

## Before Getting Started

### Voltage Supplies

This document supplements the ISL54302 data sheet **FN6592**. Evaluation board users should review that document to obtain information on the part's basic functionality and power requirements. Important Note: **before powering up the board, review the Power-Up Sequence section in the ISL54302 data sheet**. There are many DC sources utilized, so a user may inadvertently misapply the power sources causing damage to the part.

Take time to review the ISL54302 Data Sheet (FN6592) and become familiar with the part's basic functions and power options. Note also that FN6591 supersedes this document with respect to updates and modifications. Always refer to that document if discrepancies occur.

No signal should be more positive than VPLUS or more negative than VSS. Also, all voltages are reference to the GND Pin. Under all circumstances, VLOGIC should be 3.0V  $\pm 10\%$  and VDD should also be 3.0V above VSS.

### Software Installation

This ISL54302EVAL1Z Evaluation board comes with software for operating the switch conditions of the board. This feature is based in a USB interface dongle that Intersil uses in many applications. This dongle comes pretested and plugged into the ISL54302EVAL1Z Evaluation board. Care should be taken not to inadvertently remove the dongle from the evaluation board as it is detachable. It is detachable so the user can remove the Dongle and connect a customer specific control if desired.

Before attaching the USB cable or applying power to the Evaluation board banana jacks, the user must execute the installation program.

Intersil\_ISL54302\_Installer.Exe. This program not only installs the Evaluation Software, but also installs the USB drivers needed to communicate with the Intersil USB Dongle.

Double click on the installer program to execute and follow the defaults for performing the installation.

All Intersil Evaluation Software is placed in a directory in the Windows "Program Files" Directory. After installation the software is available at: All Programs/Intersil/Intersil\_54302. In that directory will be both the execution program and the uninstaller.

Once installation is complete, connect the USB cable. You will receive audio notice that the new device is ready for use. Once this occurs, double click on the ISL54302 application. The operator interface screen will appear on your desktop.

Two buttons are located on the right hand side of the user screen. They provide a quick means of testing the computer to Dongle communications. Clicking on the "Led's On" will turn on the Green and Red Led's located on the USB Dongle. Clicking "Led's Off" will turn them off again.

If the LED's fail to respond:

1. Exit the application and restart the application.
2. Exit the application, disconnect the USB cable, wait for the USB disconnect tone, then connect the USB, wait for the connect tone and restart the application.

Once you can successfully turn the Dongle Led's on and off, you are ready to start working with ISL54302 device.

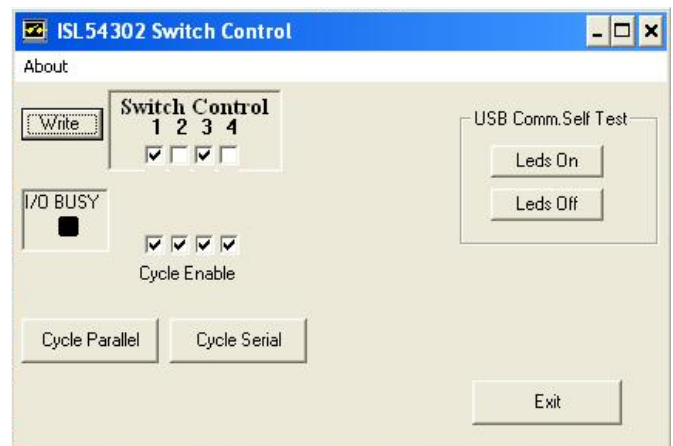


FIGURE 1. ISL54302 SWITCH CONTROL

### Device Power Supply Banana Jacks

There are five banana jacks located on the edge of the board.

- GND - the reference for all supplies always 0V's
- VSS - the negative switch operating range (-3V to 0V)
- VDD - digital logic supply, always VSS + 3V
- VLOGIC - digital interface reference always 3V
- VPLUS - Positive switch operation range, 5V to 9V

**Apply these voltages in the order detailed in the device specification.**

### Test Setup Voltages

The user may wish to adopt the procedure outlined in the "Initial Power-Up" section on page 2.

**Electrical Specifications** Evaluation Board Test, Typical Current Drain

PARAMETER	TEMP (°C)	MIN	TYP	MAX	UNITS
<b>POWER SUPPLY CHARACTERISTICS</b>					
VPLUS Supply, I (Quiescent)	25	-	15	-	μA
VSS Supply, I (Quiescent)	25	-	16	-	μA
VDD Supply, I (Quiescent)	25	-	1	-	μA
VLOGIC Internal Logic Supply, I (Quiescent)	25	-	0	-	μA

**Scope Probe Connections**

Another topic to cover before getting started is the evaluation board physical connections for waveform observations. On each schematic version, you will see a component with pins designated as leadless scope probe connections. This is not an active component but a dual pin header physically designed to accommodate connection of Active/ Differential Probes. This will minimize Ground Lead Inductance and Capacitive Loading while make waveform observations. However, the user must also be mindful of Max Voltage Limitations when using these types of probes.



Scope Probe Test Points (TP) are positioned across most device pins and power supplies.

**Initial Power-Up**

Please refer to the device specifications found in the FN6592 data sheet for power-up sequencing and current requirements.

**Test Setup Voltages**

To get started, the user may wish to adopt the following voltages which provide an analog switch range that is rail-to-rail. With these conditions, the user needs only three power supplies to get started.

- VSS = GND = 0V
- VDD = VLOGIC = 3V
- VPLUS = +6V to + 12V

The user can now open and close each switch via the software by checking and unchecking the switch controls and click the "Write" button.

**BNC (Switch Contact) Connections**

The evaluation board provides BNC connections for Switch Contact A and Switch Contact B signals see Figures 2 and 3. Since the ISL54302 is a quad switch device, there are eight BNC connections to the evaluation board.

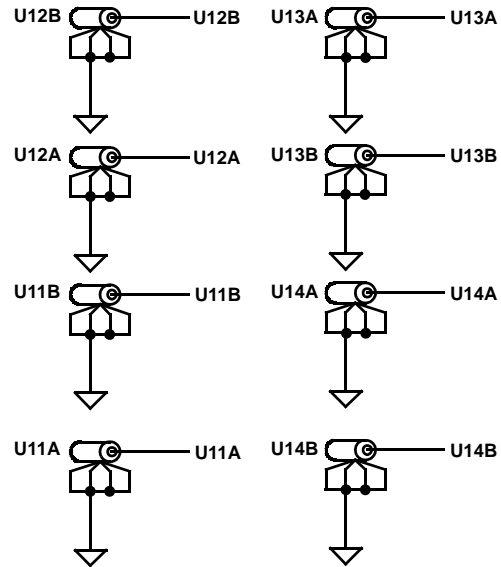


FIGURE 2. BNC CONNECTIONS FOR ALL SWITCH CONTACTS

**Test Procedure**

**First Time Setup**

**SOFTWARE INSTALLATION AND BASIC COMMUNICATIONS CHECK**

1. Remove the USB cable; do not have Evaluation board USB cable connected during software installation
2. Double click the provided installation file and follow the instructions for installation
  - Intersil\_ISL54302\_Installer.Exe.
3. When finished, exit the installation software.
4. Connect the USB cable between the Evaluation board and your computer.
5. Run the Evaluation software. Start\ All Programs\Intersil\ ISL54302 Demo
6. Click the Led's On and Led's Off buttons and verify the green and red LED's on the Intersil USB board.
7. Exit the Software

### Test Procedure For Each Board Under Test.

1. Connect USB cable between your computer and the evaluation board.
2. Start the Evaluation Software
  - "Start\All Programs\Intersil\ISL54302 Demo"
3. Verify the LED's turn on and off. (Click Led's On/Led's Off buttons on user screen.)
4. Apply power to the Evaluation Banana Jack, as specified in the FN6592 (ISL54302 Data Sheet)
5. Verify approximate currents (Electrical Specifications Table)

6. Place an ohm meter across each set of switch contacts and open and close each switch with the software. Click the associated switch check box and click "Write" button. When the switch is closed, the resistance should be less than  $5\Omega$ , and when open, it should be greater than  $500k$ .
7. If all switches operate, board test is successful.

### Schematic Information

This evaluation board supports the ISL54301 and ISL54302. In the case of the ISL54302, the Cheetah Connection is not used. This also explains why there are scope probe test points and connections made to pins designated as NC - "No Connection" on the ISL54302 version of the Evaluation board see Figure 4.

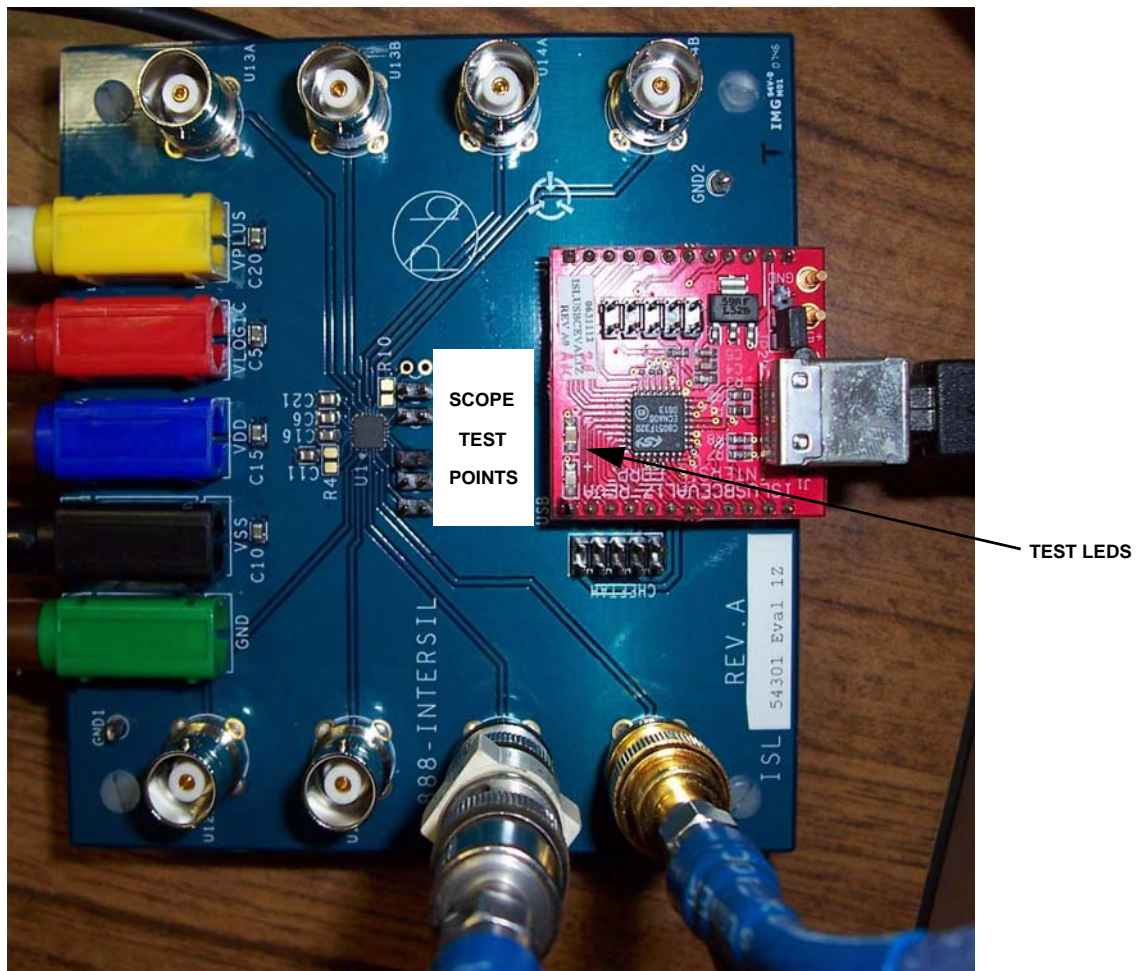


FIGURE 3. ISL54302 EVAL BOARD (BNC CONNECTORS ALLOW FOR AC STIMULUS)

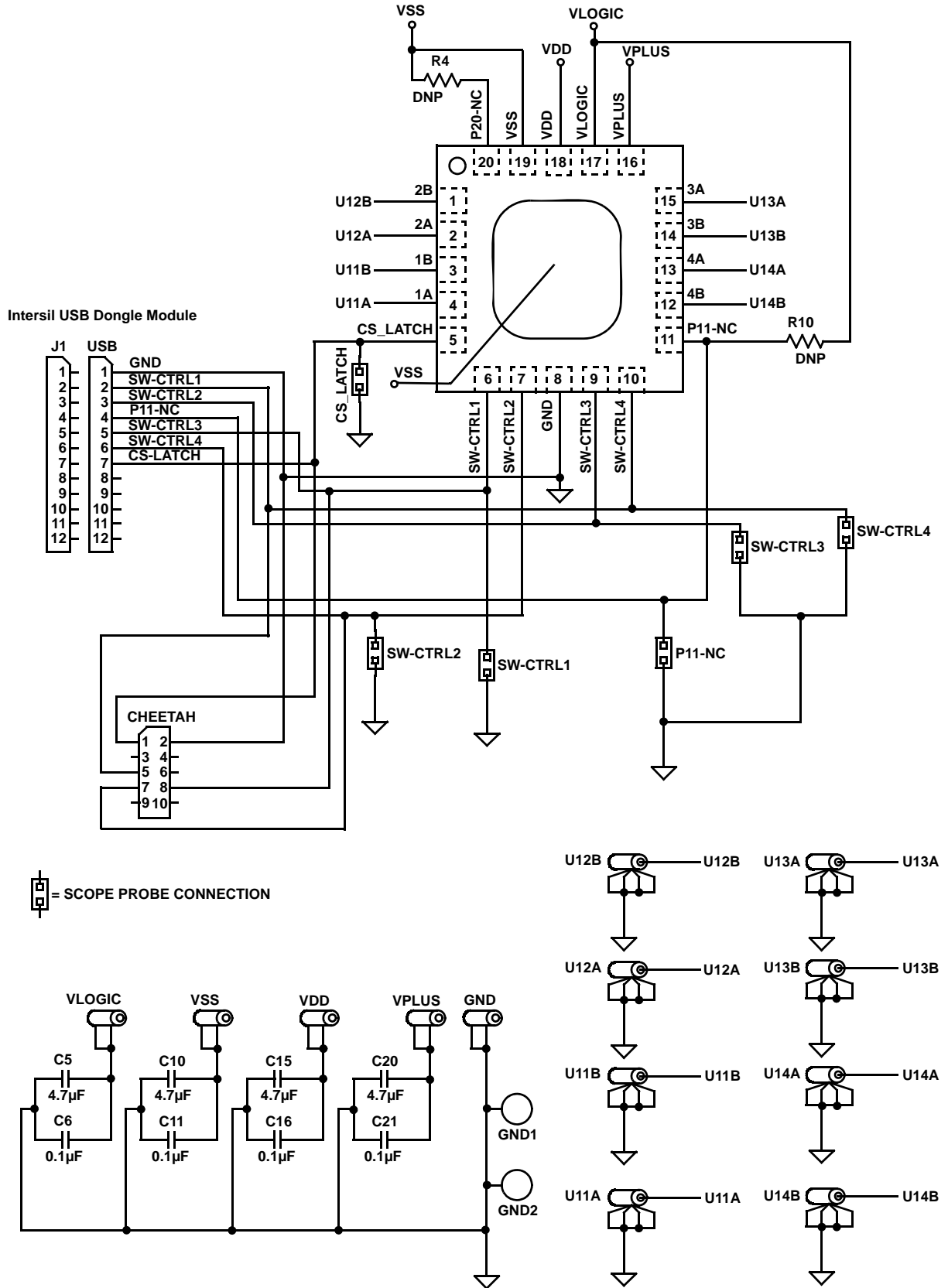


FIGURE 4. ISL54302 EVAL BOARD SCHEMATIC

## Application Note 1382

### ISL54302EVAL1Z Bill of Materials

QTY	REFERENCE DESIGNATOR	DESCRIPTION	MANUFACTURER	MANUFACTURER PART
1	SEE LABEL-RENAME BOARD	PWB-PCB, ISL5430XEVAL1Z, REVA, QFN, ROHS	Intersil	ISL5430XEVAL1ZREVAPCB
4	C6, C11, C16, C21	CAP, SMD, 0805, 0.1 $\mu$ F, 50V, 10%, X7R, ROHS	MURATA	GRM40X7R104K050AD
4	C5, C10, C15, C20	CAP, SMD, 0805, 4.7 $\mu$ F, 10V, 10%, X5R, ROHS	AVX	0805ZD475KAT2A
8	U11A-U14A, U11B-U14B	CONN-BNC, FEMALE, 50 $\Omega$ , 4 POST VERTICAL PC MOUNT, NICKEL W/GOLD CONTACT	AMPHENOL	31-5329-52RFX
2	GND1, GND2	CONN-MINI TEST PT, VERTICAL, BLK, ROHS	KEYSTONE	5001
1	VSS	CONN-PLUG, BANA-INSULSDRLESS, BLACK, 4mm, RA	DELTRON	571-0100
1	VDD	CONN-PLUG, BANA-INSUL-SDRLESS, BLUE, 4mm, ROHS, RA	DELTRON	571-0200
1	GND	CONN-PLUG, BANA-INSUL-SDRLESS, GREEN, 4mm, ROHS, RA	DELTRON	571-0400
1	VLOGIC	CONN-PLUG, BANA-INSUL-SDRLESS, RED, 4mm, RA	DELTRON	571-0500
1	VPLUS	CONN-PLUG, BANA-INSUL-SDRLESS, YELLOW, 4mm, RA	DELTRON	571-0700
1	CHEETAH	CONN-HEADER, 2x5, BRKAWY 2x36, 2.54mm, ST	BERG/FCI	67996-272
5	CLK-IN, CLK-OUT, DATA-IN, CS_PULSE, DATA-OUT	CONN-HEADER, 1x2, RETENTIVE, 2.54mm, ST, ROHS	BERG/FCI	69190-202HLF
2	J1, USB	CONN-DEVICE SKT, 1x12, SIP STRIP-100PINS, 072DIA, ROHS"	ADVANCED INTERCONNECTIONS	KSS100-33GG
1	U1	IC-QUAD SPST ANALOG SWITCH, 20P, QFN, 4X4, ROHS	INTERSIL	ISL54302IRZ
0	R4, R10	RES, SMD, 0805, DNP-PLACE HOLDER, ROHS		
4	Four corners	SCREW, 4-40x1/2in, PAN, NYLON, PHILLIPS, ROHS		
4	Four corners	STANDOFF, 4-40x3/4in, F/F, HEX, NYLON	KEYSTONE	1902D
1	Place assy in bag	BAG, STATIC, 8x12, ZIP LOC	INTERSIL	D812(212403-014)
0	INTERRUPT	DO NOT POPULATE OR PURCHASE		
1	a) Use one long label for RELABELS	LABEL, GENERIC		
0	b) RELABEL: CLK-IN as S2_CTRL	LABEL, GENERIC		
0	c) RELABEL: CLK-OUT as S3_CTRL	LABEL, GENERIC		
0	d) RELABEL: DATA-IN as S1_CTRL	LABEL, GENERIC		
0	e) RELABEL: CS_PULSE as CS_LATCH	LABEL, GENERIC		
0	f) RELABEL: DATA-OUT as S4_CTRL	LABEL, GENERIC		
1	RENAME PCB TO: ISL54302EVAL1Z	LABEL, TO RENAME BRD		
1		LABEL, FOR SERIAL NUMBER AND BOM REV #		
1	*INSTALL @ TEST	PWB-ASSY, ISLUSBCEVAL1Z	INTERSIL	ISLUSBCEVAL1ZFG

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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