

Part Number: I0-0940Q-0000-A001

Desc: Die; 940; Q; 3B; S5,S6,S7; 3.0mW; 0.16mm X 0.20mm;

PRODUCT DESCRIPTION

A Quasi (with a Gaussian beam shape and Multi-mode Spectral profile) 940nm VCSEL.

Applications:

- Time of Flight (ToF) sensing
- High spatial resolution sensing (requiring narrow beam divergence)
- Proximity Sensor

Features:

- Low divergence angle
- Circular beam profile
- Narrow spectral width



COMPLIES WITH IEC 60825-1, 2nd Edition 2007.
COMPLIES WITH 21 CFR 1040.10 AND 1040-10.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER
NOTICE NO.50 DATED 27 MAY 2001.

Absolute Maximum Ratings

Parameter	Rating	Notes
Storage temperature (VCSEL)	-40 to 125 °C	
Operating temperature (VCSEL)	-20 to 120 °C	
Lead solder temperature	260°C, 10 seconds	
CW current (VCSEL)	10 mA	(Note 1)
Laser reverse voltage	5 V	(Note 2)

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Functional operation of the device beyond the Absolute Maximum Ratings for extended periods of time may affect device reliability.

Note 1: The maximum CW laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the table above.

Note 2: For some applications, a burn-in period for VCSEL die is recommended to stabilize the output power.

Electro-Optical Characteristics

VCSEL Operating Temp (Tv) =30°C & Operating Current=8mA unless otherwise stated)

Parameter	Symbol	Units	Minimum	Typical	Maximum	Notes
Threshold current	I _{th}	mA	--	0.85	1.2	
Operating voltage	V _f	Volts	--	2.4	3.0	
Series resistance (VCSEL)	R _s	Ohms	--	125	--	
Slope efficiency	SE	mW/mA	--	0.4	--	
Optical output power	L _{op}	mW	--	3.0	--	T=30°C
Optical output power	L _{op}	mW	--	2.5	--	T=80°C
Reverse breakdown voltage		V	10	--	--	I _r ≤ 1nA
Operating wavelength	λ _{op}	nm	930	940	950	
Beam divergence 1/e ²		deg	22	24	28	
Beam divergence FWHM	FWHM	deg	16	18	22	
Wavelength current coefficient		nm/mA	0.15	0.30	0.5	
Wavelength temp. coefficient		nm/°C	--	0.065	--	

Typical Performance

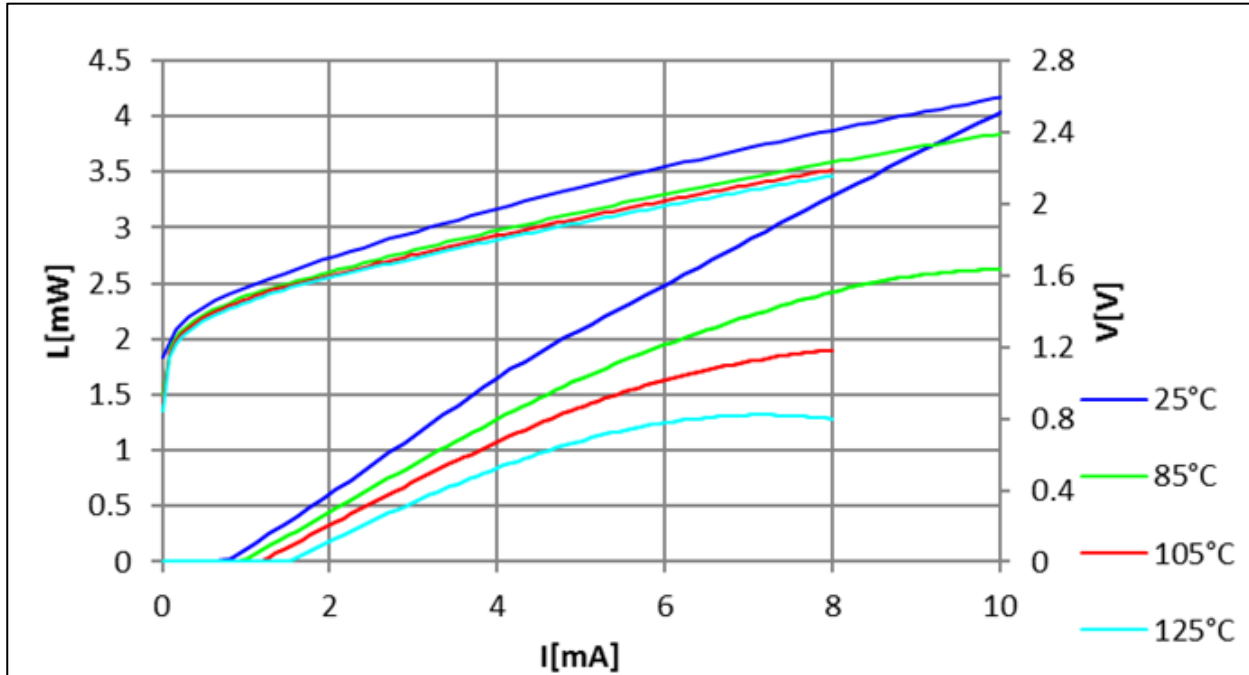


Figure 1 L-I-V Performance of I0-0940Q-0000-X001 vs Temperature

Spectral Profile

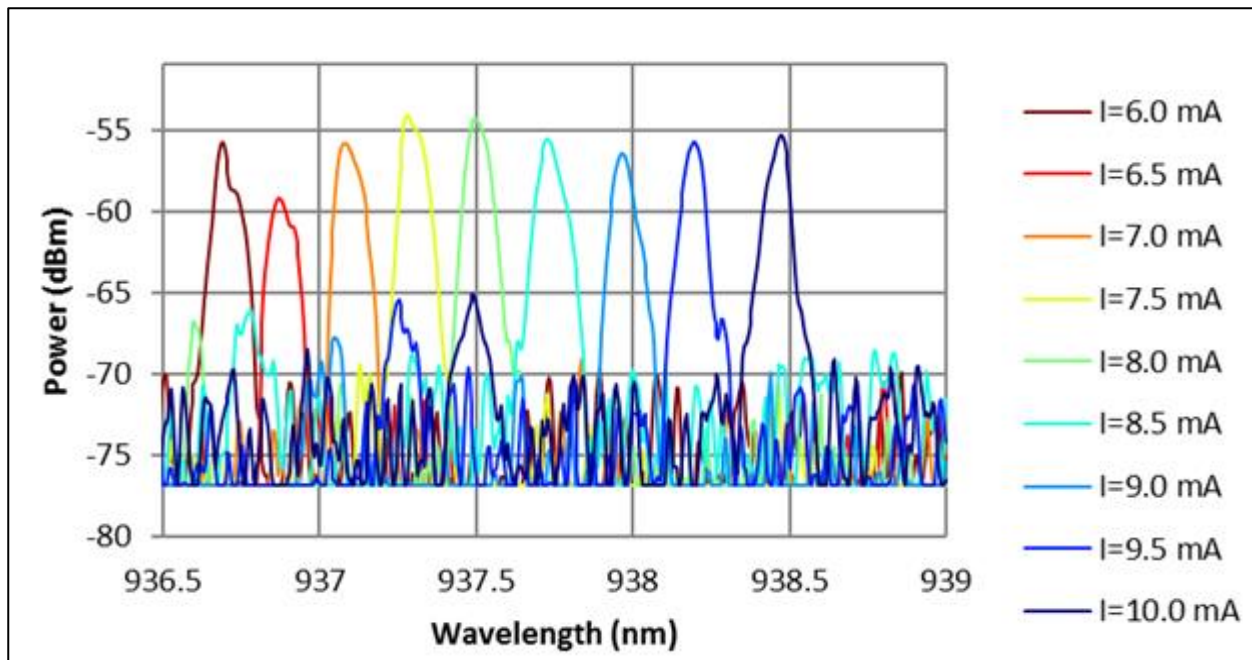
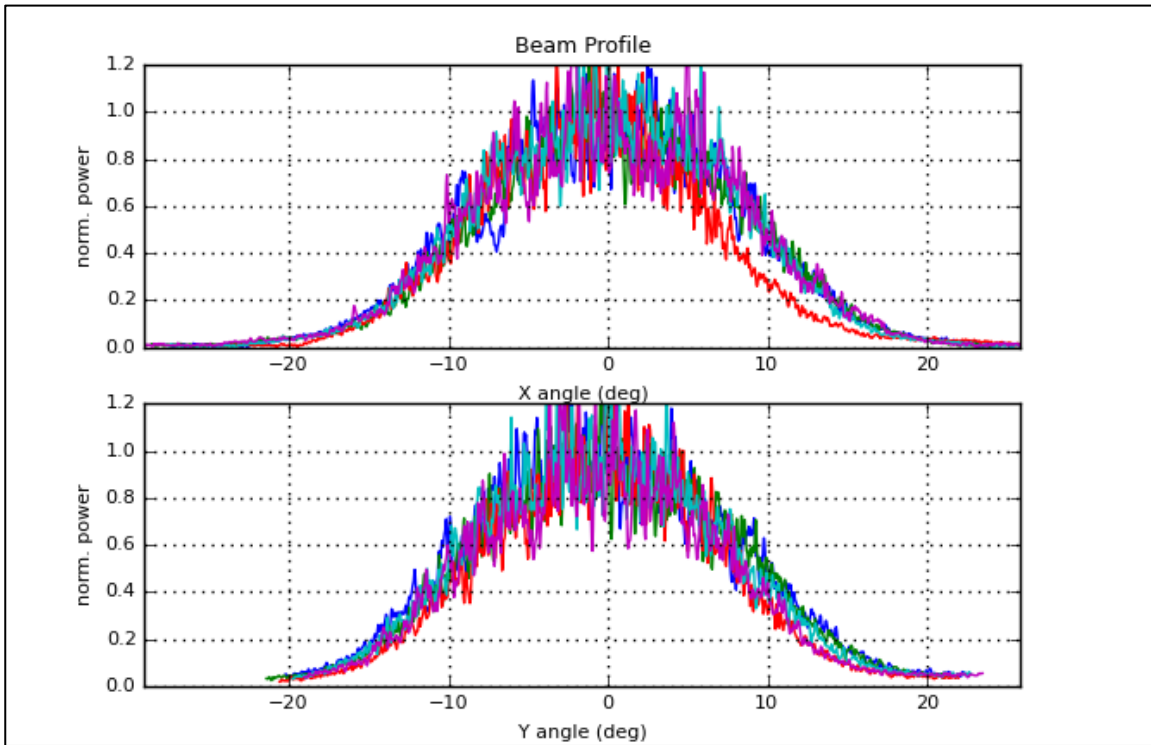


Figure 2 Spectral Beam performance of I0-0940Q-0000-X001 vs Current

Beam Profile



Ordering Information

Description	Part Number
Die; 940; Q; 3B; S5,S6,S7; 3.0mW; 0.16mm X 0.20mm;	I0-0940Q-0000-A001



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