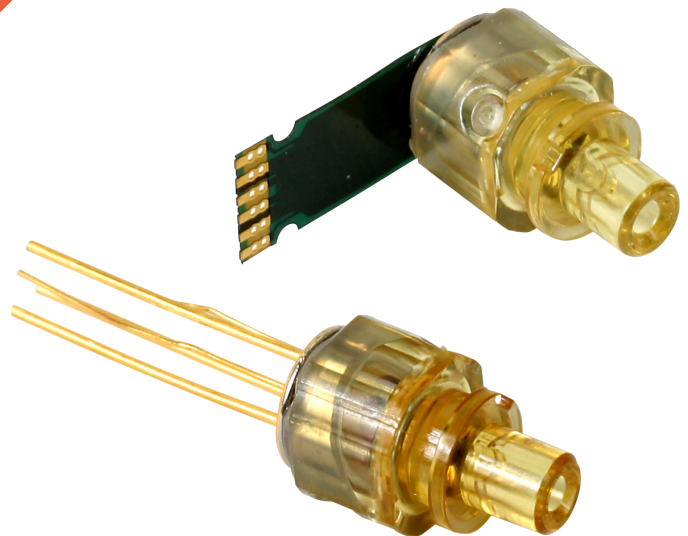


# 850 nm 8.5 G TOSA



The Lumentum 850 nm 8.5 Gbps connectorized TOSA product (Transmit Optical Sub-Assembly) is designed for high-speed data communication applications in 8.5 Gbps transceiver modules. The product utilizes a high performance, high reliability VCSEL integrated in a custom hermetically sealed TO package aligned to a precision LC housing. The device is configured for differential drive and a controlled impedance flex circuit is available for optimum performance. Each unit receives Lumentum's proprietary burn-in and stabilization process to insure a low failure rate and long life expectancy while providing continuously consistent performance.

The 8.5G TOSA converts an electrical signal into optical power at data rates up to 8.5 Gbps and it is designed for performance over extended operating temperature and power conditions with high reliability. It is perfectly suited for 50/125  $\mu\text{m}$  multimode fiber. Each part is electro-optically tested to exacting standards.

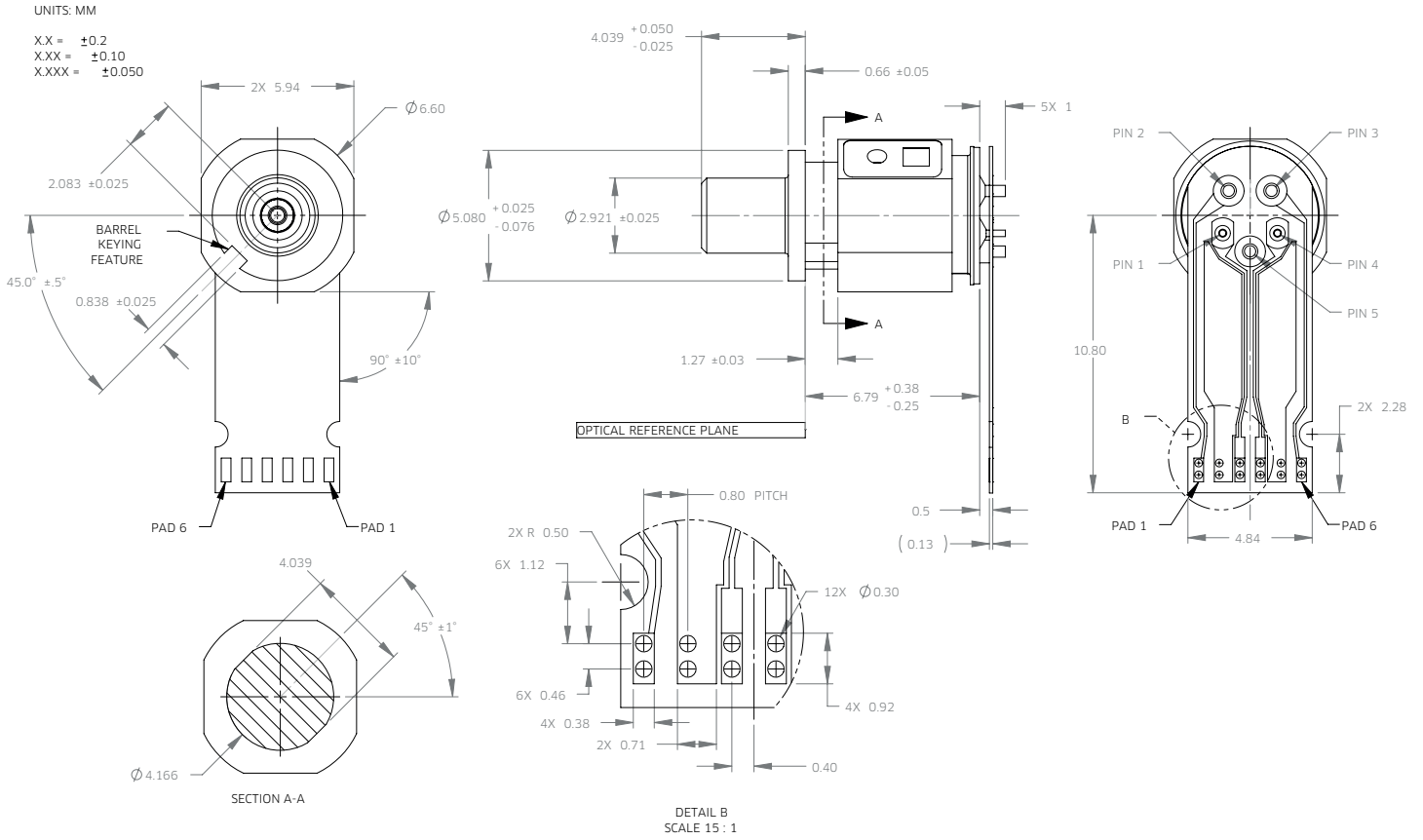
#### **Features**

- Data rates up to 8.5 Gbps
- -10°C to 85°C operation
- Optical power monitor with excellent tracking
- Multiple pinout options available
- VCSEL TO-can aligned to LC optical housing
- Optional flex attach to PCBA

#### **Benefits**

- Industry standard housing dimensions
- Very high reliability
  - Low FIT
  - High MTBF
- Excellent performance over extended operational temperatures
- Modulation performance verification

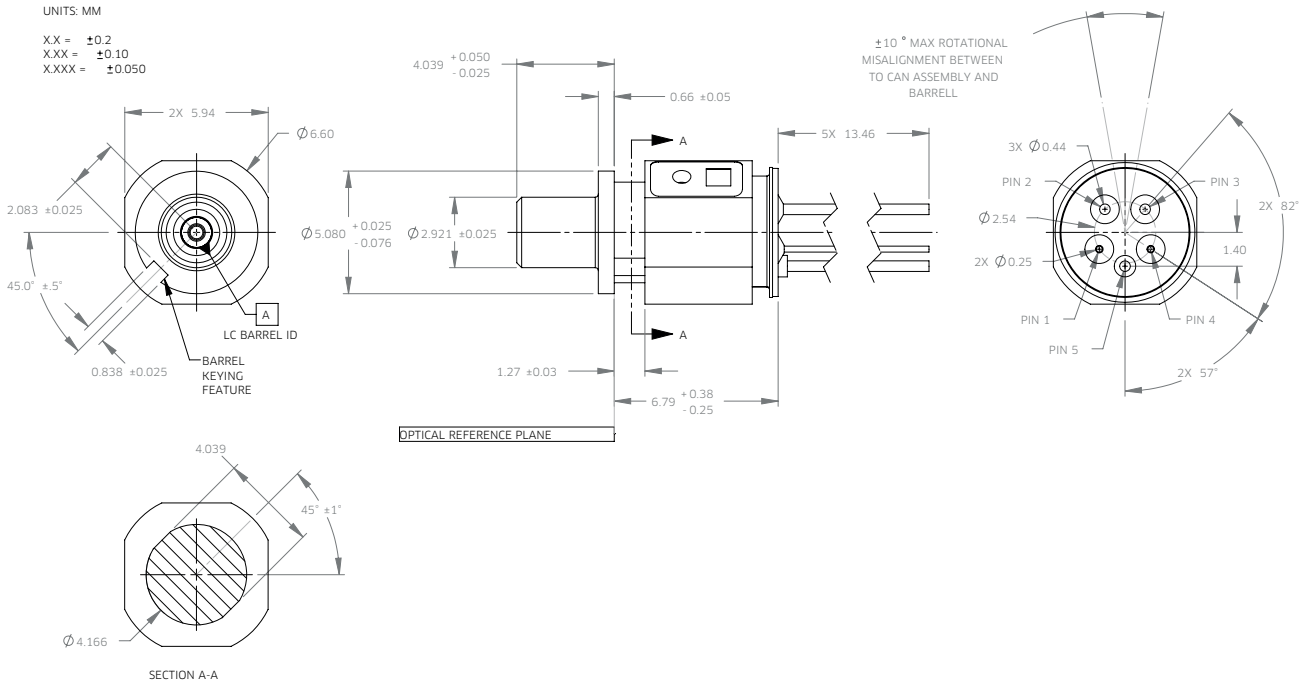
TOSA with Flex Dimensions (LC)



(5-lead TOSA, Differential drive, with flex)

Pad	Symbol	Function
1	KPD	Monitor Cathode
2	GND	Case/ GND
3	ALD	VCSEL Anode
4	KLD	VCSEL Cathode
5	GND	Case/GND
6	APD	Monitor Anode

5-Lead TOSA without Flex Dimensions (LC)



58001331-001  
 (5-lead TOSA, no flex)

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

Shipping Information

Shipped in anti-static stackable trays.

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Storage temperature	T <sub>st</sub>	-40 to +100	°C
Lead solder temperature	T <sub>s</sub>	260°C for 10 sec. 2 mm from case	
Flex attach temperature	T <sub>F</sub>	370°C for 10 sec.	
Laser forward current <sup>1</sup>	I <sub>f</sub>	7	mA
Laser reverse voltage	BV <sub>RLD</sub>	-2	V
Photodiode forward current	I <sub>fm</sub>	2	mA
ESD <sup>2</sup>		Class 0	

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. Average

2. HBM

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

Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Unit
<b>VCSEL</b>						
Peak emission wavelength	$\lambda_D$	P <sub>out</sub> =0.5 mW	840	850	860	nm
Case operating temperature	T <sub>op</sub>		-10		85	°C
RMS spectral width	$\Delta\lambda$	P <sub>out</sub> =0.5 mW; 10.3125 Gb/s mod.			0.65	nm
$\lambda_D$ temp coefficient	$\Delta\lambda_D$			0.06		nm/°C
Relative intensity noise <sup>1</sup>	RIN <sub>12</sub>	10.3125 Gb/s mod.			130	dB/Hz
Rise/Fall time	t <sub>r</sub> t <sub>f</sub>	P <sub>out</sub> =0.5 mW, 10.3125 Gb/s, 20-80%, filtered		50		psec
Threshold current	I <sub>th</sub>			1	1.3	mA
I <sub>th</sub> temperature variation	$\Delta I_{th}$	T = -10°C to 85°C		+1.0	+2.0	mA
Laser forward voltage	V <sub>f</sub>	P <sub>out</sub> =0.5 mW		1.9	2.2	V
Series resistance	R <sub>s</sub>	P <sub>out</sub> =0.5 mW	90	100	110	Ω
Coupling efficiency	e <sub>fiber</sub>			75		%
Slope efficiency <sup>2</sup>	$\eta$	P <sub>out</sub> =0.5 mW	0.075		0.16	mW/mA
Slope efficiency temperature variation	$\Delta\eta/\Delta T$			-4000		PPM/°C
Total capacitance @ VCSEL	C <sub>LD</sub>	6 mA bias			0.6	pF
Small signal bandwidth		P <sub>out</sub> =0.5 mW	6.375			GHz
Optical return loss					-12	dB
<b>Monitor Photodiode</b>						
Photocurrent	I <sub>PD</sub>	P <sub>out</sub> =0.5 mW V <sub>r</sub> = 1.5V	0.12		0.6	mA
Monitor current tracking <sup>3</sup>	$\Delta I_m$	P <sub>out</sub> =0.5 mW T = -10°C to 85°C V <sub>rm</sub> = 1.5V	-0.25		0.25	dB
Monitor dark current	I <sub>D</sub>	V <sub>r</sub> = 1.5 V			500	nA
Monitor capacitance	CM	V <sub>rm</sub> = 1.5V			50	pF

1. Measured according to IEEE802.3 for RIN under Modulation.

2. Includes connector repeatability, ferrule concentricity, and diameter (50 μm fiber).

3. For constant monitor current. Does not include the effect of fiber coupling efficiency.

### Ordering Information

For more information on this or other products and their availability, please contact your local Lumentum account manager or Lumentum directly at [customer.service@lumentum.com](mailto:customer.service@lumentum.com).

Part Number	Description
58001331-001	Differential drive 8.5 G TOSA with LC housing



North America  
Toll Free: 844 810 LITE (5483)

Outside North America  
Toll Free: 800 000 LITE (5483)

China  
Toll Free: 400 120 LITE (5483)

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