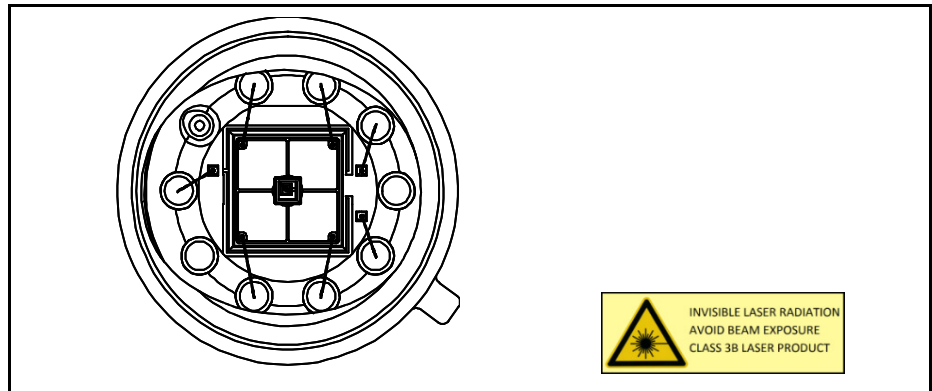
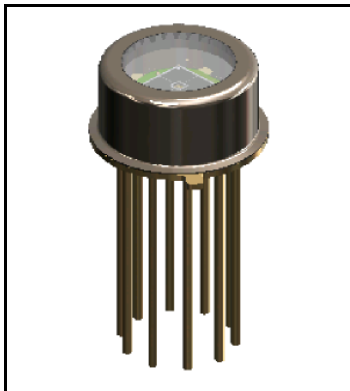


**Preliminary**

**Features**

- Quadrant detector
- Micro-hole
- 850 nm VCSEL
- Low dark current
- Fast response time

**Description**

Quadrant PIN detector with 850 nm Vertical Cavity Surface Emitting Laser (VCSEL) mounted inside micro-hole in hermetic isolated TO5 package.

**Application**

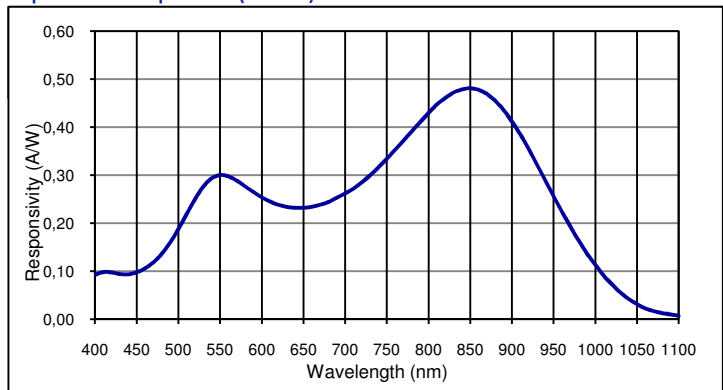
- Axis symmetrical detector system geometries
- Light scattering applications
- Tiny tube mounted detection systems

**RoHS**

2002/95/EC


**Absolute maximum ratings**

Symbol	Parameter	Min	Max	Unit
$T_{STG}$	Storage temp	-40	125	°C
$T_{OP}$	Operating temp	-40	85	°C
$V_{OP}$	Operating voltage		10	V
$I_{PEAK}$	Peak DC current		10	mA
$V_{max}$	Reverse voltage VCSEL		8	V
$I_{cf}$	Continuous forward current VCSEL		4	mA

**Spectral response (23 °C)**

**Electro-optical characteristics of photodiode@ 23 °C**

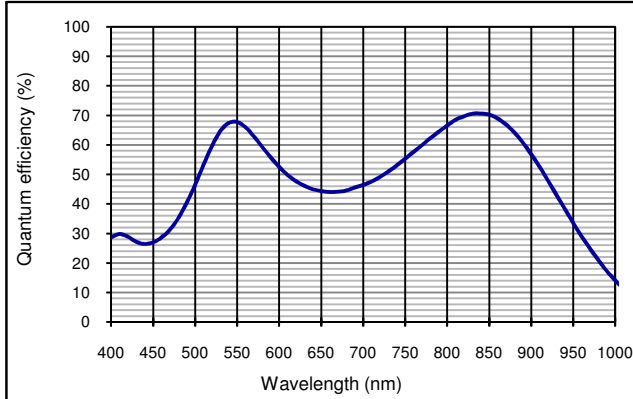
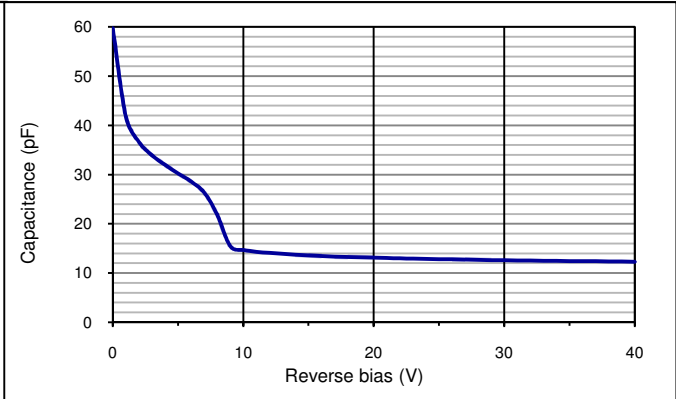
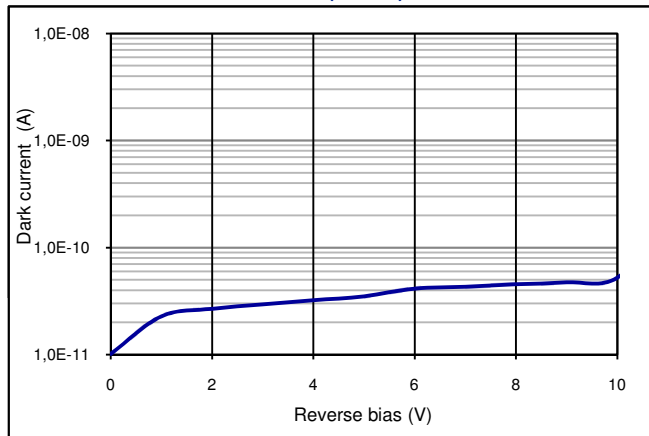
Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	Number of elements		4 quadrants			
	Active area	total, excluding hole and gaps	6.2			mm <sup>2</sup>
	Active area	per element	1.52			mm <sup>2</sup>
	Gap	between elements	40			µm
$I_D$	Dark current	$V_R = 5 V$ , per element		35	400	pA
$C$	Capacitance	$V_R = 5 V$ , per element		30		pF
	Responsivity	$V_R = 0 V$ ; $\lambda = 850 nm$ ; $R_L = 50 \Omega$	0.4	0.48		A/W
$t_R$	Rise time	$V_R = 5 V$ ; $\lambda = 850 nm$ ; $R_L = 50 \Omega$		2		ns
$V_{BR}$	Breakdown voltage	$I_R = 2 \mu A$	10			V
	Photo current uniformity	$\lambda = 850 nm$		5	10	%

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**Preliminary**
**Quantum efficiency (23 °C)**

**Capacitance as fct of reverse bias (23 °C)**

**Dark current as fct of bias (23 °C)**

**Electro-optical characteristics of VCSEL @ 25 °C**

Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
$\lambda$	Emission wavelength	$I_F = 6 \text{ mA}$	830	850	860	nm
$I_{TH}$	Threshold current		0.4	0.9	1.4	mA
$I_{TH}$	Threshold current	$T = -40 \dots 90 \text{ °C}$	0.4		2.5	mA
$P_{opt}$	Optical output power	$I_F = 6 \text{ mA}$		2.0		mW
$\eta_s$	Slope efficiency		0.27		0.55	W/A
$\Delta\eta_s/\eta_s/\Delta T$	Variation of $\eta_s$	$T = -40 \dots 25 \text{ °C}$ & $T = 25 \dots 90 \text{ °C}$		0.45	0.6	%/K
$R_S$	Differential series resistance	$I_F = 6 \text{ mA}$	25	50	65	$\Omega$
$V_{3db}$	3 dB modulation bandwidth	$I_F = 6 \text{ mA}$	3			GHz
$t_R/t_F$	Rise and fall time	20 % ... 80 %; ER = 10 dB; $I_F = 6 \text{ mA}$		70	80	ps
RIN	Relative intensity noise	$I_F = 6 \text{ mA}$		-130	-120	dB/Hz
$\Delta\lambda$	Spectral bandwidth	$I_F = 6 \text{ mA}$ ; RMS		0.3	0.65	nm
$\theta$	Beam divergence	$I_F = 6 \text{ mA}$ ; full width $1/e^2$		25	30	°

**European, International Sales:**

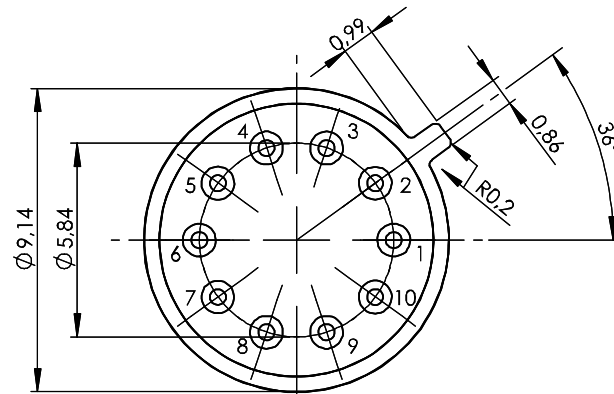
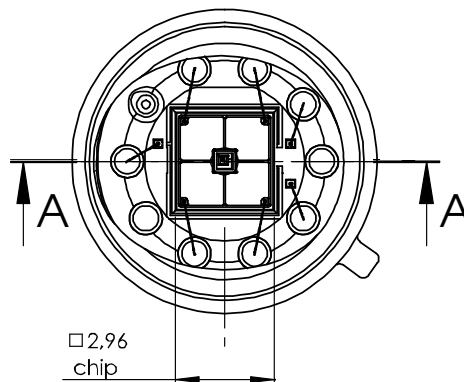
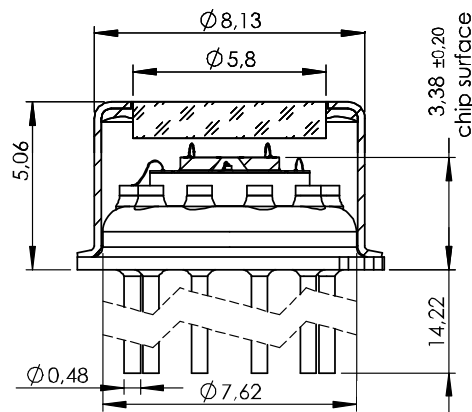

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**Preliminary**
**Technical Drawing**

pin assignment										
pin	1	2	3	4	5	6	7	8	9	10
connection	n. c.	anode laser	anode 1	anode 2	n. c.	cathode chip	case	anode 3	anode 4	cathode Laser


**A-A**


Disclaimer: Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

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