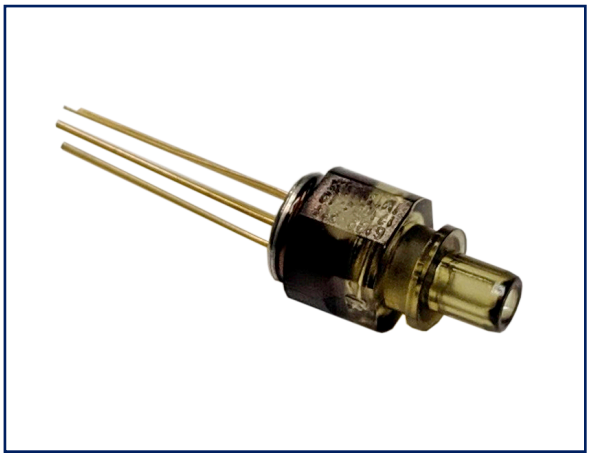
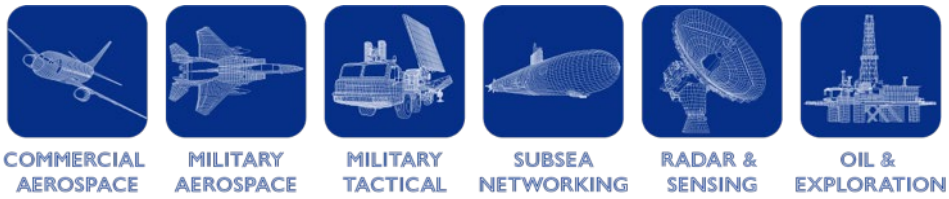
104-00078
Up to 5Gbps 850nm 4-Pin VCSEL

Features:

- 850nm multimode oxide isolated VCSEL
- Operates up to 5.0 Gbps
- TO-46 tilt window TO-CAN prealigned into LC sleeve
- Packaged with a monitor photodiode
- 6dB attenuated receptacle



COTSWORKS 850nm 5G VCSEL TOSA is suited to a wide variety of multimode fiber applications.



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Temperature	T_{sto}	–55	105	°C	
Case Operating Temperature	T_{OP}	–55	100	°C	
Laser Reverse Voltage	V_R	-	5	V	
Laser Forward Current	I_F	-	15	mA	
Hand Lead Soldering Temperature	-	-	260	°C	(1)
ESD Exposure (Human Body Model)	-	-	225	V	(2)

Notes:
1) Hand solder for 10 seconds.
2) Proper ESD conditions should be employed while attaching to host board.

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Opto-Electronic Specifications

(Unless otherwise noted, –55°C ≤ T_C ≤ 100°C.)

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit	Notes
VCSEL							
Data Rate	-	DR	-	-	5.0	Gbps	
Optical Output Power	I_F = 7.5mA 50/125µm MMF 62.5/125µm MMF T_C = 25°C	P_F	0.45	-	0.7	mW	
Coupling Efficiency	I_F = 7.5mA T_C = 25°C	PO_PCT	70	-	-	%	(2)
Threshold Current	T_C = 25°C	I_{TH}	-	0.75	2	mA	
Threshold Current Temperature Variation	-	ΔI_{TH}	-	-	1.7	mA	(3)
Slope Efficiency	T_C = 25°C	η	0.07	0.09	0.1	W / A	
Center Wavelength	-	λ_C	830	850	860	nm	(1)
Center Wavelength Temperature Variation	-	$\Delta\lambda_C$ / ΔT	-	0.06	-	nm / °C	
RMS Spectral Width	-	$\Delta\lambda$	-	-	0.65	nm	(1)
Laser Forward Voltage	I_F = 7.5mA T_C = 25°C	V_F	-	2.1	2.4	V	
Laser Reverse Voltage	I_R = 10µA	V_R	5	10	-	V	
Relative Intensity Noise	I_F = 7.5mA	RIN12OMA	-	–130	–122	dB / Hz	(4)
Series Resistance	-	R	50	70	85	Ω	(1)
Optical Return Loss	-	ORL	12	-	-	dB	
Encircled Flux Diameter	-	EF 4.5µm	-	-	30	%	(5)
		EF 19µm	86	-	-		
Bias Current Range	-	I_F	6	-	12	mA	
High Temperature Power Droop	-	P_{DROOP}	–0.8	-	0	dB	(7)
Transmitter Dispersion Penalty	-	TDP	-	-	3.8	dB	(1)
Monitor Photodiode							
MPD Current	V_R = 3V	I_{PD}	90	-	200	µA	(1)
MPD Power Tracking	-	ΔP / ΔT	0.8	-	1.2	dB	
MPD Dark Current	P_F = 0mW V_R = 3V	I_{DARK}	-	-	20	nA	
MPD Reverse Voltage	P_F = 0mW I_R = 10µA	BVR_{PD}	30	115	-	V	(6)
Monitor Capacitance	V_R = 0V Freq = 1MHz	C_{PD}	-	75	100	pF	
	V_R = 3V Freq = 1Mhz		-	40	55		

Notes:

1) Test condition is over all operating condition temperatures with tracked back monitor current found at 7.5 mA at 25C with a 15 mA clamp.
2) PO_PCT is defined as the ratio of the coupled power into a 50/125µm fiber to the total power output from the optical front end as measured on a large area detector.
3) Operation outside of the specified range may result in the threshold current exceeding the maximums defined in the electro-optical characteristics table. ΔITH is the maximum deviation from the 25°C value.
4) RIN12 is measured using the OMA technique with 12dB return.
5) Encircled flux is measured per TIA-455-203 at 7.5 mA average current.
6) To prevent VCSEL damage, short the VCSEL anode and cathode during BVR testing of the photodiode.
7) Droop is the fiber coupled power difference in dB from a tracked condition to the clamped condition.
8) Settling time is tracked by center wavelength stabilizing to within 5% of the final value.

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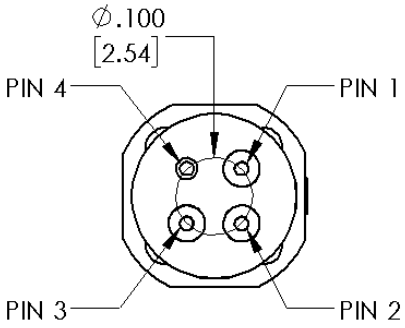
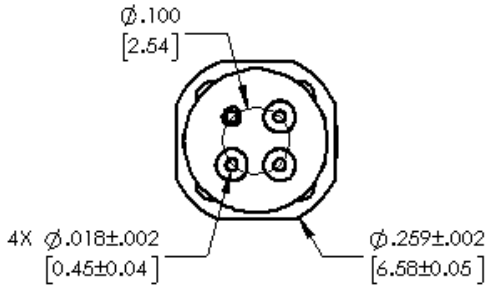
Pin Identification



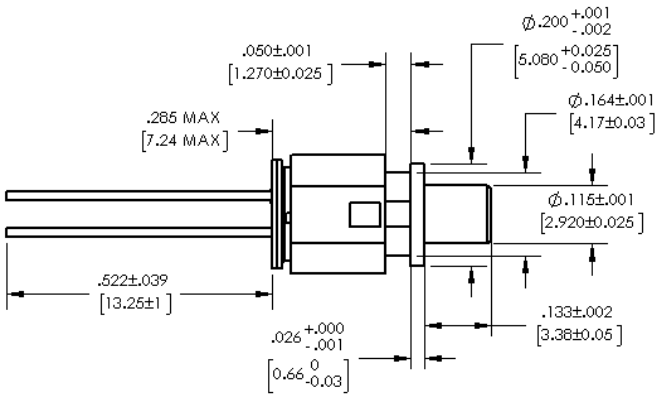
PIN #	Description	Pin Diameter
1	VCSEL Cathode	18 mil
2	VCSEL Anode	18 mil
3	Monitor Diode Cathode	18 mil
4	Monitor Diode Anode (Case)	18 mil

Notes:
1) Mechanical dimensions shown here are in units of inches [mm].

Standard Mechanical Dimensions



Front View, dimensions in inches [mm]



Side View, dimensions in inches [mm]

Warnings:

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended.

Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation

Ordering Information

Contact COTSWORKS Sales for information and pricing.

Contact COTSWORKS for mechanical dimensional information, lead times and configuration options.