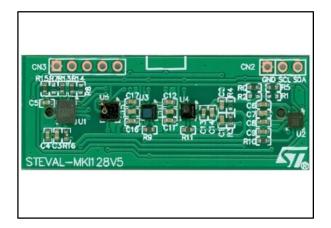


STEVAL-MKI128V5

ST MEMS sensor module

Data brief



Features

- Analog supply voltage: 1.91 V to 3.6 V
- Digital supply voltage I/OS: 1.8 V
- Power-down, "always on" eco power mode
- Motion MEMS sensors:
 - 3D accelerometer sensor
 ±2/±4/±8/±16g selectable full-scale
 acceleration range
 - 3D gyroscope sensor ±125/±245/±500/±1000/±2000dps selectable full-scale angular rate range
 - 3D magnetometer ±4/±8/±12/±16gauss selectable full-scale magnetic field range
- Environmental sensors:
 - High accuracy pressure sensor
 - Piezo-resistive pressure sensor
 - 260-1260 mbar absolute pressure range
 - Low power consumption
 - Low noise (0.0075 hPa RMS)
- Humidity and temperature sensor
 - 0 to 100% RH range
 - -40 to +85 °C temperature range
 - 16 bit ADC measurement

- Digital UV index sensor
 - 0-15 UV index output range
 - Resolution UVI/16
 - Selectable readout: 1 Hz ODR / one shot
- ECOPACK®, RoHS, and "Green" compliant

Applications

- Tablets and mobile phones
- Gaming and virtual reality input devices
- Wellness and wearable devices
- Drones and robotics
- IoT devices such as industrial and factory automation machines

Description

ST MEMS sensor module integrates the ST 3D accelerometer, 3D magnetometer, 3D gyroscope, pressure, relative humidity, ambient temperature and UV index sensors.

Introduction STEVAL-MKI128V5

1 Introduction

STEVAL-MKI128V5 sensor module integrates a set of complementary motion and environmental sensors. It is a robust and easy-to-assemble building block for quick system prototyping.

The module features the following ST sensors:

- LSM6DS3H (3D Accelerometer + 3D Gyroscope
- LIS3MDL (3D magnetometer)
- LPS22HB (pressure)
- HTS221 (humidity + temperature)
- UVIS25 (UV index)

Each sensor has dedicated drivers available for the principal operating systems. The sensor module and accompanying software form a convenient sensor subsystem solution for developing gaming, augmented reality, indoor navigation and localization-based services.

Find the relevant sensor documentation on www.st.com.

STEVAL-MKI128V5 Block diagram

2 Block diagram

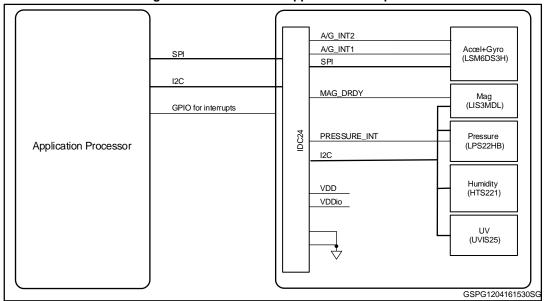
A/G_INT2 Accel+Gyro (LSM6DS3H) A/G_INT1 SPI MAG_DRDY Mag (LIS3MDL) IDC24 PRESSURE_INT Pressure (LPS22HB) I2C Humidity (HTS221) VDD VDDio UV (UVIS25) GSPG1204161510SG

Figure 1: MEMS module block diagram

Application hints STEVAL-MKI128V5

3 Application hints

Figure 2: Sensor module application example



4 Schematic diagrams

GSPG1204161600SG SPI_MISO SPI_CS_N SPI_CLK v n n 2 8 R3 V D D 1 8 R4 [N/A] VDD VDD18 CON5X1 I2C/SCS SCL /SPC SDA/SD I SA0/SDO VDDio VDD CN2 INT1 INT2/DEN 4.7 u 12C _SC L GND VDD18 SCS2 MSCL /SPC2 MSDA/SD I O2 4.7 u 100n R5 0 12C_SBA R15 0 AG_INT1 R6 0 12C_SCL R16 0 AG_INT2 VD<u>D2</u>8 VD<u>D1</u>8 R11 0 Humid_Drdy SCL /SCK SDA/SDI A1/SDO I2C/SCS INT VDDi∘ VDD 11 9 10 12 C _S D A 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 C1 GND Rsv d(Gnd) Rsv d(Gnd) GND DRDY LIS3MD L TR R10 0 Mag_Drdy PRESSURE_INT VDDVDD18 SPI_CS_N SPI_MOSI SPI_CLK SPI_MISO 12C/SCS SCL /SPC SDA/SD1 SA0/SD0 INT1 VDDio VDD Rsv (Gnd) GND GND S P I_C L K S P I_M IS O 12 C _S D A V D D 18 CON12 x 2 L PS22HBTR I2C/SCS SCL /SPC SDA/SD I O DRDY <u>V D D 18</u> VDD 12 C _S C L Humid_Drdy GND HTS221TR VDD VD<u>D1</u>8 12C/SCS SCL /SPC SDA/SD1 SDO INT VDDio VDD Rsv (Gnd) GND GND C15 C16

Figure 3: Module schematic

PCB overview STEVAL-MKI128V5

5 PCB overview

Figure 4: PCB top

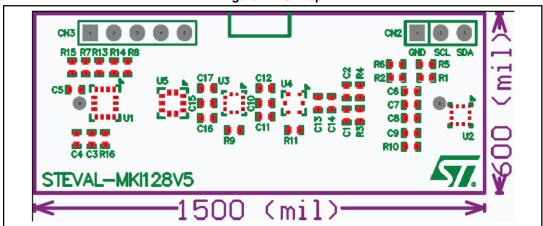
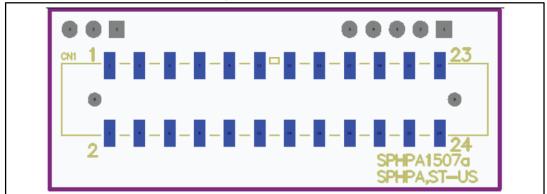


Figure 5: PCB bottom



STEVAL-MKI128V5 Revision history

6 Revision history

Table 1: Document revision history

Date	Version	Changes
21-Apr-2016	1	Initial release.
18-Jul-2016	2	Updated -40 to +85°C temperature range feature on the cover page.

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