

# ISL9305/ISL9305H Evaluation Board User Guide

## Evaluation Board Features

- Input voltage rating from 2.3V to 5.5V for ISL9305 and 2.5V to 5.5V for ISL9305H
- Two 800mA buck converters for ISL9305 and two 1.5A buck converters for ISL9305H
- Two 300mA LDOs
- Output voltages are programmable with I<sup>2</sup>C
- 3MHz switching frequency
- Connector, test point and Jumper

## Required Equipment

- Power supply capable of delivering up to 5.5V and 3A
- Electronic load
- Voltmeter, Oscilloscope

## Quick Setup Guide

1. Install jumpers on JP3, JP4, JP8 and JP9.
2. Connect power supply to VCC, with voltage setting within voltage rating.
3. Connect electronic loads at VODCD1, VODCD2, with load setting up to 800mA for ISL9305, and 1.5A for ISL9305H.
4. Connect electronic loads at VOLDO1, VOLDO2, with current setting up to 300mA.
5. Place scope probes at 4 outputs.
6. Turn on the power supply.
7. Monitor output voltages start-up sequence in default on the scope. The waveforms will look similar to that shown in Figure 1.
8. Turn on the electronic loads at all outputs.
9. Measure the output voltages with voltmeter. The voltages should regulate within the data sheet spec limit.

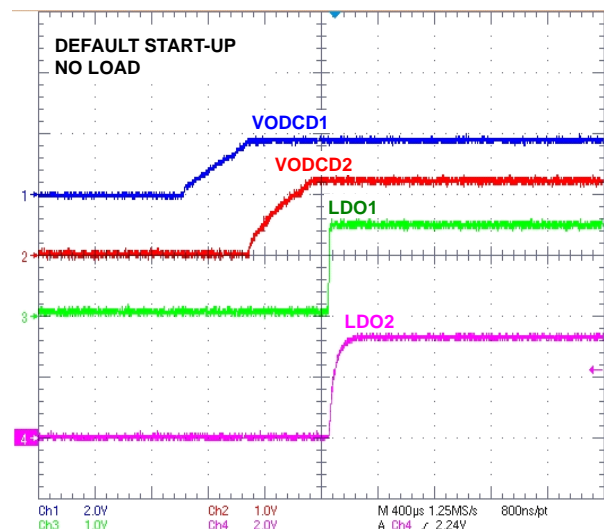


FIGURE 1. START-UP SEQUENCE

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**TABLE 1. DESCRIPTION OF CONNECTOR AND TEST POINT**

TEST POINT(S)	DESCRIPTION
P1, P3	VCC (Power supply input for the evaluation board)
P2, P4	GND (Ground)
P5	VODCD1 (Output of DCD1 buck converter)
P6, P8	GND (Ground)
P7	VODCD2 (Output of DCD2 buck converter)
P9	VINDCD1 (Input of DCD1 and IC internal logic and analog circuits. DCD2, LDO1 and LDO2 will not operate if VINDCD1 is open)
P10, P12	GND (Ground)
P11	VINDCD2 (input of DCD2)
P15, P17	GND (Ground)
P13	PG (Power-good signal output)
P14	VINLDO1 (Input of LDO1)
P16	VINLDO2 (Input of LDO2)
P18	VOLD01 (Output of LDO1)
P20	VOLD02 (Output of LDO2)
P19, P20	GND (Ground)
JP7	4 pin header (connector to connect I <sup>2</sup> C interface board to the EVB)

**TABLE 2. DESCRIPTION OF JUMPERS**

JUMPER	DESCRIPTION
JP1	Connecting points for connecting a load between VODCD1 to ground.
JP2	Connecting points for connecting a load between VODCD2 to ground.
JP3	Jumper installed to short VINDCD1 to VCC as input supply for DCD1.
JP4	Jumper installed to short VINDCD2 to VCC as input supply for DCD2.
JP5	Jumper installed to connect VODCD1 to FB1 pin, allowing user to program VODCD1 with the internal feedback network.
JP6	Jumper installed to connect VODCD2 to FB2 pin, allowing user to program VODCD2 with the internal feedback network.
JP8	Jumper installed to short VINLDO1 to VCC as input supply for LDO1.
JP9	Jumper installed to short VINLDO2 to VCC as input supply for LDO2.
JP10	Connecting points for connecting a load between VOLD01 to ground.
JP11	Connecting points for connecting a load between VOLD02 to ground.

## Evaluation Software Installation and Use

- Check your system specs against the system requirements listed in the following.
  - Windows 98SE, Windows XP, or Windows NT
  - CDROM drive
  - USB port
  - At least 20MB free hard disk space
  - 1024x768 or larger resolution monitor
- Install the driver for the ISLUSB2I2C interface by double clicking on the file named "usb2i2c\_installer.exe" on the ISL9305/ISL9305H eval kit CDROM. Follow the instructions that appear on-screen to install the driver.
- Install the ISL9305 evaluation software by double clicking on the file named: "ISL9305\_Eval\_Installer.exe" on the ISL9305 eval kit CDROM. Follow the instructions that appear on-screen to install the application. This software is applicable to the ISL9305H evaluation kit as well.
- Attach the ISLUSB2ISC interface to the computer using the supplied USB cable. The "Found New Hardware" dialog will appear. Select "Install the software automatically" and click "Next".
- Locate the 4-wire I2C cable that is provided with the ISLUSB2I2C kit. Attach one end of this cable to the 4-pin header on the ISLUSB2I2C interface, and connect the other end of this cable to the corresponding 4-pin header on the ISL9305 eval board.

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- Following the Quick Setup Guide on page 1 of this document, connect power supply, DC load, and other test equipment to the ISL9305/ISL9305H evaluation board, then apply power.
- Launch the ISL9305 eval software. The installer adds a shortcut in the Start menu: Start > Programs > Intersil > ISL9305 > ISL9305 Eval. Select this item to launch the evaluation software.
- When launched, the ISL9305 eval software detects the ISLUSBI2C interface. At the bottom of the ISL9305 application window is a Log textbox. The message in this textbox should report: "UB-to-I2C driver initialization successful" and "USB-to-I2C interface detected", indicating successful connection between the device and the eval software. If this message is not displayed, please check connections and try reinstalling the ISLUSBI2C driver.
- Check if the "Enable I2C Functions" box under SYS Control section is checked.
- Try reading the ISL9305/ISL9305H device registers by clicking on the READ buttons. Observe the activity reported in the Log textbox. Successful I2C communication will be reported in this textbox. If there is a communication error, this will also be reported in the Log text box.
- Also try changing the DCD or LDO voltages to a different value using the up/down arrow buttons next to that text box. The WRITE button for that register should get highlighted. Click on the WRITE button. This will update the register with the new control bits and the output voltage should change.
- Refer to the ISL9305/ISL9305H datasheet for description of the registers and control bits provided in the ISL9305, ISL9305H.

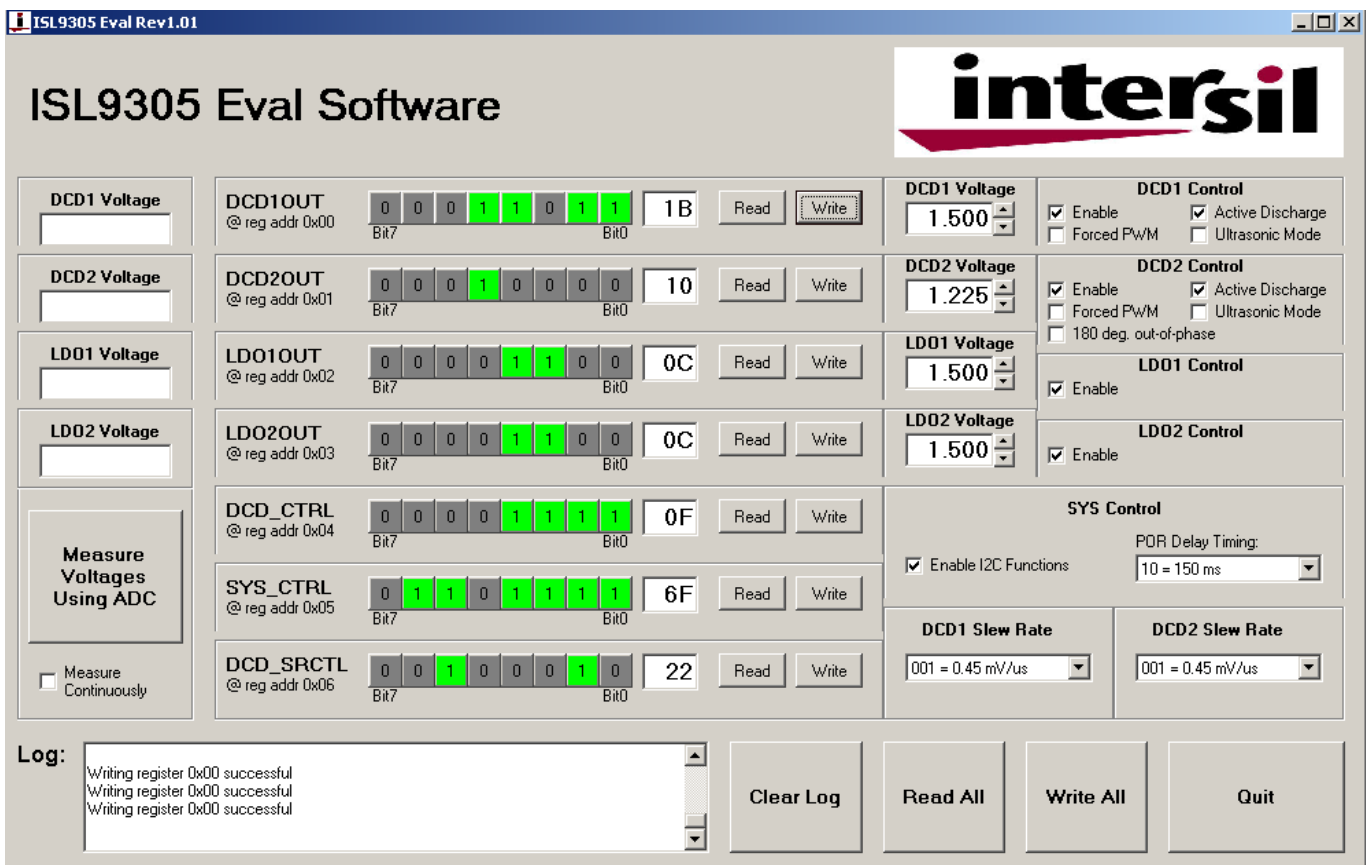


FIGURE 2. ISL9305/ISL9305H EVALUATION SOFTWARE MAIN SCREEN

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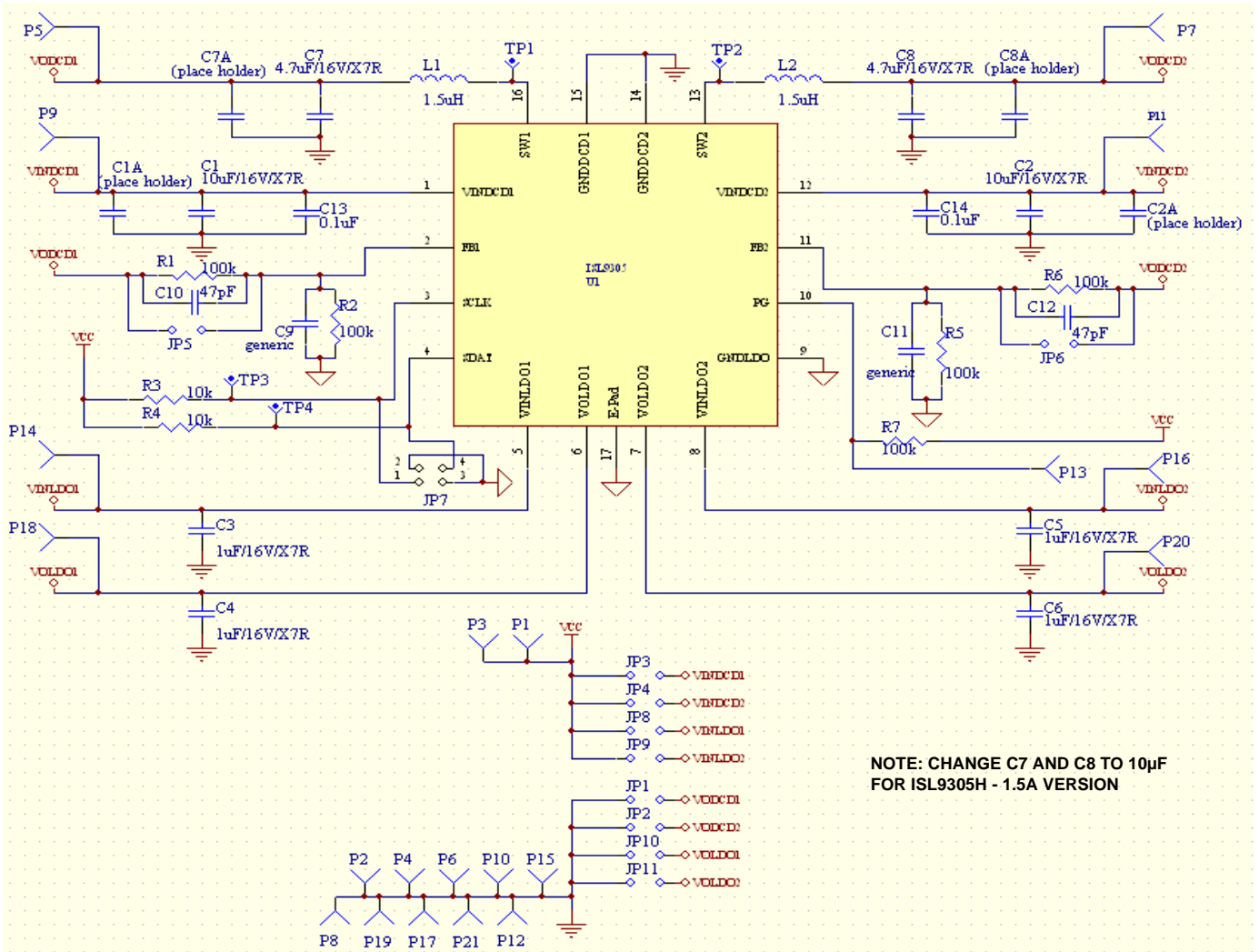


FIGURE 3. ISL9305/ISL9305H EVALUATION BOARD SCHEMATIC

# Evaluation Board Layout

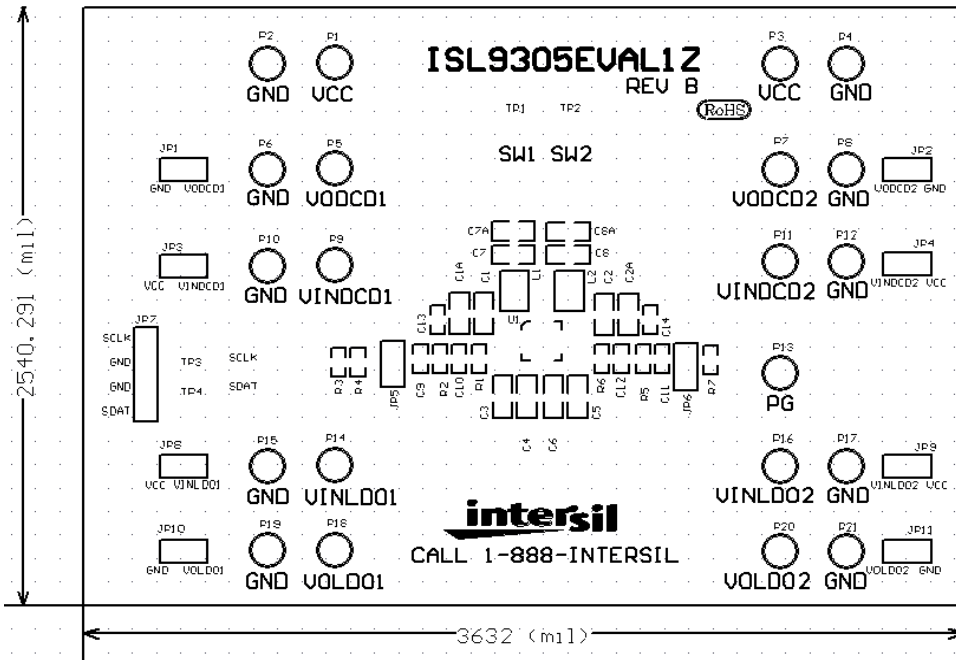


FIGURE 4. ISL9305 EVALUATION BOARD SILKSREEN TOP (SIMILAR to ISL9305H)

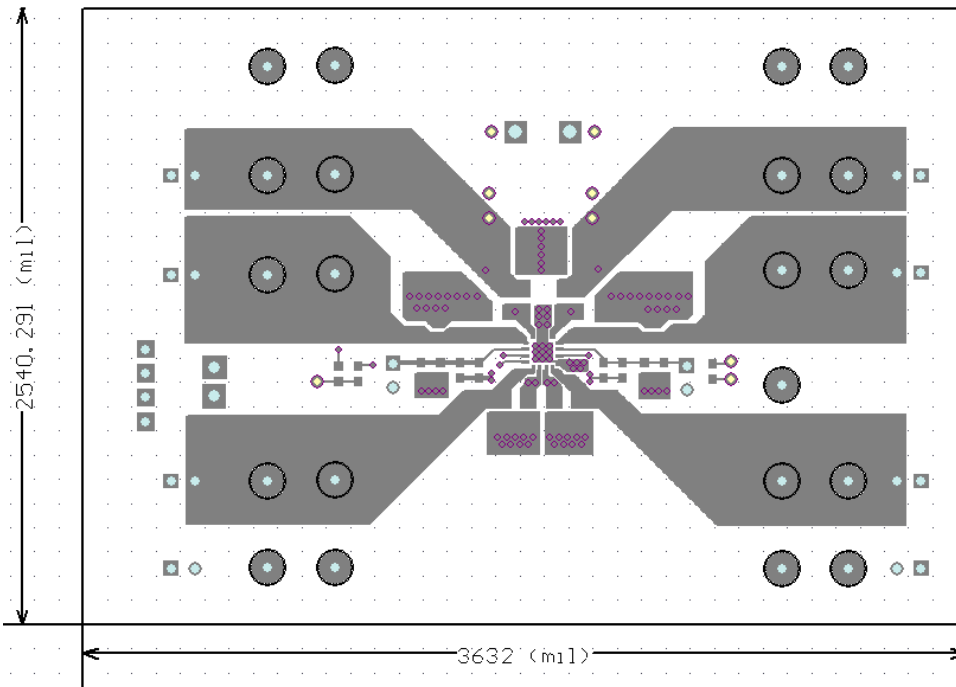


FIGURE 5. ISL9305/ISL9305H TOP COPPER

Evaluation Board Layout (Continued)

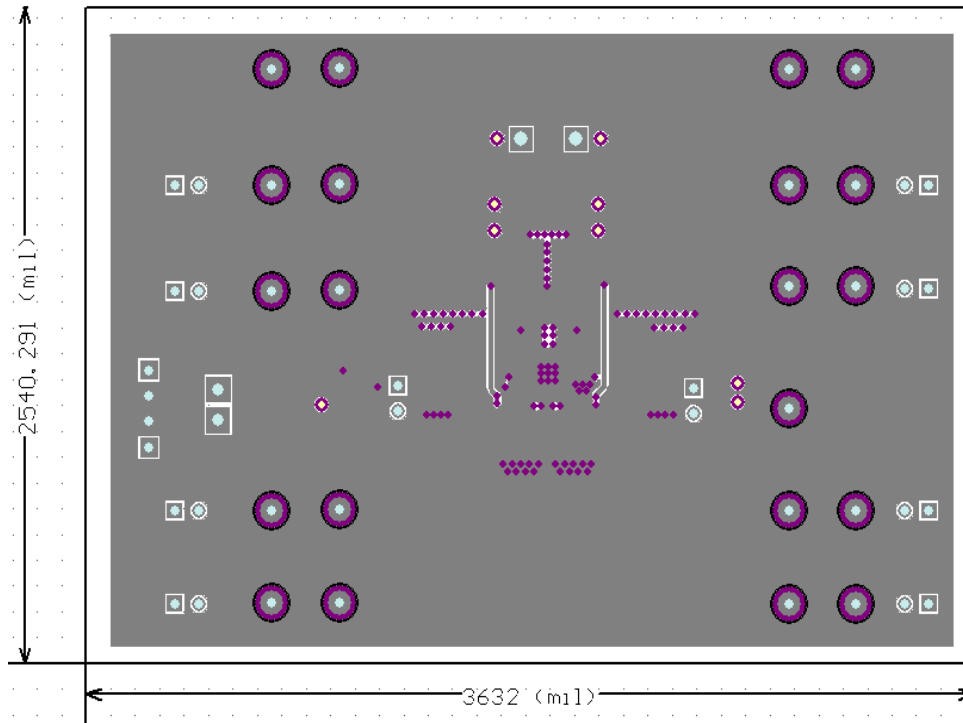


FIGURE 6. ISL9305/ISL9305H MIDLAYER 1 (AGND)

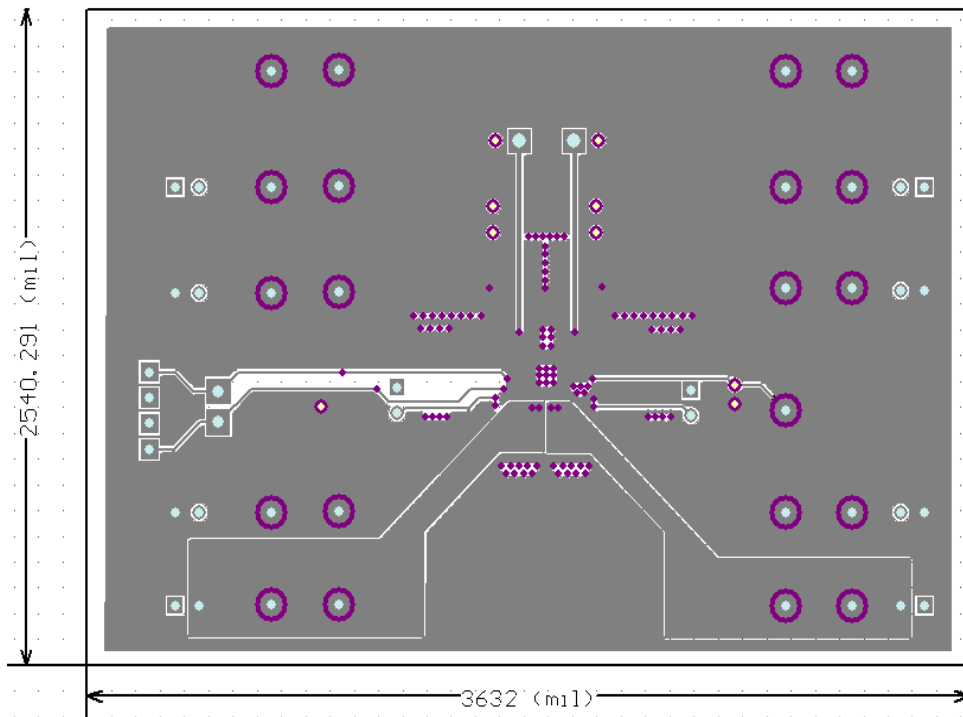


FIGURE 7. ISL9305/ISL9305H MIDLAYER 2 (VCC)

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## Evaluation Board Layout (Continued)

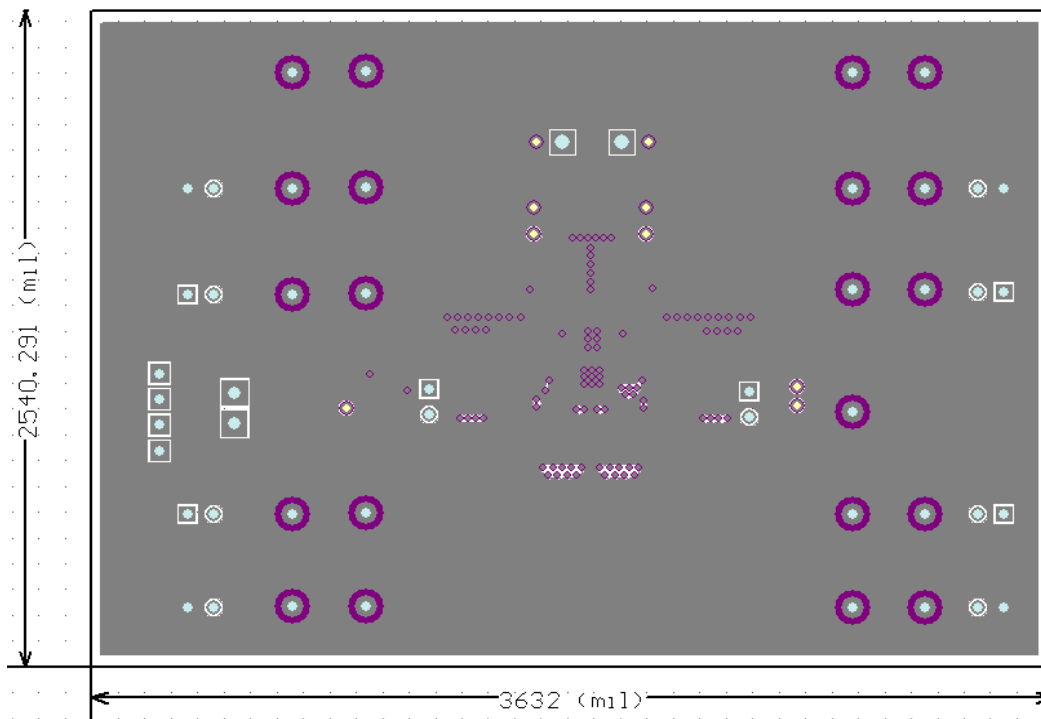


FIGURE 8. ISL9305/ISL9305H BOTTOM LAYER (PGND)

TABLE 3. ISL9305 EVALUATION BOARD BILL OF MATERIALS

ITEM#	QTY	DESIGNATOR	PART TYPE	FOOTPRINT	DESCRIPTION	VENDORS
1	1	U1	ISL9305/ISL9305H	L16.4x4 TQFN	Intersil ISL9305	INTERSIL
2	2	L1, L2	1.5 $\mu$ H	3x3x1.55	CDRH2D14NP-1R5NC	SUMIDA
3	2	C1, C2	10 $\mu$ F/10V/X7R	805	GRM21BR71A106KE51L	MURATA
4	2	C1A, C2A		805	Do Not Populate	
5	4	C3 - C6	1 $\mu$ F/16V/X7R	805	C2012X7R1C105K	TDK
6	2	C7, C8	4.7 $\mu$ F/16V/X7R	805	GRM21BR71C475KA73L	MURATA
7	2	C7A, 8A	(Place holder)	805	Capacitor, 10V rating is OK	
8	2	C9, C11	Generic	603	Capacitor, 10V rating is OK	
9	2	C10, C12	47PF/50V	603	C1608C0G1H470J	TDK
10	2	C13, C14	0.1 $\mu$ F/50V	603	GRM188R71H104KA93D	MURATA
11	5	R1, R2, R5, R6, R7	100k $\Omega$ , 1%, SMD	603	CR0603-16W-1003FT	VENKEL
12	2	R3, R4	10k $\Omega$ , 1%, SMD	603	RHM10.0KHTR-ND	Rohm
13	4	TP1 - TP4	SW1	TEST POINT	Digikey 5000K-ND	
14	4	JP1, JP2, JP10, JP11	Jumper-2 pin	Jumper-2 pin	ED7336-ND	
15	4	JP3 - JP6, JP8, JP9	Jumper-2 pin	Jumper-2 pin	538-22-28-4360	MOLEX
16	1	JP7	CON4	Header 4x1	640456-4	TYCO
17	21	P1 - P21	GOLD PIN	POWERPOST	3156-1-00-15-00-00-08-0	Mill-max

NOTE: Change C7 and C8 to 10 $\mu$ F for ISL9305H (1.5A version).

Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that the Application Note or Technical Brief is current before proceeding.

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