

# iC-LQNP

## PULSE AND AC LIGHT SENSOR



iC-LQNP is a sensor for pulse and alternating light with a monolithically integrated photodiode. The device supersedes conventional photoreceivers, such as those in light barriers, for example.

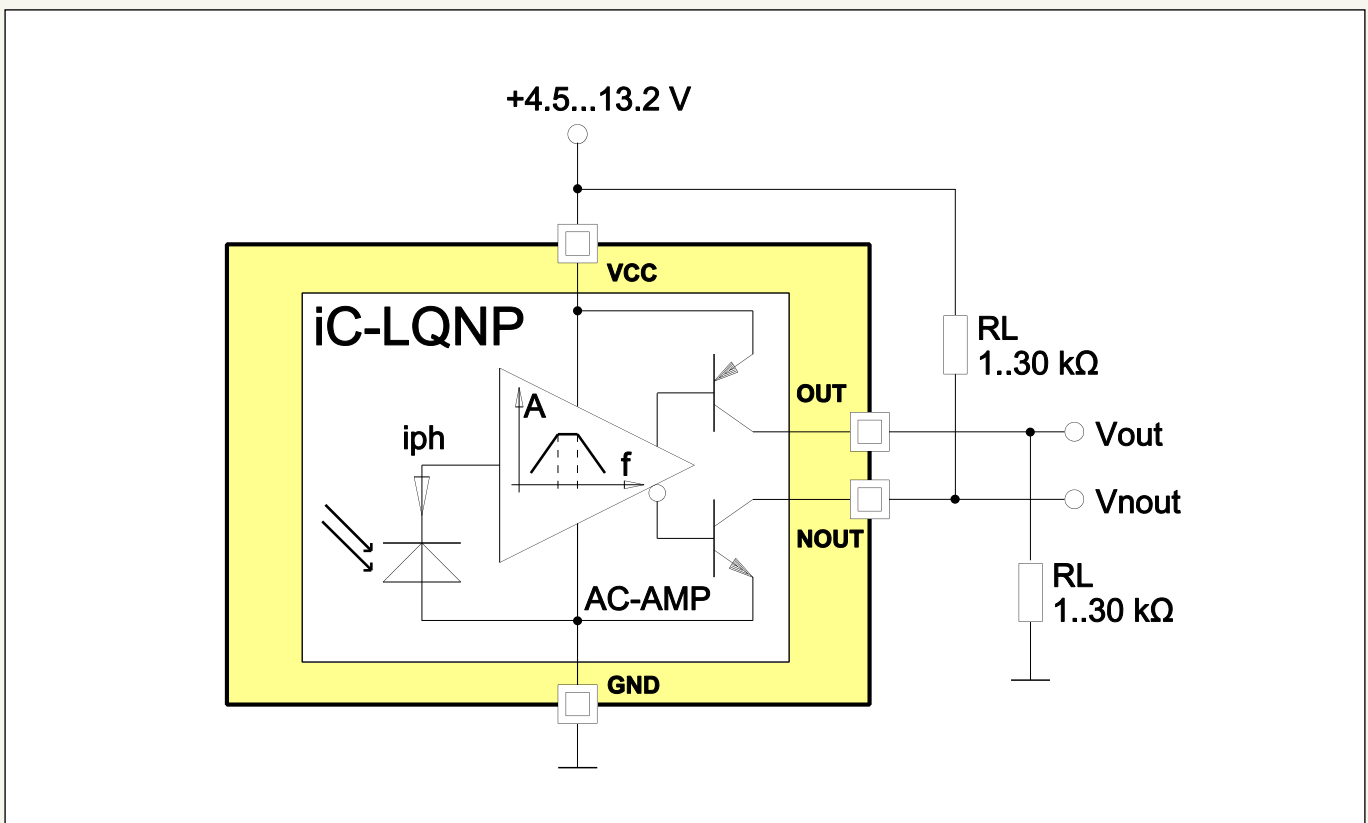
Alternating photocurrents are amplified whereas the photocurrents caused by background light are electronically suppressed with over 60 dB (at 100 Hz).

### Applications

- Amplification of pulse and AC light signals
- Receiver for through beam, reflex and proximity sensors

### Features

- Fast response amplifier with on-chip photodiode
- High interference immunity due to monolithic design
- Active photodiode area of ca. 1 mm<sup>2</sup>
- Suitable for visible light and near infrared
- Integrated bandpass filter with 140 kHz center frequency
- Maximum gain obtained for pulse light of 1.4 μs and upwards
- High LF and DC (ambient) light suppression (70 klx)
- Transfer characteristics irrespective of ambient light level
- Fast recovery from flashes
- Analog current source output, transimpedance can be set by external resistor
- Single 5 to 12 V supply, low power consumption also with bright ambient light
- Options: customised COB packages





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The integrated amplifier forms a bandpass characteristic without using any external components. The highpass suppresses ambient light and low-frequency alternating light and the lowpass reduces high-frequency noise.

For visible light or near infrared the highest sensitivity for alternating light signals is reached at approximately 140 kHz; for pulse light this is reached at 1.4  $\mu$ s and upwards. The transimpedance can be selected within a range of approximately 1 to 10 M $\Omega$  via the external load resistor.

iC-LQNP is available as a 4-lead TO18 metal can package with a glass lens or flat window. Customised COB versions are also possible.

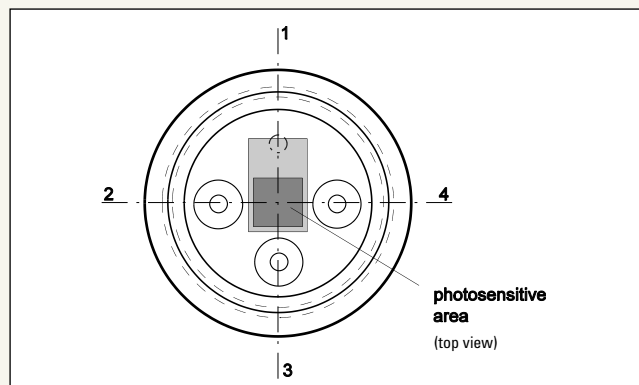
## Key Specifications

General	
Supply Voltage Range	4.5 to 13.2 V
Output Current NOUT OUT	0 to 2 mA -2 to 0 mA
Operational Temperature Range	-25 to +85 °C (extended range on request)

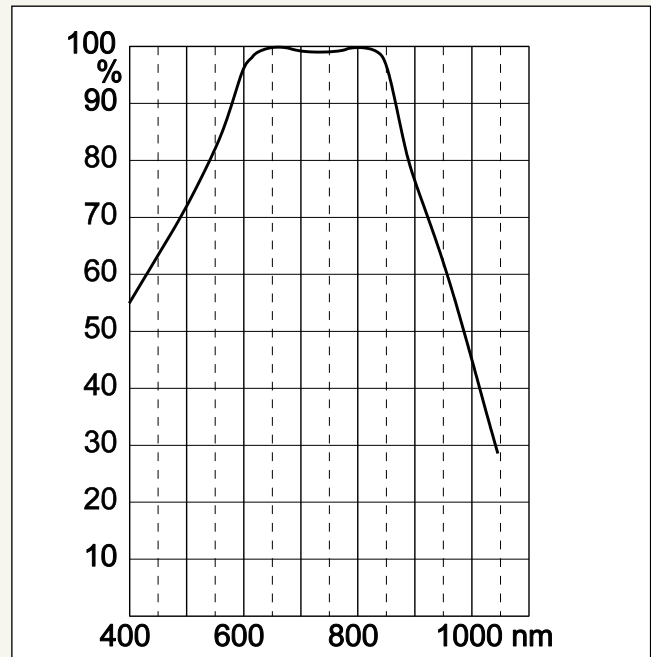
Photo Sensor	
Radiant Sensitive Area	typ. 1 mm <sup>2</sup>
Spectral Sensitivity	0.5 A/W max.

Photocurrent Amplifier	
Ambient Light Susceptibility standard illuminant A, T = 2856 K TO18-4F (flat cap) TO18-4L (lens cap)	typ. 70 klx typ. 10 klx
Pulse Light Amplification @ 850 nm VCC = 5 V, E(PD)pk = 35 $\mu$ W/cm <sup>2</sup> , tr = tf = 0.1 $\mu$ s, twpk = 1.4 $\mu$ s; TO18-4F TO18-4L	typ. 250 A/W typ. 1800 A/W
Power Flash Recovery Time E(PD)pk = 35 mW/cm <sup>2</sup> , twpk = 100 $\mu$ s	60 $\mu$ s max.
Bandpass Center Frequency RL = 1 k $\Omega$ , CL = 20 pF RL = 10 k $\Omega$ , CL = 20 pF	typ. 140 kHz typ. 120 kHz

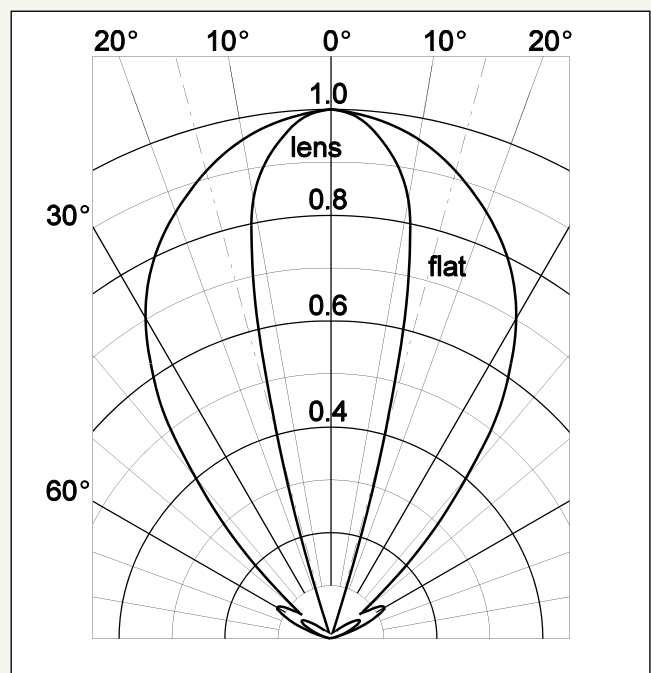
## Pin Configuration TO18-4 L/F



## Spectral Responsivity



## Directional Characteristic



## Pin Functions

No.	Name	Function
1	GND	Ground
2	OUT	Highside Current Output
3	VCC	+4.5 to +13.2 V Supply Voltage
4	NOUT	Lowside Current Output