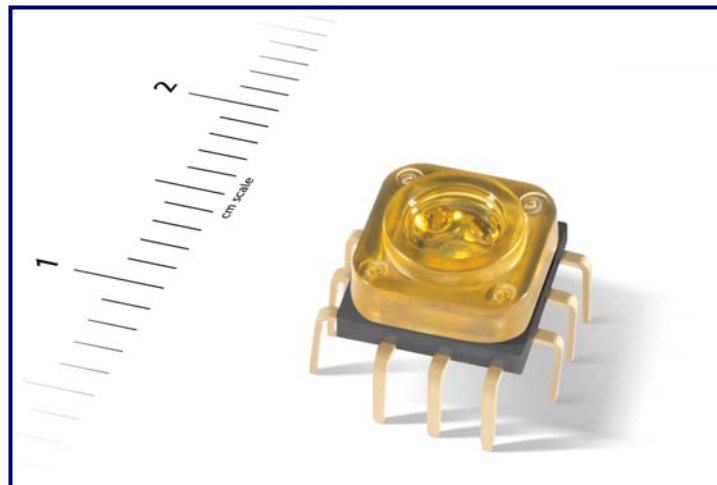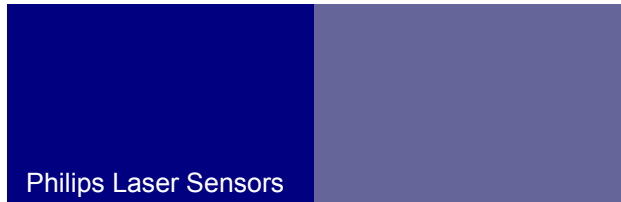*twin-eye laser*

PLN2020
twin-eye laser sensor

Complete navigation sensor that works on virtually all surfaces

Introduction

The Philips' PLN2020 twin-eye laser sensor is a high-precision, ultra-fast, low-power consuming, small-sized, single-component, laser-based tracking device for use in computer mice, identification devices, printers and mobile phones.
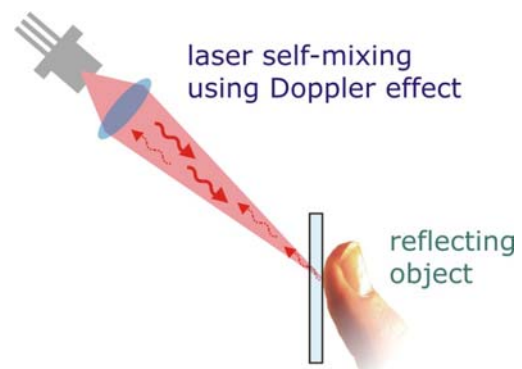

Philips Laser Sensors

General information

The PLN2020 is a fully integrated single-component, robust, self-aligning and small-sized (<180 mm^3) laser-based tracking device. The 11-pin 3.85-mm high twin-eye laser sensor has a printed circuit board footprint of a mere 6.8 mm x 6.8 mm and incorporates lenses for its two lasers in the package assembly. Thanks to a dedicated laser power control scheme, energy use is limited to a minimum while power management is maximized, making the device particularly useful for cordless mice.

The PLN2020 is based on laser tracking technology. It measures changes in position by sensing the scattered laser light that is reflected by the surface, and mathematically by on-chip logic and software, determining the direction and magnitude of the movement. It is capable of measuring extremely accurately at a wide range of speeds.

Key features

- Design-in simplicity
- Complete single integrated component solution (System-In-Package)
- 11-pin miniature square package
- Intelligent, built-in, multi-mode power management system
- Low-power operation and sleep modes
- Accurate optical navigation
- Smooth and rough surface navigation
- 3D motion sensor
- Accurate motion up to 500 mm/s (20 ips) with an extended motion range up to 1000 mm/s
- Micrometer resolution (800 cpi)
- Single 3.3 volt power supply
- SPI serial bus host interface
- High-speed serial port registers for programming and data transfer
- Embedded firmware can be upgraded and customized
- Active redundant protection system to ensure laser safety
- Lead-free wave solderable (or by manual soldering)
- No mechanical moving parts
- Insensitive to wear and tear

laser self-mixing using Doppler effect

reflecting object

The PLN2020 does not require a smooth surface, but can be used on virtually all light-scattering surfaces, even those with a relatively rough structure. Compact in dimensions, the PLN2020 is a true 'system-in-a-package' that is suitable for many applications. As there are no moving parts, and because of its self-aligning optical path, the application of the technology is simple and can be mass-produced in a cost-effective manner without applying expensive aligning procedures.

PHILIPS

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Eye safety compliance

The PLN2020 meets Class 1M eye safety requirements* and contains an active redundant protection system to ensure laser safety in case of internal and external hardware failure. Full support through sensor datasheets and application notes is available.

* Eye safety limits and classification levels are specified in the International Electrotechnical Commission document IEC 60825-1, Edition 1.2, 2001-08

Parameter	Min	Typ	Max	Unit
Free working distance	1.8	2.3	3.3	mm
Supply current "active mode"			15	mA
Supply current "idle mode"			2	mA
Supply current "power save mode"			40	µA
Power consumption "power save mode"			135	µW
Resolution		800		cpi
Maximum speed		1		m/s

Reference data PLN2020
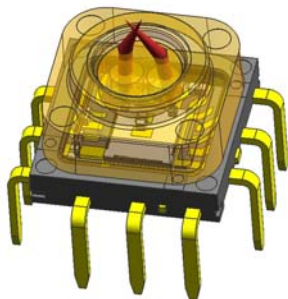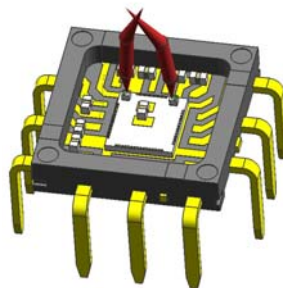
PLN2020 with lens   *PLN2020 without lens*

Block diagram PLN2020
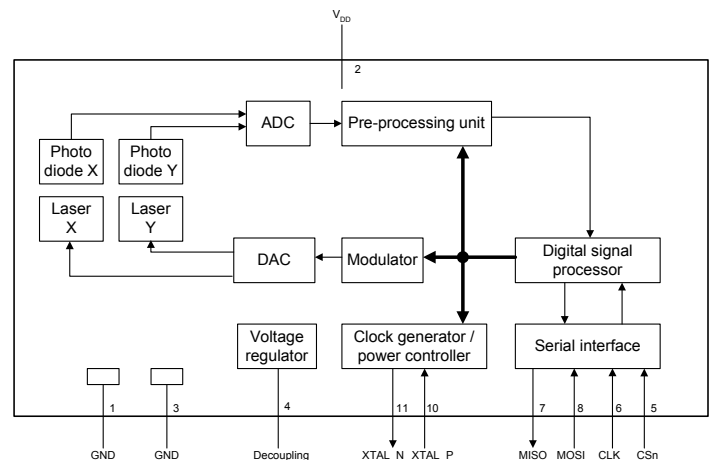
Applications

- PC notebook cordless mice
- mice for desktop PC's, portable PC's and workstations (corded or cordless)
- integrated input devices
- track-balls

Ordering information

The products are packed in trays of 144 pieces per tray. Ten trays are packed in a sealed ESD-bag and two bags are packed in an outer carton. This results in a minimum order quantity (MOQ) of 2880 pieces per carton.

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