MSPM0 I/O module introduction

MSPM0 peripheral training series

Presented by Sal Ye
MSPM0 I/O module introduction

GPIO module

Key Features

- **Standard-drive with wake IO** is for SHUTDOWN wakeup
- Up to **5 high speed GPIOs** (HSIO) support up to 40MHz frequency
- Up to **4 high drive GPIOs** (HDIO) are able to output 20mA current to drive the load
- **5V tolerant open-Drain** GPIOs enable 5V communication without level shifter devices
- Unused pin should be set as GPIO output intern pull-down
- 0 wait state MMR access from CPU enhance SPI or I2C simulation using GPIO

Key Differences between G and L MCUs

- There is no high-drive IO on MSPM0Lxx MCUs
- NRST can be used as GPIO on 20-pin and 16-pin packages on MSPM0Lxx MCUs

Digital IO Type can be found on device data sheet

<table>
<thead>
<tr>
<th>IO Structure</th>
<th>Inversion Ctrl</th>
<th>Drive Strength Ctrl</th>
<th>Hysteresis Ctrl</th>
<th>Pullup Resistor</th>
<th>Pulldown Resistor</th>
<th>Wakeup Logic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard-drive</td>
<td>Y</td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>Partial</td>
</tr>
<tr>
<td>High-drive</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>High-speed</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Open-drain</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
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IOMUX module

Key Features

- Digital input path configuration
  - Hysteresis control
  - Input path enable/disable
  - Input logic inversion control
- Digital output path configuration
  - Drive strength control
  - Output connection enable/disable
  - Output logic inversion (control shared with input logic inversion)
  - Logic-high to High-Z output conversion (for open-drain style interfaces)
  - Retention of "last state" when a peripheral connected to an IO is disabled
- Pullup/pulldown resistor control
- Analog path configuration
- Selection of which peripheral is multiplexed to each digital IO pin (one digital function but multiply analogs if support)
- Wakeup configuration (for wakeup from SHUTDOWN mode)

Note: Peripheral 01 means GPIO
I/O module quick start

Academy
I/O introduction lab

Driverlib Examples
MSPM0G350x:
- gpio_input_capture
- gpio_software_poll
- gpio_toggle_output
- gpio_toggle_output_high

MSPM0L13xx:
- gpio_input_capture
- gpio_software_poll
- gpio_toggle_output

Related Links
- MSPM0 online resource
- MSPM0 Quick start guide
- MSPM0 Sysconfig user’s guide
- MSPM0G350x datasheet
- MSPM0L13xx datasheet
- MSPM0Gxx technical reference manual
- MSPM0Lxx technical reference manual

Launchpad
LP-MSPM0G3507
LP-MSPM0L1306

Sysconfig Entrance for IOMUX Setting

Step 1:
Step 2:
To find more MSPM0 training series, please visit:

- Tl.com.cn
- WeChat (德州仪器公众号)
- Bilibili
- 21IC