

Data Sheet(Preliminary)

VCSEL single emitter chip

680nm 3mW R01

Dogain Core Optoelectronic Technology(Suzhou)Co.,Ltd

PN: DG-VC-A680-3B01-N

Rev. R01

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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 3mW on CW with heatsink temperature 25°C.
- **Multimode output** : The laser operates at 680nm.
- **Low power consumption, high photoelectric conversion efficiency** :28% Power Conversion Efficiency (PCE) at 25°C.
- **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 (25°C)

Parameters	Symbol	Min	Typical	Max	Units	Test Condition
Optical Output Power	P _{OP}	2	3	-	mW	CW 5mA 25°C
Threshold Current	I _{th}	-	2.1	-	mA	CW 25°C
Operating Current	I _{op}	-	5	-	mA	CW 25°C.
Differential Resistance	R _s	-	60	-	Ω	CW 5mA 25°C
Operating Voltage	V _{op}	1.90	2.15	2.50	V	CW 5mA 25°C
Slope Efficiency	η _s	1.0	1.1	-	W/A	CW 5mA 25°C
Power Conversion Efficiency	PCE	23	28	-	%	CW 5mA 25°C
Wavelength	λ _{peak}	672	680	688	nm	CW 5mA 25°C
Full Width at Half Maxima (FWHM)	Δλ	-	-	2.5	nm	CW 5mA 25°C
Wavelength Coefficient	dλ/dT	-	0.07	-	nm/°C	CW

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

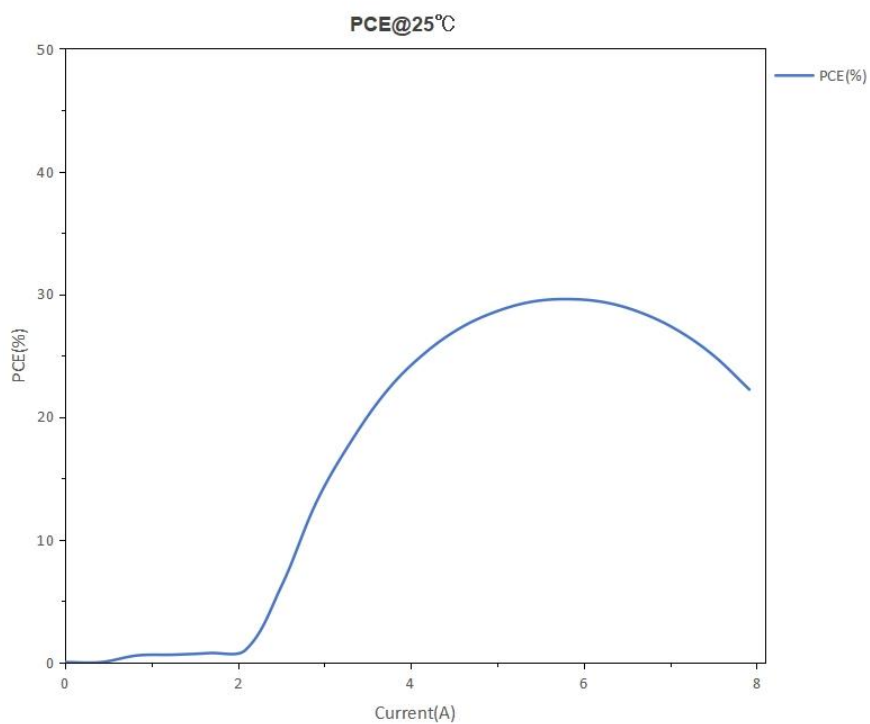
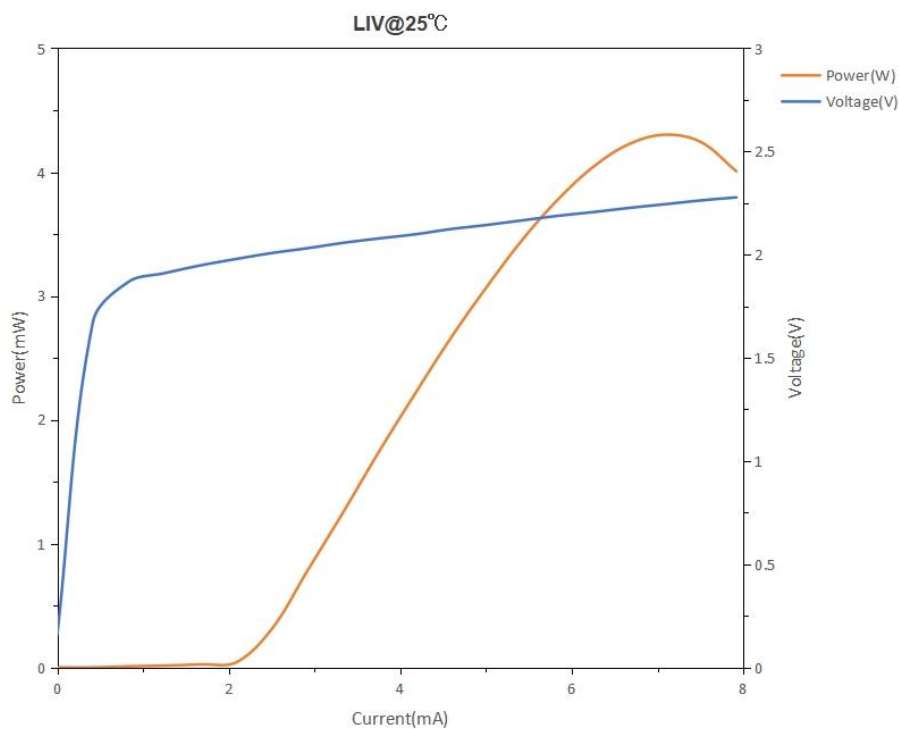
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Electro-optic conversion curve



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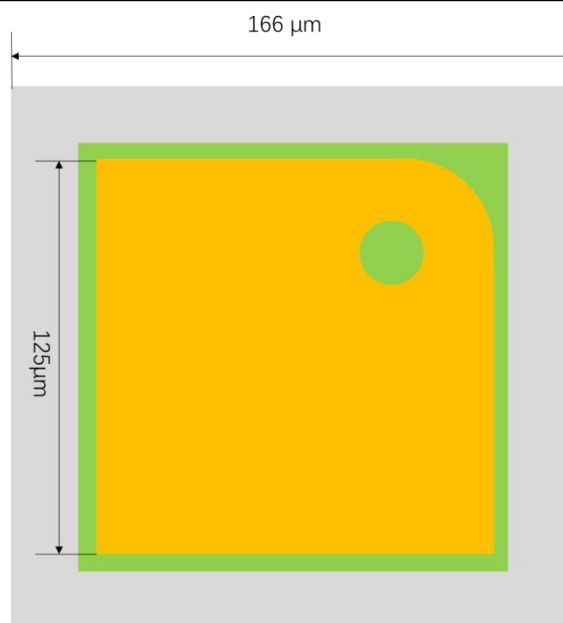
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Product appearance mechanical characteristics

Parameter	Ratings	Units
Number of emitters	1	#
Chip Width	166 ± 20	μm
Chip Length	166 ± 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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