

# Vertical Cavity Surface Emitting Laser in FC Optical Sub-Assembly

OPV314AT, OPV314YAT, OPV314YBT



## Features:

- 850 nm VCSEL technology
- High thermal stability
- Up to 2.5 Gbps
- Recommended for multimode fiber applications
- Microbead lens
- Pin out and attenuation options available upon request
- Burned in for communication level reliability
- High optical coupling to MM fiber
- ST style receptacle



## Description:

The OPV314AT and OPV314BT are high performance 850nm VCSEL packaged for high speed communication links. OPV314AT and OPV314BT combines all the performance advantages of a VCSEL with the addition of a power monitor diode for precise control of optical power. The OPV314YAT and OPV314YBT are identical electrically and optically and differ only in pin out. Refer to mechanical drawings for details. This product's combination of features including high speed, high output power and concentric beam makes it an ideal transmitter for integration into all types of data communications equipment.

## Applications:

- Fiber channel
- Gigabit Ethernet
- ATM
- VSR (very short reach)
- Intra-system links applications
- Optical backplane interconnects

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature	-40° C to +125° C
Operating Temperature	0° C to +85° C
Soldering Lead Temperature	260° C for 10 Seconds
Maximum Forward Peak Current, Continuous	12 mA
Maximum Reverse Voltage	5 V
Maximum Forward Current, pulsed 1 $\mu$ s P.W., 10% D.C.)	48mA



Additional laser safety information can be found on the Optek website. See application #221.

Classification is not marked on the device due to space limitations. See package outline for center-line of optical radiance. Operating devices beyond maximum rating may cause devices to exceed rated classification



RoHS

## General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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## Electrical Specifications

Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$P_{T50}$	Total coupled power 50/125 $\mu\text{m}$ fiber OPV314AT, OPV314YAT OPV314YBT	600			$\mu\text{W}$	$I_F = 7\text{ mA}$
		400			$\mu\text{W}$	$I_F = 7\text{ mA}$
$I_{TH}$	Threshold current	0.8		3.0	mA	Note 1
$V_F$	Forward voltage	1.6		2.2	V	$I_F = 7\text{ mA}$
$I_R$	Reverse current			100	nA	$V_R = 5\text{ V}$
$R_S$	Series resistance	20		55	Ohms	Note 2
$\eta$	Slope efficiency OPV314AT, OPV314YAT OPV314YBT	60			$\mu\text{W}/\text{mA}$	Note 3
		40			$\mu\text{W}/\text{mA}$	
$I_{RPD}$	Reverse current, photodiode			30	nA	$V_R = 40\text{ V}$
$I_M$	Monitor current	30			$\mu\text{A}$	$I_F = 7\text{ mA}$ , $V_R = 5\text{ V}$
$\lambda$	Wavelength	840		860	Nm	
$\Delta\lambda$	Optical bandwidth			0.85	Nm	
$t_r$	Rise time		90		Ps	20 to 80%
$t_f$	Fall time		120		Ps	80 to 20%
$N_{RI}$	Relatively intensity noise		-123		Db/Hz	
$\Delta\eta/\Delta T$	Temp coefficient of slope efficiency		-0.4		$\%/^\circ\text{C}$	$0^\circ - 70^\circ\text{C}$
$\Delta I_{TH}$	Temp variance of threshold current		$\pm 1.0$		mA	$0^\circ - 70^\circ\text{C}$
$\Delta\lambda/\Delta T$	Temp coefficient of wavelength		0.06		$\text{Nm}/^\circ\text{C}$	$0^\circ - 70^\circ\text{C}$
$\Delta V_i/\Delta T$	Temperature coefficient for $V_F$		-2.5		$\text{mV}/^\circ\text{C}$	

### 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. Measured with a 50/125  $\mu\text{m}$  fiber.
- (4) Linearity—Using data points taken for slope efficiency above, data  $L/\Delta I$  shall be calculated for each adjacent pair of points.

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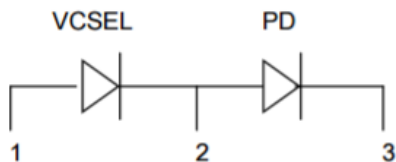
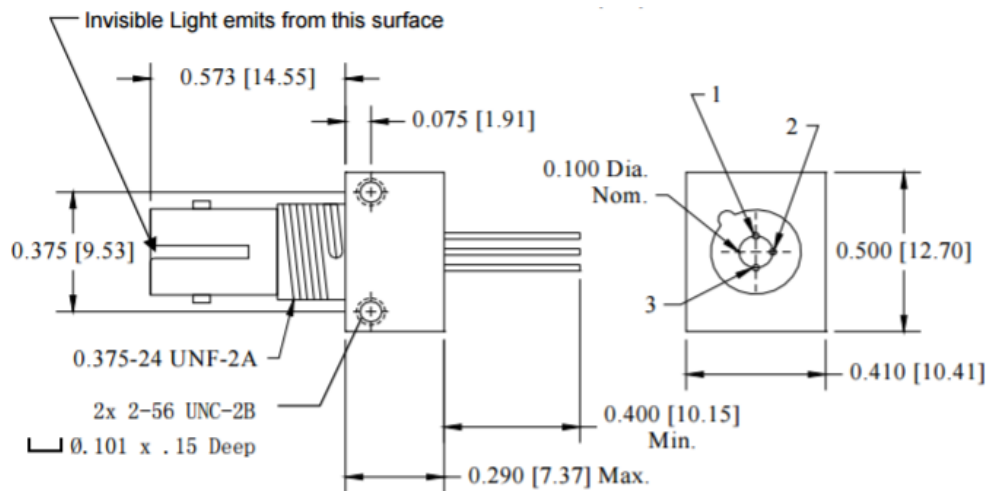
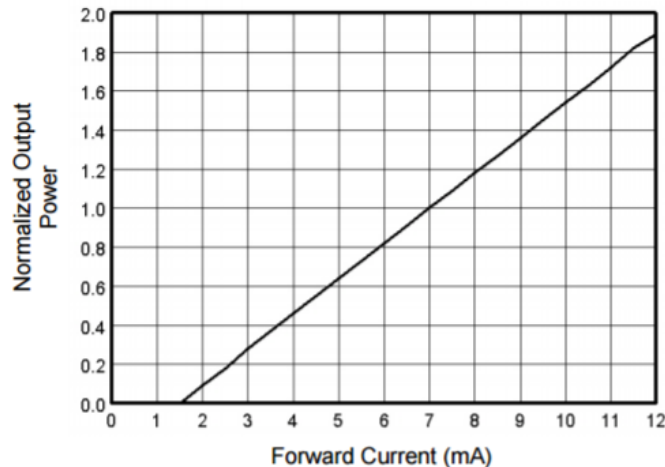
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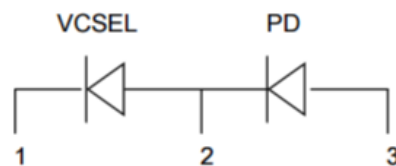


OPV314AT, OPV314YAT, OPV314YBT

**Normalized Output Power vs. Forward**



OPV314AT, OPV314BT	
Pin	Connection
1	VCSEL Anode
2	VCSEL Cathode/PD Anode
3	PD Cathode



OPV314YAT, OPV314YBT	
Pin	Connection
1	VCSEL Cathode
2	VCSEL Anode/PD Cathode
3	PD Anode

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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