

## Product Overview

### Description

The ADNB-3532 LED mouse bundle is a small form factor (SFF) LED illuminated navigation system. The bundle consists of an integrated chip-on-board (COB) LED mouse sensor ADNS-3530 and a SFF lens ADNS-3150-001.

The ADNS-3530 is a low- power optical navigation sensor. It has a new, low-power architecture and automatic power management modes, making it ideal for battery- and power-sensitive applications such as cordless input devices.

The ADNS-3530 is capable of high-speed motion detection – up to 20ips and 8G. In addition, it has an on-chip oscillator and integrated LED to minimize external components.

The ADNS-3530 along with the ADNS-3150-001 lens form a complete and compact mouse tracking system. There are no moving parts which means high reliability and less maintenance for the end user. In addition, precision optical alignment is not required, facilitating high volume assembly.

The bundle sensor is programmed via registers through a four-wire serial port. It is packaged in a 16 I/O surface mountable package.

Bundle Part Number	Part Number	Description
ADNB-3532	ADNS-3530	Integrated sensor
	ADNS-3150-001	Small form factor lens

### Features

- Low power architecture
- Small form factor
- Surface mount technology (SMT) device
- Self-adjusting power-saving modes for longest battery life
- High speed motion detection up to 20ips and 8G
- Self-adjusting frame rate for optimum performance
- Motion detect pin output
- Internal oscillator – no clock input needed
- Selectable 500 and 1000 cpi resolution
- Wide operating voltage: 2.7V-3.6V nominal
- Four wire serial port
- Minimal number of passive components
- Integrated chip-on-board LED

### Applications

- Optical Mice
- Optical trackballs
- Integrated input devices
- Battery-powered input device

## Theory of Operation

The ADNS-3530 is based on Optical Navigation Technology, which measures changes in position by optically acquiring sequential surface images (frames) and mathematically determining the direction and magnitude of movement.

The ADNS-3530 contains an Image Acquisition System (IAS), a Digital Signal Processor (DSP), and a four wire serial port.

The IAS acquires microscopic surface images via the lens and illumination system. These images are processed by the DSP to determine the direction and distance of motion. The DSP calculates the  $\Delta x$  and  $\Delta y$  relative displacement values.

An external microcontroller reads the  $\Delta x$  and  $\Delta y$  information from the sensor serial port. The microcontroller then translates the data into PS2, USB, or RF signals before sending them to the host PC or game console.

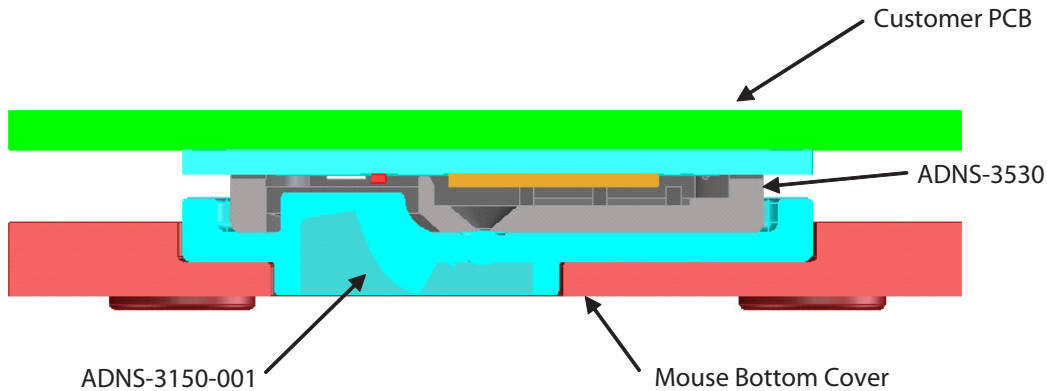
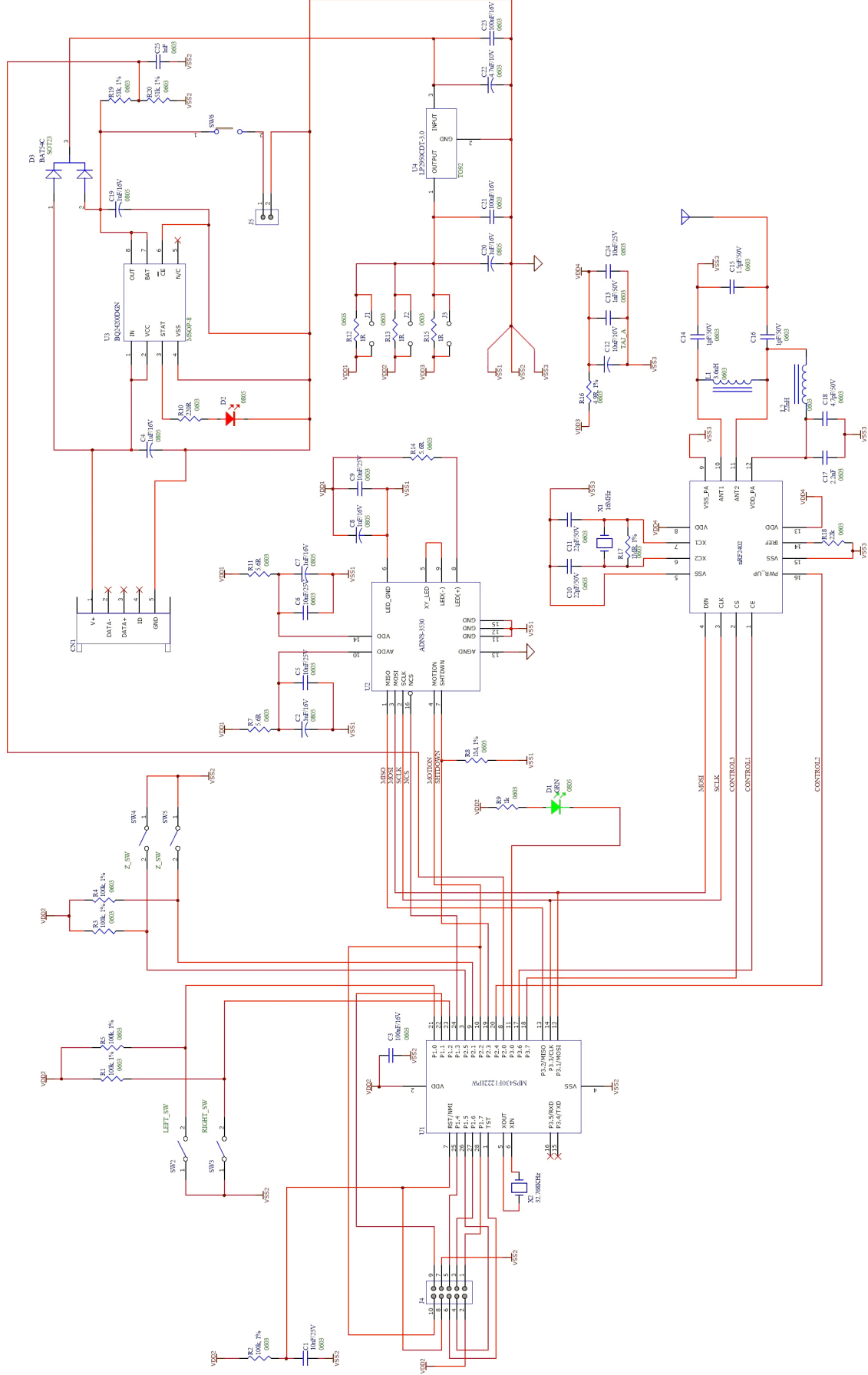


Figure 1. 2D Assembly drawing of ADNB-3532



**Figure 2. Schematic Diagram for Interface between ADNS-3530 and microcontroller**

#### Notes

The supply and ground paths should be laid out using a star topology.

## ADNB-3532 Key Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Units	Notes
Operating Temperature	T <sub>A</sub>	0		40	°C	
Power supply voltage	V <sub>DD</sub>	2.7		3.6	Volts	Including noise
Power Supply Rise Time	V <sub>RT</sub>	0.001		100	ms	0 to 2.8V
Supply Noise (Sinusoidal)	V <sub>NA</sub>			100	mVp-p	10 kHz – 50MHz
Serial Port Clock Frequency	f <sub>SCLK</sub>			1	MHz	Active drive, 50% duty cycle
Distance from Lens Reference Plane to Surface	Z	-0.1	0.97	+0.1	mm	Result in 0.1 mm DOF
Speed	S			20	In/sec	
Acceleration	a			8	G	

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