

# Vertical Cavity Surface Emitting Laser in TO-46 Package



## OPV214, OPV214Y

## Technical Data

### Features

- 850 nm VCSEL technology
- High thermal stability
- Up to 1.25 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



### Description

The OPV214 is a high performance 850nm VCSEL packaged for high speed communication links. OPV214 combines all the performance advantages of a VCSEL with the addition of a power monitor diode for precise control of optical power.

The OPV214Y is identical electrically and optically and differs 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 include:

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

### 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
Max. Continuous Optical Power at 70° C	1.1 mW



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
$P_{ot}$	Power Out Total	1.4		4.5	mW	$I_F = 12 \text{ mA}$
$I_{TH}$	Threshold Current	2.0		5.5	mA	Note 1
$V_F$	Forward Voltage			2.15	V	$I_F = 12 \text{ mA}$
$I_R$	Reverse Current			30	nA	$V_R = 5 \text{ V}$
$R_S$	Series Resistance	14		40	ohms	Note 2
$\eta$	Slope Efficiency	0.17			mW/mA	Note 3
$I_{RPD}$	Reverse Current, photo diode			30	nA	$V_R = 5 \text{ V}$
$I_M$	Monitor Current	20			$\mu\text{A}$	$I_F = 12 \text{ mA}$
$\lambda$	Wavelength	830		860	nm	
$\Delta\lambda$	Optical Bandwidth			0.85	nm	
$t_r, t_f$	Rise and Fall Time		200		ps	20% to 80%
$N_{RI}$	Relative Intensity Noise		-123		dB/Hz	
$\Delta\eta/\Delta T$	Temp Coefficient of Slope Efficiency		-40		%/°C	(0° - 70° C)
$\Delta I_{TH}/\Delta T$	Temp Coefficient of Threshold Current		$\pm 1.5$		mA	0° - 70° C
$\Delta\lambda/\Delta T$	Temp Coefficient of Wavelength		0.06		nm/°C	0° - 70° C
$\Delta V_F/\Delta T$	Temperature Coefficient for VF		-2.5		mV/°C	

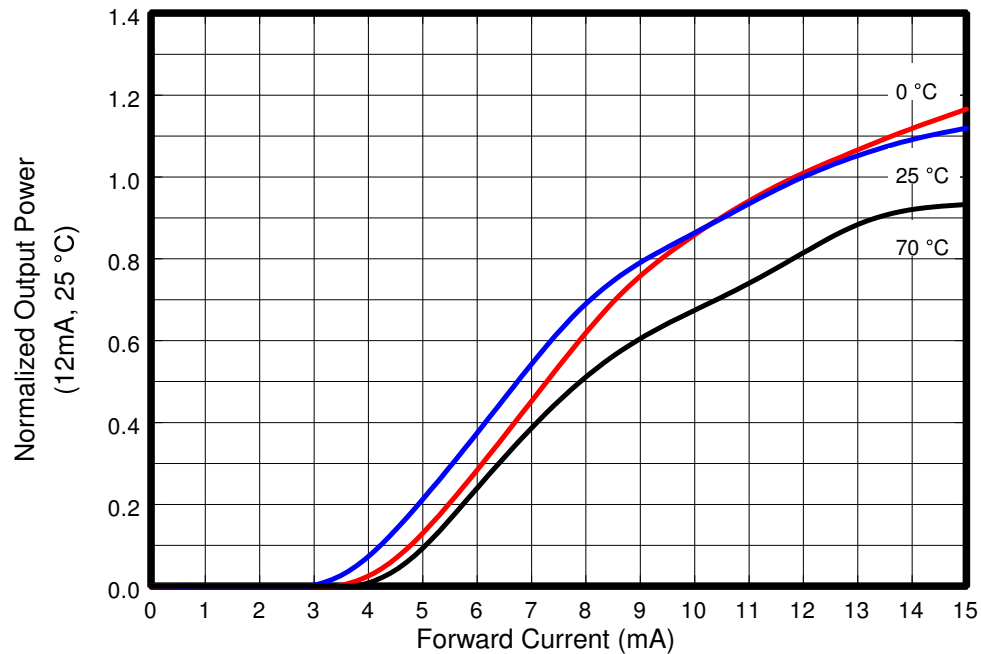
### NOTES:

- (1) Threshold Current is based on the two line intersection method specified in Telcordia GR-468-Core. Line 1 from 6 mA to 8 mA.  
Line 2 from 0 mA to 2 mA.
- (2) Series Resistance is the slope of the Voltage-Current line from 8 to 12mA.
- (3) Slope efficiency, is the slope of the best fit LI line from 8 mA above threshold to 12mA using no larger than .5 mA test interval points.

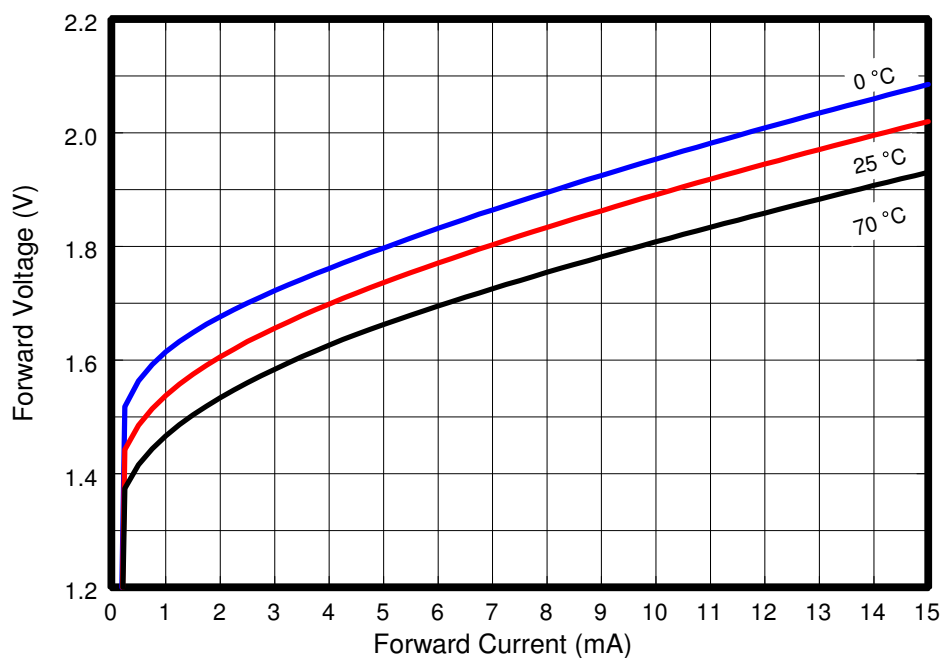
# OPV214, OPV214Y Technical Data



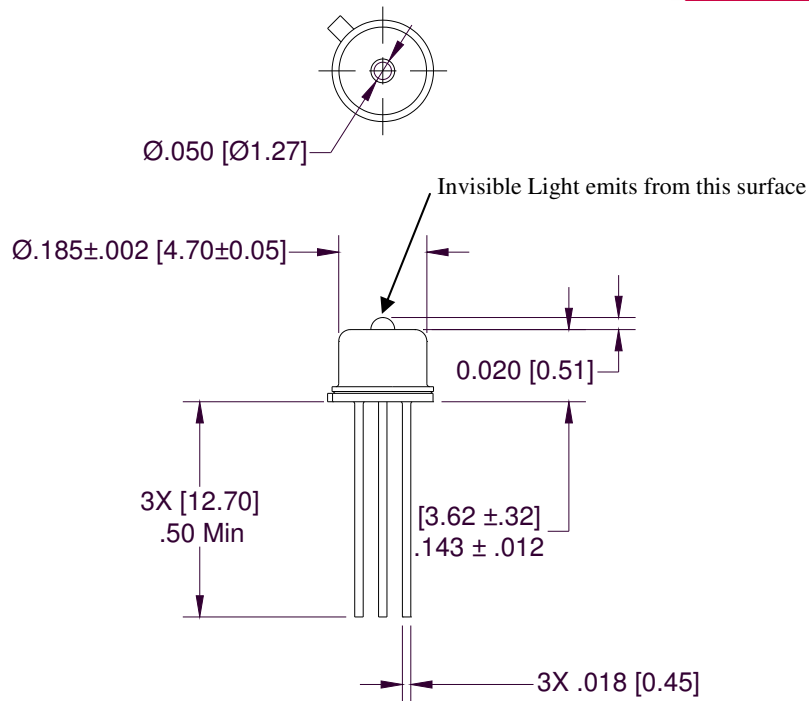
## Output Power vs. Forward Current



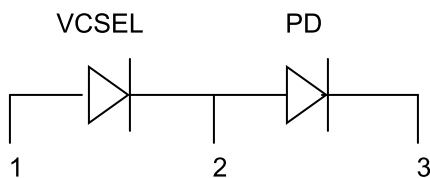
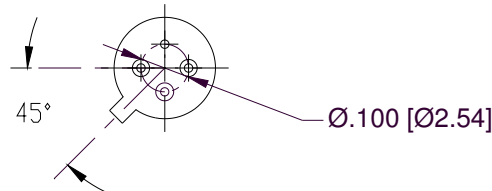
## Forward Voltage vs. Forward Current



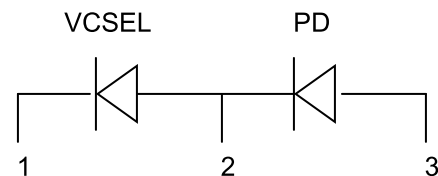
# OPV214, OPV214Y Technical Data



- 1) Tolerances are  $\pm 0.005$  unless otherwise specified
- 2) Dimensions in inches [mm]



OPV214	
Pin	Connection
1	VCSEL Anode
2	VCSEL Cathode/PD Anode
3	PD Cathode



OPV214Y	
Pin	Connection
1	VCSEL Cathode
2	VCSEL Anode/PD Cathode
3	PD Anode

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