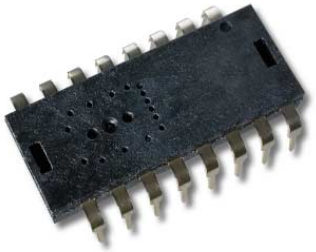
Agilent HDNS-2000 Optical Mouse Sensor

Product Brief



Description

You Can Use the Mouse Wherever You Want: Innovative Ball-less Mouse by Agilent

The HDNS-2000 is a low cost reflective optical sensor that provides a non-mechanical tracking engine for implementing a computer mouse. It is based on optical navigation technology which measures changes in position by optically acquiring sequential surface images for 1500 times per second and mathematically determining the direction and magnitude of movement precisely at 400 counts per inch and at speeds up to 12 inches per second.

Agilent provides the complete tracking engine kit. The CMOS based sensor is mounted in a plastic package and designed to be used with the HDNS-2100 (Lens), HDNS-2200 (LED Clip) and HLMP-ED80 (639 nm LED illumination source).

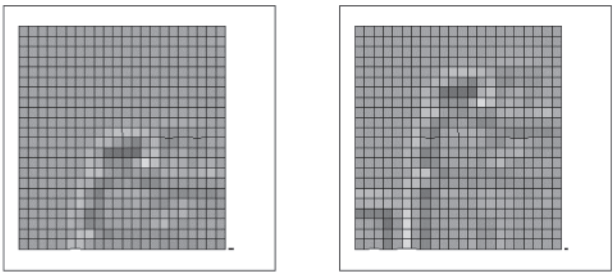
Theory of Operation

The sensor acquires an image 1500 times a second, and compares the most recent image to past images to determine the direction and speed of movement.

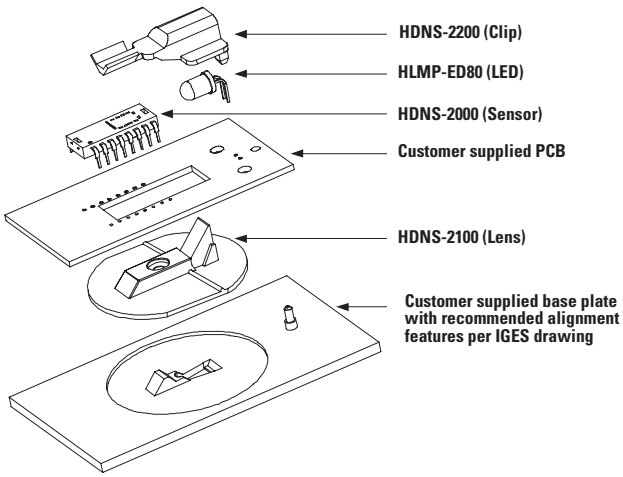
Features

- **No mechanical moving parts**
- **Complete compact 2D sensor**
- **Standard 3-button mode**
- **PS/2 or quadrature output**
- **Smooth surface navigation**
- **Accurate motion up to 12"/sec**
- **No more ball slipping**
- **Cool and sharp design**
- **No gravity required**
- **High reliability**
- **Maintenance free**
- **Light weight and ergonomic**
- **No ball, no choke hazard**
- **Eye safe illumination**
- **Power saving during no motion**

Navigation by Two Images Comparison



Easy Assembly



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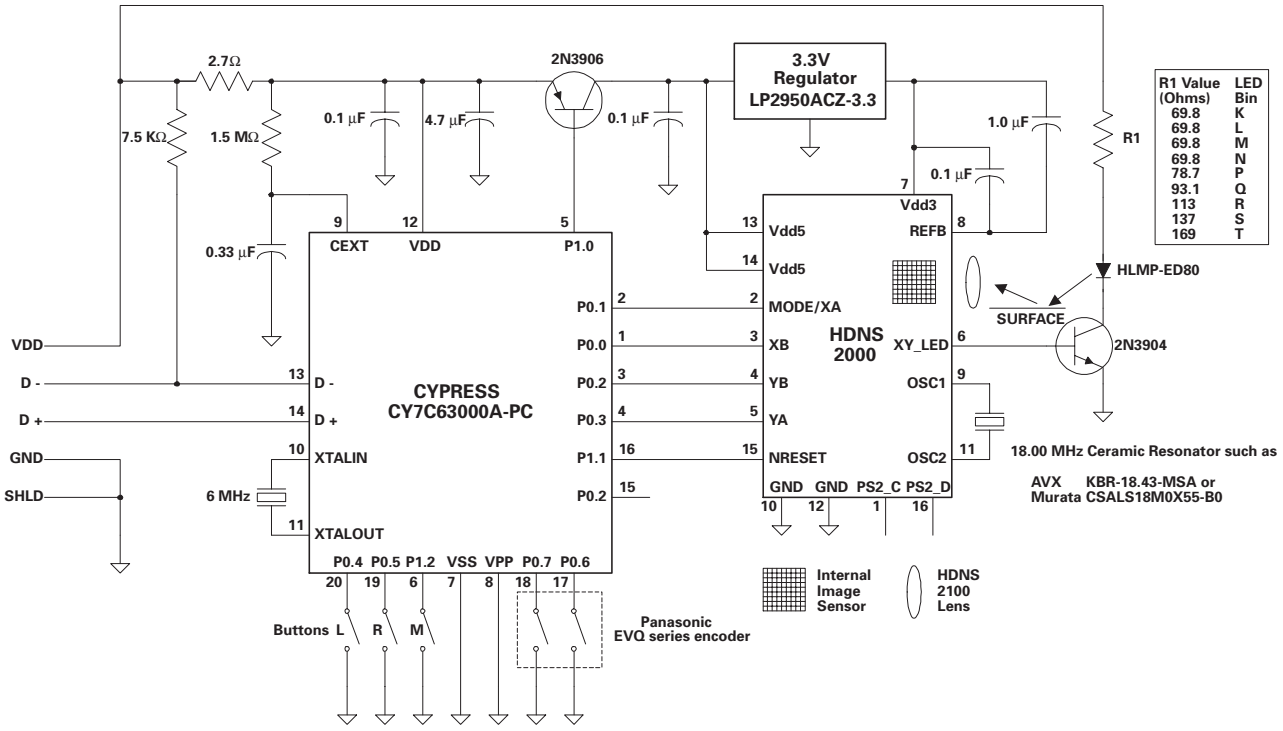
Schematic of USB Mouse



HDNS-2000 Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Operating Temperature	T_A	0		40	C	
Supply Voltage	V_{DD3}	3.15	3.3	3.45	V	
Supply Voltage	V_{DD5}	4.25	5.0	5.5	V	
Supply Current (mouse moving)	I_{DD3}		9.3	15.5	mA	
Supply Current (mouse moving)	I_{DD5}		4.7	9.5	mA	Pin 6 = 0.6 V
Supply Current (mouse not moving)	I_{DD5}		1.9		mA	Pin 6 = 0.6 V
Clock Frequency	CLK	17.4	18.432	18.7	MHz	Set by ceramic resonator
Resonator Impedance	X_{RES}			40	Ω	
Reset Capacitor	C_{RESET}	0.001	0.22	10.0	µF	
Depth of Focus			0.5		mm	
Speed	S	0 0		12 30	in/sec cm/sec	
Acceleration	ACC	0		0.15	g	
Light level onto IC	IRR_{INC}	40		25000	mW/m^2	λ = 639 nm

www.semiconductor.agilent.com

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