FS3000-EVK

Air Velocity Sensor

The FS3000 evaluation kit can display measurements with the on-board display and log data via the USB interface to the PC GUI software.

Features

- USB-to-I2C interface board
- Data log application
- USB power or battery operation
- FS3000 module on adapter board with extension cable

Specifications

- FS3000-1005 module (0 to 7 meters/sec) or FS3000-1015 module (0 to 15 meters/sec)
- Supply voltage – 5V (USB)
- Battery – 3.3V

Kit Contents

- 1 interface board with OLED display
- 1 extension cable
- 1 micro-USB cable
- 1 FS3000 air velocity module

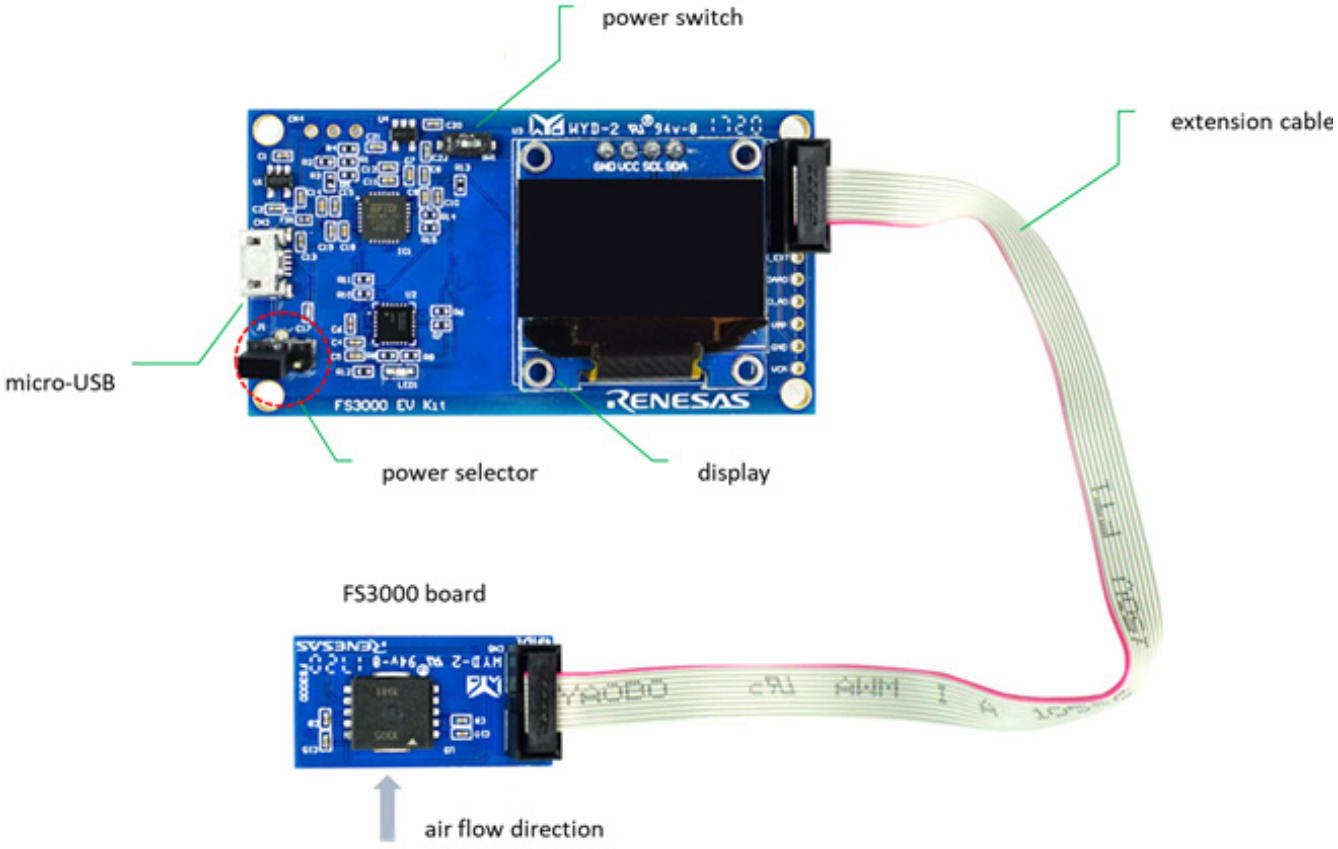


Figure 1. FS3000 Evaluation Kit

1. Functional Description

The FS3000-EVK allows for quick demonstration of the sensitivity and response of the FS3000 module to air flows. The FS3000 adapter board with extension cable can be placed on application boards, enclosures, air ducts, and custom housings to quickly take measurements without the need to integrate it to the application board.

1.1 Setup and Configuration

1. Connect the interface board to the FS3000 module with the extension cable.
2. Connect the USB cable to the interface board and to a PC USB port. Default power to the kit is set to use USB.
   a. For information on how to set the battery power, see “Power Selection”. A USB cable is not required in Battery power mode.
   b. Insert two CR2032 cell batteries on the backside.
3. Slide the power switch to the “on” position.

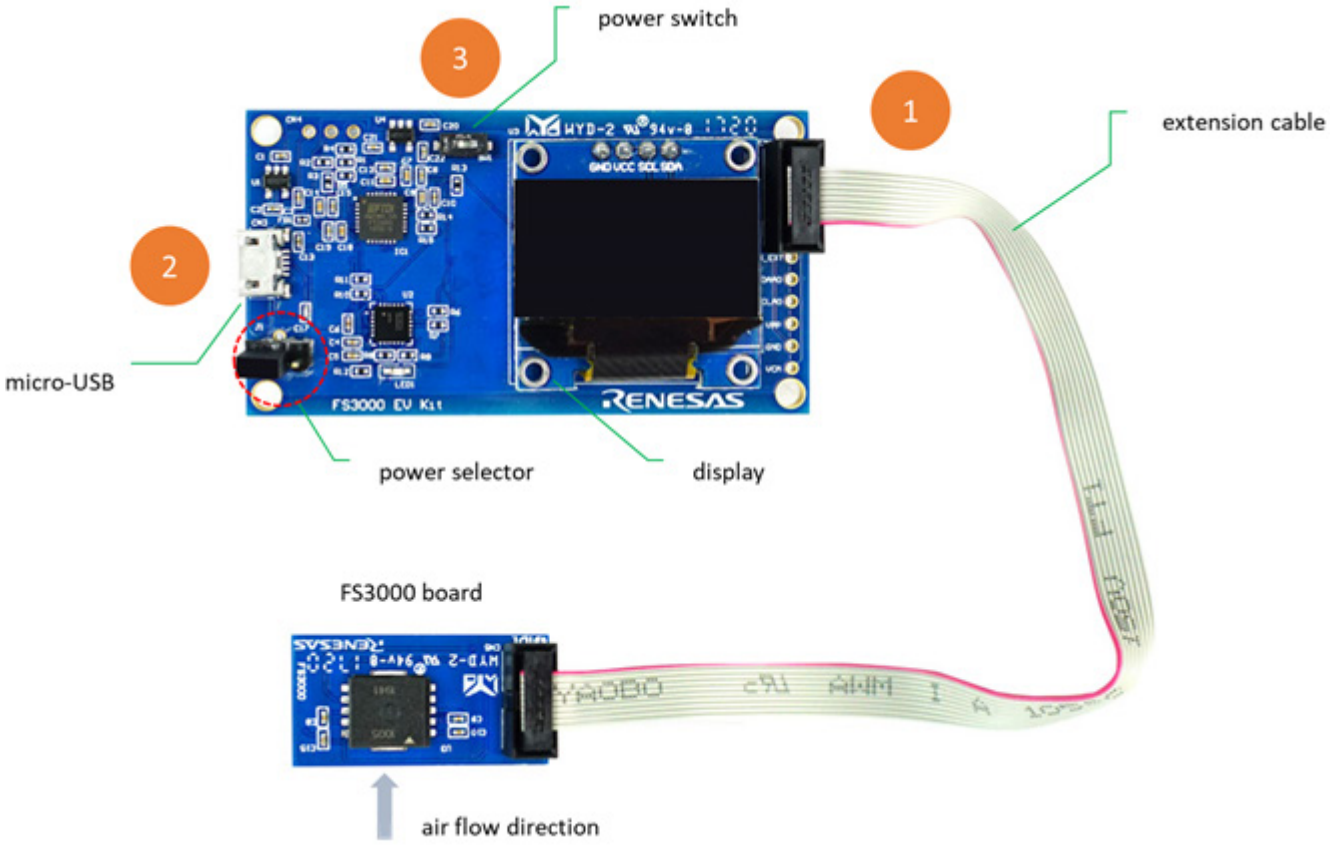


Figure 2. FS3000 Evaluation Kit – Start-up Procedure

1.2 Power Selection

1. Select the jumper positions for the USB, battery, or external power (see Figure 3 for USB and Battery selections).
2. The default jumpers are set to USB cable power. When using this mode, connect a micro-USB cable to the board.
3. Position the jumper for battery power. Two CR2032 3V batteries are required.

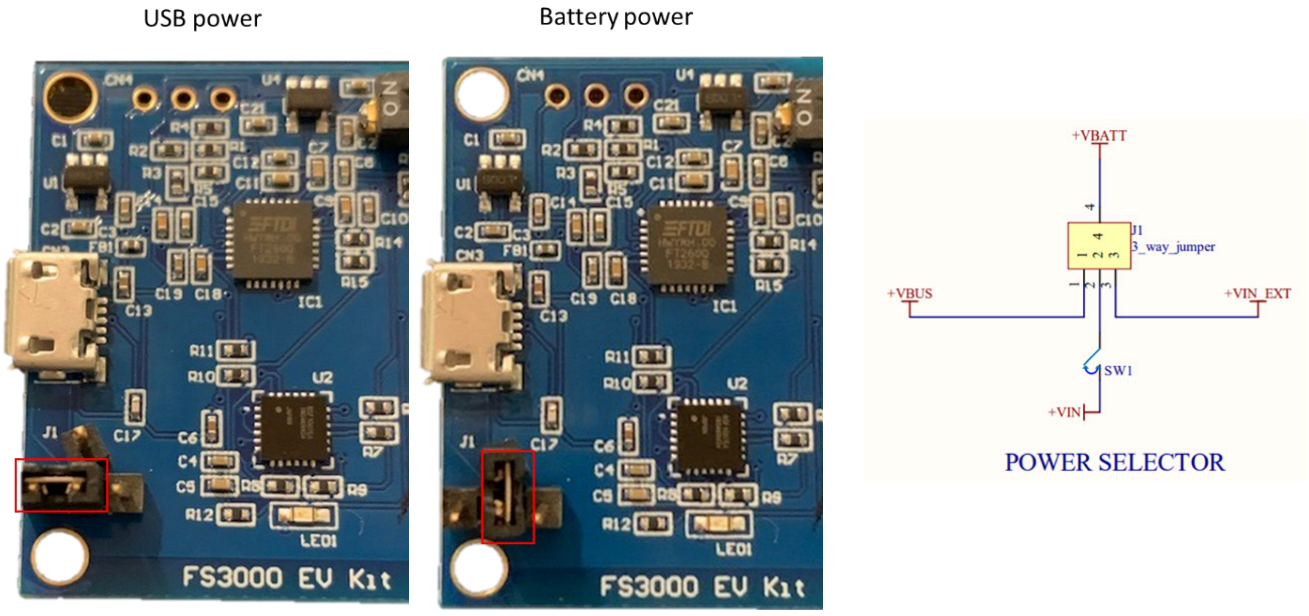


Figure 3. USB and Battery Jumper Positions

1.3 Air Flow Indicator

The air or gas flow to the FS3000 module is indicated with the arrow in Figure 2.

1.4 Software Installation

To visualize the measurements graphically and to log data:

1. Download the FS3000 Demonstration software from www.renesas.com/flow.
2. Install the Demonstration software on a Windows-compatible PC by unzipping and installing FS3000_Demo.exe.

Note: Software is not required to operate the kit. The kit displays the output in counts and correlated velocity in meters/sec.

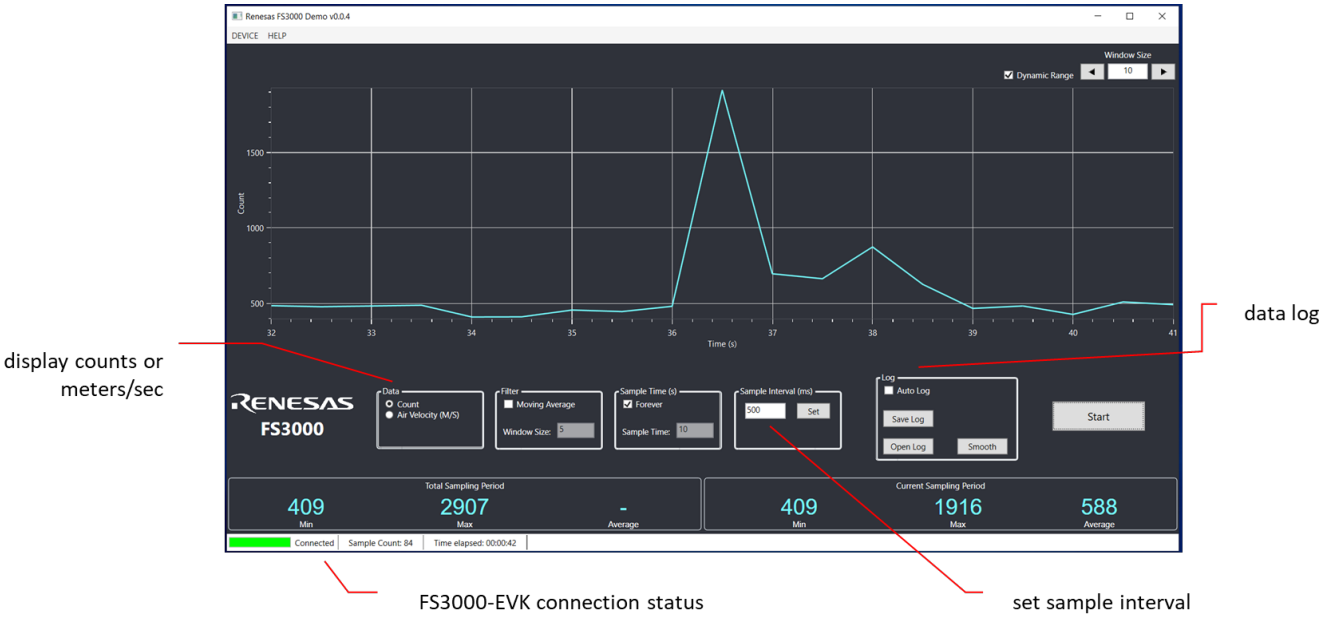
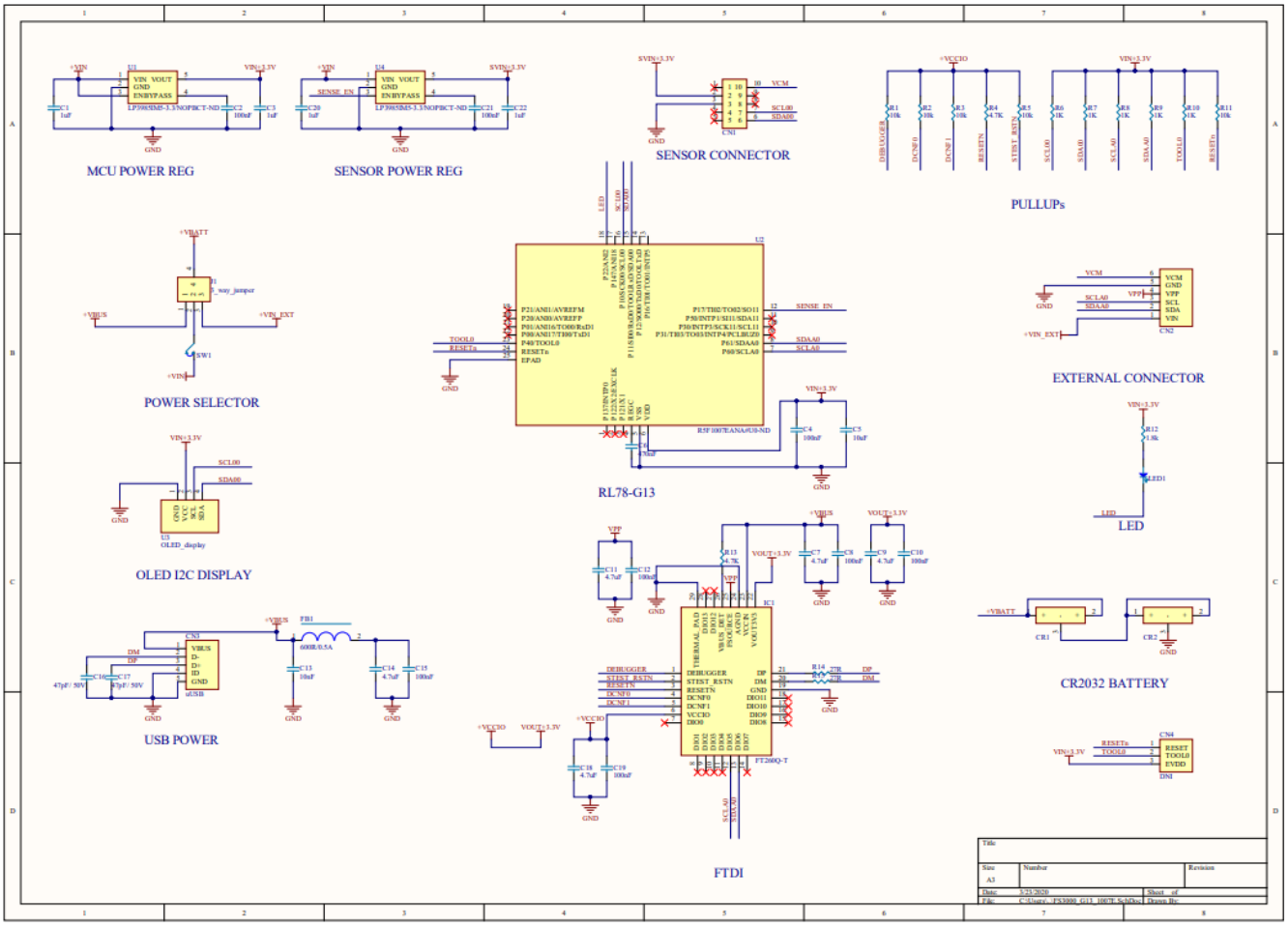


Figure 4. FS3000 Demonstration Software

2. Board Design

2.1 Schematic Diagram



2.2 Bill of Materials

Designator	Description	Comment	Quantity	Footprint	LibRef
C1, C3, C20, C22	Cap Ceramic 1uF 10V X5R 20% SMD 0402 85C Paper T/R	1uF	4	C0402	CL05A105MP5NNNC
C2, C4, C8, C10, C12, C15, C19, C21	Cap Ceramic 0.1uF 16V Y5V -20% to 80% SMD 0402 85C T/R	100nF	8	C0402	CL05F104ZO5NNNC
C5	10µF 6.3V Ceramic Capacitor X5R 0402 (1005 Metric) 0.039" L x 0.020" W (1.00mm x 0.50mm)	10uF	1	C0402	GRJ155R60J106ME11D
C6	CAP CER .47UF 10V 20% X7S 0402	470nF	1	C0402	CGA2B3X7S1A474M050BB
C7, C9, C11, C14, C18	CAP CER 4.7UF 6.3V 20% X5R 0402	4.7uF	5	C0402	GRM155R60J475ME87D
C13	CAP CER 10000PF 50V X7R 0402	10nF	1	C0402	C0402C103K5RAC-TU
C16, C17	CAP CER 47PF 50V C0G/NPO 0402	47pF/ 50V	2	C0402	CC0402JRNPO9BN470
CN1	CONN HEADER VERT 10POS 1.27MM	3220-10-0100-00	1	10pin_1.27mm_header	3220-10-0100-00
CN2	FS3000_G10_6pin connector	FS3000_G10_6pin connector	1	6_pin_2.54mm_header	MAIN_CONN_FS3000_G10
CN3	CONN RCPT USB2.0 MICRO B SMD R/A	uUSB	1	microUSB	10118193-0001LF
CN4		DNI	1	3pin_2.54mm_hole	PROG_CONN2
CR1, CR2	Coin Cell Battery Holders COIN CELL RETAINER	3034	2	CR2032	3034
FB1	FERRITE BEAD 600 OHM 0402 1LN	600R/0.5A	1	RL0402	BLM15AX601SN1D
IC1	Integrated Circuit	FT260Q-T	1	QFN50P500X500X80-29N-D	FT260Q-T
J1		3_way_jumper	1	3_way_jumper	3-way_jumper
LED1	Standard LEDs - SMD Blue 470nm 28mcd 5mA	LTST-C193TBKT-5A	1	L0603	LTST-C193TBKT-5A

Designator	Description	Comment	Quantity	Footprint	LibRef
R1, R2, R3, R5, R11		10k	5	R0402	CRGP0402F10K
R4, R13	RES SMD 4.7K OHM 5% 1/16W 0402	4.7K	2	R0402	RC0402JR-074K7L
R6, R7, R8, R9, R10		1K	5	R0402	CRGP0402F1K0
R12		1.8k	1	R0402	2-2176325-8
R14, R15	RES SMD 27 OHM 1% 1/10W 0402	27R	2	R0402	ERJ2RKF27R0X
SW1	SWITCH SLIDE DIP SPST 100MA 6V	CHS-01TA	1	CHS-01TA	CHS-01TA
U1, U4	IC REG LINEAR 3.3V 150MA SOT23-5	LP3985IM5-3.3/NOPBCT-ND	2	SOT23-5	LP3985IM5-3.3/NOPB
U2	MCU 16BIT 64KB FLASH 24WQFN	R5F1007EANA#U0-ND	1	HWQFN_24	R5F1007EANA#U0
U3		OLED_display	1	OLED_display	OLED_display_0.96inch

2.3 Board Layout

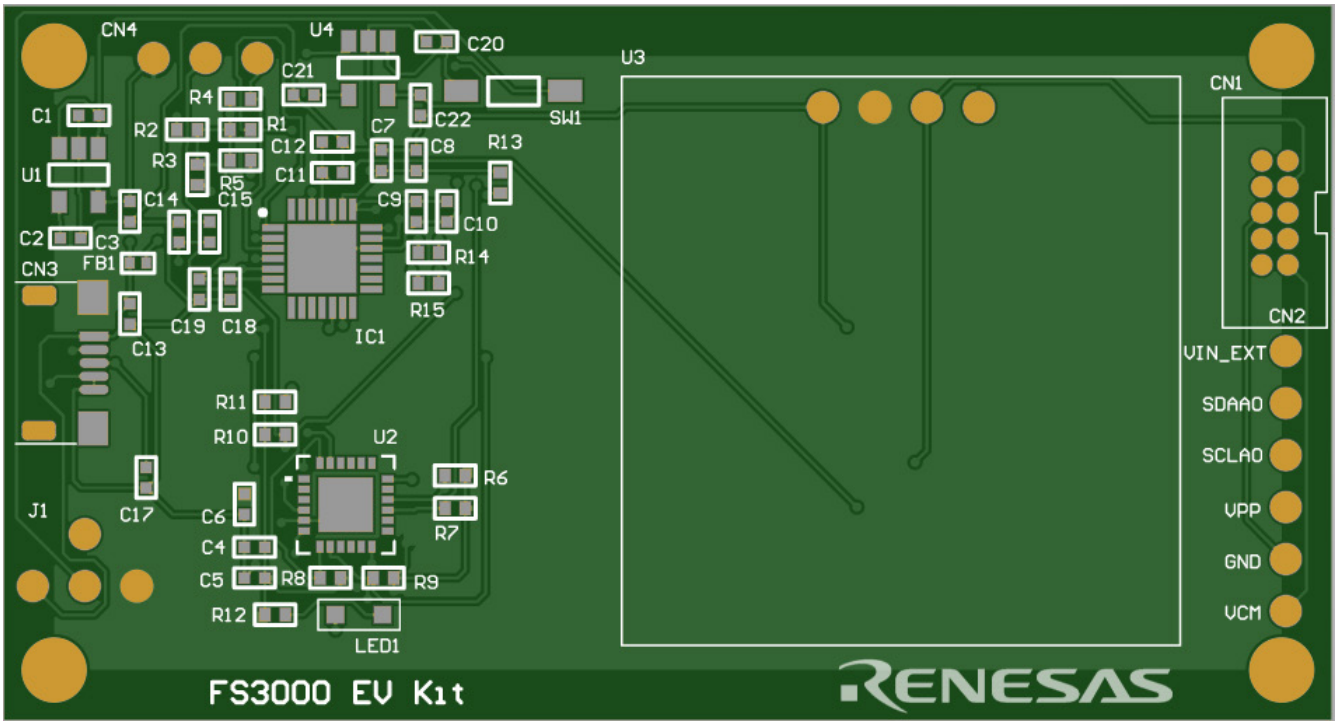


Figure 5. Top Layer

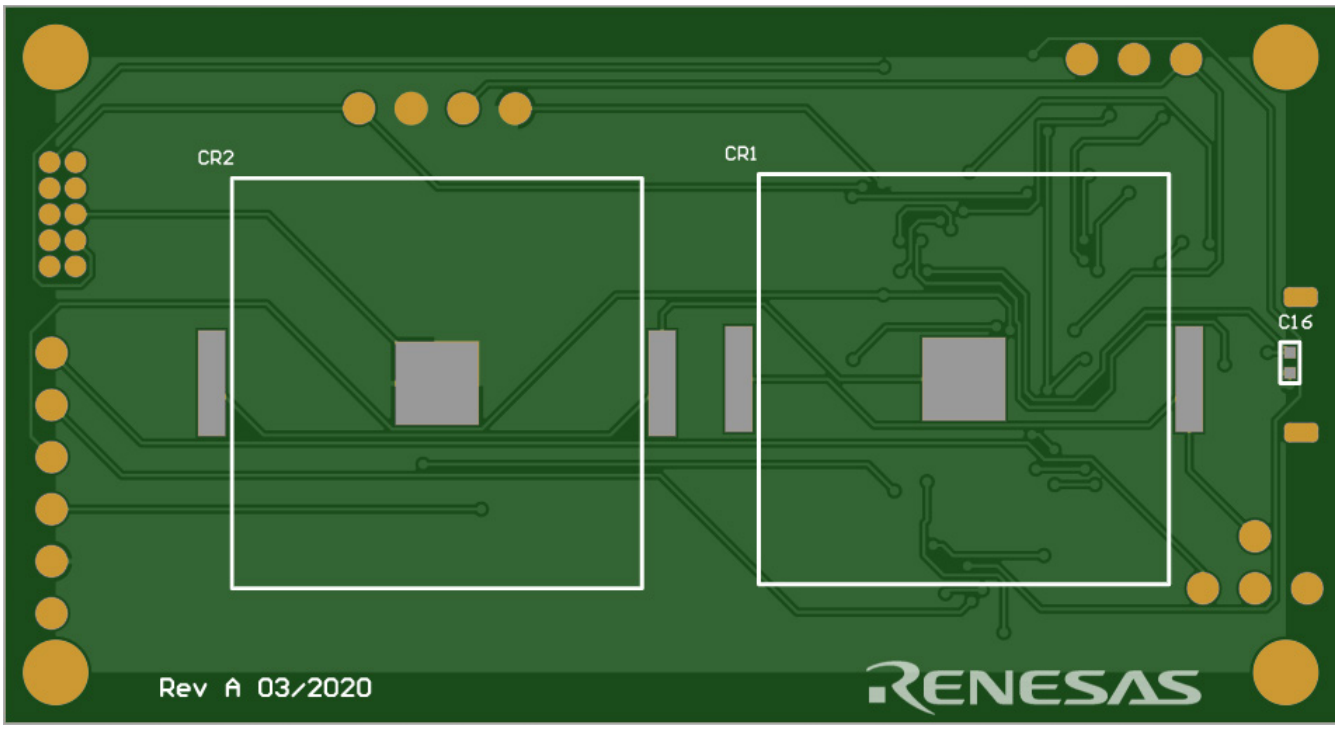


Figure 6. Bottom Layer

3. Ordering Information

Part Number	Description
FS3000-EVK	FS3000-EVK Evaluation Board

4. Revision History

Revision	Date	Description
1.00	Aug 17, 2021	Initial release.

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