

Data Sheet(Preliminary)

VCSEL array

940nm 8W 3J R01

Dogain Core Optoelectronic Technology(Suzhou)Co.,Ltd

PN: DG-VC-C940-8WBAA-N

Rev. R01

May. 2026

Note: Customers represent that they have all the necessary expertise to create and implement their own safeguards that anticipate dangerous failures, monitor failures and their consequences, lessen the likelihood of dangerous failures and take appropriate remedial actions.

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Product Introduction

Performance characteristics

- **High output power** : Output optical power is 8.5W on QCW with heatsink temperature 50°C.
- **Multimode output** : The laser operates at 940nm.
- **Low power consumption, high photoelectric conversion efficiency** :49% Power Conversion Efficiency (PCE) at 50°C.
- **Donut far-field** : divergence angle 25 degrees.
- **Other wavelengths, chip dimensions, and emitter patterns are available according to customer request.**

Application

- Consumer electronics
- Machine vision
- Infrared illumination
- Industrial applications

Electro-optical characteristics (50°C)

Parameters	Symbol	Min	Typical	Max	Units	Test Condition
Optical Output Power	P_{OP}	-	8.5	-	W	Pulse 3.5A 50°C
Threshold Current	I_{th}	-	550	-	mA	Pulse 50°C
Operating Current	I_{op}	-	3.5	-	A	Pulse 50°C.
Differential Resistance	R_s	-	0.2	-	Ω	Pulse 3.5A 50°C
Operating Voltage	V_{op}	-	4.9	-	V	Pulse 3.5A 50°C
Slope Efficiency	η_s	-	2.9	-	W/A	Pulse 3.5A 50°C
Power Conversion Efficiency	PCE	-	49	-	%	Pulse 3.5A 50°C
Wavelength	λ_{peak}	932	940	948	nm	Pulse 3.5A 50°C
Full Width at Half Maxima (FWHM)	$\Delta\lambda$	-	-	2.5	nm	Pulse 3.5A 50°C
Beam Full Divergence (D86)	ϕ	22	25	35	°	Pulse 3.5A 50°C
Wavelength Coefficient	$d\lambda/dT$	-	0.07	-	nm/°C	Pulse

* All tests are under pulse condition on 30 μ s, 1%D.C. with heatsink temperature 50°C

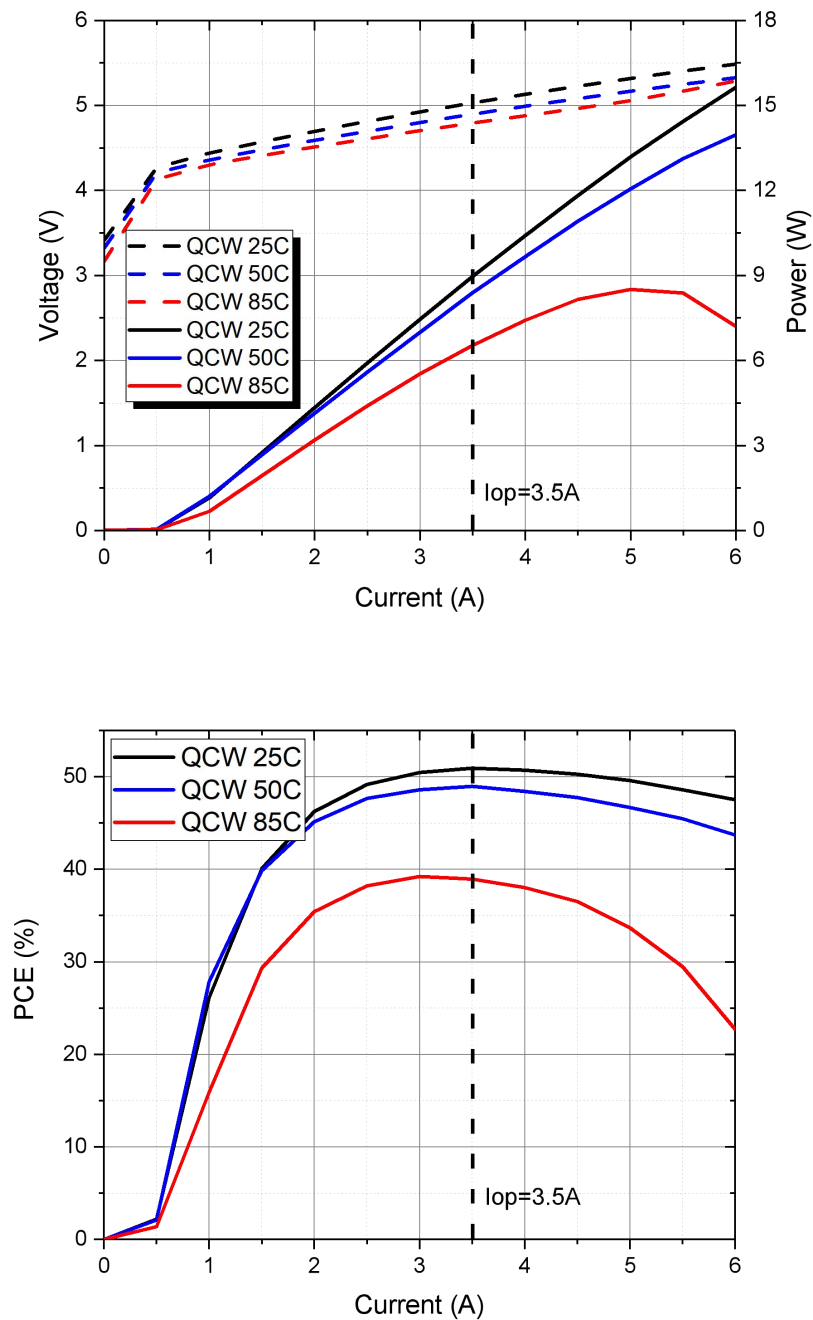
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Electro-optic conversion curve



* All tests are under pulse condition on $30\mu s$, 1%D.C. with heatsink temperature $50^{\circ}C$

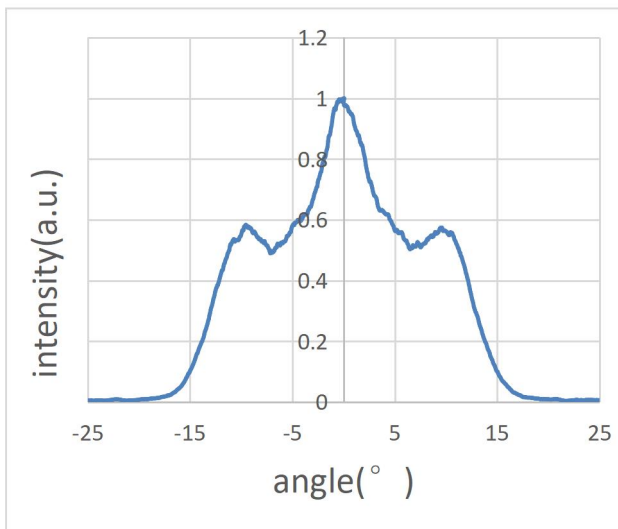
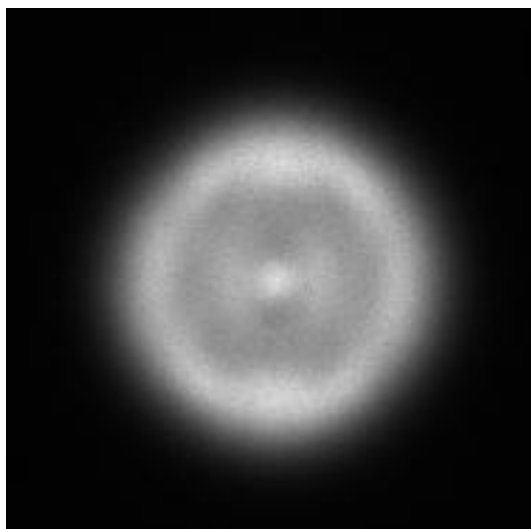
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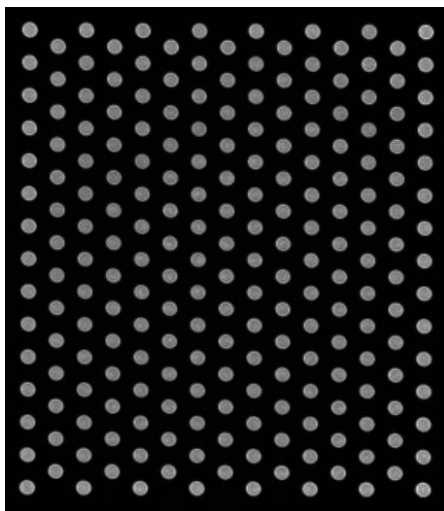
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Far Field profile



Tested at 50°C in pulse mode
($I_{op}=3.5A$, pulse width: 30 μs , pulse duty cycle:1%).

Near Field profile



Tested at 50°C in pulse mode
($I=3.5A$, pulse width: 30 μs , pulse duty cycle:1%).

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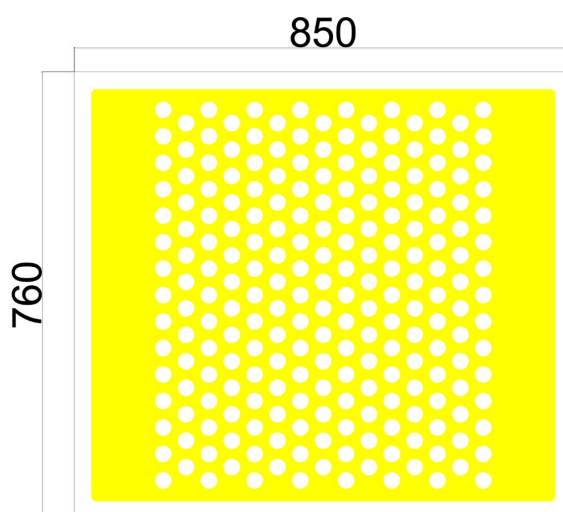
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Product appearance mechanical characteristics

Parameter	Ratings	Units
Number of emitters	218	#
Chip Width	850±20	μm
Chip Length	760±20	μm
Anode Contact	Emission side, Au surface	/
Die Thickness	100±15	μm
Cathode Contact	Backside, Au surface	/



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Operating temperature	Top	-20	85	℃
Operating humidity	Hop	0	85	%
Storage temperature	Ts	-40	110	℃
Storage humidity	Hs	0	85	%

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Eye safety and disclaimer

Security recommendations

Depending on the usage of the device, the module may emit highly concentrated invisible infrared light that is harmful to the human eye. Products containing these modules may be required to follow the safety precautions specified in IEC 60850-1 and IEC62471.

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Note:

No responsibility is assumed for the use of these products. The products can emit Class I~IV radiation and must be operated with extreme care. Avoid directly viewing the laser beam or exposure to specular reflections. Proper eye wear must be worn at all times when operating. VCSEL Chip in the modules are electrostatic-sensitive device and proper ESD protection is required for handling.



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