PB86 8-Button Circuit Schematic

SPICE Validated: LED current 15mA, Power 120mA total
Date: January 16, 2026

CIRCUIT OVERVIEW

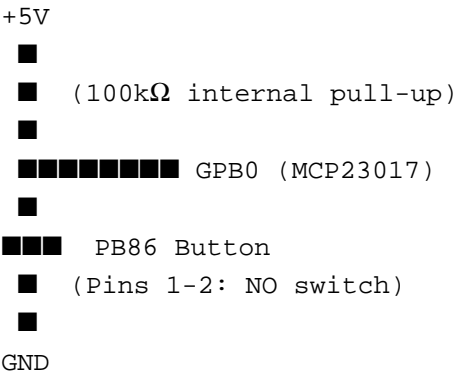This circuit implements 8 PB86 push buttons with built-in LEDs.

Components:
- MCP23017: I2C I/O Expander (button inputs)
- 74HC595: 8-bit Shift Register (LED outputs)
- 8x PB86: Push buttons with LEDs
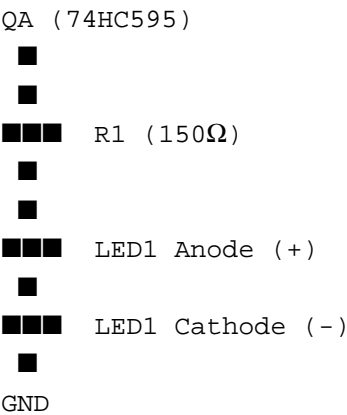- 8x 150Ω: Current limiting resistors

Interfaces:
- I2C: SDA, SCL (MCP23017 control)
- SPI: DATA, LATCH, CLOCK (74HC595 control)

BUTTON INPUT CIRCUIT

```
+5V
 ■
 ■    (100kΩ internal pull-up)
 ■
 ■■■■■■■■ GPB0 (MCP23017)
 ■
■■■   PB86 Button
 ■    (Pins 1-2: NO switch)
 ■
GND
```

LED OUTPUT CIRCUIT

```
QA (74HC595)
 ■
 ■
■■■   R1 (150Ω)
 ■
 ■
■■■   LED1 Anode (+)
 ■
■■■   LED1 Cathode (-)
 ■
GND
```

COMPONENT VALUES

Resistors: