

# TO-56, 2.5Gbps VCSEL

## Product Description

The TO-56, 2.5Gbps VCSEL is a high-performance, near-infrared, 850nm VCSEL (Vertical Cavity Surface-Emitting Laser) tailored to meet the needs of high-speed data communications and telecommunications applications. The product is designed for easy integration into a wide variety of Gigabit Ethernet, Fibre Channel, and ATM transceiver modules and systems.



## Product Specifications

### Absolute Maximum Ratings

Parameter	Rating	Important Notice
Operating Case Temperature	0°C to 85°C	Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated for extended periods of time may effect device reliability.
Storage Temperature	-40°C to 100°C	
Lead Solder Temperature	260°C for 10 seconds	
Laser Reverse Voltage	5V	
Laser Forward Current (continuous)	10mA	
Laser Forward Current (instantaneous)	15 mA	
Photodiode Forward Current	2mA	
Photodiode Reverse Voltage	10V	

### Electro-Optical Characteristics (T= 25°C unless otherwise stated)

Characteristic	Symbol	Min.	Typ.	Max.	Units
Peak Emission Wavelength	$\lambda_p$	830	850	860	nm
RMS Spectral Width	$\Delta\lambda$			0.85	nm
$\lambda$ Temp Coefficient	$\Delta\lambda_p$		0.06		nm/°C
Optical Rise and Fall Time (20% - 80%)	$t_R, t_F$		90	110	ps
Threshold Current	$I_{TH}$		1.5	2.5	mA
Laser Forward Voltage ( $I_{ld}=8mA$ )	$V_F$		1.8	2.2	V
Relative Intensity Noise ( $I_{ld}=10mA, f_0 = 1GHz$ )	RIN		-128	-122	dB/Hz
Differential Resistance ( $I_{ld}=8mA$ )	$\delta R$		35	60	$\Omega$
Slope Efficiency ( $I_{th}$ to 10mA)	$\eta$	.2	.3	.4	mW/mA
Beam Divergence (Full width, $1/e^2$ )	$\theta$		27	32	deg

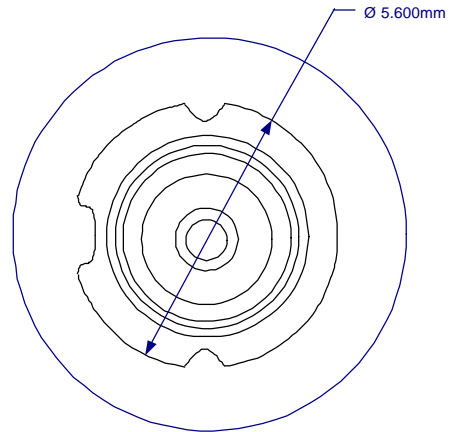
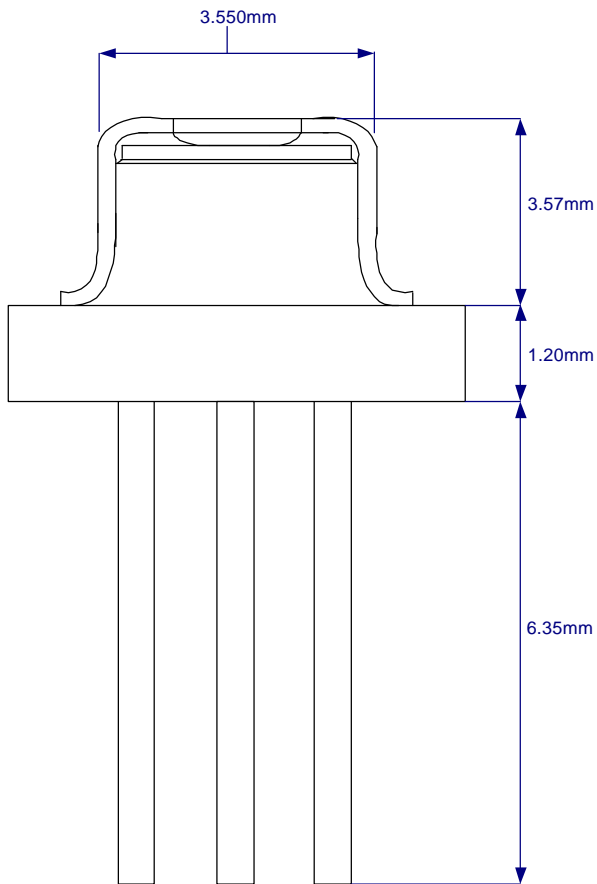
### Photodiode Characteristics (T= 25°C unless otherwise stated)

Characteristic	Symbol	Min.	Typ.	Max.	Units
Monitor Current	$I_{pd}$	100		580	$\mu A$
Dark Current @ -3V bias	$I_d$			20	nA
Capacitance @ 0V bias, 1MHz	$C_{pd}$		100		pF

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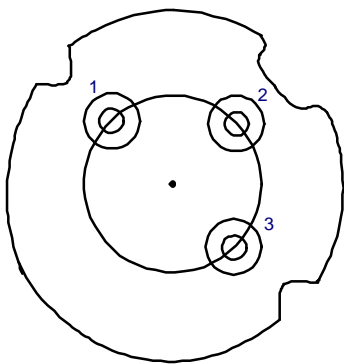
## Diagram

*Dimensions are nominal*

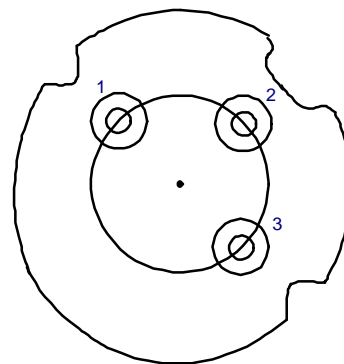


8585-8239: ISOLATED CASE, COMMON ANODE

8585-8240: ISOLATED CASE, COMMON CATHODE



PIN 1 - VCSEL CATHODE  
PIN 2 - VCSEL ANODE/PHOTODIODE CATHODE  
PIN 3 - PHOTODIODE ANODE



PIN 1 - VCSEL ANODE  
PIN 2 - VCSEL ANODE/PHOTODIODE CATHODE  
PIN 3 - PHOTODIODE CATHODE

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