

Product Overview

Description

The ADNB-3552 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-3550 and a SFF lens ADNS-3150-001.

The ADNS-3550 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-3550 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-3550 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-3552	ADNS-3550	Integrated sensor
	ANDS-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-3550 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-3550 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 Δx and Δy relative displacement values.

An external microcontroller reads the Δx and Δy 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.

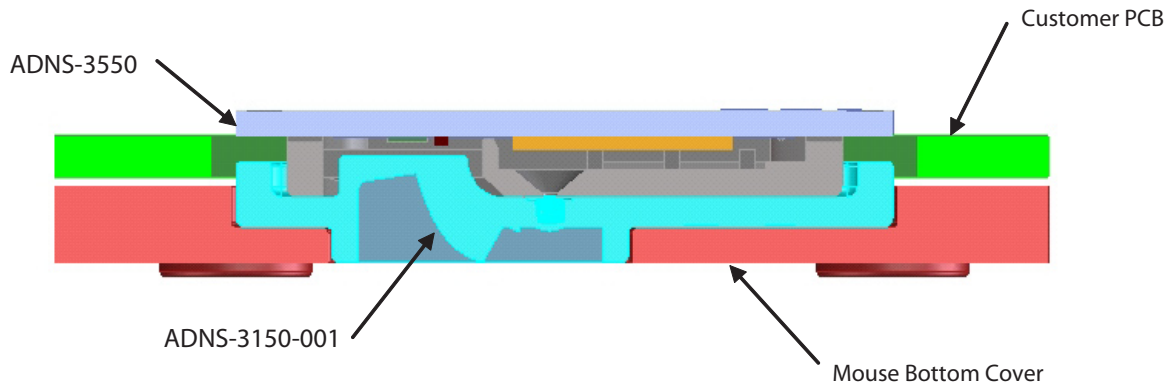


Figure 1. 2D Assembly drawing of ADNS-3550 (Mounted on the top side of customer PCB)

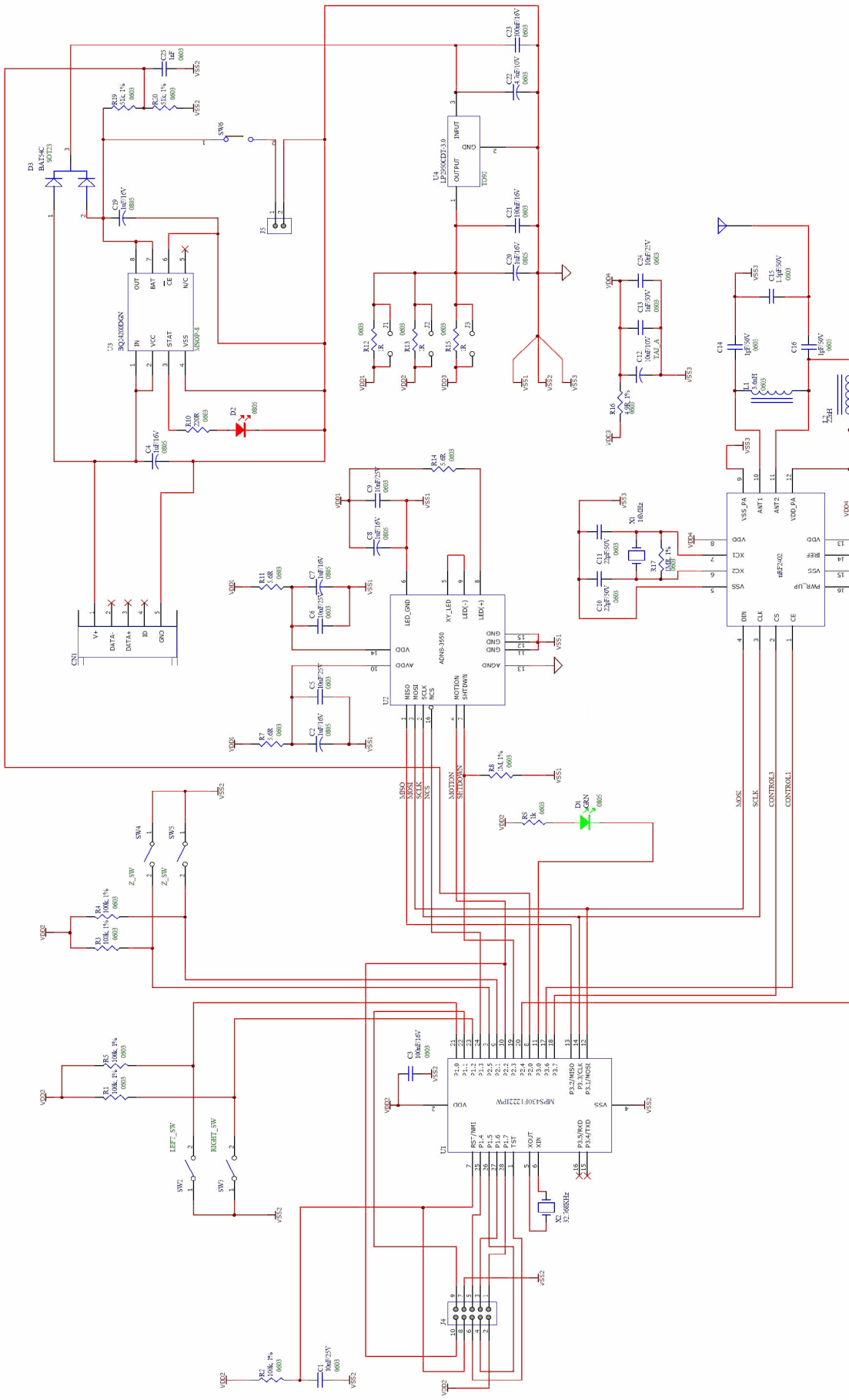


Figure 2 Schematic Diagram for Interface between ADNS-3550 and microcontroller

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_A	0		40	°C	
Power supply voltage	V_{DD}	2.7		3.6	Volts	Including noise.
Power supply rise time	V_{RT}	0.001		100	ms	0 to 2.8V
Supply noise (Sinusoidal)	V_{NA}			100	mV p-p	10kHz-50MHz
Serial Port Clock Frequency	f_{SCLK}			1	MHz	Active drive, 50% duty cycle.
Distance from lens reference plane to surface	Z	-0.1	0.97	+0.1	mm	Result in 0.1mm DOF
Speed	S			20	in/sec	
Acceleration	A			8	G	

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