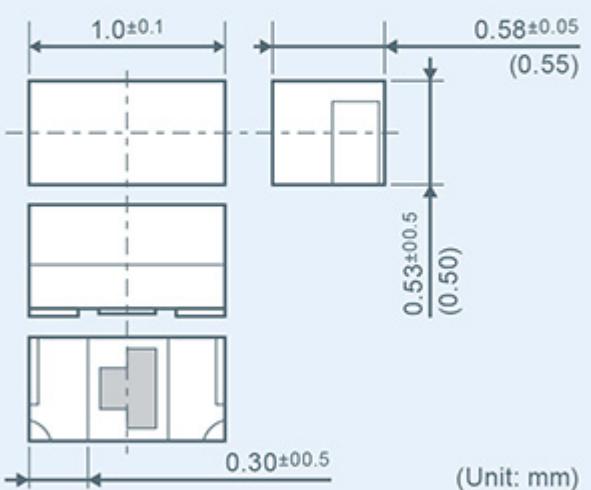
\*ROHM study



## 1. Ultra-compact side-emitting form factor provides exceptional design flexibility

ROHM has expanded its venerable PICOLED™ lineup of ultra-compact chip LEDs with the infrared CSL1501RW that delivers a peak wavelength of 860nm in a class-leading small size (1.0mm x 0.55mm, t=0.5mm), while the side-firing design offers superior versatility that makes it ideal as a light source for eye-tracking in VR/MR/AR applications.

### External Appearance and Land Pattern

Product Image	Standard LED	New Product: CSL1501RW
	Top Emission (Top View)	Side Emission (Side View)
External Appearance	 <p>(Unit: mm)</p>	 <p>(Unit: mm)</p>

New products offer high design flexibility for applications in ultra-compact, side-firing

## 2. 20% lower power consumption over conventional products contributes to longer operating time

ROHM utilizes its strengths in LED die manufacturing to reduce power consumption by more than 20% (from 0.24W to 0.18W at 1mW/sr) by increasing both the radiant intensity and luminous efficiency vs conventional products. The result is improved energy savings that prolongs application operating time.

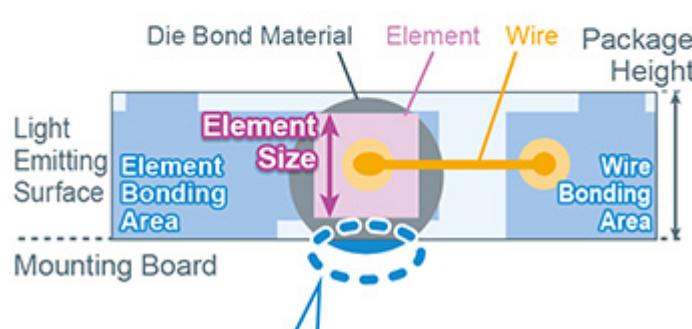
## 3. Achieves superior reliability in an Ultra-compact package

ROHM's thorough quality design ensures high mounting reliability in an ultra-compact size utilizing a new package optimized for the high- intensity LED die.

This prevents issues that can occur when mounting ultra-compact products, such as lighting failures caused by protrusion of the die bonding material.

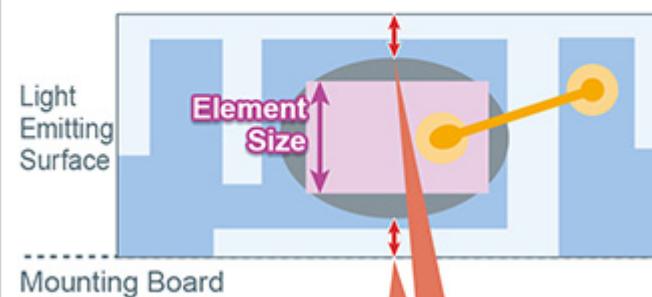
### Mounting Reliability Comparison

#### Quality design not carried out



The die bond material protrudes due to lack of space

#### New Product: CSL1501RW (Quality design performed)



Enough margin is secured, preventing the die bond material from sticking out

Insufficient package height for the element size can cause the die bond material to stick out, resulting in lighting failure

Newly designed package optimized for high-output elements ensures superior mounting reliability

### Specifications

Part No.	Package Size	Absolute Max. Ratings				Electrical Optical Characteristics (@ $I_F=30mA$ )		
		$I_F$	$V_R$	Operating Temp Range	Storage Temp Range	Radiant Intensity	$V_F$	Peak Wavelength
NEW CSL1501RW	1.0mm x 0.55mm, t=0.5mm	50mA	5V	-40°C to +85°C	-40°C to +100°C	2.5mW/sr (Typ.)	1.5V (Typ.)	860nm (Typ.)

Pricing: 0.36USD/unit (samples, excluding tax)

Availability: November 2020 (samples), March 2021 (In mass production)

### Terminology

VR/MR/AR (Virtual Reality/Mixed Reality/Augmented Reality)

Virtual reality immerses users in a virtual world utilizing small high-resolution monitors or screens in an enclosed space, while mixed reality merges the real and virtual worlds, allowing users to interact with both physical and virtual objects in real time. Augmented reality enhances the real world by layering digital content on a headset or smart glasses, giving users the ability to view 3D images. These technologies are sometimes collectively referred to as xR.

#### PICOLED™ Series

Refers to ROHM's ultra-small, ultra-thin chip LEDs ideal for compact mobile devices and wearables developed using a proprietary element manufacturing process.

\*PICOLED™ is a trademark or registered trademark of ROHM Co., Ltd.

### Latest News

**2021-04-15**

32bit D/A Converter IC for Hi-Fi Audio Equipment

**2021-04-07**

ROHM Semiconductor Europe appoints Wolfram Harnack as new President

**2021-03-18**

ROHM and Sanden Huayu Hold an Opening Ceremony Announcing the Establishment of a Joint Technology Laboratory

**2021-03-15**

"ROHM was Selected as a White 500 Company 2021 Four Years in a Row" Certifying Outstanding Health and Productivity Management ...

**2021-03-11**

ROHM acquired the "Association for Business Innovation in harmony with Nature and Community Certification" sponsored by the G ...

**2021-03-10**

RHOM was recognized as "Sports Yell Company 2021" by Japan Sports Agency for the first time.

**2021-03-03**

Enactment of the ROHM Group Tax Policy

**2021-03-01**

Social Conducted an online class to Ritsumeikan High School

**2021-02-24**

ROHM's Wi-SUN FAN Module Solution: Empowering the infrastructure of smart cities

**2021-02-17**

Ultra-Low IQ PMIC from ROHM Selected to Power NXP iMX8M Nano for High Performance Embedded Artists Industrial Control Board

**2021-02-10**

New 5th Gen P-channel MOSFETs Deliver Class-Leading Low ON Resistance

**2021-02-05**

ROHM has been selected as an "Excellent Business Operator" for emission reduction of greenhouse gas by Kyoto City.

**2021-02-05**

We carried out a food drive at Kyoto headquarter and Yokohama office!

**2021-02-03**

ROHM SiC MOSFETs Solve Design Challenges for Leading Solar Energy Company Midnite Solar

**2021-02-01**

Posted 3rd quarter financial results and related documents for fiscal year ending March 31, 2021

**2021-01-28**

ROHM expands its miniature PICOLED™ lineup: Power-Saving Infrared LED for VR/MR/AR Applications

**2021-01-19**

ROHM Awarded Gold Class in "Sustainability Site Award 2021"

**2021-01-18**

ROHM Completes Construction of a New Environmentally Friendly Building at its Apollo Chikugo to Expand Production Capacity o ...

**2021-01-14**

New faster 125°C operation compatible EEPROMs extend service life

**2020-12-21**

ROHM Awarded Gold Rating of Sustainability 2020 by EcoVadis