Genesys Logic, Inc.

GL603USB-XP2P / GL603USB-A-XP2P

USB / PS2

All-in-1 Mouse Controller

Datasheet

Revision 1.20

Aug. 11, 2003

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Revision History

Revision	Date	Description
1.00	05/01/2003	First formal release
1.10	06/30/2003	Changed 3D5B optical sensor circuit R1 and R2 from 47K to 47K~100K
1.20	08/11/2003	Changed Figure 4.6 and 4.12 application circuit

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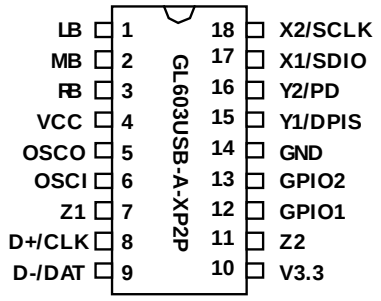
GL603USB-A-XP2P (3D3B)

All in 1 USB/PS2 Mouse Controller

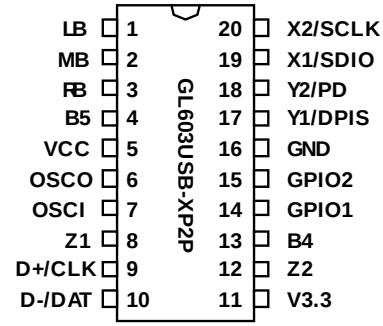
Features

- Fully CMOS Static Design
- 8 Bits RISC-like Micro Controller
- 1.5Mbps USB SIE engine
- 6Mhz external clock
- Internal switch for USB D+/D-and PS2 CLK/Data I/O
- On chip 3.3V output
- 5V operation voltage
- 18 / 20 pin PDIP, SOIC Package
- 0-40ºC operation temperature

3D3B Package Type : 18 PDIP/SOIC



3D5B Package Type : 20 PDIP/SOIC



Mouse Functions

- Microsoft 3D Intellimouse and IBM PS/2 mouse compatible
- GL603USB-A-XP2P supports 3D3B
- GL603USB-XP2P supports 3D5B
- Z axis support two kinds of scroller input (mechanical and optomechanical)

Sensor Support

- Support Traditional Ball Type Sensor
- Support PixArt PAN101B Optical Sensor
- Support Agilent HDNS-2000 Optical Sensor
- Support Agilent ADNS-2051 Optical Sensor
- Support Agilent ADNS-2610 Optical Sensor
- Support Agilent ADNS-2620 Optical Sensor

Power Management

- Suspend current < 500 uA

Special Function

- Support Agilent ADNS-2051 Optical Sensor 400dpi/800dpi selection
- Support Traditional Ball Type Sensor with 4 Bit ADC auto reference function

CHAPTER 1 GENERAL DESCRIPTION

The Genesys Logic XP2P series is the most powerful USB/PS2 combo mouse controller. GL603USB-XP2P is suit for 3D5B(buttons) application with 20 pin PDIP/SOIC package and GL603USB-A-XP2P is suit for 3D3B(buttons) application with 18 pin PDIP/SOIC package. It can adopt with Agilent HDNS-2000, ADNS-2051, ADNS-2610, ADNS-2620 and PixArt PAN101B optical sensor or the traditional ball type mouse. The user may use the GL603USB-XP2P to design almost all style of mouse easily.

CHAPTER 2 FEATURES

- Fully CMOS Static Design.
- 8 Bits RISC-like Micro Controller.
- 1.5Mbps USB SIE engine.
- Low-cost and powerful solution for PS/2 and low-speed USB combo mouse.
- USB Specification Compliance.
  - Conforms to USB 1.5Mbps Specification, Version 1.1
  - Conforms to USB HID Class Specification, Version 1.1
  - Support 1 device address and 2 endpoints(include endpoint 0).
- Integrated USB transceiver with open drain I/O capability.
  - In PS/2 mode, D+ used as CLK and D- used as DATA.
  - Use legacy USB cable and an USB to PS/2 converter to connect PS/2 port.
- On-chip 3.3 V output
  - No external regulator required.
- 6 MHz external clock.
- 5V operation voltage.
- Internal power-on reset(POR).
- Internal power-fail detector.
- Supports suspend/normal mode power management
  - Suspend current lower than 500uA for whole mouse system.
- Microsoft 3D Intellimouse and IBM PS/2 mouse compatible
- Microsoft web mouse compatible.
- Z axis can support two kinds of scroller input(mechanical and optomechanical).
- Internal switch for USB D+/D- and PS2 CLK/Data I/O.
- Supports Agilent HDNS-2000, ADNS-2051, ADNS-2610 and ADNS-2620 optical sensor. It also supports 400/800 DPI selection via DPIS selection pin for ADNS-2051 only.
- Support PixArt PAN101B optical sensor.
- Support Traditional Ball Type Sensor with 4 Bit ADC auto reference function.
- 18/20 pin PDIP or SOIC package.

CHAPTER 3 PIN ASSIGNMENT

3.1 Pinouts

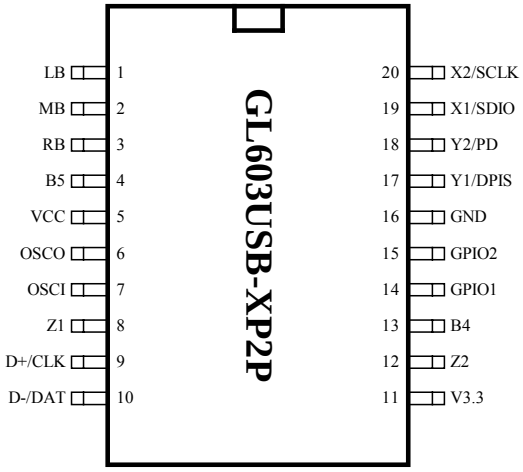


Figure 3.1 – GL603USB-XP2P (3D5B) Pinout Diagram

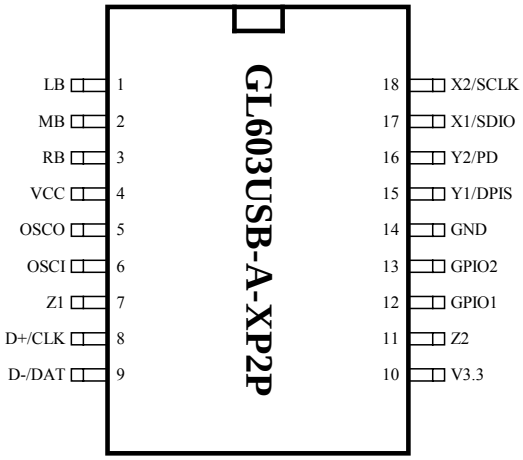


Figure 3.2 – GL603USB-A-XP2P (3D3B) Pinout Diagram

3.2 Pin Descriptions

Table 3.1 - Pin Descriptions

Pin Name	20Pin	18Pin	Type	Description	Note
LB	1	1	I	Left button input	Internal pull up resistor 10K Ω
MB	2	2	I	Middle button input	Internal pull up resistor 10K Ω
RB	3	3	I	Right button input	Internal pull up resistor 10K Ω
B5	4	-	I	The 5th button input	Internal pull down resistor 32K Ω
VCC	5	4	P	+5V power input	
OSCO	6	5	O	6 MHz ceramic resonator or crystal output	6MHz resonator or crystal
OSCI	7	6	I	6 MHz ceramic resonator or crystal input	6MHz resonator or crystal
Z1	8	7	I	Z axis input 1	Internal pull down resistor 32K Ω
D+/CLK	9	8	I/O	USB D+ or PS/2 clock	Need 7.5K Ω resistor to GPIO2
D-/DAT	10	9	I/O	USB D- or PS/2 data	Need 7.5K Ω pull up resistor to VCC
V3.3	11	10	O	3.3V output	a 0.1uF to 1uF capacitor should be added on external circuit for this pin
Z2	12	11	I	Z axix input 2	Internal pull down resistor 32K Ω
B4	13	-	I	The 4th button input	Internal pull down resistor 32K Ω
GPIO1	14	12	O	Power control (20mA driver capability)	Normal run=Low, Suspend=Vcc
GPIO2	15	13	I/O	PS2 enable	
GND	16	14	P	Ground	
Y1/DPIS	17	15	I/O	Y axis input 1 DPI selector for ADNS-2051 optical mouse	Internal pull down resistor 10K Ω
Y2/PD	18	16	I/O	Y axis input 2 Power down pin for ADNS-2051 optical mouse	Internal pull down resistor 10K Ω
X1/SDIO	19	17	I/O	X axis input 1 Serial data from Agilent sersor	Internal pull down resistor 10K Ω
X2/SCLK	20	18	I/O	X axis input 2 Serial clock to Agilent sersor	Internal pull down resistor 10K Ω

CHAPTER 4 APPLICATION CIRCUIT

4.1 GL603USB-XP2P

4.1.1 3D5B Ball Type Circuit

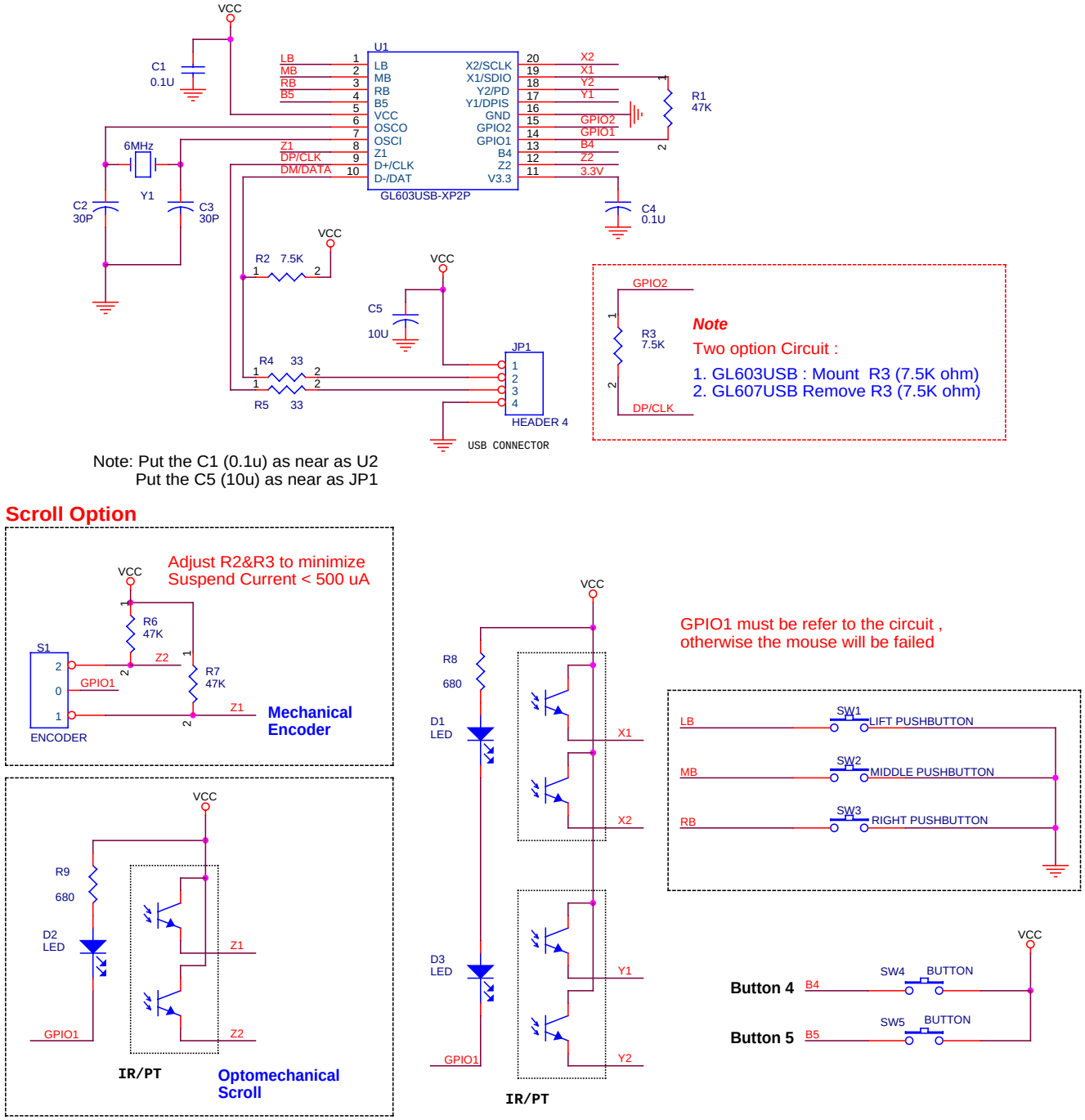


Figure 4.1 - GL603USB-XP2P 3D5B Ball Mouse

4.1.2 3D5B with HDNS-2000 Optical Sensor Circuit

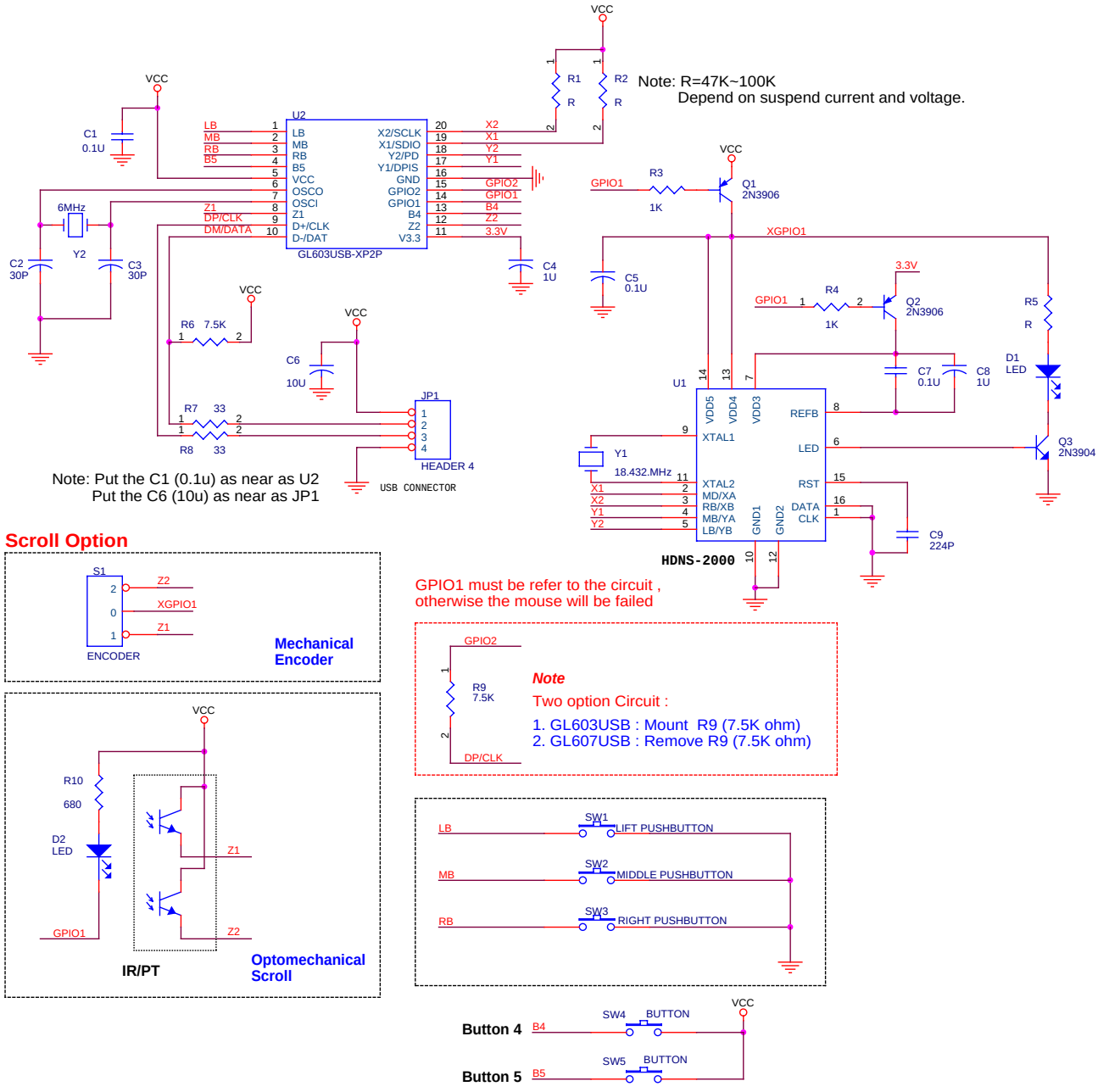


Figure 4.2 - GL603USB-XP2P 3D5B HDNS-2000 Optical Mouse

4.1.3 3D5B with ADNS-2051 Optical Sensor Circuit

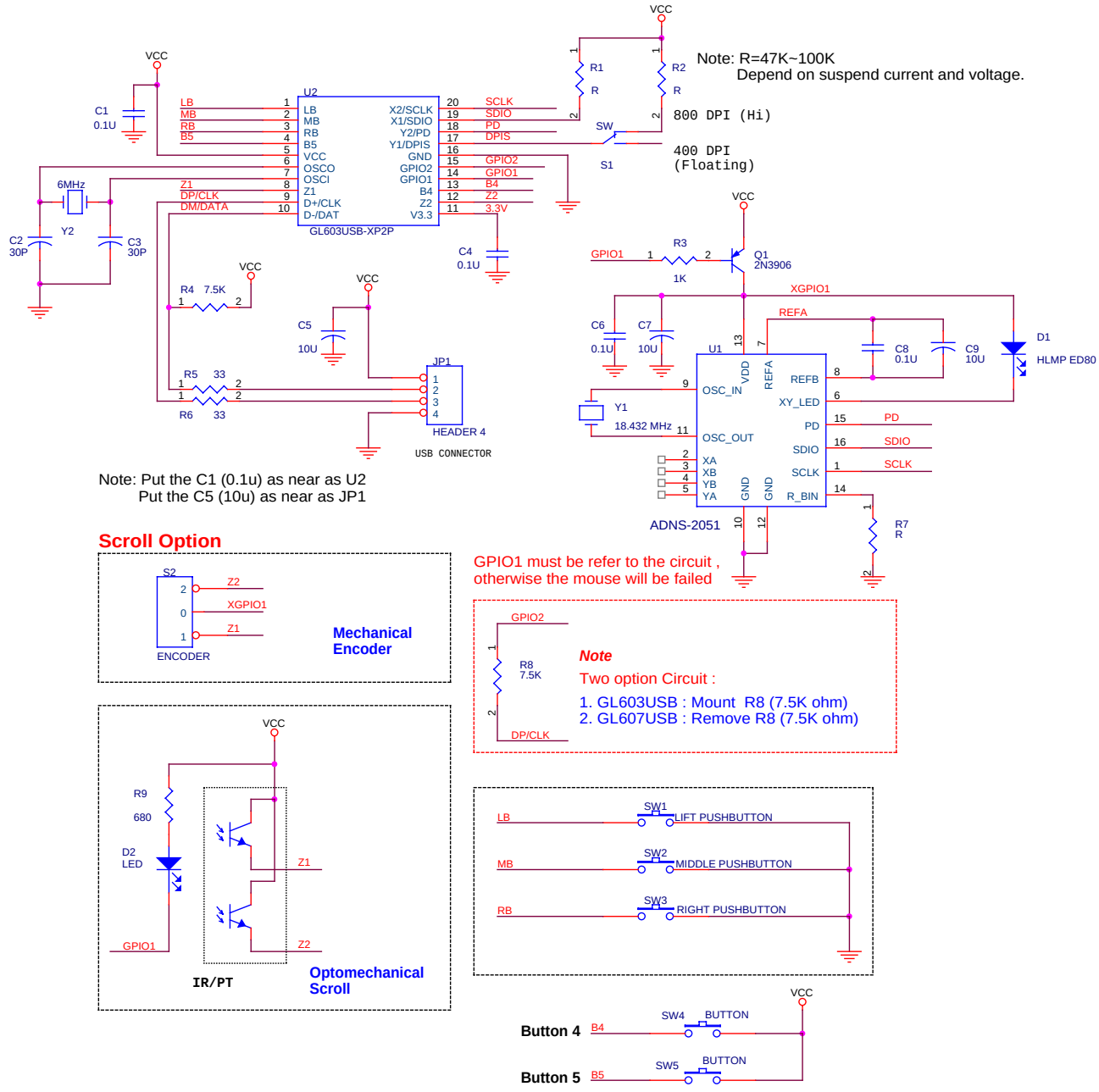


Figure 4.3 - GL603USB-XP2P 3D5B ADNS-2051 Optical Mouse

4.1.4 3D5B with ADNS-2610 Optical Sensor Circuit

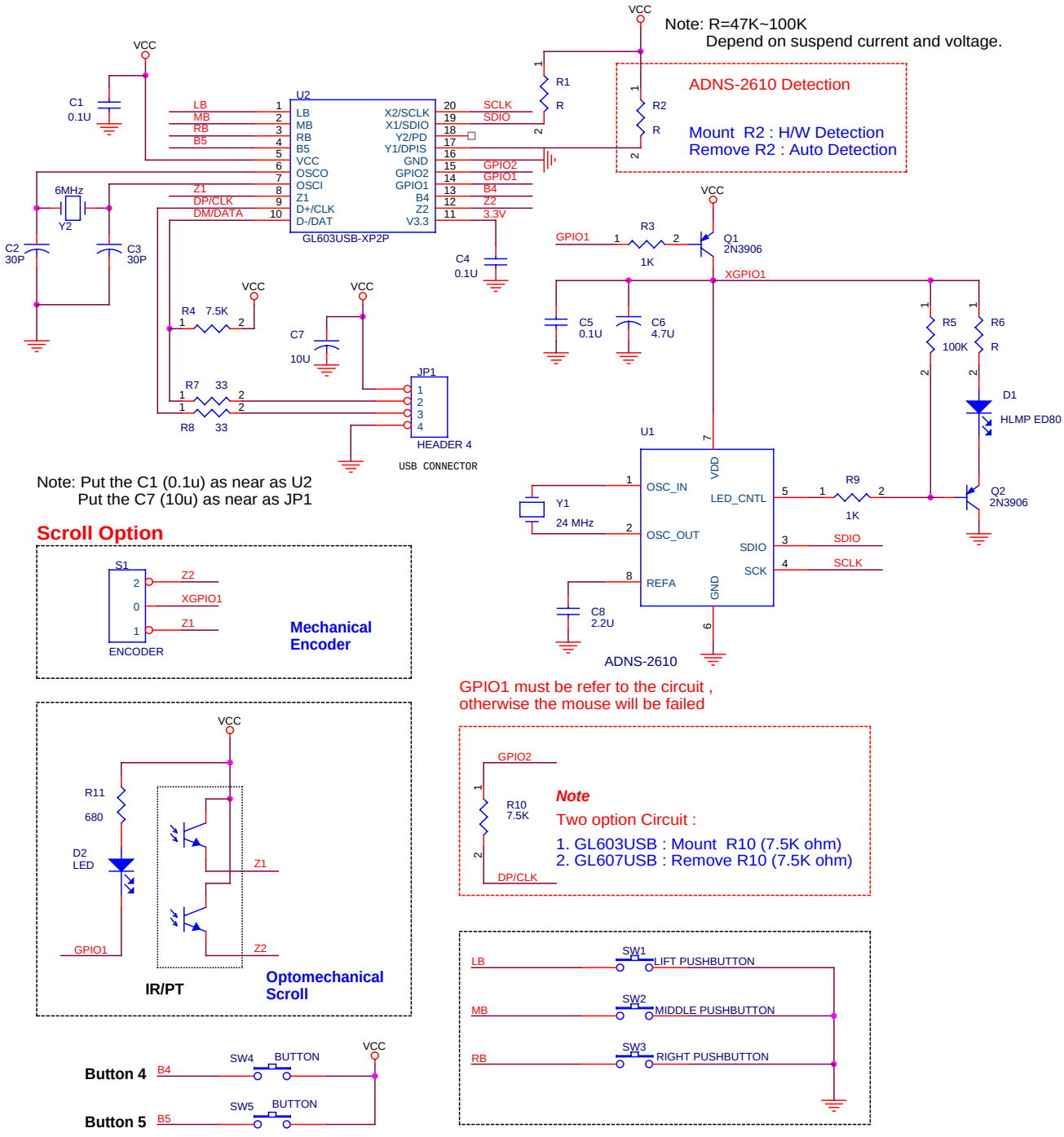


Figure 4.4 - GL603USB-XP2P 3D5B ADNS-2610 Optical Mouse

4.1.5 3D5B with ADNS-2620 Optical Sensor Circuit

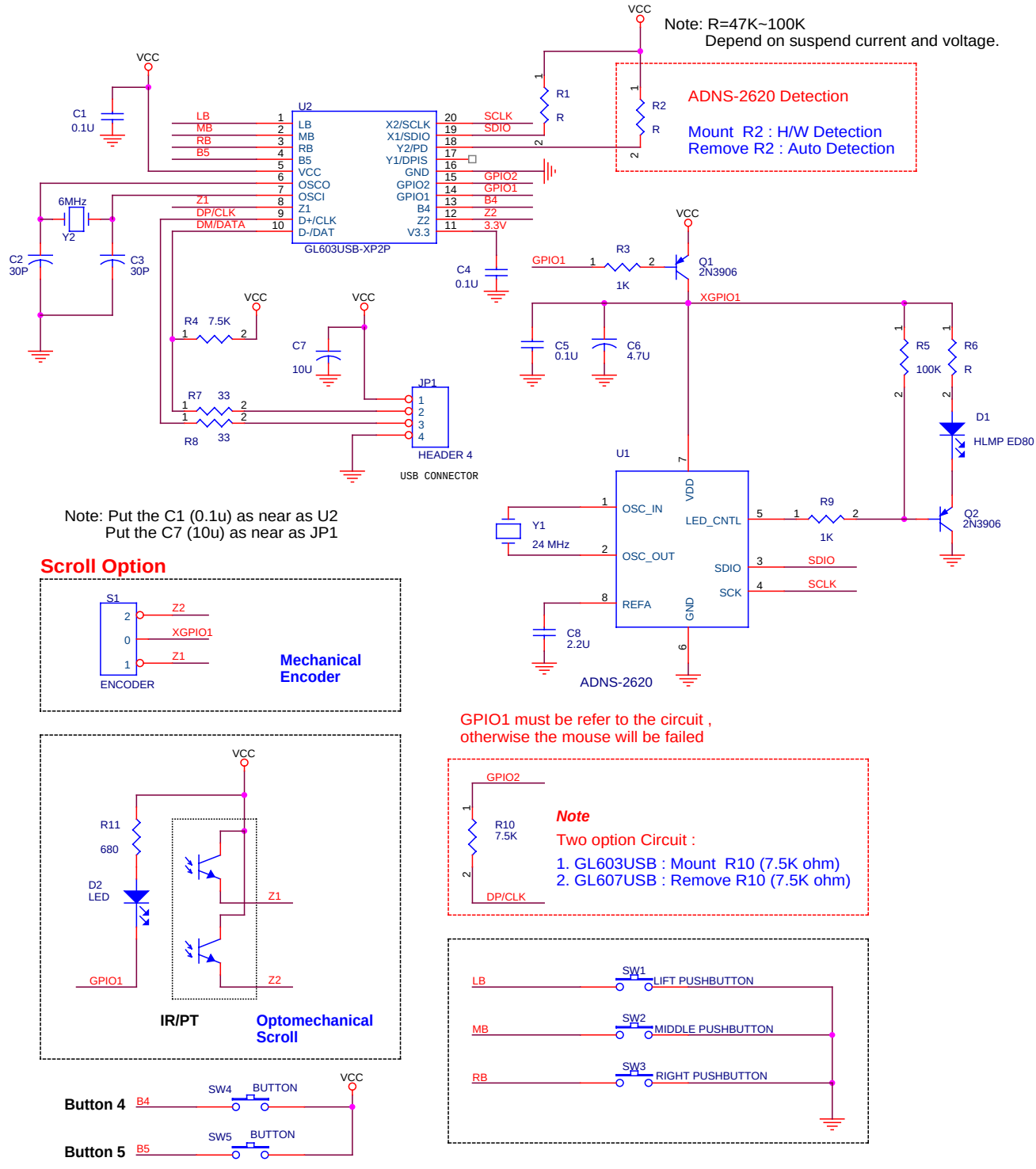


Figure 4.5 - GL603USB-XP2P 3D5B ADNS-2620 Optical Mouse

4.1.6 3D5B with PAN101B Optical Circuit

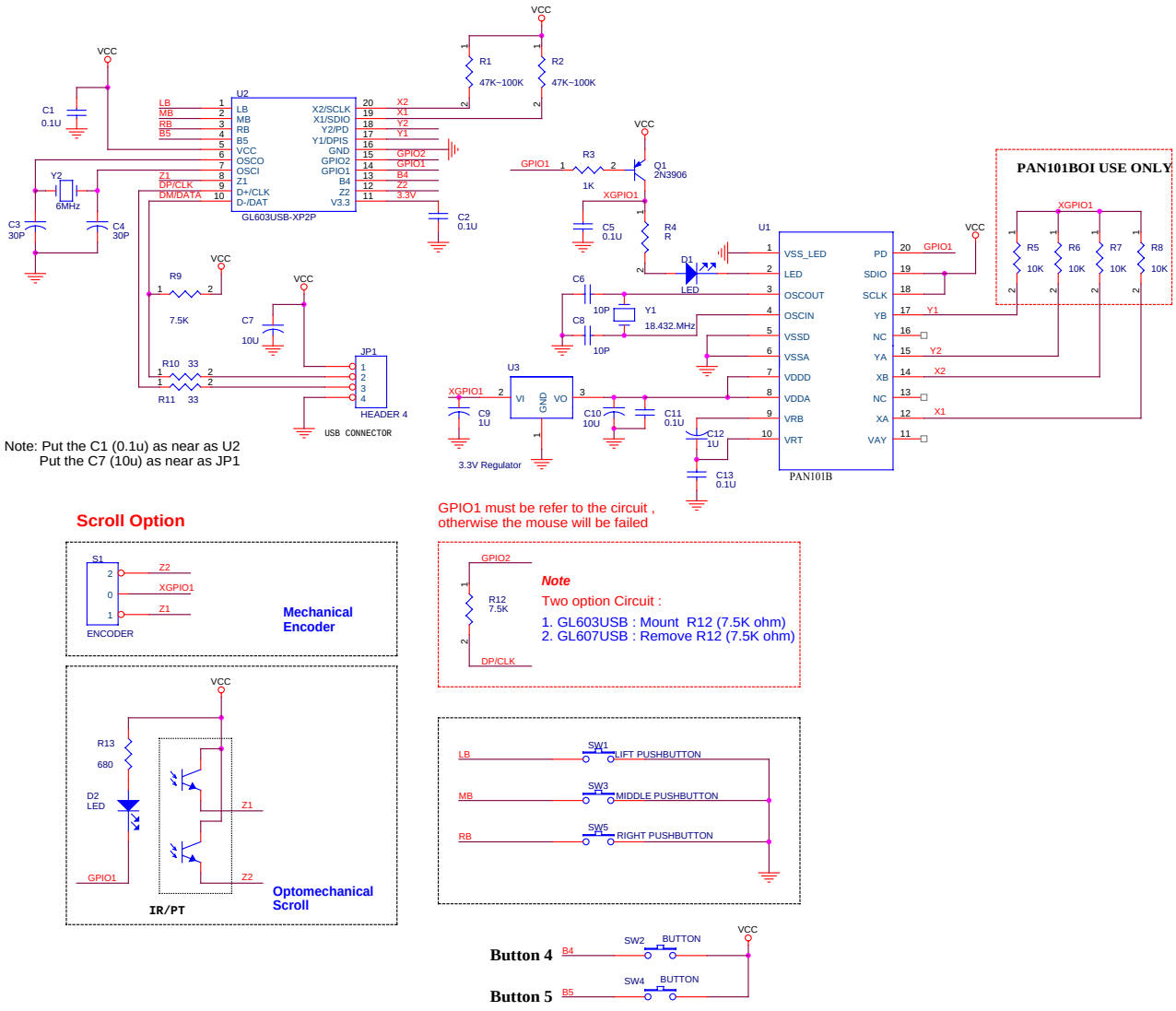


Figure 4.6 - GL603USB-XP2P 3D5B PAN101B Optical Mouse

4.2 GL603USB-A-XP2P

4.2.1 3D3B Ball Type Circuit

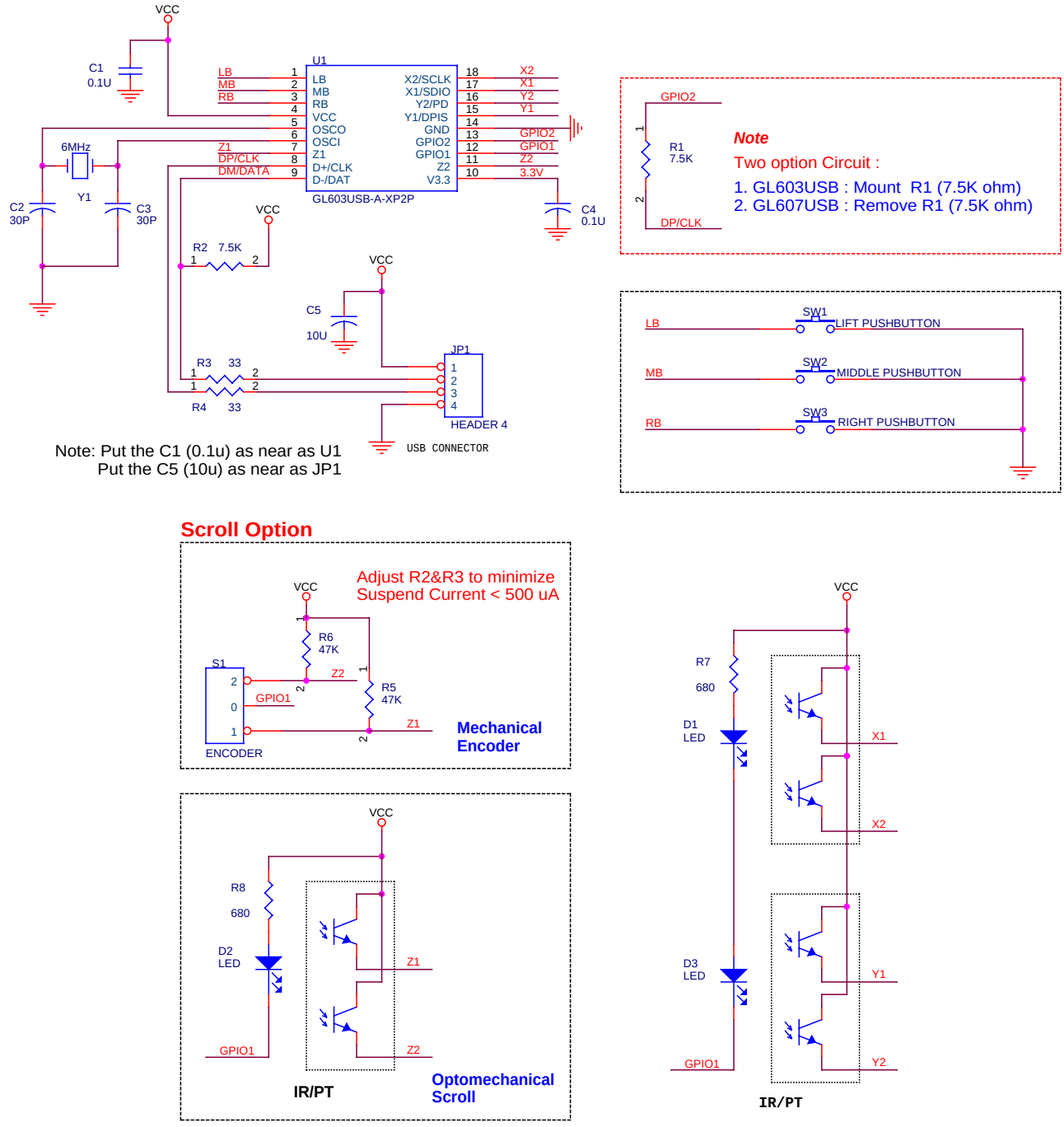


Figure 4.7 - GL603USB-A-XP2P 3D3B Ball Mouse

4.2.2 3D3B with HDNS-2000 Optical Sensor Circuit

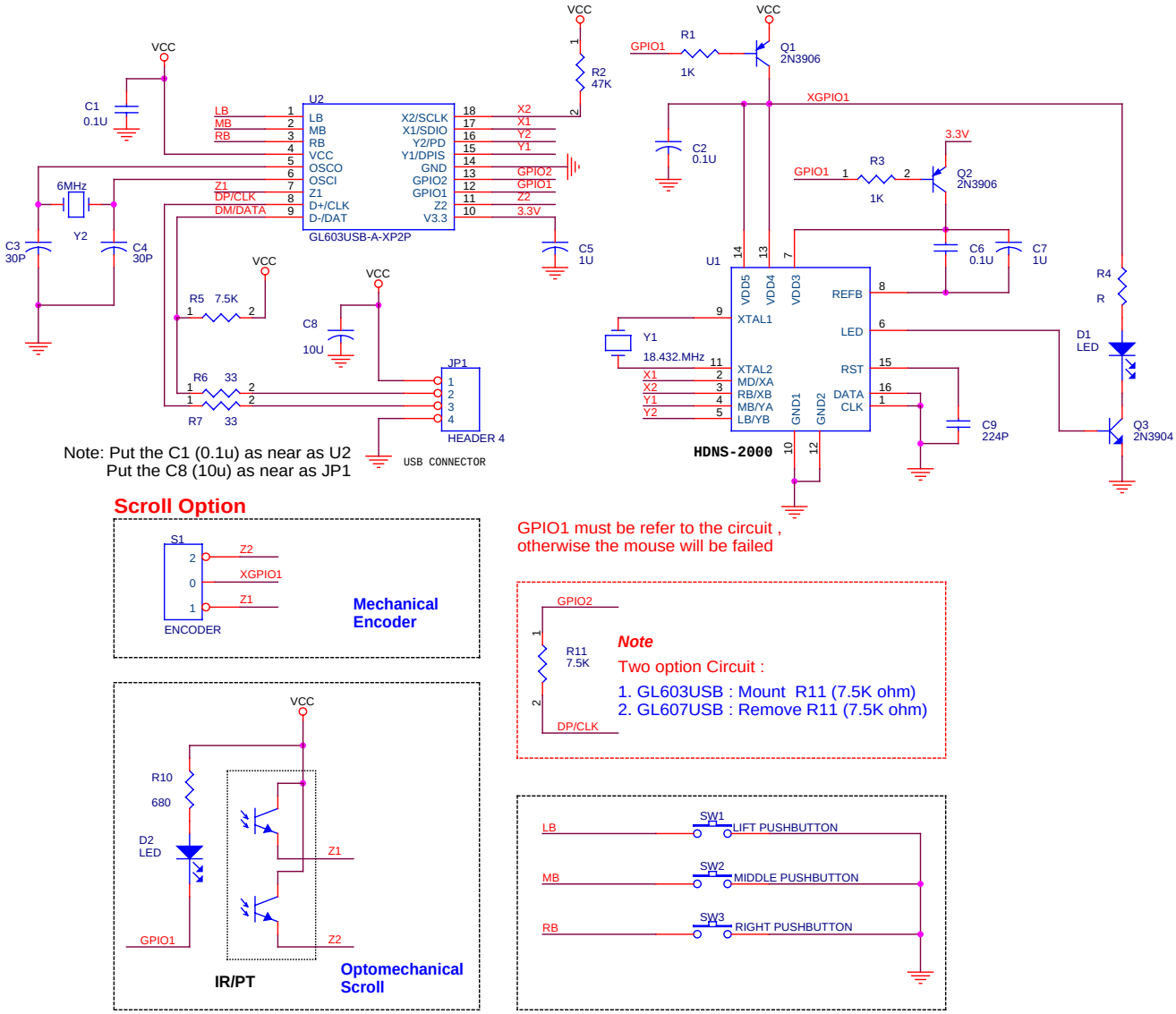


Figure 4.8 - GL603USB-A-XP2P 3D3B HDNS-2000 Optical Mouse

4.2.3 3D3B with ADNS-2051 Optical Sensor Circuit

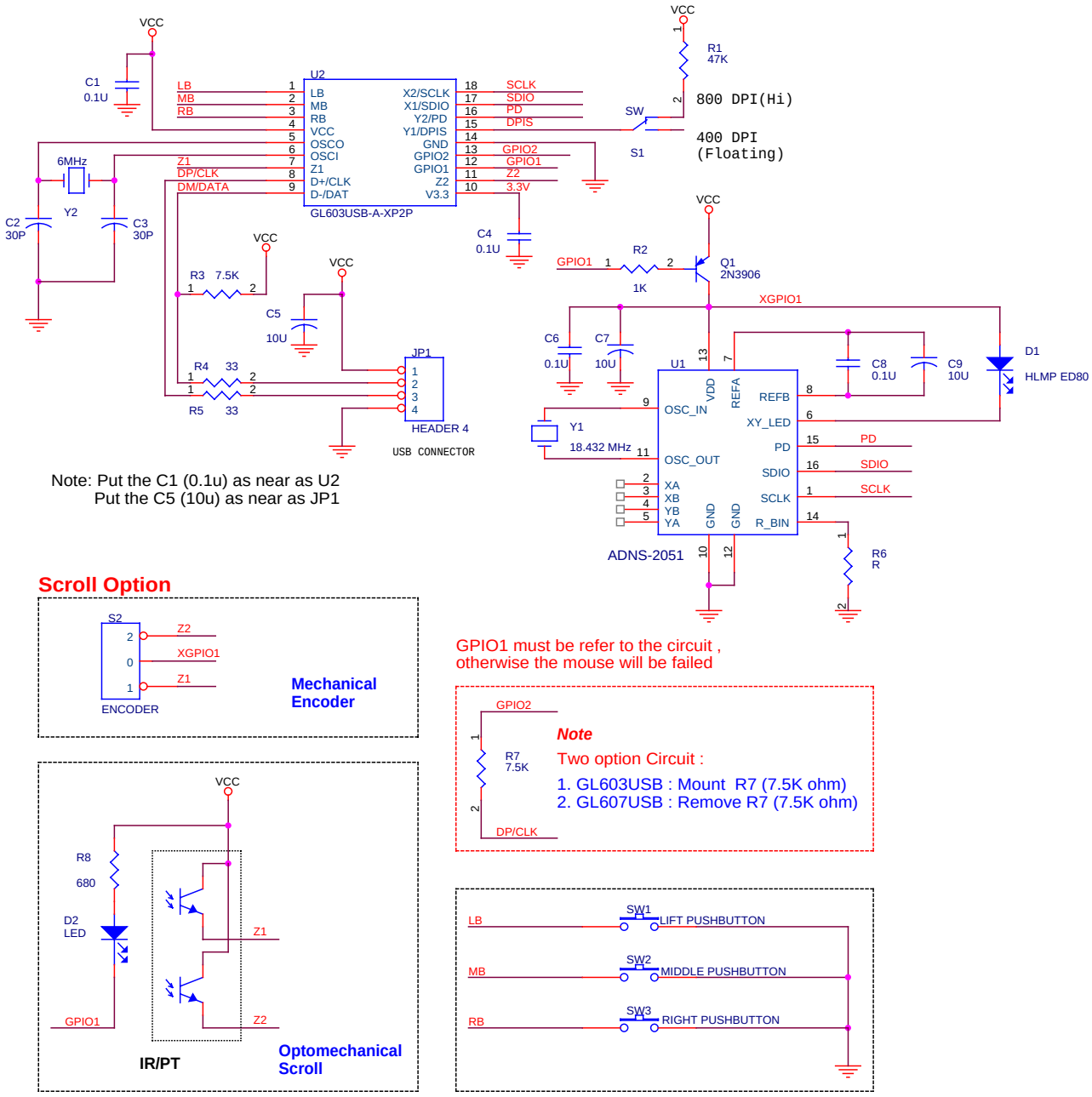


Figure 4.9 - GL603USB-A-XP2P 3D3B ADNS-2051 Optical Mouse

4.2.4 3D3B with ADNS-2610 Optical Sensor Circuit

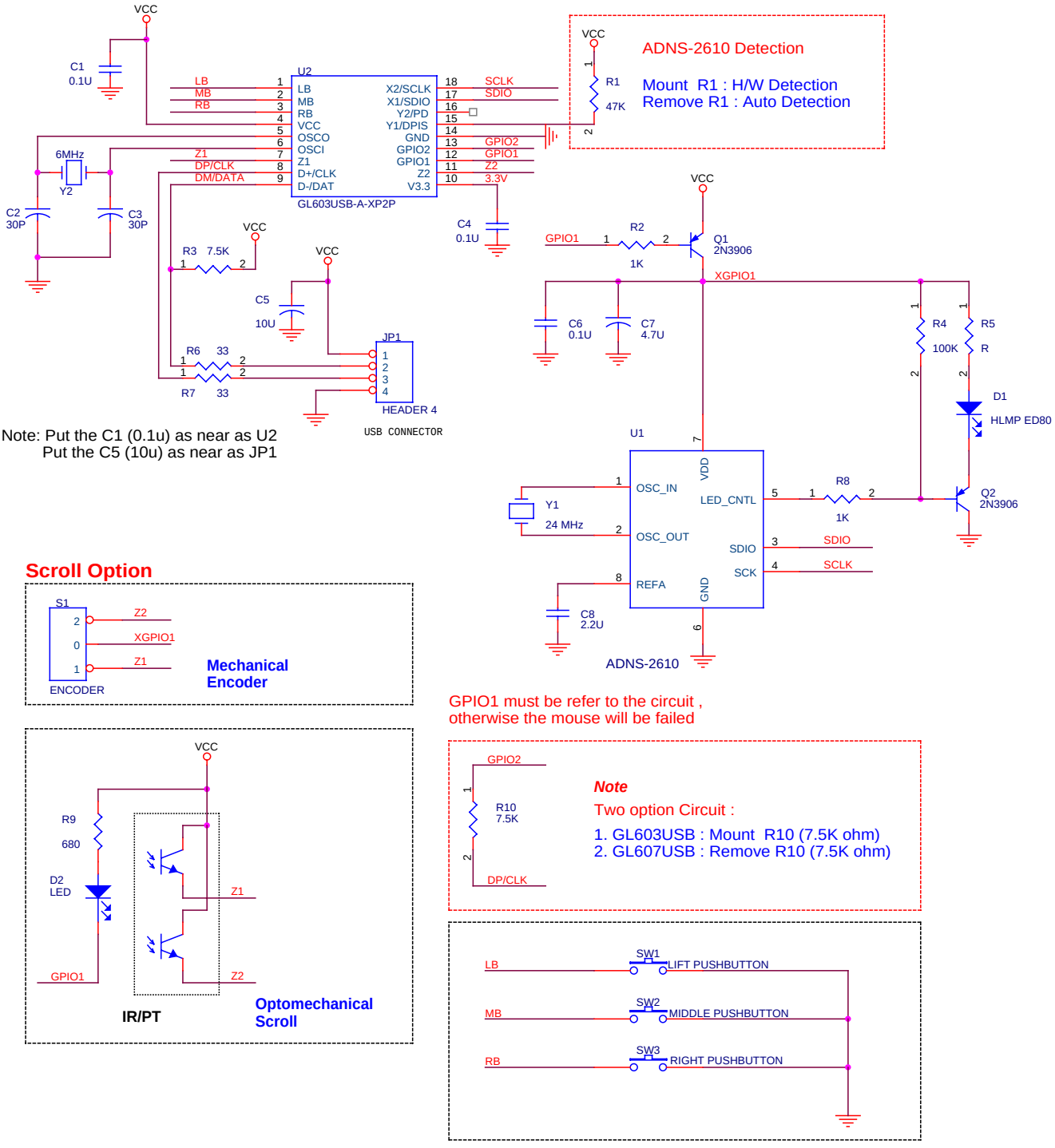


Figure 4.10 - GL603USB-A-XP2P 3D3B ADNS-2610 Optical Mouse

4.2.5 3D3B with ADNS-2620 Optical Sensor Circuit

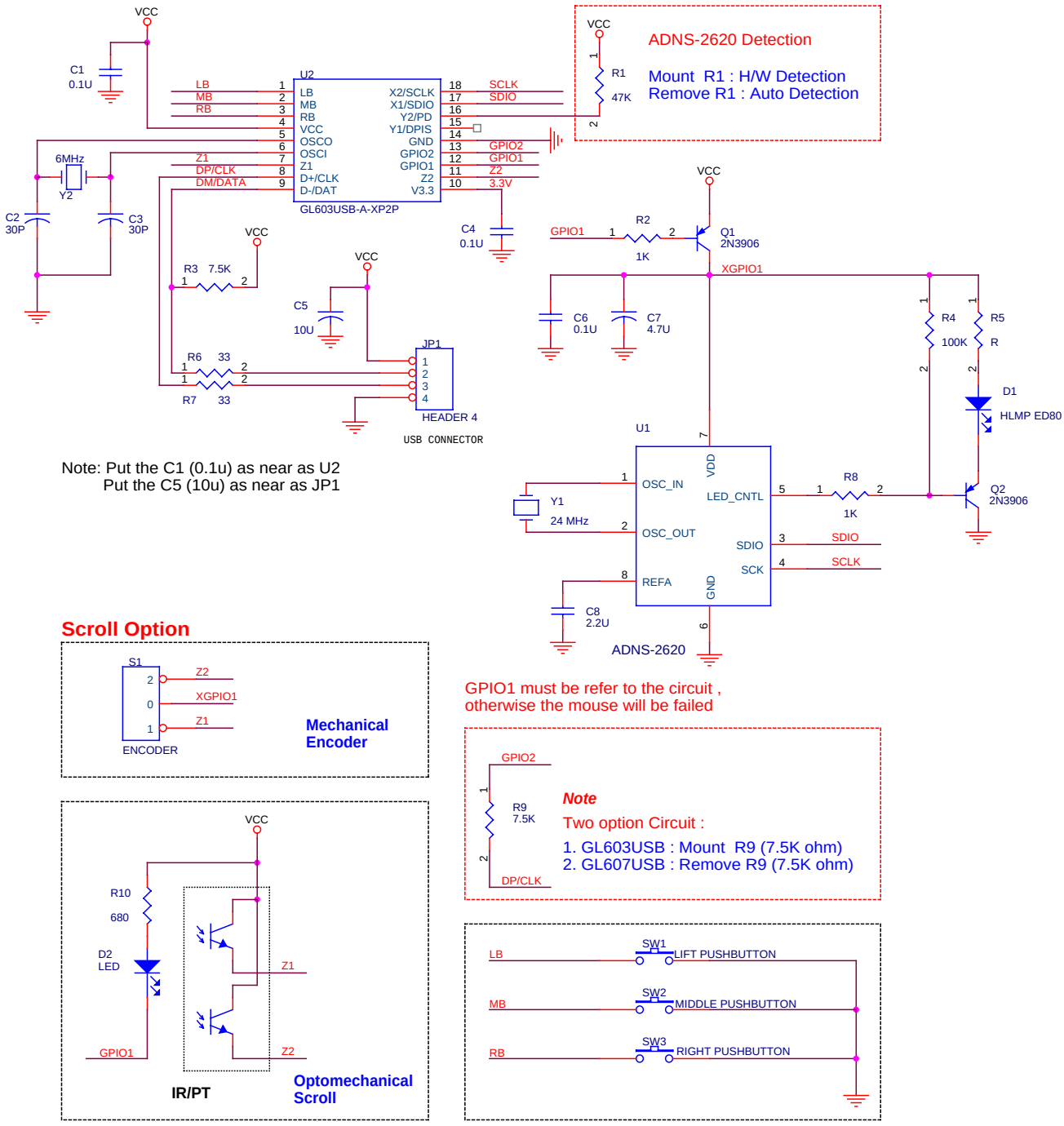


Figure 4.11 - GL603USB-A-XP2P 3D3B ADNS-2620 Optical Mouse

4.2.6 3D3B with PAN101B Optical Sensor Circuit

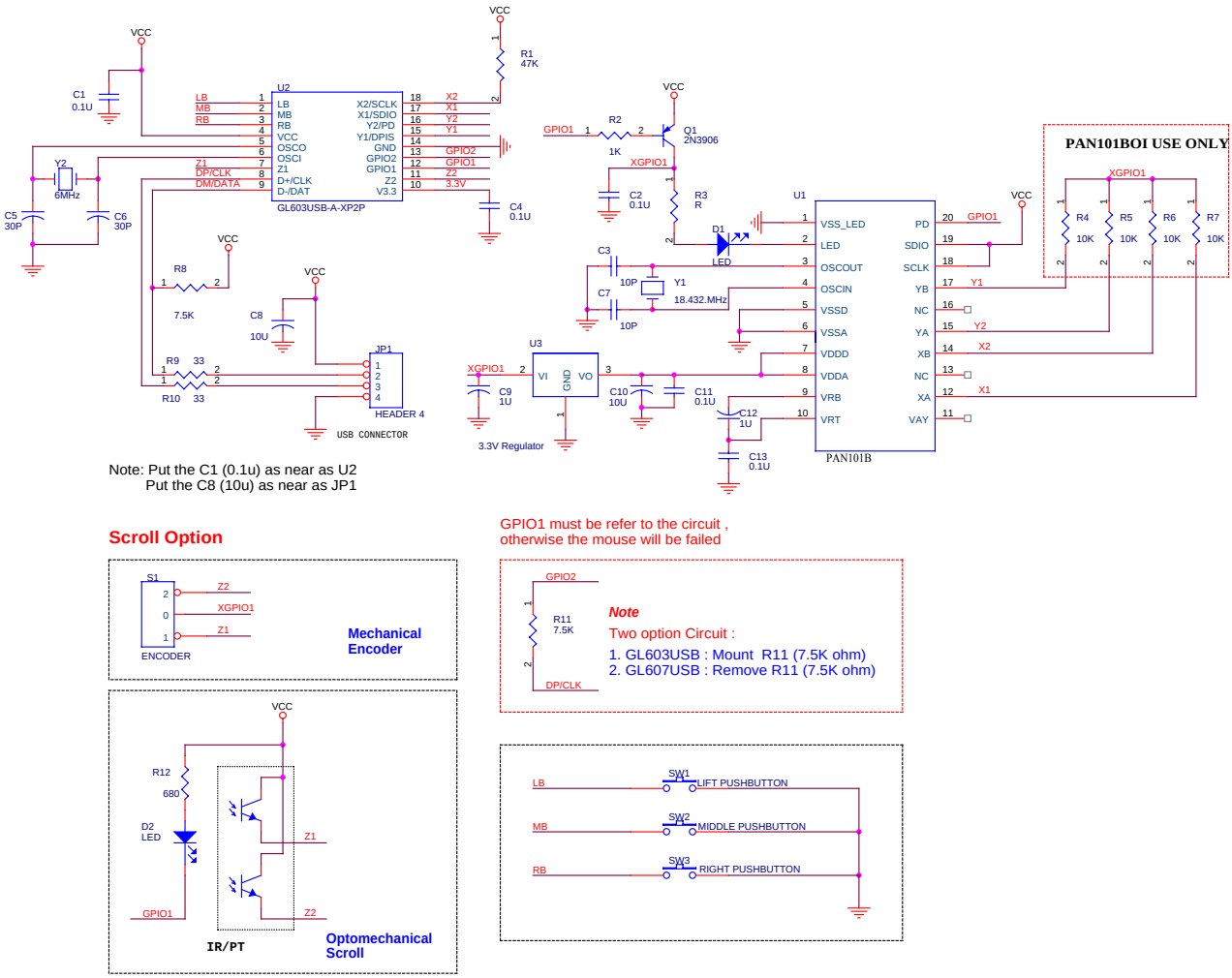
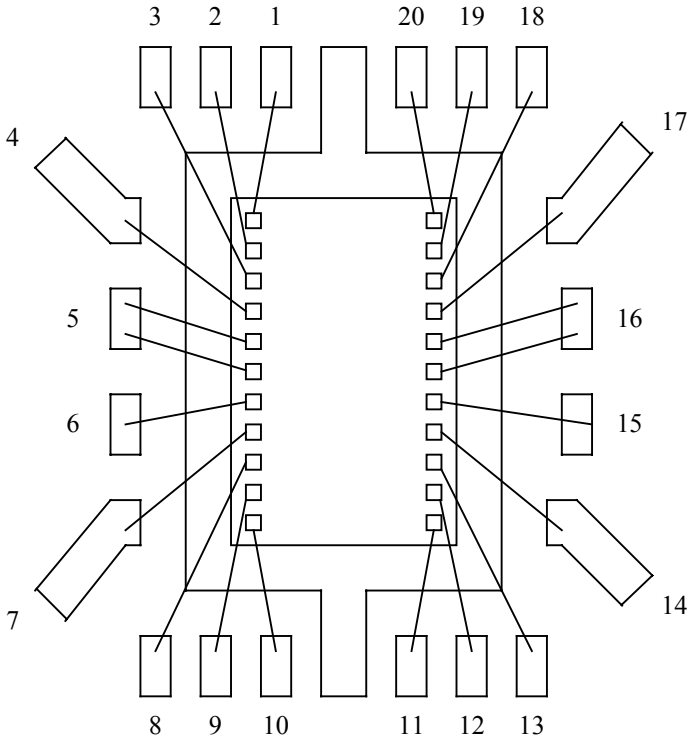


Figure 4.12 - GL603USB-A-XP2P 3D3B PAN101B Optical Mouse

CHAPTER 5 BONDING DIAGRAM

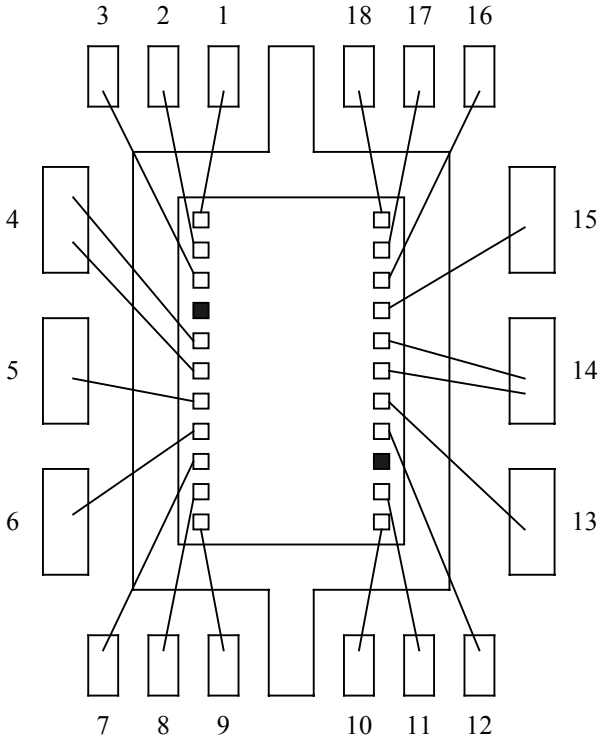
5.1 GL603USB-XP2P for 3D5B 20-pin



Chip substrate should be connected to GND

Figure 5.1 - GL603USB-XP2P for 3D5B 20-Pin

5.2 GL603USB-A-XP2P for 3D3B 18-pin



Chip substrate should be connected to GND

Figure 5.2 - GL603USB-A-XP2P for 3D3B 18-Pin

CHAPTER 6 PACKAGE DIMENSION

6.1 GL603USB-XP2P P-DIP and SOP Package

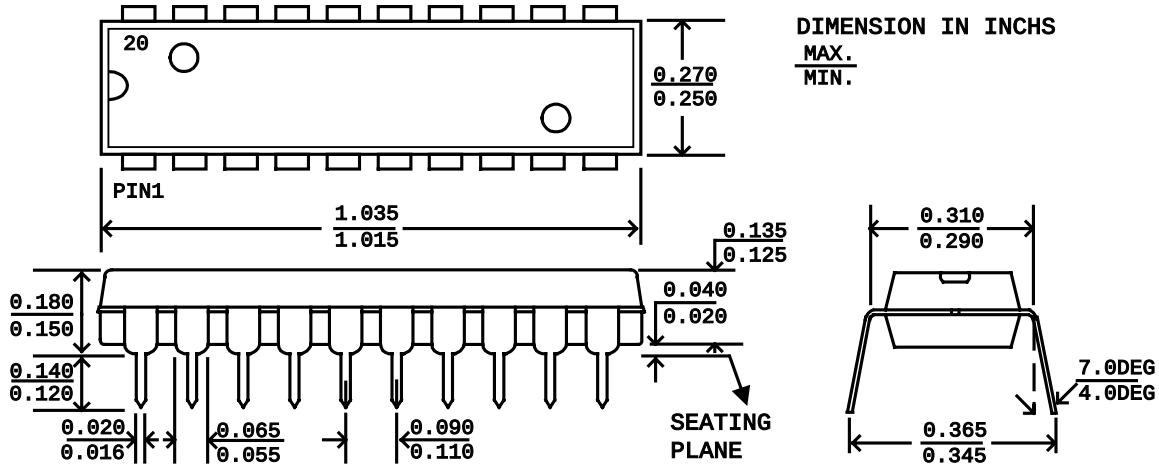


Figure 6.1 – Package Outline Dimension for 20-Pin P-DIP

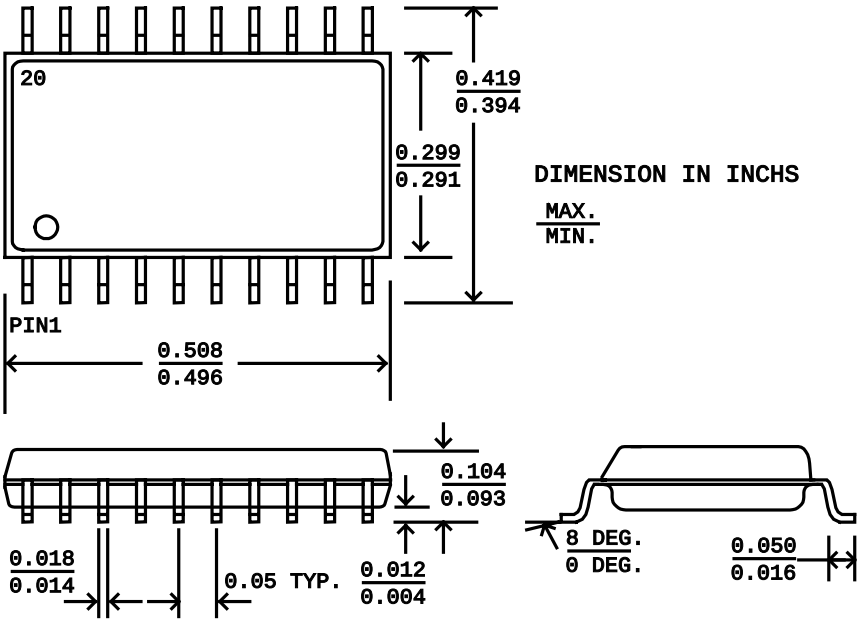


Figure 6.2 – Package Outline Dimension for 20-Pin SOP

6.2 GL603USB-A-XP2P P-DIP and SOP Package

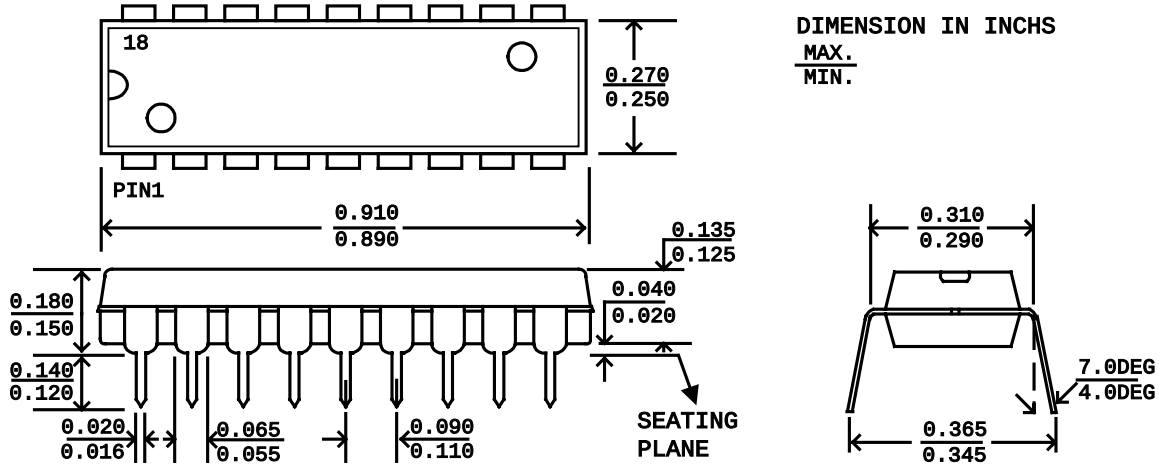


Figure 6.3 – Package Outline Dimension for 18-Pin P-DIP

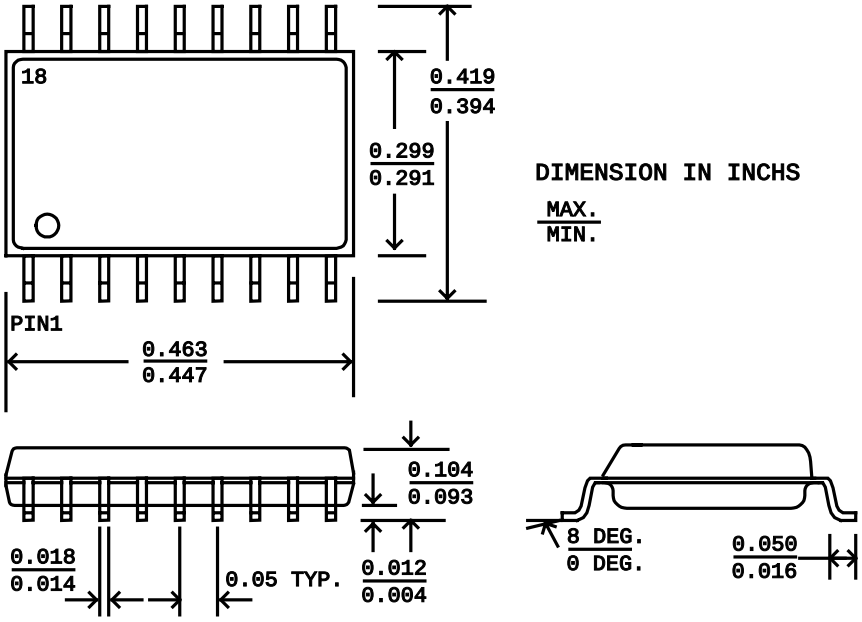


Figure 6.4 – Package Outline Dimension for 18-Pin SOP

