

Data Sheet(Preliminary)

VCSEL array

680nm 150mW R01

Dogain Core Optoelectronic Technology(Suzhou)Co.,Ltd

PN: DG-VC-A680-150BAL-N

Rev. R01

Apr. 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 150mW on QCW with heatsink temperature 25°C.
- **Multimode output** : The laser operates at 680nm.
- **Low power consumption, high photoelectric conversion efficiency** : 36% Power Conversion Efficiency (PCE) at 25°C.
- **Donut far-field** : divergence angle 20 degrees, symmetrical, donut mode.
- **Other wavelengths, chip dimensions, and emitter patterns are available according to customer request.**

Application

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

Electro-optical characteristics (25°C)

Parameters	Symbol	Min	Typical	Max	Units	Test Condition
Optical Output Power	P_{OP}	130	150	-	mW	Pulse 180mA 25°C
Threshold Current	I_{th}	-	60	90	mA	Pulse 25°C
Operating Current	I_{op}	-	180	-	mA	Pulse 25°C
Differential resistance	R_s	-	2.2	-	Ω	Pulse 180mA 25°C
Operating Voltage	V_{op}	2.0	2.3	2.6	V	Pulse 180mA 25°C
Slope Efficiency	η_s	0.9	1.3	-	W/A	Pulse 180mA 25°C
Power Conversion Efficiency	PCE	28	36	-	%	Pulse 180mA 25°C
Wavelength	λ_{peak}	672	680	688	nm	Pulse 180mA 25°C
Full Width at Half Maxima (FWHM)	$\Delta\lambda$	-	-	2.5	nm	Pulse 180mA 25°C
Beam Full Divergence (D86)	ϕ	17	20	23	°	Pulse 180mA 25°C
Wavelength coefficient	$d\lambda/dT$	-	0.07	-	nm/°C	Pulse

* All tests are under pulse condition on 0.5ms, 1% D.C. with heatsink temperature 25°C.

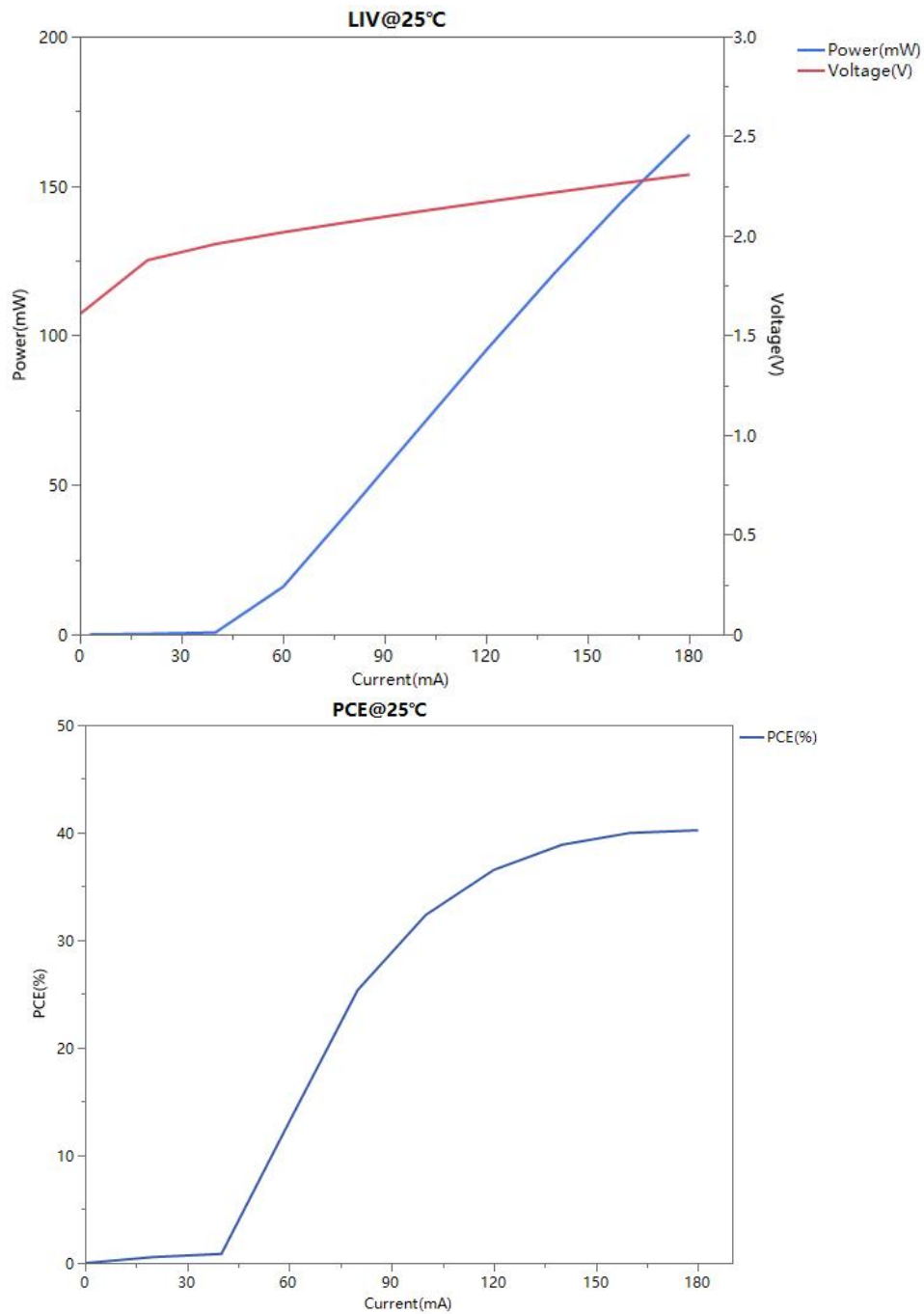
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Electro-optic conversion curve



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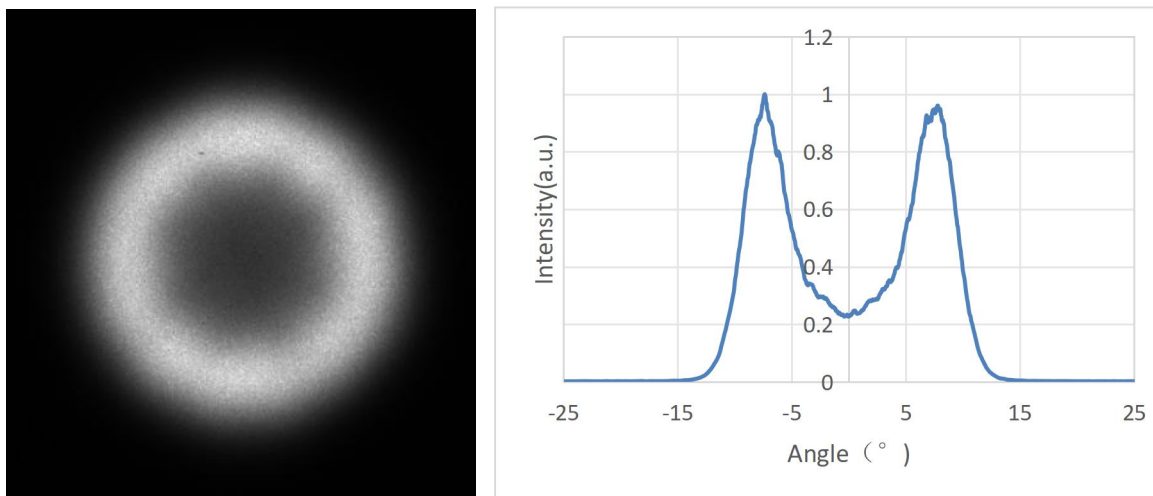
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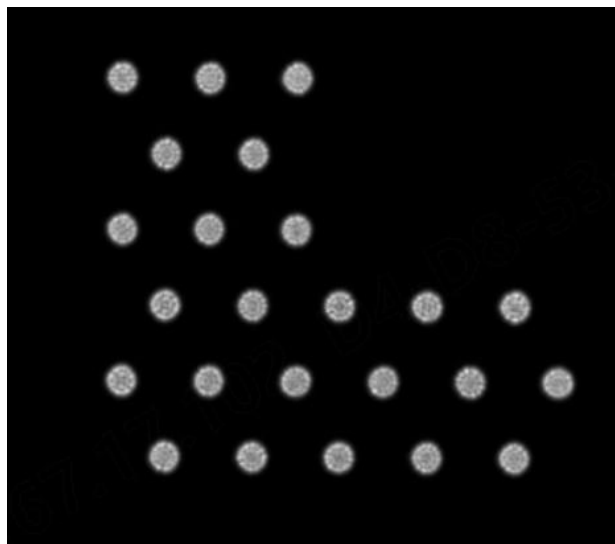
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Far Field profile



Tested at 25°C in pulse mode
(I_{op}=180mA, pulse width: 0.5ms, pulse duty cycle:1%).

Near Field profile



Tested at 25°C in pulse mode
(I_{op}=180mA, pulse width: 0.5ms, pulse duty cycle:1%).

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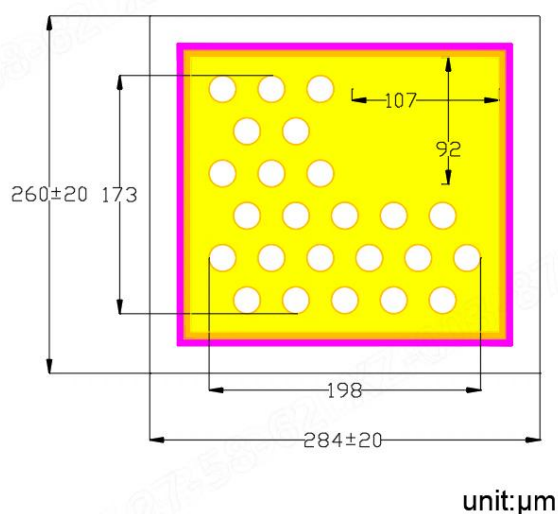
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Product appearance mechanical characteristics

Parameter	Ratings	Units
Number of emitters	24	#
Chip Width	260 ± 20	μm
Chip Length	284 ± 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	$^{\circ}\text{C}$
Operating humidity	Hop	0	85	%
Storage temperature	Ts	-40	110	$^{\circ}\text{C}$
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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