



# 8Gbps 850nm VCSEL Chip/Array

P/N: DO314B\_VCSEL\_8G (1x1, 1x4, 1x8, or 1x12 arrays)

Known Good Die

## Introduction



The DO314B\_VCSEL\_8G high speed products are 850nm multimode Vertical Cavity Surface Emitting Laser (VCSEL) devices that feature low electrical parasitics and proven high reliability. These products are engineered to meet data communication rates up to 8 Gbps and are specially tailored for consumer-based active optical cable (AOC) and optical USB (OUSB) applications. The VCSEL devices have top side anode and cathode contacts and are available in singlets, 1x4, 1x8, or 1x12 arrays configurations with 250µm pitch between each channel.

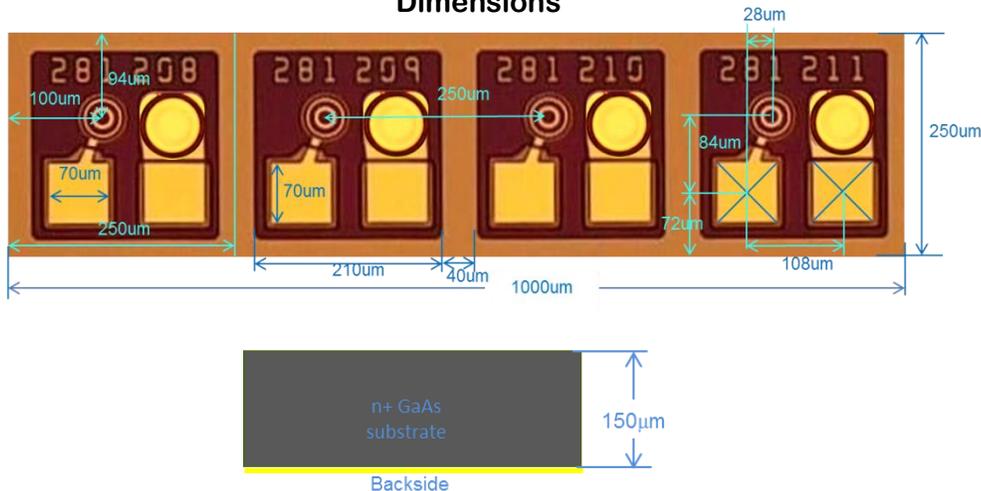
## Key Features

- 850nm multimode emission
- Low threshold and operation current
- Excellent reliability
- Data rates up to 8 Gb/s for singlet chip
- Optimized for -5C to 70C operation
- Customization for 1x4, 1x8 and 1x12 array configuration
- Highly robust 4" IC wafer FAB with fast cycle-time
- Deliverable in GCS Known Good Die™ with 100% testing and inspection
- RoHS compliant

## Applications

- Up to 8Gbps data communication
- Active Optical Cable
- Optical USB
- HDMI

## Dimensions



Attention: Avoid ESD; the device may be permanently damaged.

## Global Communication Semiconductors, LLC

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## SPECIFICATIONS

	Symbol	Min.	Typical	Max.	Unit	Test condition
Emission Wavelength	$\lambda$	840	850	860	nm	$I_{OP} = 6\text{mA}$
Threshold current	$I_{th}$	0.5	1	1.5	mA	Temp = 25°C
Operating voltage	$V_{OP}$	1.8	1.9	2.2	V	
Slope efficiency	$\eta_s$	0.3	0.4	0.5	W/A	Temp = 25°C
Differential resistance	$R_d$	45	60	75	$\Omega$	Temp = 25°C, $I_{OP} = 6\text{mA}$
Operating power	$P_{OP}$	1	1.5		mW	Temp = 25°C, $I_{OP} = 6\text{mA}$
Beam divergence (FWHM)	$\theta$		20		deg	$I_{OP} = 6\text{mA}$
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$		0.4	0.65	nm	Temp = 25°C, $I_{OP} = 6\text{mA}$
3dB modulation bandwidth	$f_{3dB}$		7.5		GHz	$I_{OP} = 6\text{mA}$
Rise and fall time	$t_R/t_F$ 20/80		45	55	ps	$I_{OP} = 6\text{mA}$
Relative intensity noise	RIN		-128		dB/Hz	
Wavelength tuning over current			0.3		nm/mA	
Wavelength tuning over temp			0.07		nm/K	
Thermal impedance	$Z_{Thermal}$		2		°C/mW	

## ABSOLUTE MAXIMUM RATING

	Symbol	Min.	Typical	Max.	Unit
Optical output power	$P_{max}$			8	mW
Peak forward current	$I_f$			16	mA
VCSEL reverse voltage	$V_{rv}$			8	V
Operating temperature	$T_{OP}$	-5		85	°C
Storage Temperature	$T_{st}$			100	°C

## UNIFORMITY OF ARRAY PRODUCTS

	Symbol	Min.	Typical	Max.	Unit
Threshold current	$\Delta I_{th}$			0.15	mA
Slope efficiency	$\Delta\eta_s$			0.1	W/A
Series resistance	$R_s$			8	%

### About GCS:

GCS is a world-class semiconductor manufacturer specializing in advanced photodiode technologies. We provide advanced GaAs and InGaAs photodiodes of varying data rate and application to multiple top tier optical transceiver customers throughout the world. With over 15 years' experience and over 150 million units delivered, our state of the art manufacturing facility has the capacity to produce 2,000 (100mm) wafers per month.

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