

Adding Peripherals Using I²C

by:

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Overview of I²C

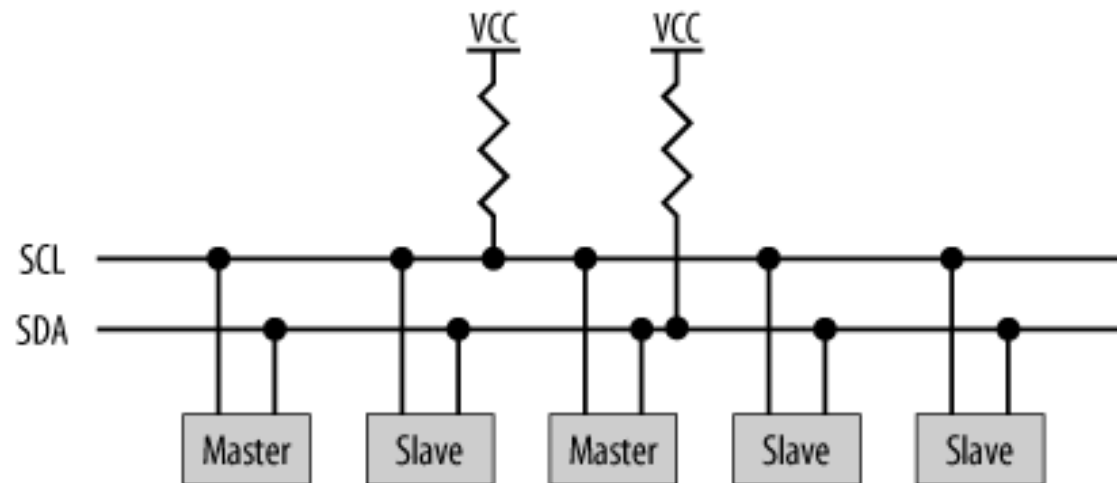
- I²C (Inter-Integrated Circuit) bus is a very cheap yet effective network used to interconnect peripheral devices within small-scale embedded systems.
- It is sometimes also known as IIC and has been in existence for more than 20 years.
- It is the equivalent of SPI, but its operation is somewhat different.

Overview of I²C

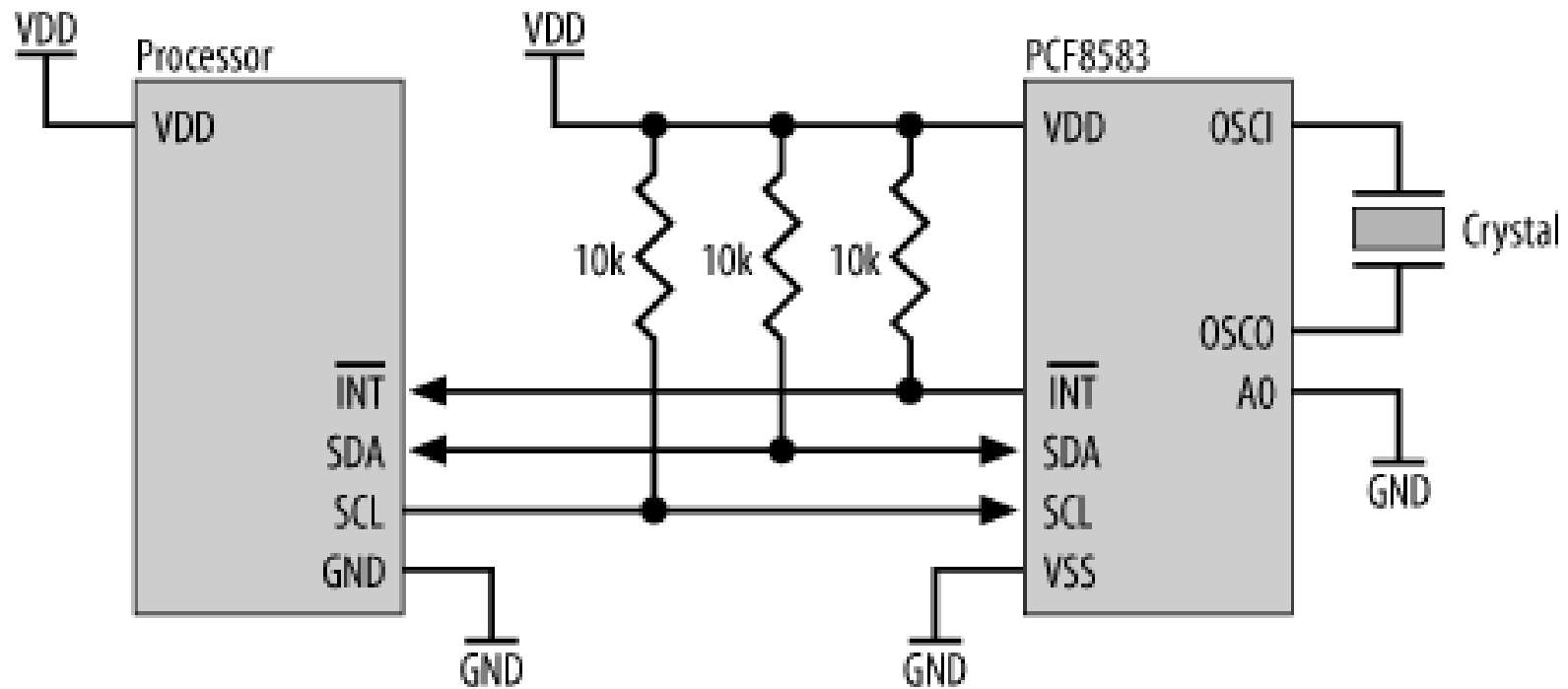
- I²C uses two wires to connect multiple devices in a multi-drop bus.
- The bus is bidirectional, low-speed, and synchronous to a common clock.
- Devices may be attached or detached from the I²C bus without affecting other devices.
- Several manufacturers, such as Microchip, Philips, Intel, and others produce small microcontrollers with I²C built in.
- The data rate of I²C is somewhat slower than SPI, at 100 kbps in standard mode, and 400 kbps in fast mode.

Overview of I²C

- The two wires used to interconnect with I²C are SDA (serial data) and SCL (serial clock). Both lines are open-drain.
- They are connected to a positive supply via a pull-up resistor and therefore remain high when not in use.
- A device using the I²C bus to communicate drives the lines low or leaves them pulled high as appropriate.
- Each device connected to the I²C bus has a unique address and can operate as either a transmitter (a bus master), a receiver (a bus slave), or both.



Adding a Real-Time Clock with I²C



Adding a Small Display with I²C

