OM36FPS

PS/2
MCU+Sensor 2-in-1
Optical Mouse IC

Product Specification

DOC. VERSION 1.0

ELAN MICROELECTRONICS CORP.

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1 General Description

The OM36FPS IC is integrated with a PS/2 Micro-controller Unit (MCU) for computer optical mouse utilization. It is housed in a unique 14 pins staggered dual in-line DIP like package for 3D3K application. The chip has a resolution of 800 dots per inch (DPI) and catches the surfaces images at 3200 times per second. Its tracking speed is up to 20 inches per second (IPS).

2 Features

- Optical sensor and PS/2 MCU are integrated into a single chip
- Up to 20 IPS high speed motion detection
- Frame rate is up to 3200 frames per second
- 5 volt power supply
- Built-in 3.3V and 1.8V voltage regulators
- 14-pin staggered DIP
- The resolutions are 800 dpi.
- Supports 3D3K and Z/2 mouse scrolling
- Two operating modes, Active and Standby modes
- Automatic Standby mode (takes effect after no motion elapses for more than 1 second)
- *Conform with Green Products protocol

NOTE

These are all Green Products which do not contain hazardous substances

3 Pin Configuration (Package)

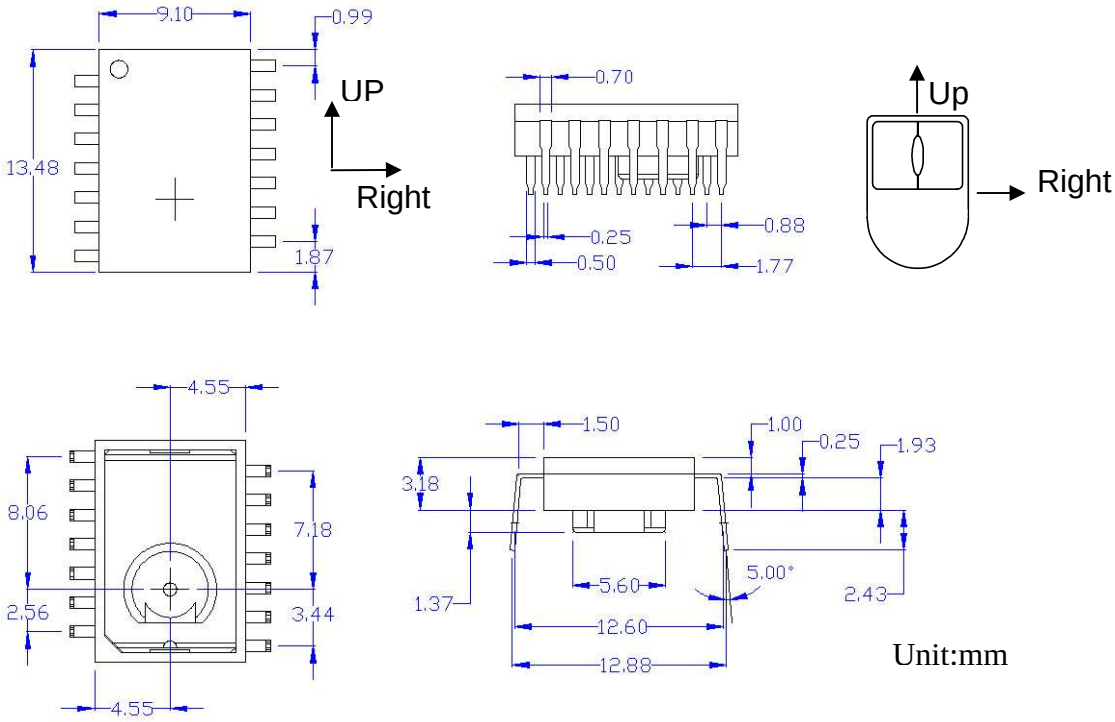


Figure 3-1 OM36FPS outline

4 Functional Block Diagram

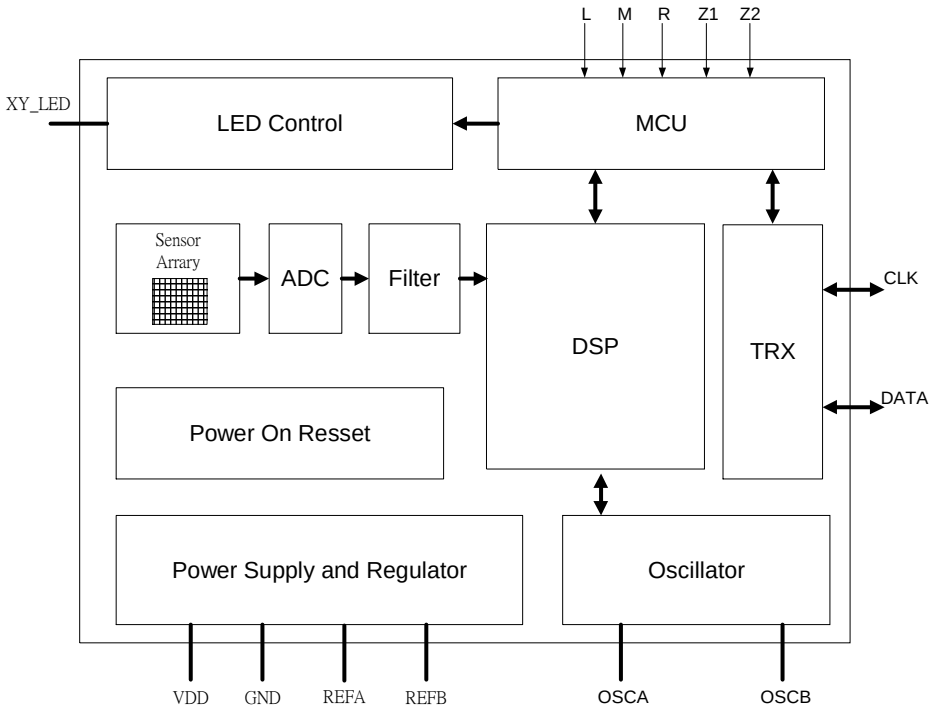
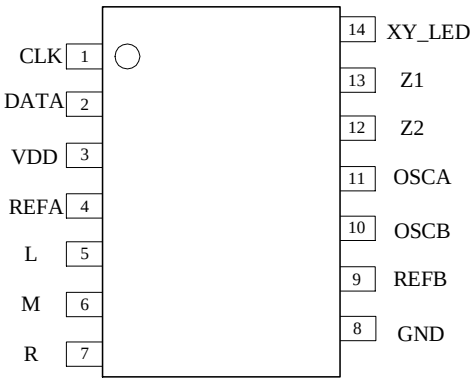


Figure 4-1 OM36FPS Functional Block Diagram

5 Pin Descriptions



Pin No.	Symbol	I/O	Description
1	CLK	I/O	PS/2 CLK
2	DATA	I/O	PS/2 DATA
3	VDD	-	5 V DC power supply
4	REFA	-	3.3V Reference
5	L	I	Left key
6	M	I	Middle key
7	R	I	Right key
8	GND	-	Ground
9	REFB	-	1.8V Reference
10	OSCB	-	Oscillator
11	OSCA	-	
12	Z2	I	Scroller
13	Z1	I	
14	XY_LED	O	LED control

6 Absolute Maximum Rating

Parameter	Symbol	Min.	Max	Unit	Notes
Storage Temperature Range	Tstr	-40	85	℃	-
Operating Temperature Range	Totr	-15	40	℃	-
Lead Solder Temperature	-	-	245	℃	For 10 seconds, 1.6mm below seating plane.
Supply Voltage	VDD	-0.5	5.5	V	-
Input Voltage	Vin	-0.5	5.5	V	Pin1, Pin2, Pin14
		-0.5	3.6	V	All GPIO pins except Pin1, Pin2, Pin14
ESD	ESD	-	2	KV	All pins, human body model
Distance from Lens Reference Plane to Surface Plane	D	2.2	2.4	mm	This distance actually depends on the lens. 2.2 to 2.4 mm is just the most popular design range. Verify and confirm with your lens supplier for the best distance.

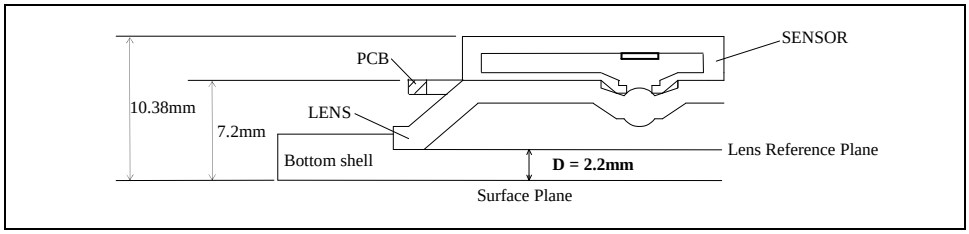


Figure 6-1 Distance from Lens Reference Plane to Surface Plane

7 DC Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max	Unit	Notes
Supply Voltage		VDD	4.0	5.0	5.5	V	
DC Reference A		VrefA	3.0	3.3	3.6	V	
DC Reference B		VrefB	1.6	1.8	2.0	V	
Input Low Voltage		V_{IL}	-	-	0.8	V	
Input High Voltage		V_{IH}	2.0	-	-	V	
Output Low Voltage		V_{OL}	-	0	0.5	V	
Output High Voltage		V_{OH}	2.8	3.3	3.6	V	
Output Low Current		I_{OL}		10		mA	
Output High Current		I_{OH}	-	-10	-	mA	
Resolution		Res	-	800	-	DPI	
Speed		S	-	20	-	in/sec	
Clock Frequency		FCLK	-	24	-	MHz	
Sensor Frame Rate		fframe	-	3000	3200	frames/sec	
LED Current (Average)		I_LED	2.0	-	17	mA	P_Bin LED R_LED=51Ω
DC Supply Current	Mouse Active	IDDACT	-	6.6	-	mA	No load on GPIO. Excluding LED current.
	Standby	IDDSTB	-	3	-	mA	

8 Application Circuit

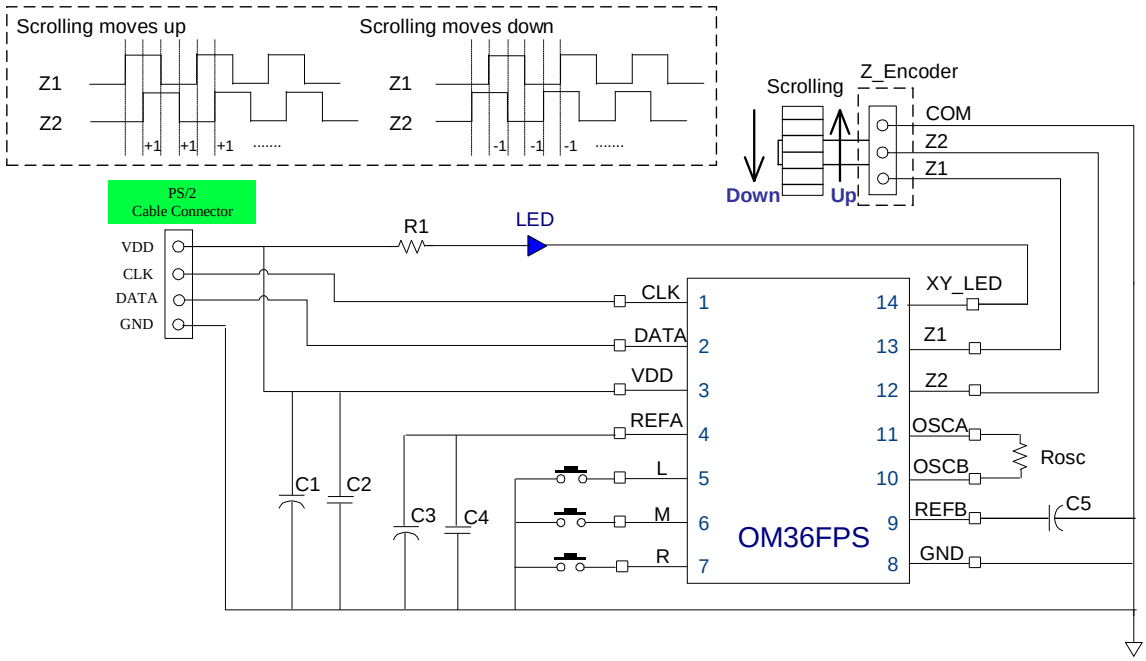


Figure 8-1 MODE-I for Basic Circuit

Where**: *R1:*** *33 ~51 Ohm,* ***Rosc:*** *62K Ohm,* ***C1:*** *10uF,* ***C2:*** *0.1uF,* ***C3:*** *10uF,* ***C4:*** *0.1uF,* ***C5:*** *4.7uF*

NOTE

1. *For the P bin LED (3600- 4700mcd), the LED maximum average current (when working on black surfaces) of LED is about 17mA and the LED minimum average current (when working on white surfaces) is 2mA with R1=51 Ohm.*
2. *If the LED illumination is less than P bin, then R1=33 Ohm is recommended. It will allow the LED maximum average current to reach 25mA.*
3. *The cable connector is better located at the left side of the sensor to shorten the track length of CLK and DATA.*
4. *C1, C2, C3, C4, C5 and Rosc must be as close to sensor as possible.*
5. *A Large and complete ground is better than several small and separated grounds.*

9 PCB Through-Holes (Vias) Layout

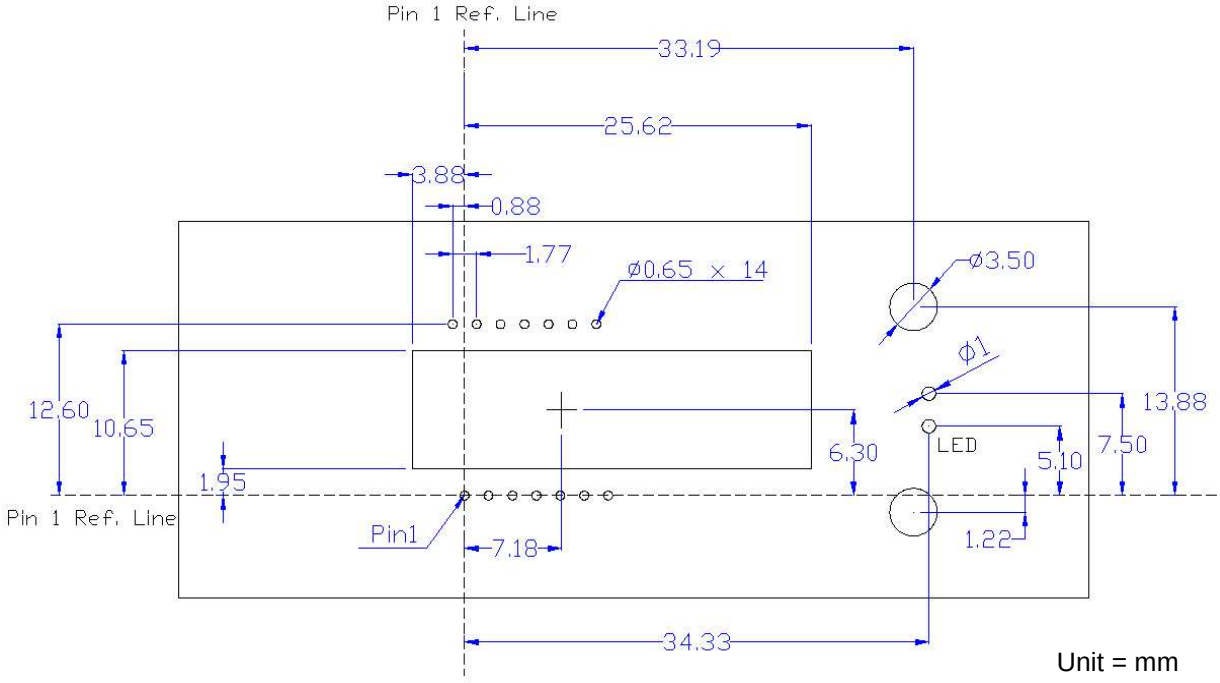


Figure 9-1 PCB Vias Layout for OM36FPS

10 Package Type

MCU+Sensor 2-in-1 Optical Mouse IC	Package Type	Pin Count
OM36FPS	OMD14	14 pins

Where: "**FP**" stands for "OMD14" package type
"**S**" stands for compliance with Sony SS-00259 standard