MAX3010X Breakout

Calvary Engineering

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**Section 1: Description**

The MAX3010X Breakout is an SMD to DIP adapter made for the MAX30100, MAX30101, MAX30102 Pulse Oximeter and Heart-Rate Sensor ICs from Maxim Integrated. The breakout allows users to have a low-cost, convenient method of prototyping the chip, which is in a leadless surface mount package. The breakout is provided with the MAX30101 already installed meaning the user only needs to solder a few header pins to interface the breakout with a breadboard.

**Section 1: Specifications**

Operating Voltage: 1.8V

LED Operating Voltage: 3.3V – 5V

Peak LED Current: 50mA

Quiescent Current: 0.7x μA

Operating Temperature: -40oC to +85oC

**Section x.xx Pinouts**

|  |  |  |
| --- | --- | --- |
| Pins | Name | Description |
| 1,7\*,8,14 | NC | No connect. No electrical connection to chip. |
| 2 | SCL | I2C clock input |
| 3 | SDA | I2C data input |
| 4 | PGND | Ground for LED drivers |
| 5,6,7\* | DRV | Driver for LEDs. No input required of user. |
| 9,10 | Vled | Power input for LEDs. Add a bypass capacitor to ground. |
| 11 | VDD | Analog power. Add a bypass capacitor to ground. |
| 12 | GND | Device analog ground. |
| 13 | INT | Pin output for device interrupt signal. |

\* Pin 7 is NC on the MAX30100 and MAX30102, but is Driver for Green LED in the MAX30101.

**Section x.xx Quick Getting started instructions**

Place two 7 position male headers on a breadboard spaced as pictured. Place the MAX3010X Breakout through the male header pins. Turn on your soldering iron to the appropriate temperature and solder the headers pins to the vias. Allow the board to cool before using the device.

Power

The MAX3010X are powered with 1.8V for the digital signals and 3.3V for the LEDs. Attach bypass capacitors of 4.7uF for the LED power and 1uF for the digital signals.

Signal transmission

Using the MAX3010X with a standard Arduino will require the use of bi-directional level shifters to translate the 3.3V or 5V from the Arduino I2C lines to the 1.8V logic level of the MAX3010X chips and vice versa. This can be easily accomplished using a few transistors. Follow the guide here. If the user would like to purchase a breakout with the level shifters already installed, please see our other product which includes the level shifter and a 1.8V voltage regulator for powering the MAX3010X devices.

**Section x.xx Design Implementation**

The breakout follows a simple pin to header scheme where each pin of the MAX3010X is broken out including the NC pins. This is done because at the point of making this breakout, Maxim appeared to be doing a lot of work on the MAX3010X family. The first product they started selling was the MAX30100 which had pin 7 as a “No Connect” pin. A few months later, they released the MAX3010X which used pin 7 as the green LED driver pin. Though the user does not need to connect to the green LED driver pin, we decided to breakout the other N.C. connections just in case Maxim changes the function of those pins in future iterations of the family, though we do not anticipate it.

**Section x.xx Troubleshooting Guide**

**Section x.xx Testing**

The MAX3010X Breakout boards are tested using the following firmware.

**Section x.xx Contact Us**

Support.calvengio@gmail.com

Links: calveng.io