

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



## OPV315AT, OPV315BT, OPV315YAT, OPV315YBT

### 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 on request
- Burned in for communication level reliability
- High optical coupling to MM fiber
- ST\* style receptacle

### Description

The OPV315AT and OPV315BT are high performance 850nm VCSEL packaged for high speed communication links. OPV315AT and OPV315BT combines all the performance advantages of a VCSEL with the addition of a power monitor diode for precise control of optical power.

The OPV315YAT and OPV315YBT are identical electrically and optically and differ only in pin out. Refer to mechanical drawings for details.

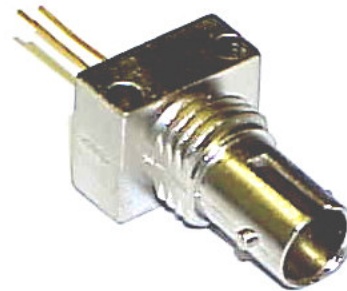
This product's combination of features including high speed, high output power and concentric beam make it an ideal transmitter for integration into all types of data communications equipment.

Applications include:

- ◆ Fibre Channel
- ◆ Gigabit Ethernet
- ◆ ATM
- ◆ VSR (Very Short Reach)
- ◆ Intra-system links
- ◆ Optical backplane interconnects.

\* - ST is a registered trademark of AT&T

## Technical Data



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

Storage Temperature	-40° C to +125° C
Operating Temperature	-40° C to +85° C
Soldering Lead Temperature	260° C for 10 Seconds
Maximum Forward Peak Current	30 mA
Maximum Reverse Voltage	5 V



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 centerline of optical radiance. Operating devices beyond maximum rating may cause devices to exceed rated classification

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## Electrical/Optical Characteristics (at 25 °C unless otherwise specified)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITION
P <sub>T50</sub>	Total Coupled Power 50/125 μm Fiber	300			μW	I <sub>F</sub> = 7 mA
		200			μW	I <sub>F</sub> = 7 mA
I <sub>TH</sub>	Threshold Current	0.8		3.0	mA	Note 1
V <sub>F</sub>	Forward Voltage	1.6		2.2	V	I <sub>F</sub> = 7 mA
I <sub>R</sub>	Reverse Current			35	nA	V <sub>R</sub> = 5 V
R <sub>S</sub>	Series Resistance	20		55	ohms	Note 2
η	Slope Efficiency	30			μW/mA	Note 3
		20			μW/mA	Note 3
I <sub>RPD</sub>	Reverse Current, photo diode			35	nA	V <sub>R</sub> = 40 V
	Linearity	0.00				Note 4
I <sub>M</sub>	Monitor Current	30			μA	I <sub>F</sub> = 7 mA, V <sub>R</sub> = 5 V
λ	Wavelength	840		856	nm	
Δλ	Optical Bandwidth			0.85	nm	
t <sub>r</sub>	Rise Time		90		ps	20% to 80%
t <sub>f</sub>	Fall Time		120		ps	80% to 20%
N <sub>RI</sub>	Relative Intensity Noise		-123		db/Hz	
Δη/ΔT	Temp Coefficient of Slope Efficiency		-0.5		%/°C	(0° - 70° C)
ΔI <sub>TH</sub> /ΔT	Temp Coefficient of Threshold Current		±0.1		mA	0° - 70° C
Δλ/ΔT	Temp Coefficient of Wavelength		0.06		nm/°C	0° - 70° C
ΔV <sub>f</sub> /ΔT	Temperature Coefficient for VF		-2.5		mV/°C	

### NOTES:

- 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.
- Series Resistance is the slope of the Voltage-Current line from 5 to 8 mA.
- 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 μm fiber.
- 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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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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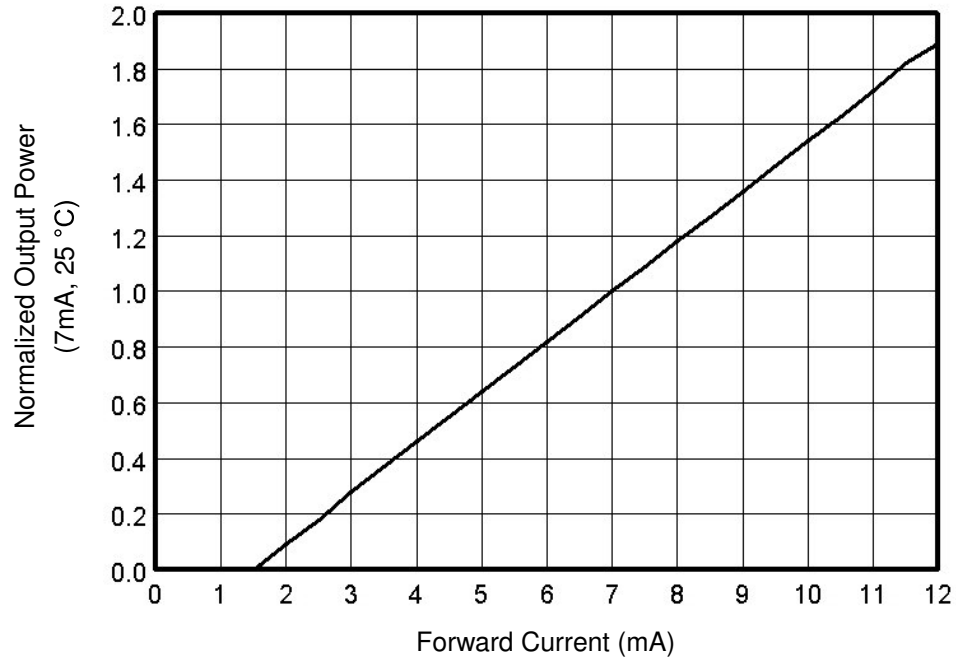
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### Normalized Output Power vs. Forward Current



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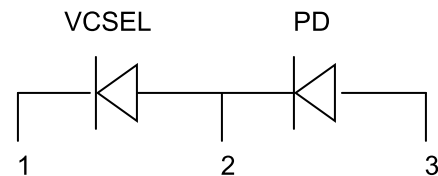
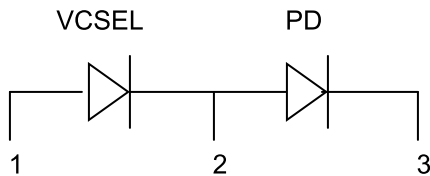
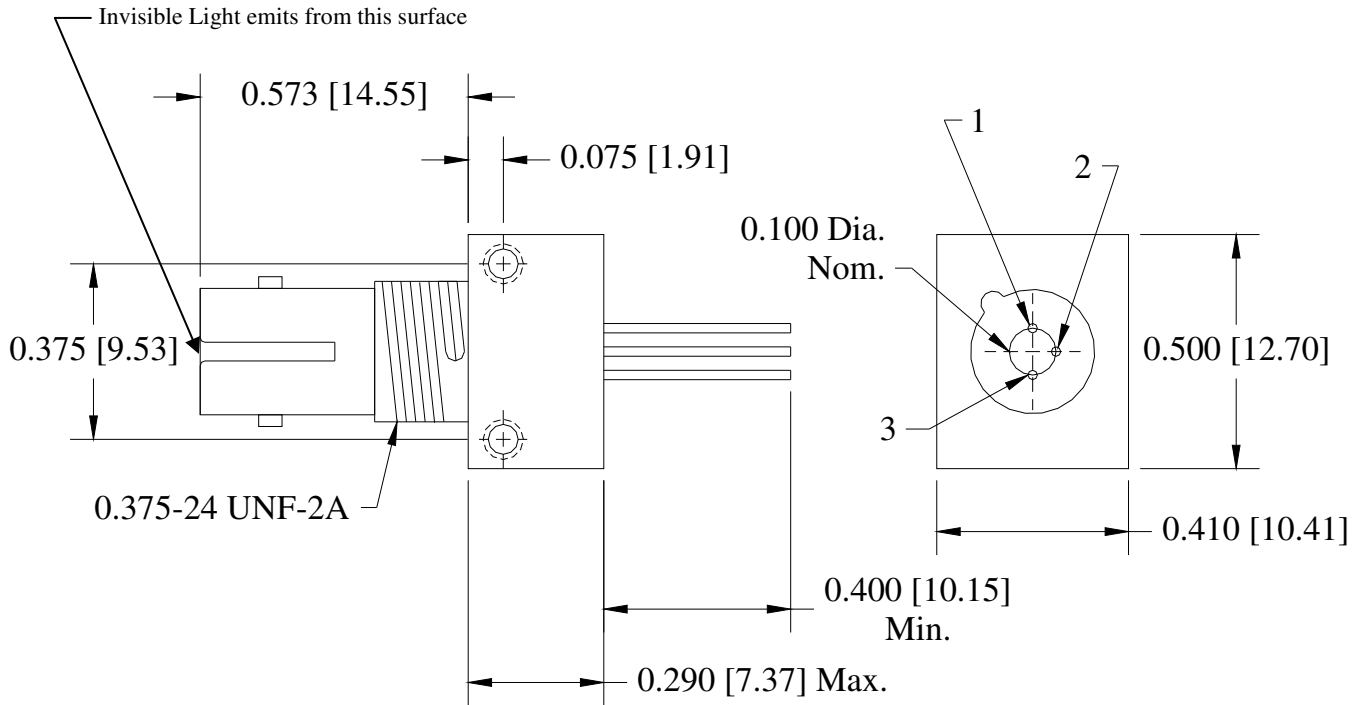
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# OPV315AT, OPV315BT, OPV315YAT, OPV315YBT Technical Data



OPV315AT, OPV315BT	
Pin	Connection
1	VCSEL Anode
2	VCSEL Cathode/PD Anode
3	PD Cathode

OPV315YAT, OPV315YBT	
Pin	Connection
1	VCSEL Cathode
2	VCSEL Anode/PD Cathode
3	PD Anode

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