

## 850 nm 4.25 G VCSEL LC TOSA

### PL-SLx-00-SG0-Cx

**Key Features**

- Data rates up to 4.25 Gbps
- Optimized for -40 °C to 85 °C transceiver applications
- Optical power monitor with excellent tracking
- Common cathode, common anode, or differential drive VCSEL TO package aligned to a plastic LC barrel
- Custom specification tolerances available
- Fully burned-in and stabilized

**Benefits**

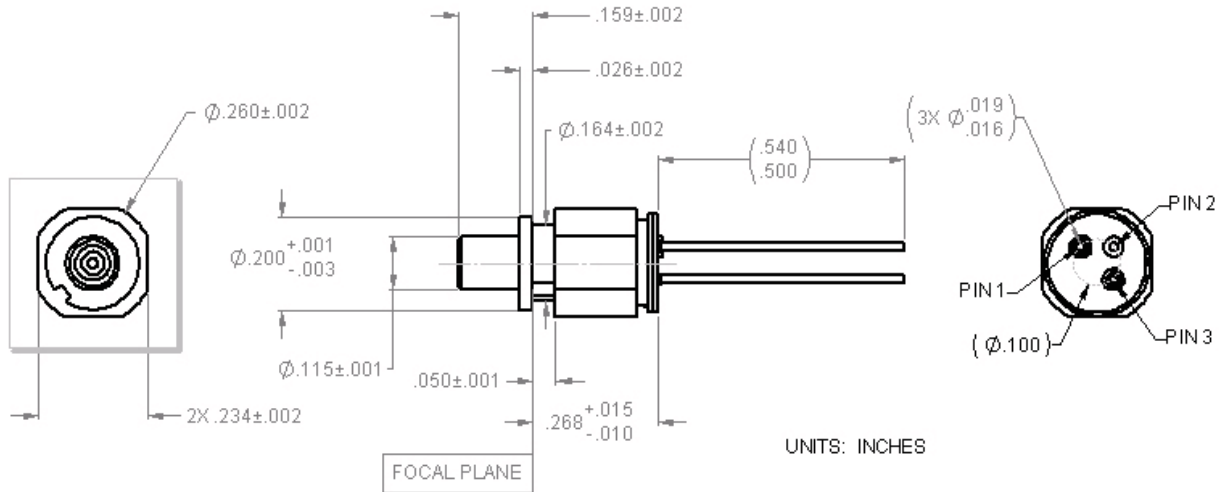
- Proven performance and reliability per GR-468-CORE
- Very high reliability
  - Low FIT
  - High MTBF
- Industrial temperature operation
- Qualified AC modulation performance

This JDSU 850 nm LC connectorized TOSA (Transmit Optical Sub-Assembly) meets the requirements of demanding 4.25 Gb/s transceiver modules. The product utilizes a high performance, high reliability VCSEL integrated in a TO-46 package. Each device is actively aligned to a precision plastic LC barrel using a proprietary alignment algorithm and tested to precise requirements. The JDSU design produces excellent monitor current tracking over temperature. Each unit receives JDSU's proprietary burn-in and stabilization process to ensure a low failure rate and long life expectancy while providing continuously consistent performance. Each part is electro-optically tested to ensure optimum performance and yield in the application.

The PL-SLx-00-SG0-Cx converts an electrical signal into optical power at data rates up to 4.25 Gb/s and it is designed for performance over extended operating temperatures and power conditions with high reliability. The circular optical beam provides optimal power coupling to both 50/125  $\mu\text{m}$  and 62.5/125  $\mu\text{m}$  multimode fibers.

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## Mounting Dimensions (3 Pin Versions)



## PL-SLC-00-SG0-C0

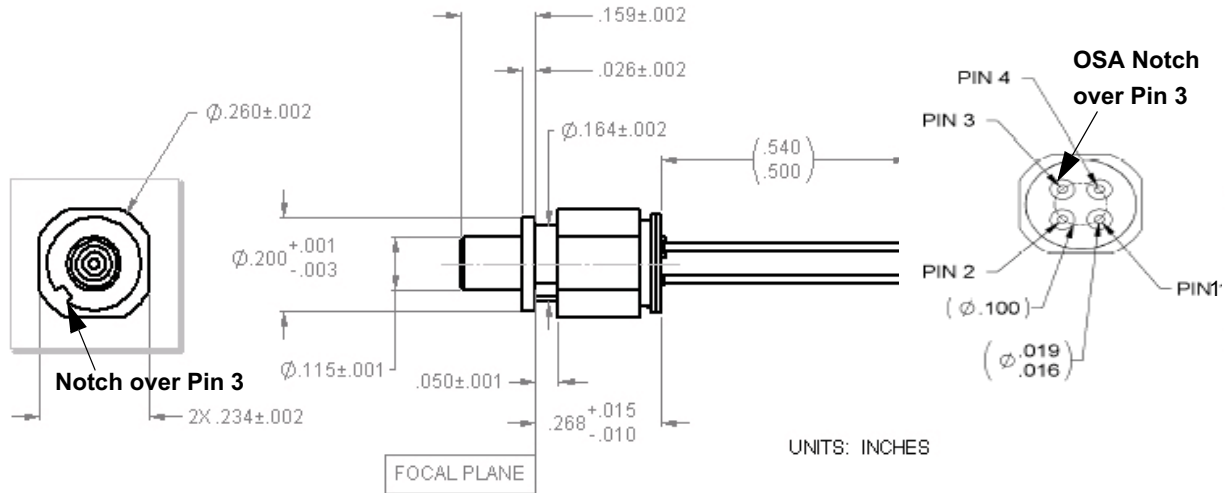
Pin	Symbol	Function
1	A <sub>LD</sub>	VCSEL Anode
2	K <sub>LD</sub> , A <sub>PD</sub>	VCSEL Cathode, Monitor Anode, Case
3	K <sub>PD</sub>	Monitor Cathode

## PL-SLA-00-SG0-C0

Pin	Symbol	Function
1	K <sub>LD</sub>	VCSEL Cathode
2	A <sub>LD</sub> , K <sub>PD</sub>	VCSEL Anode, Monitor Cathode, Case
3	A <sub>PD</sub>	Monitor Anode

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**Mounting Dimensions  
(PL-SLD-00-SG0-C0 and  
PL-SLD-00-SG0-C1)**



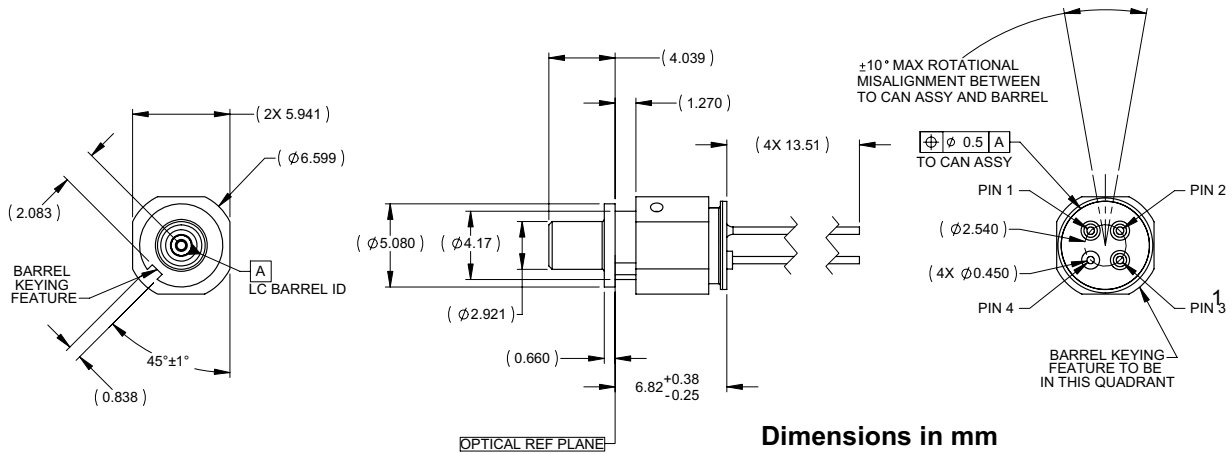
**PL-SLD-00-SG0-C0**

Pin	Symbol	Function
1	A <sub>LD</sub>	VCSEL Anode
2	K <sub>LD</sub>	VCSEL Cathode
3	A <sub>PD</sub>	Monitor Anode
4	K <sub>PD</sub>	Monitor Cathode

**PL-SLD-00-SG0-C1**

Pin	Symbol	Function
1	A <sub>LD</sub>	VCSEL Anode
2	K <sub>LD</sub>	VCSEL Cathode
3	K <sub>PD</sub>	Monitor Cathode
4	A <sub>PD</sub>	Monitor Anode

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**Mounting Dimensions  
(PL-SLD-00-SG0-C3)**

**PL-SLD-00-SG0-C3**

Pin	Symbol	Function
1	A <sub>LD</sub>	VCSEL Anode
2	K <sub>LD</sub>	VCSEL Cathode
3	K <sub>PD</sub>	Monitor Cathode
4	GND/A <sub>PD</sub>	Case ground/Monitor Anode

**Shipping Information**

Shipped in anti-static stackable trays.

**Absolute Maximum Ratings**

(T<sub>case</sub> = 25 °C, Continuous Wave (CW) operation unless otherwise stated)

Parameter	Symbol	Ratings	Unit
Storage temperature	T <sub>st</sub>	-40 to +125	°C
Lead solder temperature	T <sub>s</sub>	260 °C for 10 sec. 2 mm from case	
Laser forward current <sup>1</sup>	I <sub>f</sub>	10	mA
Laser reverse voltage	BV <sub>R<sub>LD</sub></sub>	-5	V
Photodiode forward current	I <sub>fm</sub>	10	mA
ESD <sup>2</sup>		Class 1	

**Note:**

Conditions exceeding those listed may cause permanent damage to the device. Devices subjected to conditions beyond the limits specified for extended periods of time may adversely affect reliability.

1. Peak
2. HBM

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**Electro-optical Characteristics**(T<sub>case</sub> = 25 °C , CW operation unless otherwise stated)

VCSEL Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Unit
Case operating temperature	T <sub>op</sub>		-40		85	°C
Peak emission wavelength	λ <sub>p</sub>		840	850	860	nm
RMS spectral width	Δλ	I <sub>f</sub> = 6 mA			0.65	nm
λ <sub>p</sub> temperature coefficient	Δλ <sub>p</sub>	T = -40 °C to 85 °C		0.06		nm/°C
Threshold current	I <sub>th</sub>			1.0	2.0	mA
I <sub>th</sub> temperature variation	ΔI <sub>th</sub>	T = -40 °C to 85 °C			1.0	mA
Slope efficiency <sup>1</sup>	η	T = 25 °C	0.10	0.125	0.15	mW/mA
		P <sub>out</sub> = 0.5 mW T = -40 °C			0.17	mW/mA
		T = 85 °C	0.08			mW/mA
Slope efficiency temperature variation	Δη/ΔT			-6000		PPM/°C
Laser forward voltage	V <sub>f</sub>	I <sub>f</sub> = 6 mA		1.8	2.2	V
Series resistance	R <sub>s</sub>	T=25 °C, I <sub>f</sub> = 6 mA	40	55	65	Ohms
		T=-40 °C			75	Ohms
		T=85 °C	35			Ohms
Series resistance temperature coefficient	ΔP <sub>σ</sub> /ΔT	I <sub>f</sub> = 6 mA T = 0 °C to 70 °C		-2000		ppm/°C
Rise/Fall time <sup>2</sup>	t <sub>r</sub>	20% - 80%		80		psec
	t <sub>f</sub>	20% - 80%		80		psec
Coupling efficiency	efiber			75		%
Average fiber coupled power	P <sub>OC</sub>	I <sub>f</sub> = 6 mA		0.50		mW
Relative intensity noise	RIN <sub>12</sub>	1 GHz BW, I <sub>f</sub> = 6 mA		-130	-122	dB/Hz
Photocurrent	I <sub>PD</sub>	P <sub>out</sub> = 0.5 mW V <sub>f</sub> = 1.5 V	0.15		0.6	mA
Monitor current tracking <sup>3</sup>	ΔI <sub>m</sub>	P <sub>out</sub> = 0.5 mW T = 0 to 70 °C V <sub>fm</sub> = 1.5 V		0.05	0.1	%/°C
Monitor dark current	I <sub>D</sub>	V <sub>f</sub> = 5 V			20	nA
Monitor capacitance	C <sub>M</sub>	V <sub>fm</sub> = 1.5 V Freq = 1 MHz			100	pF

1. Slope efficiency is defined as ΔP<sub>σ</sub>/ΔI<sub>f</sub>.

2. Drive electronics and optical measurement hardware affect Rise/Fall Time measurement.

3. Change in optical power over temperature while operated in a feedback loop in which the monitor current is held constant.

**Order Information**

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at [customer.service@jdsu.com](mailto:customer.service@jdsu.com).

**Sample: PL-SLC-00-SG0-C0**

<b>Part Number</b>	<b>Description</b>
PL-SLC-00-SG0-C0	850 nm 4.25 G VCSEL LC TOSA with common cathode
PL-SLA-00-SG0-C0	850 nm 4.25 G VCSEL LC TOSA with common anode
PL-SLD-00-SG0-C0	850 nm 4.25 G VCSEL LC TOSA 4 pin differential drive
PL-SLD-00-SG0-C1	850 nm 4.25 G VCSEL LC TOSA 4 pin differential drive alternate pinout
PL-SLD-00-SG0-C3	850 nm 4.25 G VCSEL LC TOSA 4 pin differential drive alternate pinout