Featured Products

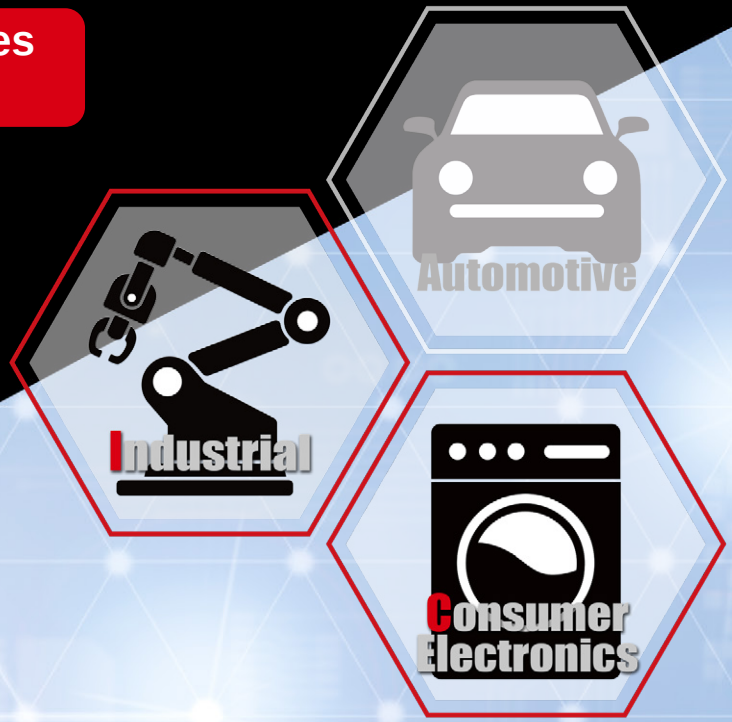
Electronics for the Future

ROHM SEMICONDUCTOR

Class-leading high-output light emission improves LiDAR measurement accuracy

High Power 1kW (125W×8ch) 905nm Band Laser Diode

RLD8BQAB3

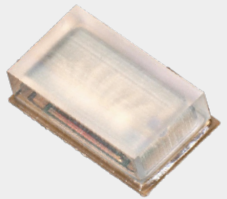


Overview of High Power 1kW (125W×8ch) 905nm Band Laser Diode

The RLD8BQAB3 is an ultra-compact surface mount high power 125W 8ch array laser diode developed for distance measurement and spatial recognition applications such as LiDAR. The illumination method can be selected to suit application needs, from individual emission of 1 to 8 channels to simultaneous emission of all 8 channels with a total light output of 1kW.

Features

- **High output 8ch array contributes to improved measurement accuracy and miniaturization in LiDAR applications**
  A wide variety of light emission control options, including continuous, individual, and simultaneous illumination, makes it possible to configure flexible, high resolution LiDAR applications. What's more, the ultra-compact 5.6mm×3.3mm surface mount package reduces size by 33% over conventional models.
- **Superior light emission performance enables high resolution detection over long distances**
  Uniform emission minimizes the intensity drop between channels, while the glass cap package ensures high beam quality.
- **Minimal wavelength temperature dependence improves overall LiDAR performance**
  Narrower wavelength bandpass filter increases the S/N ratio.

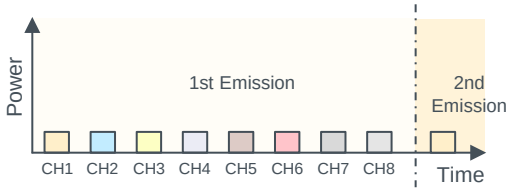


RLD8BQAB3
(5.6×3.3×1.75mm)

High Output 8ch Array Improves Measurement Accuracy in LiDAR Applications

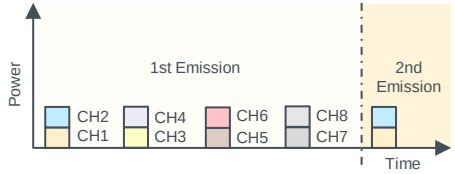
8ch Emission Control Variations

1ch Continuous Emission



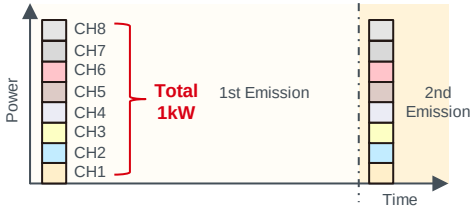
Continuous emission of each of the 8 channels is possible, one at a time in short intervals

2ch×4 Individual Emission



Individual emission control of each channel allows for dynamic resolution adjustment and power consumption optimization

8ch Simultaneous Emission

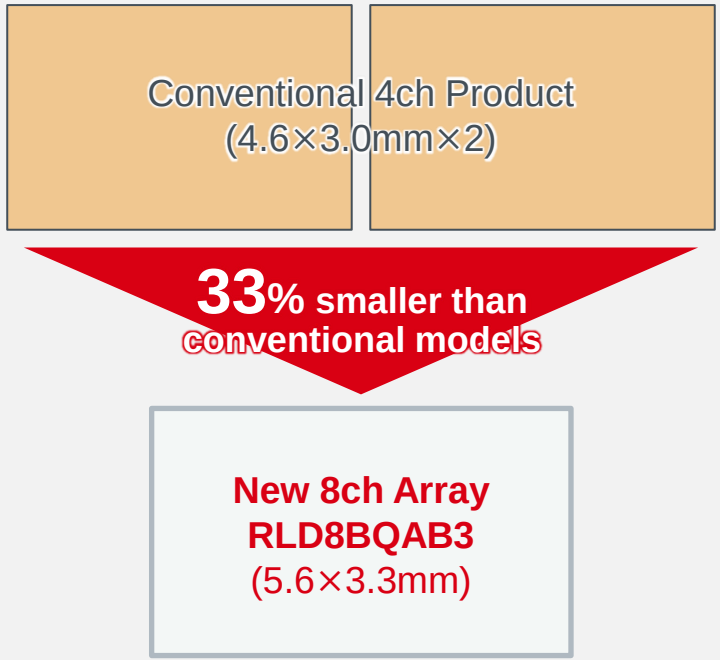


Simultaneous 8ch emission with a total optical output of 1kW improves the accuracy and reliability of long-distance measurements

Enables the configuration of flexible, high resolution LiDAR applications

High Output 8ch Array Contributes to the Miniaturization of LiDAR Applications

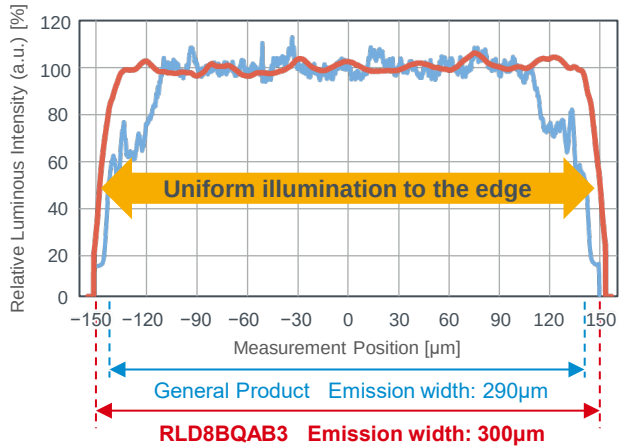
Area Comparison of 4ch×2 vs 8ch Arrays



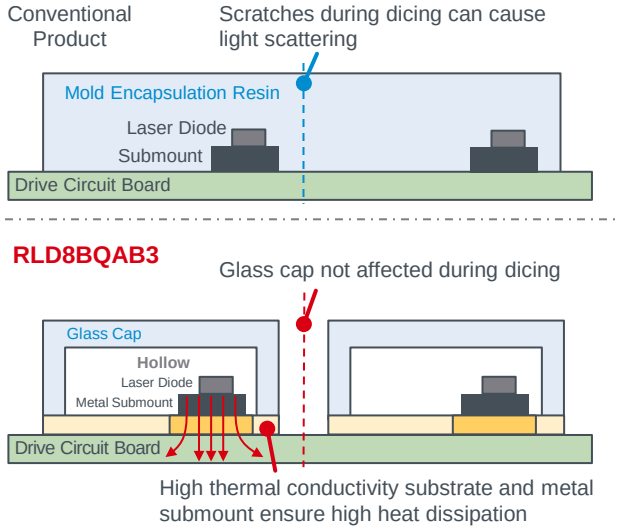
The ultra-compact 5.6mm×3.3mm surface mount package reduces size by 33% over conventional products

Superior Light Emission Performance Enables High-Resolution Detection Over Long Distances

Luminous Intensity Comparison: RLD8BQAB3 vs General Product



The Industry's First* Glass Cap Package

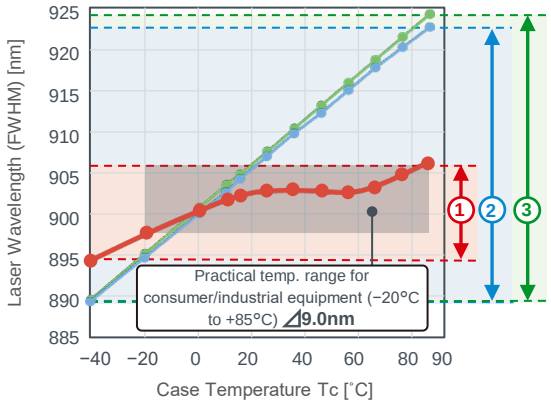


*ROHM September 2024 study

Uniform emission minimizes the intensity drop between channels, while the glass cap package ensures high beam quality

Minimal Wavelength Temperature Dependence Improves Overall LiDAR Performance

Comparison of Laser Wavelength Temperature Dependence: RLD8BQAB3 vs General Product



66% lower than General Product B

	Wavelength Shift Amount* (Ave. Shift per 1°C)
①RLD8BQAB3	⊿11.6nm (Avg. 0.10nm/°C)
②General Product A	⊿33.4nm (Avg. 0.26nm/°C)
③General Product B	⊿34.6nm (Avg. 0.28nm/°C)

Narrowing the wavelength range of the bandpass filter while reducing wavelength-temperature dependence vs general products improves the S/N ratio by reducing the effects of sunlight and other ambient light

Same distance: Low optical output and power consumption
Same optical output: Longer measurement distance

*Wavelength shift from −40°C to +85°C

Extends LiDAR detection range while reducing power consumption

905nm Band High Power Laser Diode Lineup

(Mass Production Plants are IATF16949 Certified, with Automotive-Grade Products Under Development)

Part No.	Absolute Max Ratings (T_c=25°C)				Electrical-Optical Characteristics (Typ) (T_c=25°C)					Emission Area [μm×μm]	Package [mm]
	I_{FP} [A]	P_o [W]	V_R [V]	Topr [°C]	Conditions I_{FP} [A]	P_o [W]	V_F [V]	Beam Diffusion Angle Θ⊥[deg]	Beam Diffusion Angle Θ//[deg]	Peak Wavelength λp[nm]	
New RLD8BQAB3	50 /ch	150 /ch	30	T_a=−40 to T_j=125	41	125 /ch	15	20	11	905	300×10 Inter-ch 30 8ch	5.6×3.3 (t=1.75) SMD
RLD90QZW8	46	145	10	−40 to +85	38	120	13	20	11		270×10	Φ5.6 CAN
RLD90QZW3	28	90	2		23	75	11	25	12		225×10	
RLD90QZWD	13	40	2		12	35	11	25	13		100×10	
RLD90QZWB	11	25	2		9	25	13	25	14		50×10	
RLD90QZW5	9	25	2		9	25	14	25	12		70×10	
RLD90QZWC	11	30	2		9	25	11	25	13		70×10	
RLD90QZWJ	9	25	2		9	25	15	20	14		50×10	
RLD90QZWA	6	17	2		5	15	13	20	14		35×10	

Click on the icon to access the product page and the icon to view the datasheet on ROHM's website.

New Product Application Examples

Drones

Golf Rangefinders

AGVs (Automated Guided Vehicles)

Automotive
(AEC-Q102 qualified by the end of FY2024)

Supports a wide range of applications, including LiDAR

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