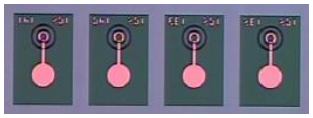
VCCA4-85B4G

4.25Gbps 850nm Oxide-Confined VCSEL Array

Data Sheet



Overview

The VCCA4-85B4G is a 4.25Gbps oxide-confined VCSEL (Vertical Cavity Surface Emitting Laser) chip array designed for 850nm multimode operation. This 1×4 VCSEL array offers high slope efficiency, low threshold current, and high optical output with low bias requirements. Its compact footprint and performance characteristics make it ideal for short-reach, non-hermetic optical data communication.

Features

- 850nm oxide-confined VCSEL array
- Supports data rates exceeding 4.25Gbps
- High slope efficiency
- High light output power with low bias
- Suitable for non-hermetic package applications

Applications

- High speed Data communications
- Gigabit ethernet
- Fiber channel

Specifications

Absolute Maximum Ratings				
Parameters	Min.	Max.	Unit	Conditions
Storage Temperature	-40	125	°C	
Operating Temperature	-20	85	°C	
Process Temperature		260	°C	10 seconds
Continuous Forward Current		12	mA	
Continuous Reverse Voltage		5	V	10uA

Electro-Optical Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I_{th}		2	2.5	mA	
Slope Efficiency	η	0.25	0.35		mW/mA	I_f=6mA
Optical Output Power	P_o	1	1.5		mW	I_f=6mA
Peak Wavelength	λ_P	830	850	860	nm	I_f=6mA
Spectral Width (RMS)	$\Delta\lambda$			0.85	nm	I_f=6mA
Beam Divergence	Θ		16	25	°	I_f=6mA (FWHM)
Forward Voltage	V_f		1.75	2.1	V	I_f=6mA
Series Resistance	R_S		45	60	Ohm	I_f=6mA
Rise Time (20~80%)	Tr		45		ps	I_f=6mA
Fall Time (20~80%)	Tf		80		ps	I_f=6mA
3dB Bandwidth	BW	5	7		GHz	I_f=6mA

Notes: All parameters are measured at I_f=6mA, 25°C, CW operation.

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
I_{th} Temperature Variation	ΔI_{th}		1	1.5	mA	T_a=0 to 70°C
V_f Temperature Coefficient	$\Delta V_f/\Delta T$		-2		mV/°C	T_a=0 to 70°C, I_f=6mA
η Temperature Coefficient	$\Delta\eta/\Delta T$		-0.35		%/°C	T_a=0 to 70°C, I_f=6mA
λ Temperature Coefficient	$\Delta\lambda/\Delta T$		0.06		nm/°C	T_a=0 to 70°C, I_f=6mA

Typical Characteristics

Fig .1 Typical Optical Characteristics

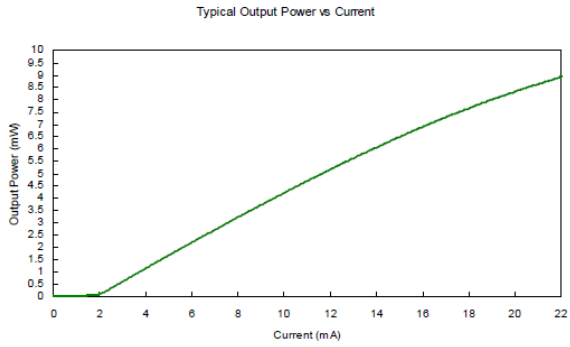
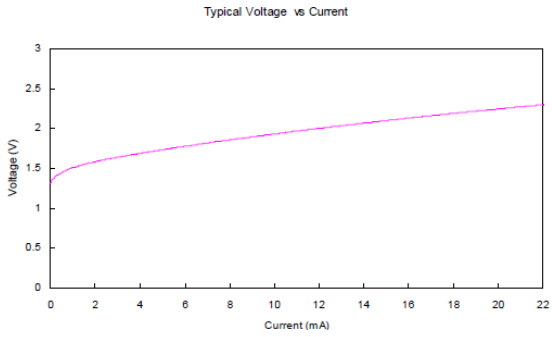
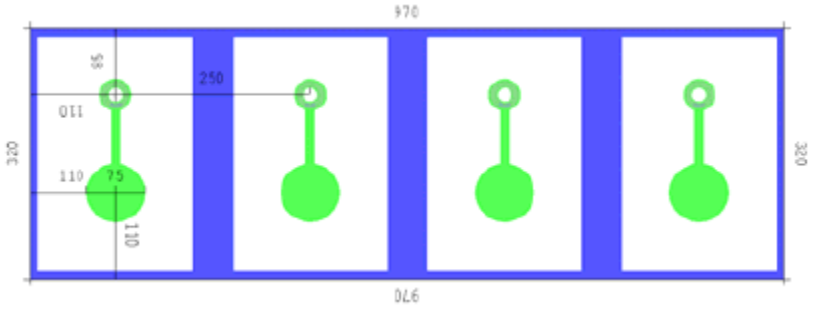


Fig .2 Typical Electrical Characteristics



Outline Dimensions



- Array size: 970 µm x 320 µm (typical)
- Thickness: 200 µm ± 20 µm (typical)

Additional Notes

- The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.
- Specifications are subject to change without notice.