

Data Sheet(Preliminary)

850nm Single Mode Polarization VCSEL A02

Dogain Optoelectronic Technology(Suzhou)Co.,Ltd

PN: DG-VC-P850-1.6B01

Rev. 2.0

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.

Product Introduction

Performance characteristics

DoGain's DG-VC-P850-1.6B01 is an 850nm single mode and polarization stable vertical cavity surface emitting laser diode chip for sensors application.

Key Features

- High output power : Output optical power is 1.6mW on CW with heatsink temperature 25°C.
- Single-mode: The laser operates at 850nm has a single-mode output.
- Stable polarization: The polarization is linearly stable.
- Ideal circular Gaussian beam: The absolutely symmetrical and Gaussian-shaped beam profile, and a reproducible angle of divergence in the range of 15° (1/e2).
- Other wavelengths, chip dimensions, and emitter patterns are available according to customer request.

Application

- Gas sensors
- Multimode datacom High precise depth sensor
- Industrial speed and distance sensor

Electro-optical characteristics (25°C)

Parameters	Symbol	Min	Typical	Max	Units	Test Condition
Optical Output Power	P_{OP}	-	1.6	-	mW	Iop=3mA, Ts=25C
Threshold Current	I_{th}	-	1.5	-	mA	Ts=25C
Differential resistance	R_s	50	-	200	Ω	Iop=3mA, Ts=25C
Operating Voltage	V_{op}	1.8	2.1	2.4	V	Iop=3mA, Ts=25C
Slope Efficiency	η_s	-	1.0	-	W/A	Iop=3mA, Ts=25C
Wavelength	λ_{peak}	840	850	860	nm	Iop=3mA, Ts=25C
Side Mode Suppression Ratio	SMSR	20	-	-	dB	Iop=3mA, Ts=25C
Orthogonal Polarization Suppression Ratio	OPSR	15	-	-	dB	Iop=3mA, Ts=25C
Beam Full Divergence (D86)	ϕ	-	18	-	°	Pout=1.6mW, Ts=25C
Wavelength coefficient	$d\lambda/dT$	-	0.06	-	nm/° C	Ts=25C

* All tests are under CW condition with heatsink temperature 25°C

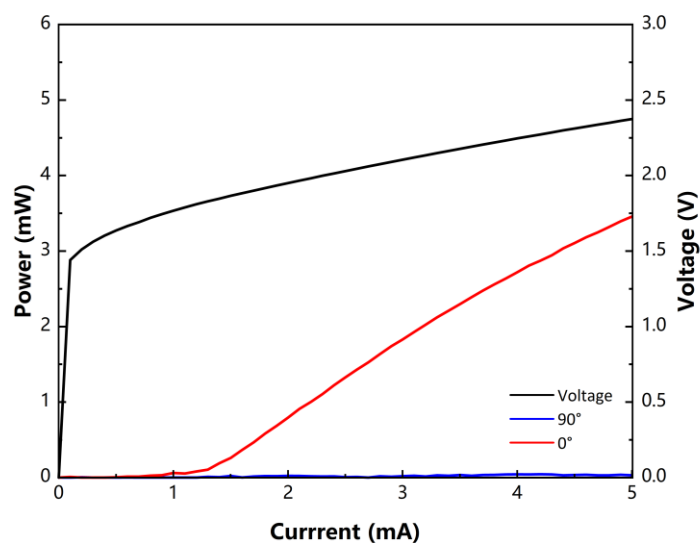
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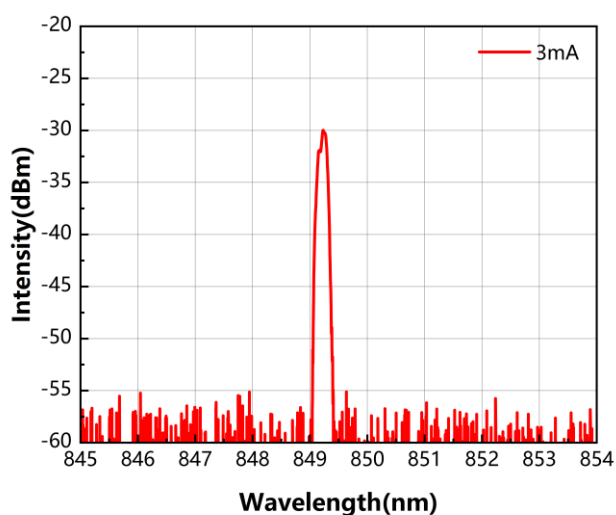
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Electro-optic conversion curve



* All tests are under CW condition with heatsink temperature 25°C

Spectrum



* All tests are under CW condition with heatsink temperature 25°C

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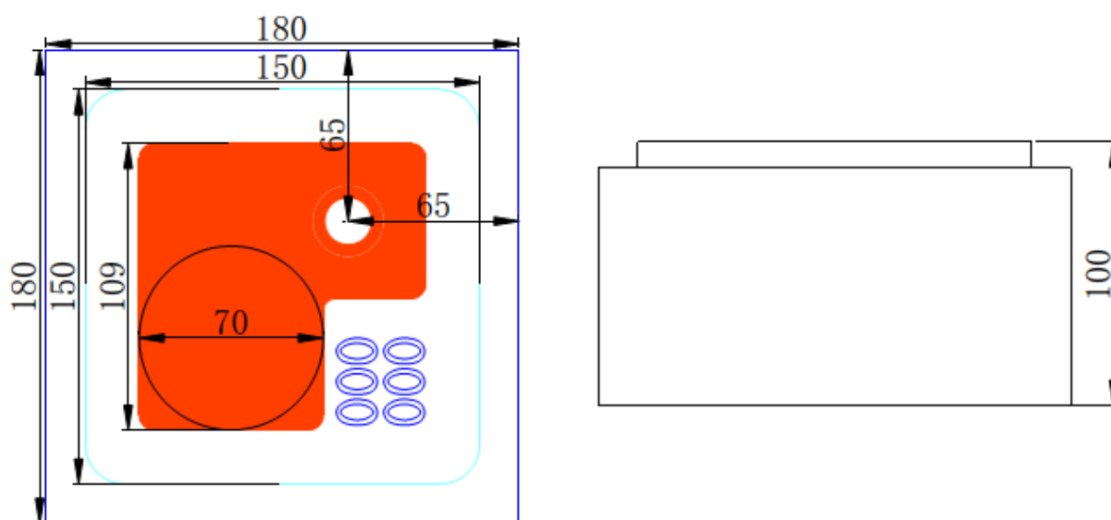
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Product appearance mechanical characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Die Length, DG-VC-P850-1.6B01	L	160	180	200	μm
Die Width, DG-VC-P850-1.6B01	W	160	180	200	μm
Die Thickness, DG-VC-P850-1.6B01	T	85	100	115	μm
Bond pad gold metalization thickness		-	1	-	μm



*Note: The size and patterns of the chip is the initial version, and the actual product can be customized.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Operating temperature	Top	0	70	℃
Operating humidity	Hop	0	85	%
Storage temperature	Ts	-40	125	℃
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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