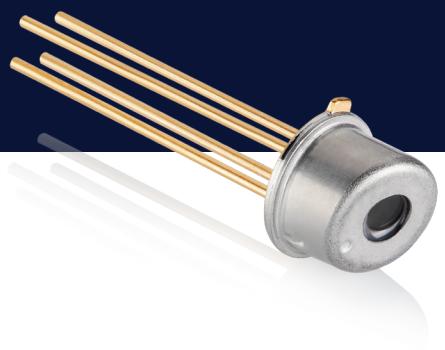
IMM photonics

Single Mode VCSEL 850 nm
with Photodiode, 1mW



IMV-850-1-PL-TO46 with photodiode
850 nm polarization locked single mode VCSEL in TO46

APPLICATIONS

- Optical sensor applications
- Optical encoder
- 2D imaging (facial recognition)
- Industrial speed and distance sensors (LIDAR)
- Targeting

FEATURES

- Single mode VCSEL
- VCSEL chip by COHERENT
- Wavelength 850 nm
- Hermetically sealed
- Single transverse and longitudinal mode
- Circular beam profile, Gaussian
- Polarization locked emission
- Compact TO-46 can, with integrated photodiode
- Low power consumption
- High reliability
- RoHS compliant
- Made in Europe

ABSOLUTE MAXIMUM RATINGS

PARAMETER	MAX RATINGS	UNIT	CONDITIONS
Continuous operating current	8	mA	
Continuous reverse voltage	8	V	
PCB solder or reflow temperature	+260	°C	max. 10 seconds

Storage temperature: -20°C to +85°C **Operating temperature: +5°C to +45°C**

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ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	RATINGS MIN	TYP	MAX	UNIT	CONDITIONS
Emission wavelength (λ_{peak})	840	850	860	nm	Operating conditions
SM optical output power (P_{SM})	0.9	1		mW	T = +25°C
Side mode suppression ratio (SMSR)	10			dB	T = +25°C, P_{op} = 0.9 mW
Optical power variation over temperature (P(T) – P_{op})	-200		+120	µW	I_{op}, T= +5 to +45°C
Beam divergence (θ_{FW1/e^2})	+12	+17	+21	deg	T = +25°C, P_{op} = 0.5 mW
Accuracy of polarization direction* (δ_{pol})	-15		+15	deg	T = +25°C, P_{op} = 0.2 to 0.9 mW
Operating voltage (U_{op})			2.3	V	Operating conditions
Operating current (I_{op})	2.3		6	mA	T = +25°C, P_{op} = 0.55 mW
Threshold current (I_{th})	1	3	5	mA	T = +25°C, P_{op} = 0.55 mW
Slope efficiency (η)	0.20	0.40	0.65	mW/mA	T = +25°C, P_{op} = 0.2 to 0.9 mW
Temperature coefficient of wavelength ($\partial\lambda/\partial T$)		0.05		nm/K	Operating conditions

SM= single mode; FW1/e^2 = full width 1/e^2
* Polarization direction relative to the chip.

$I_{Photodiode}$: min. 32 µA, typ. 41 µA; Conditions: P_{opt} = 1 mW

Operating conditions: T_{op} = +5°C to +45°C; I_{op} = const., set at +25°C so that P_{op} = 0.55 mW

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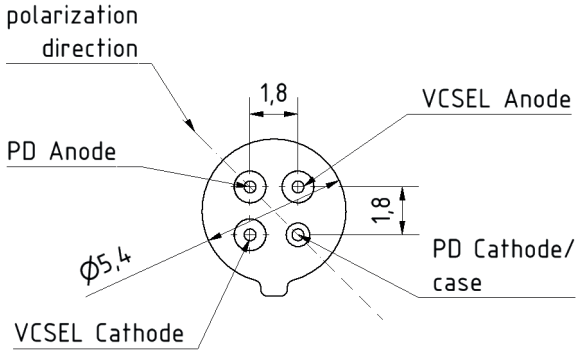
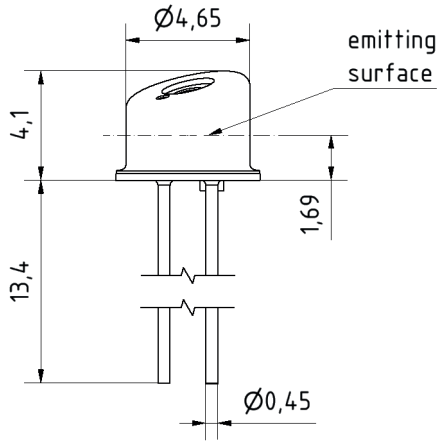
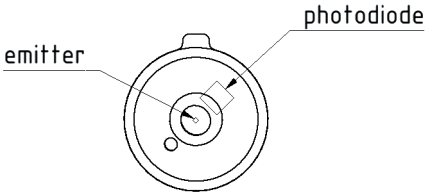
TO DIMENSIONS







Placement accuracy ±150um VCSEL eye to centre of TO cap.
Placement accuracy ±60um VCSEL eye to centre of TO header.

NOTES

Compliant with RoHS-requirements (2011/65/EU from June 8, 2011).

The above product specifications are typical values and subject to change without notice.
Release 09/2025

WE LOOK FORWARD
to solving your challenge

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