10Gbps 850nm VCSEL Chip/Array

P/N: DO188_VCSEL_10G (1x1, 1x4, 1x8, or 1x12 arrays)

Known Good Die

Introduction

The D0188_VCSEL_10G 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 10 Gbps and are specially tailored for consumer-based active optical cable (AOC) and optical USB (OUSB) applications. The VCSEL devices have a circular low divergence beam that can be efficiently coupled into a 50/125 or 62.5/125µm multimode fiber. Singlet, 1x4, 1x8, or 1x12 arrays are all provided in common cathode configuration with 250µm pitch between each channel for up to 120Gbps applications.

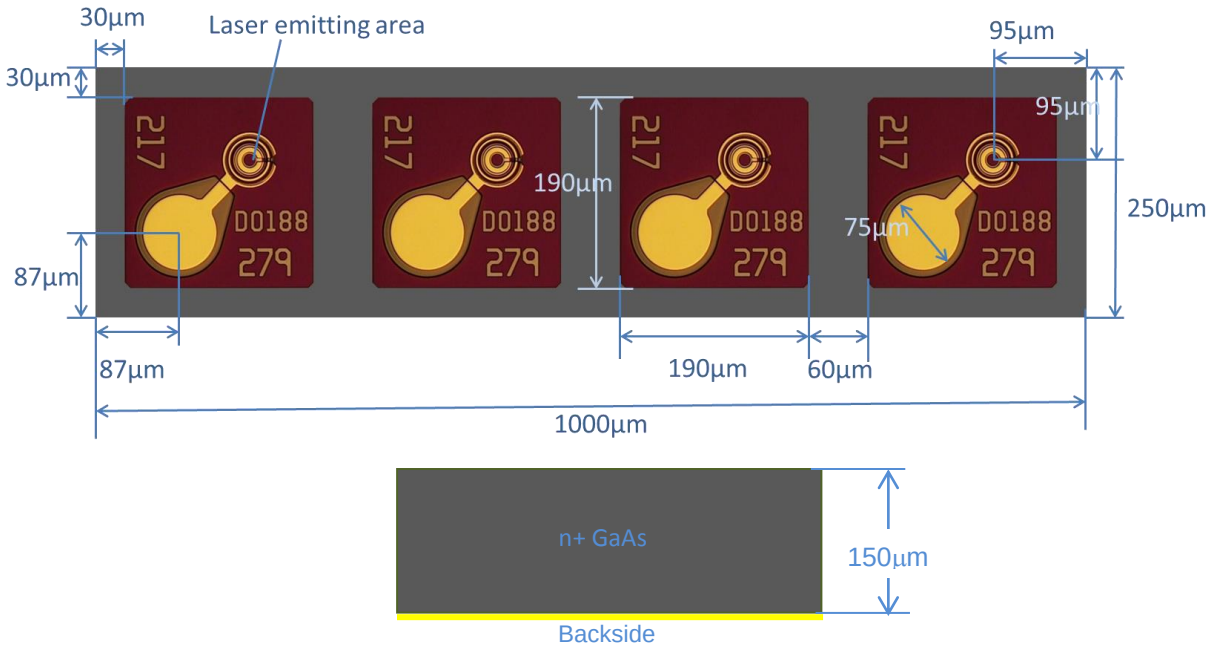
Key Features

- 850nm multimode emission
- Low threshold and operation current
- Excellent reliability
- Data rates up to 10 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

- 10Gbps data communication
- Active Optical Cable
- Optical USB
- HDMI

Dimensions



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

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SPECIFICATIONS

	Symbol	Min.	Typical	Max.	Unit	Test condition
Emission Wavelength	λ	840	850	860	nm	I_{OP} = 6mA
Threshold current	I_{th}	0.5	1	1.5	mA	Temp = 25°C
Operating voltage	V_{OP}	1.8	1.9	2.2	V	I_{OP} = 6mA, Temp = 25°C
Slope efficiency	η_s	0.3	0.4	0.5	W/A	Temp = 25°C
Differential resistance	R_d	45	60	75	Ω	Temp = 25°C, I_{OP} = 6mA
Optical output power	P_{OP}	1	1.5		mW	Temp = 25°C, I_{OP} = 6mA
Beam divergence (FWHM)	θ		20		deg	I_{OP} = 6mA
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$		0.4	0.65	nm	Temp = 25°C, I_{OP} = 6mA
3dB modulation bandwidth	f_{3dB}		7.5		GHz	I_{OP} = 6mA
Rise and fall time	$t_R/t_{F\ 20/80}$		45	55	ps	I_{OP} = 6mA
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		°K/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}	-40		85	°C
Storage Temperature	T_{st}			100	°C

UNIFORMITY OF ARRAY PRODUCTS

	Symbol	Min.	Typical	Max.	Unit
Threshold current	ΔI_{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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