OPV300, OPV310, OPV310Y, OPV314, OPV314Y



Features:

- 850nm VCSEL Technology
- Data rates up to 2.5 Gbps
- High thermal stability
- Low drive current / high output density
- Narrow and concentric beam angle
- Recommended for multimode fiber applications
- Burned in for communication level reliability



Description:

The OPV300 / OPV310 / OPV314 series are high performance 850nm Vertical Cavity Surface Emitting Laser (VCSEL). The OPV300 and OPV310 are designed to be utilized for sensing applications as well as air transmission of data. The OPV314 is designed for high speed communication links. The OPV310 / OPV314 combine all the performance advantages of a VCSEL with the addition of a power monitor diode for precise control of optical power. The OPV310 and OPV314 have a back monitor photodiode used for optical power management or optical reception for data communication applications.

The **OPV300 / OPV310** have a flat lens while the **OPV314** has a microbead lens. Refer to mechanical drawings for details.

The high performance 850nm VCSEL is designed for applications where low current is required with high on-axis optical power. These product's combine features including high speed, high output optical power and concentric beam making it an ideal transmitter for integration into all types of data communications equipment as well as for reflective and transmissive switches.

Applications:

- Fiber Channel
- Gigabit Ethernet
- ATM
- VSR
- Intra-System links
- Optical backplane interconnects
- Reflective sensing
- Interruptive sensing
- Long distance spot illumination

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Operating Temperature Range	0°C to +70°C	
Storage Temperature Range	-40°C to +100°C	
Maximum Forward Peak Current, continuous	12 mA	
Maximum Reverse Voltage	5 V	
Max. Continuous Optical Power at 70° C 1.1 mW		
Lead Soldering Temperature	260°C for 10 sec.	
Maximum Forward Current, pulsed (1 μs P.W., 10% D.C.)	48 mA	

Notes:

- (1) Threshold Current is based on the two line intersection method specified in Telcordia GR-468-Core. Line 1 from 4 mA to 6 mA. Line 2 from 0 mA to 0.5 mA.
- (2) Series Resistance is the slope of the Voltage-Current line from 5 to 8 mA.
- (3) Slope efficiency is the slope of the best fit LI line from 5 mA to 8 mA using no larger than .25 mA test interval points.
- (4) Using data points taken for slope efficiency above, delta L/delta I shall be calculated for each adjacent pair of points.





Additional laser safety information can be found on the Optek website. See application bulletin #221. Classification is not marked on the device due to space limitations. See package outline for centerline of optical radiance. Operating devices beyond maximum rating may result in hazardous radiation exposure.

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Electrical/Optical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Pai	rameter	Min	Тур	Max	Units	Test Conditions
Рот	Total Power Out	OPV300 / OPB310 OPV314	1.50 1.40			mW	I _F = 7 mA
I _{TH}	Threshold Current		0.80		3.00	mA	Note 1
V_{F}	Forward Voltage		1.60		2.20	V	I _F = 7 mA
I_R	Reverse Current				100	nA	V _R = 5 V
Rs	Series Resistance		20		55	ohms	Note 2
ŋ	Slope Efficiency		0.28		0.60	mW/mA	Note 3
	Linearity		0.00				Note 4
λ	Wavelength		840	850	860	nm	
Δλ	Optical Bandwidth				0.85	nm	
θ	Beam Divergence (O	PV300 / OPV310 only)		24		Degree	I _F = 7 mA , FWHM
t _r /t _f	Rise and Fall Time			100		ps	20% to 80%
N _{RI}	Relative Intensity Noi	se		-123		dB/Hz	
Δl_{TH}	Temp Variance of Threshold Current			±1.0		mA	0° - 70° C, Note 1
Δλ/ΔΤ	Temp Coefficient of Wavelength			0.06		%/°C	0° - 70° C, I _F = 7 mA
$\Delta V_F \Delta T$	Temperature Coefficient for VF			-2.5		mV/°C	0° - 70° C, I _F = 7 mA
Δŋ/ΔT	Temperature Coefficient for Efficiency			-0.5		%/°C	0° - 70° C, Note 3
Photodiode Electrical Characteristics (OPV310/OPV314 series)							
I _{RPD}	Reverse Current, photodiode				30	nA	V _R = 5 V
I _{M1}	Monitor Current OPV310 OPV314		30 40			μΑ	I _F = 7 mA, V _R = 5 V
I _{M2}	Monitor Current	OPV310 OPV314	40 45			μΑ	P _O = 2 mW, V _R = 5 V

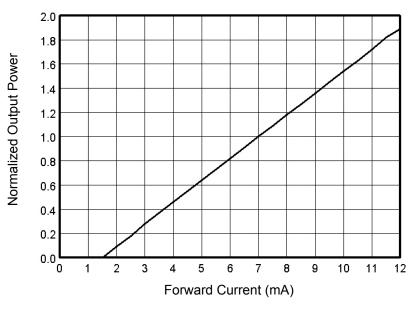
NOTES

- (1) Threshold Current is based on the two line intersection method specified in Telcordia GR-468-Core. Line 1 from 4 mA to 6 mA. Line 2 from 0 mA to 0.5 mA.
- (2) Series Resistance is the slope of the Voltage-Current line from 5 to 8 mA.
- (3) Slope efficiency, is the slope of the best fit LI line from 5 mA to 8 mA using no larger than .25 mA test interval points.
- (4) Using data points taken for slope efficiency above, delta L/delta I shall be calculated for each adjacent pair of points.
- (5) ESD Class 1

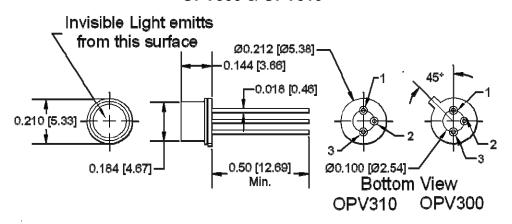
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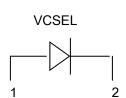


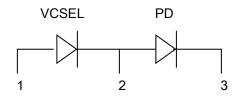
Normalized Output Power vs. Forward Current

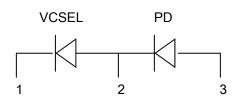


OPV300 & OPV310









OPV300			
Pin Connection			
1	VCSEL Anode		
2	VCSEL Cathode		
3	No Connection		

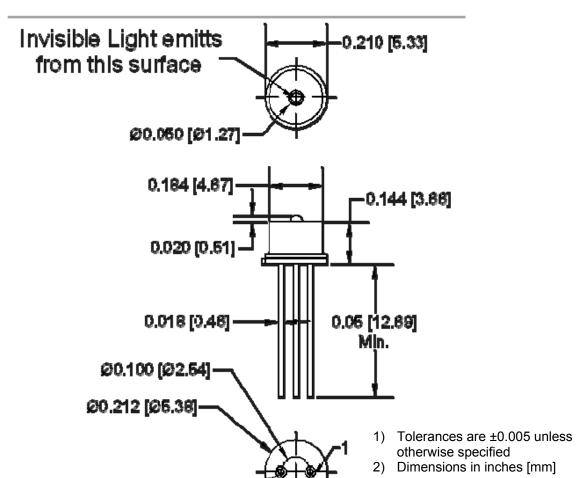
	OPV310		
Pin	Pin Connection		
1	VCSEL Anode		
2	VCSEL Cathode/PD Anode		
3	PD Cathode		

OPV310Y		
Pin	Connection	
1	VCSEL Cathode	
2	VCSEL Anode/PD Cathode	
3	PD Anode	

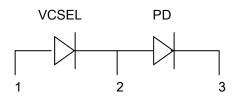
OPV300, OPV310, OPV310Y, OPV314, OPV314Y



OPV314



Bottom View



OPV314			
Pin	Connection		
1	VCSEL Anode		
2	VCSEL Cathode/PD Anode		
3	PD Cathode		

VC	SEL	PD	
	<u> </u>	 -	
I			3

OPV314Y			
Pin	Connection		
1	VCSEL Cathode		
2	VCSEL Anode/PD Cathode		
3	PD Anode		