

# HL5310

## Ultra-Low Voltage 12-Bit GPIO Expander with Interrupt Output

### Description

The HL5310 is a 12-bit general purpose GPIO expander that provides remote I/O expansion for most microcontroller families via the Fast-mode Plus (Fm+) I<sup>2</sup>C-bus interface up to 1MHz. The ultra-low voltage interface allows for direct connection to a microcontroller operating down to 1.0V.

HL5310 has separate power rails (VDD\_I<sup>2</sup>C, VDD\_P0 and VDD\_P1) for I<sup>2</sup>C bus and each 6-bit I/O ports, both ranging from 1.0V to 5.5V, allowing mixed power system where I<sup>2</sup>C bus power is not compatible with I/O port power.

HL5310 features internal power-on reset and I<sup>2</sup>C, software reset provide flexible ways to reset the IC, and four adjustable I<sup>2</sup>C slave addresses for applications.

HL5310 provides multiple ways to program the 12-bit I/O ports. When the port works as input, it can program the polarity, latch, pull-up, pull-down and interrupt functions. The interrupt function includes the level/edge trigger, mask, clear, status features. For system with noisy input, the device also provides debounce function with programmable debounce time. When the port works as output, it can program output stage with bank/pin selectable push-pull open-drain options, it can also program four options, it can also program four drive strengths of the output stage to optimize the rise/fall times.

HL5310 is available in RoHs and Green compliant 20-bump WLCSP, 1.82mm x 1.47mm with 0.35mm pitch.

## Features

- 12-bit GPIO expander through I<sup>2</sup>C
- Up to 1MHz Fast-mode Plus I<sup>2</sup>C bus
- 1.0V to VDD\_P for I/O ports
- 1.0V to 2.0V for I<sup>2</sup>C-bus
- Active-low open-drain interrupt output (INTB)
- Interrupt with trigger/mask/clear/status/features
- Internal power-on reset and I<sup>2</sup>C software reset
- Input/Output port configurable
- Input with polarity / latch / pull-up / pull-down / interrupt functions
- Programmable input debounce enable/time with optional internal 32KHz clock
- Output with bank/pin selectable push-pull or open-drain
- Programmable output drive strength
- Maximum 24mA driving capability for each port at VDD\_P0=VDD\_P1=1.8V
- Low standby current of 0.5μA typical at 1.8V
- 20-bump WLCSP, 1.82mmx1.47mm, 0.35mm pitch

## Applications

- Smartphone
- Tablet PC
- Wearables
- Laptop and desktop

## Typical Application Diagram

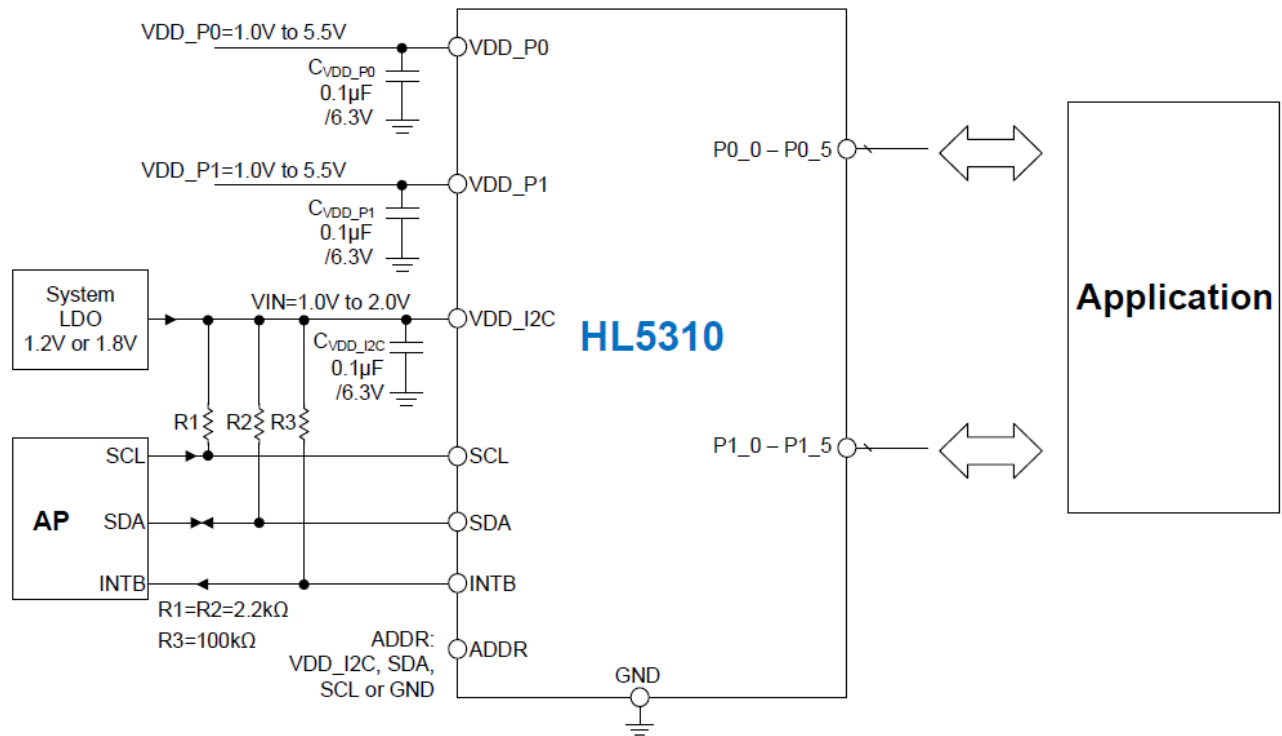


Figure 1. Typical Application Diagram

## Order Information

Part Number	Package	Remark
HL5310WL01	20-Bump WLCSP 1.82mm x 1.47mm, 0.35mm pitch	

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