

VCSEL

VCSEL with  
integrated  
Photodiode  
850 nm



Two Individual  
Addressable Lasers

Integrated  
Photodiode

Single-Mode  
Polarization Stable

Optimized for  
Self-Mixing  
Interferometry  
Sensing

# Datasheet: 850 nm VCSEL with integrated Photodiode (ViP)

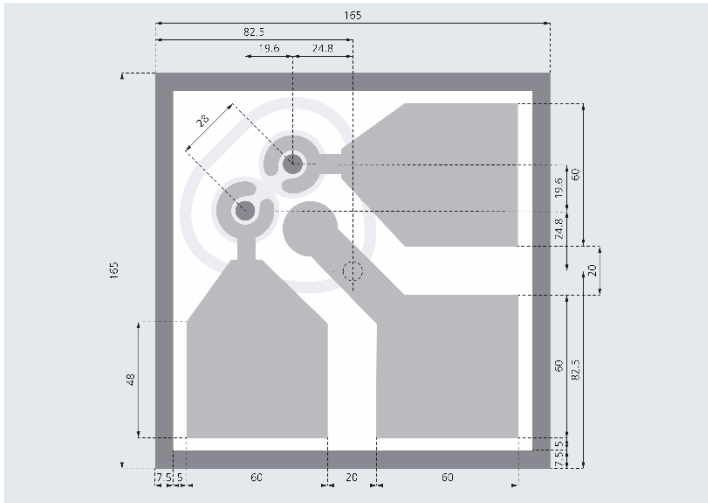
## Electro-Optical Characteristics (T = 50°C, photodiode reverse bias voltage = 1.0 V, unless otherwise stated)

Parameter	Units	Min.	Typ.	Max.	Notes
Laser emission wavelength	nm	840		865	1.5 mA laser current
Laser wavelength shift	nm/mA	0.26		0.80	2.0 mA laser current
Laser output power	mW	0.32		0.83	2.0 mA laser current
Laser side mode suppression ration	dB	10		.	2.0 mA laser current
Laser far-field-angle	°	13		20	2.0 mA laser current
Laser threshold current	mA	0.24		0.95	
Laser voltage	V	1.71		2.38	2.0 mA laser current
Laser differential resistance	kΩ	0.11		0.38	2.0 mA laser current
Photodiode current	mA	0.53		0.98	2.0 mA laser current
Photodiode current slope with laser current	mA/mA	0.32		0.60	
Photodiode capacitance	pF			5	Cp
Photodiode impedance	kΩ		100		Rp
Photodiode noise at 10 kHz	pA/√Hz			35	T = 25°C, 2.0 mA laser current
Self Mixing Interference Signal	√Hz	880			
Burst noise	cts/s			2	unfiltered

## Absolute maximum ratings

Parameter	Units	Min.	Typ.	Max.	Notes
Operating temperature	°C	-10		80	These are stress ratings, only; exposure for extended periods may affect device reliability.

## Dimensions of ViP:



Units: μm

Type	Single chip
Part number	TVP-001-850-A
Ordering number	ULMVIP-81-TT-S0101U
Dimensions	165 x 165 x 130 μm

### Safety information:

- Invisible laser radiation / avoid beam exposure / class 3B laser product
- Electrostatic sensitive devices / observe precautions for handling / class 'human body model >120 V'

Disclaimer: Water-condensation, surface-contamination or -etching of the light-emitting facet will irreversibly change the laser characteristics. A safe operation of the product within the specification limits will not be possible anymore.

For more information visit  
[www.trumpf.com/s/VCSEL-solutions](http://www.trumpf.com/s/VCSEL-solutions)

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