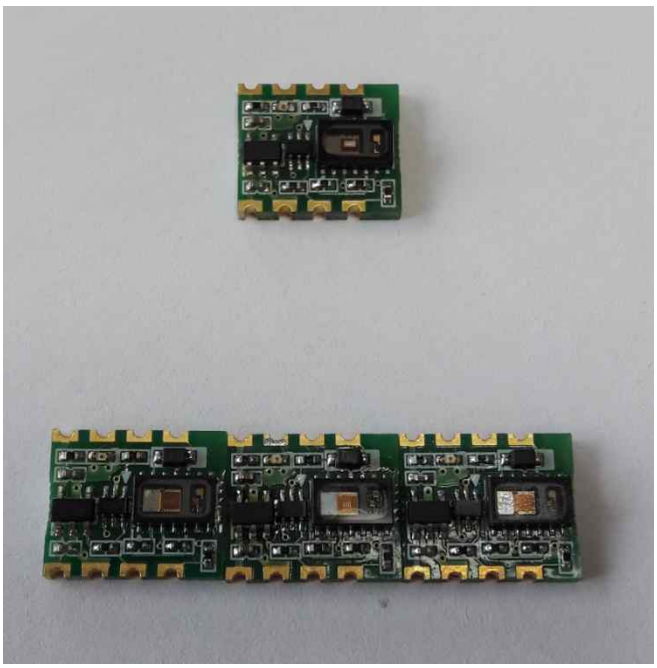
OSTSen-30101 User Guide



Ver 1.0

Onsystech

1. OSTSen-30101 Overview

OSTSen-30101 is a pulse oximetry and heart-rate monitoring module, which is based on Maxim Integrated MAX30101. The MAX30101 is an integrated pulse oximetry and heart-rate monitor module. It includes internal LEDs, photodetector, optical elements, and low-noise electronics with ambient light rejection. The MAX30101 provides a complete system solution to ease the design-in process for mobile and wearable devices.

The MAX30101 operates on a single 1.8V power supply and a separate 5.0V power supply for the internal LEDs. Communication is through a standard I2C-compatible interface. The module can be shut down through software with zero standby current, allowing the power rails to remain powered at all times.

2. Application

- Wearable Devices
- Fitness Assistant Devices

3. Features

- Heart-Rate Monitor and Pulse Oximetry Sensor in LED Reflective Solution
- Tiny 5.6mm x 3.3mm x 1.55mm 14-Pin Optical Module
  - Integrated Cover Digital Glass for Optimal, Robust Performance
- Ultra-Low Power Operation for Mobile Devices
  - Programmable Sample Rate and LED Current for Power Savings
  - Low-Power Heart-Rate Monitor (<1mW)
  - Ultra-Low Shutdown Current (0.7uA typical)
- Fast Data Output Capability
  - High Sample Rates
- Robust Motion Artifact Resilience
  - High SNR
- -40℃ to +85℃ Operating Temperature Range

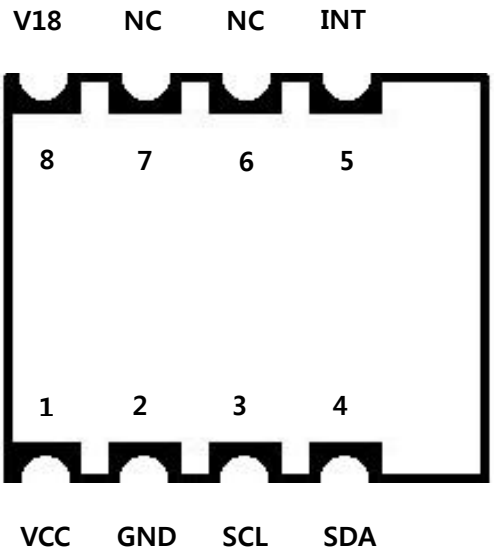
4. Application Information

4.1 Module Pin Out and Signal Description

Pin Number	Pin Name	Pin Description
1	VCC	Power supply voltage (2.5V ~ 6V)
2	GND	Power supply ground
3	SCL	I2C Serial clock 7bit device address : 0x57
4	SDA	I2C Serial data
5	INT	Active-Low Interrupt (Open-Drain)
8	V18	1.8V Voltage Output
6,7	NC	Not Connect

- **MAX30101 I2C 7bit Device Address : 0x57**

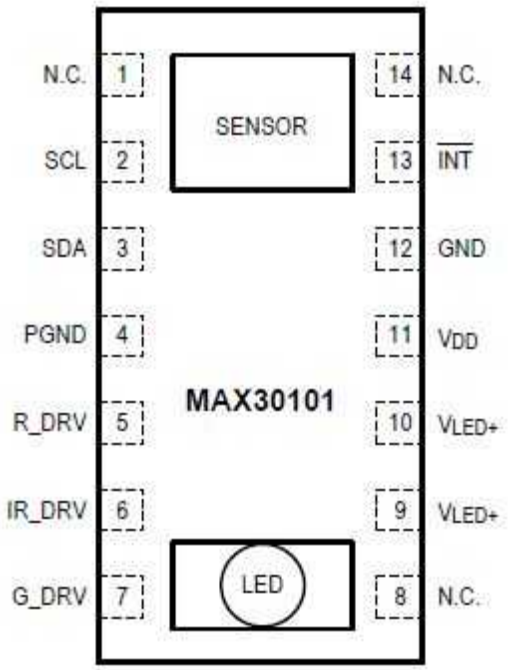
MSB							LSB
1	0	1	0	1	1	1	R/W



< Top View >

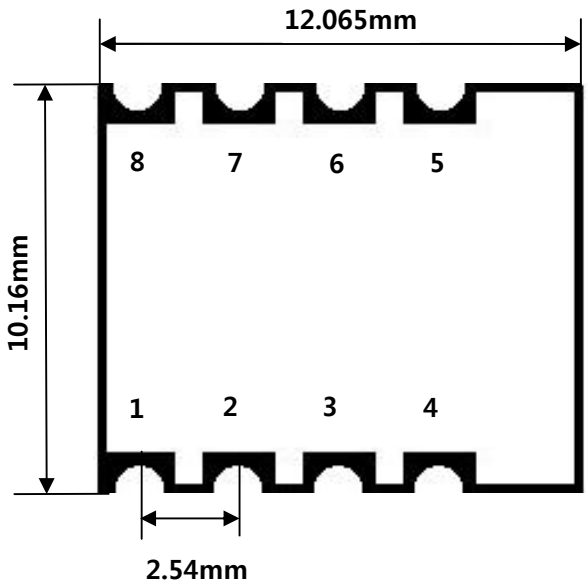
4.2 MAX30101 Pin out and Signal Description

Pin Number	Pin Name	Pin Description
1,8,14	N.C.	No Connection
2	SCL	I2C Clock Input
3	SDA	I2C Clock Data, Bidirectional (Open-Drain)
4	PGND	Power Ground of the LED Driver Blocks
5	R_DRV	Red LED Driver
6	IR_DRV	IR LED Driver
7	G_DRV	Green LED Driver
9	V_{LED+}	LED Power Supply(anode connection) Use a bypass capacitor to PGND for best performance
10	V_{LED+}	
11	V_{DD}	Analog Power supply
12	GND	Analog Ground
13	INT	Active-Low Interrupt(Open-Drain)



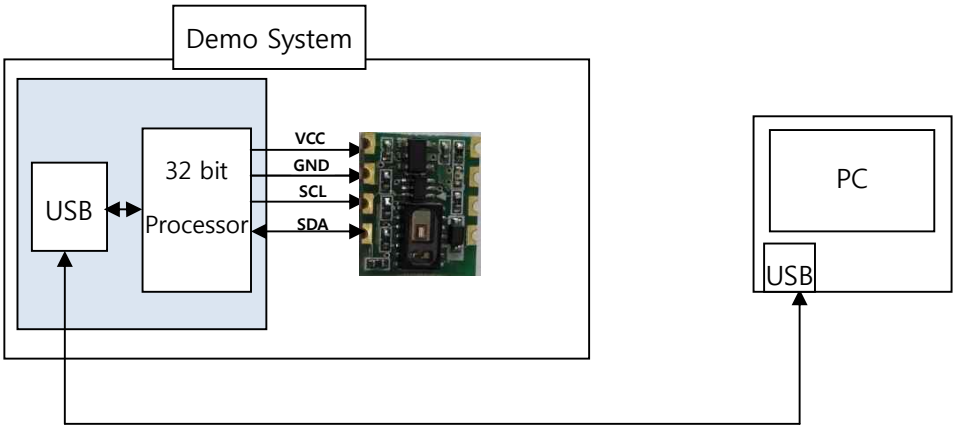
< MAX30101 Pinout (top view) >

5. Module Dimension

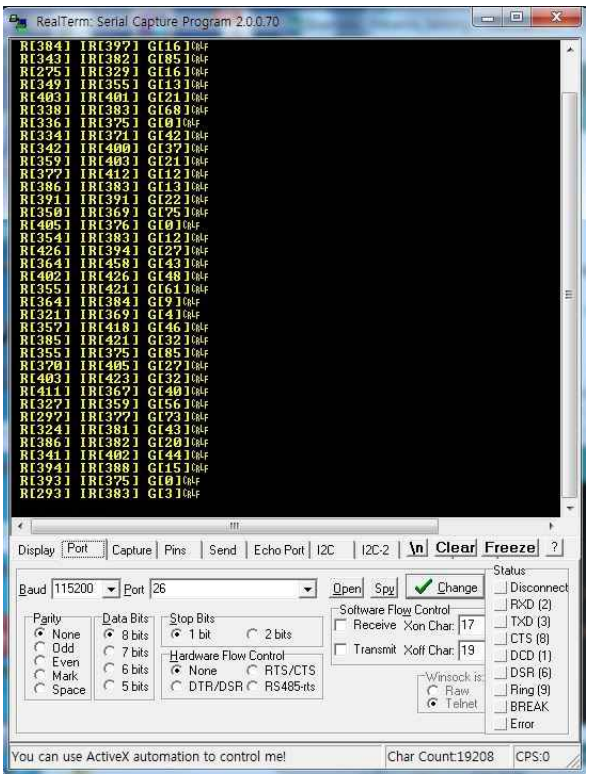


< OSTSen-30101 module >

6. Demo System



OSTSen-30101 Data Display on PC



7. Reference

1) https://www.maximintegrated.com/en/products/analog/sensors-and-sensor-interface/MAX30101.html
2) https://datasheets.maximintegrated.com/en/ds/MAX30101.pdf
3) https://github.com/sparkfun/SparkFun_MAX3010x_Sensor_Library

- If you need more information or have some questions about OSTSen-30101, contact ostsen@naver.com.