

## Product Overview

### Description

Avago Technologies has produced a new optical mouse reference design kit. Based on the new Avago Technologies ADNS-5020-EN small form factor optical mouse sensor and the powerful Cypress CY7C63743 enCoRe™ USB microcontroller, this reference design kit provides a low cost and yet, feature-rich solution in one neat package.

The Avago Technologies ADNS-5020-EN optical mouse sensor, an 8-pin staggered dual inline package (DIP), is based on an optimized architecture with good navigation performance. It is able to measure changes in position by optically acquiring sequential surface images with auto frame rate feature and mathematically determining the direction and magnitude of movement.

The ADNS-5020-EN along with the ADNS-5100 lens, ADNS-5200 clip and HLMP-ED80-XX000 form a complete, compact optical mouse tracking system. There are no mechanical 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 sensor is programmed via registers through a three-wire serial port.

The Cypress CY7C63743 enCoRe™ is a revolutionary chip that integrates numerous common components, including breakthrough crystal-less oscillator. The result is an overall reduction in board components and reduced system cost. The EPROM based microcontroller allows easy firmware modification, as well as storage of Vendor and Product ID™s without an external EEPROM.

### Features

- Complete optical mouse reference design kit
- ADNS-5020-EN small form factor optical mouse sensor
- Optimized architecture for simpler circuitry and minimal number of passive components
- No mechanical moving parts for easy maintenance and high reliability
- SmartSpeed self-adjusting frame rate for optimum performance
- Serial port burst mode for fast data transfer
- 500 or 1000 cpi selectable resolution
- Single 5.0 volt power supply
- Three-wire serial port along with reset (NRESET) pin
- Cypress enCoRe™ CY7C63743 USB controller
- USB or PS/2 interface for PC connection
- Proprietary 8-bit RISC processor, USB and PS/2-optimized interface for high system performance
- 8K Bytes of internal EPROM provided to enable easy customization of firmware and lower cost
- Conforms to USB suspend mode specifications

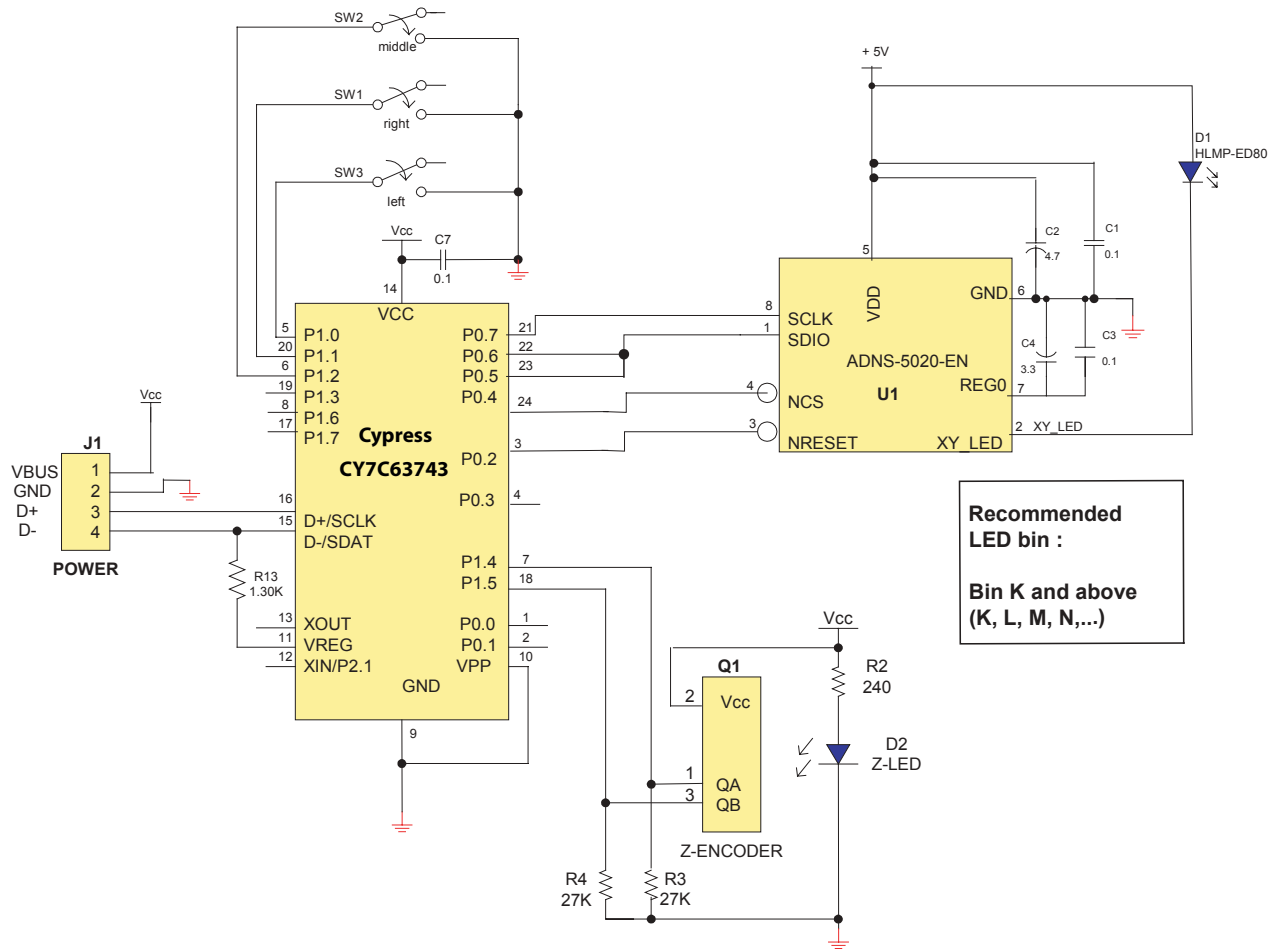


Figure 1. Circuit-level block diagram for ADNK-5023-CY02 designer's kit optical mouse using the Avago Technologies ADNS-5020-EN optical mouse sensor.

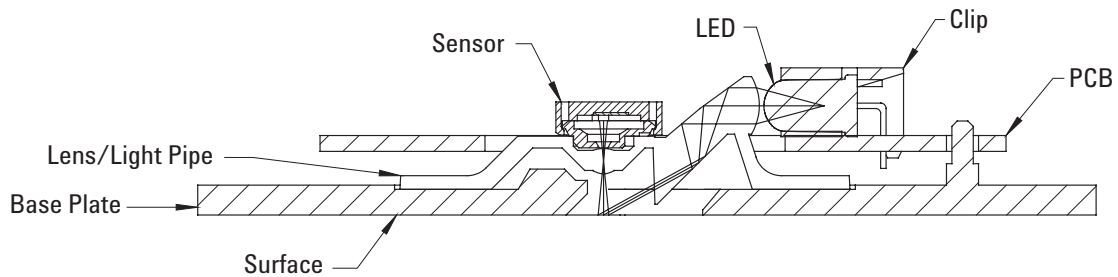


Figure 2. Sectional view of PCB assembly highlighting all optical mouse components (optical mouse sensor, clip, lens, LED, PCB, and base plate).

## Kit Components

The designer's kit contains components as follows:

| Part Number          | Description   | Name                  | Quantity |
|----------------------|---|-----------------------|----------|
| ADNK-5023-CY02 Mouse | Reference Design Mouse  | Reference Design Unit | 1        |
| ADNS-5020-EN         | Solid-State Optical Mouse Sensor  | Sensor                | 5        |
| ADNS-5100            | Round Lens Plate  | Lens                  | 5        |
| ADNS-5100-001        | Trim Lens Plate   | Lens                  | 5        |
| ADNS-5200            | LED Assembly Clip (Transparent)   | LED Clip              | 5        |
| HLMP-ED80-XX000      | 639 nm T 1 ¼ (5 mm) Diameter LED  | LED                   | 5        |
| ADNK-5023-CY02<br>CD | Includes Documentation and Support Files for ADNK-5023-CY02<br><br>Documentation<br>a. ADNS-5020-EN Data Sheet<br>b. CY7C63743 Data Sheet<br>c. ADNS-5100 Data Sheet<br>d. ADNS-5200 Data Sheet<br>e. HLMP-ED80-XX000 LED Data Sheet<br><br>Hardware Support Files<br>a. ADNK-5023-CY02 BOM List<br>b. ADNK-5023-CY02 Schematic<br>c. IGES Base Plate Feature File<br>d. Gerber File<br><br>Software Support Files<br>a. Microcontroller Firmware |                       | 1        |

## Ordering Information

For ordering information, please contact your local Avago Technologies sales representative. (800)235-0312, visit the website at <http://www.avagotech.com/>

For product information and a complete list of distributors, please go to our web site: [www.avagotech.com](http://www.avagotech.com)

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