

NOT RECOMMENDED FOR NEW DESIGNS
PLEASE SEE [AN1776](#) AND [AN1780](#)

ISL59605IRZ-EVALZ Evaluation Board Operation

Description

The ISL59605IRZ-EVALZ board is designed to allow evaluation of the ISL5960x (“MegaQ™”) family of parts, as well as provide the reference schematic and PCB layout of a typical MegaQ™ application.

Power Connections

The power connectors are at the middle of the top of the evaluation board. The board requires a 5V power supply capable of supplying at least 110mA. Because of the high amount of high-frequency gain required to equalize long cables, excessive noise on the power supply may introduce noise on the output signal or cause difficulty locking at longer distances. Power supplies with linear regulators are preferable to switching regulators, however, switching supplies may work acceptably well if they are adequately filtered.

Input Connections

Unshielded twisted pair (UTP) signals arrive via the RJ-45 Cat 5 connector on the left. The input signal can arrive on any arbitrary combination of pins, though it would typically be one of the standard Cat x pairs of 1 and 2, 3 and 6, 4 and 5, or 7 and 8. The 3x8 jumper block to the right of the RJ-45 jack is used to assign which Cat x pin goes to the positive MegaQ™ input (in the photo, it’s pin 8), and which goes to the negative input (pin 7). The “Termination” switch to the lower right of the jumper block

should be switched to “CAT5” (it’s set to “COAX” in the photo). Do not attach a coax cable while trying to receive a signal over Cat x. Coax signals are connected through the “COAX IN” BNC connector on the upper left. When using coax signals, set the “Termination” switch to “COAX” and ensure that no Cat x cables are attached to the RJ45 connector.

The IN+ and IN- test points near U1 can be used to view the input signals at the input to the MegaQ™ chip.

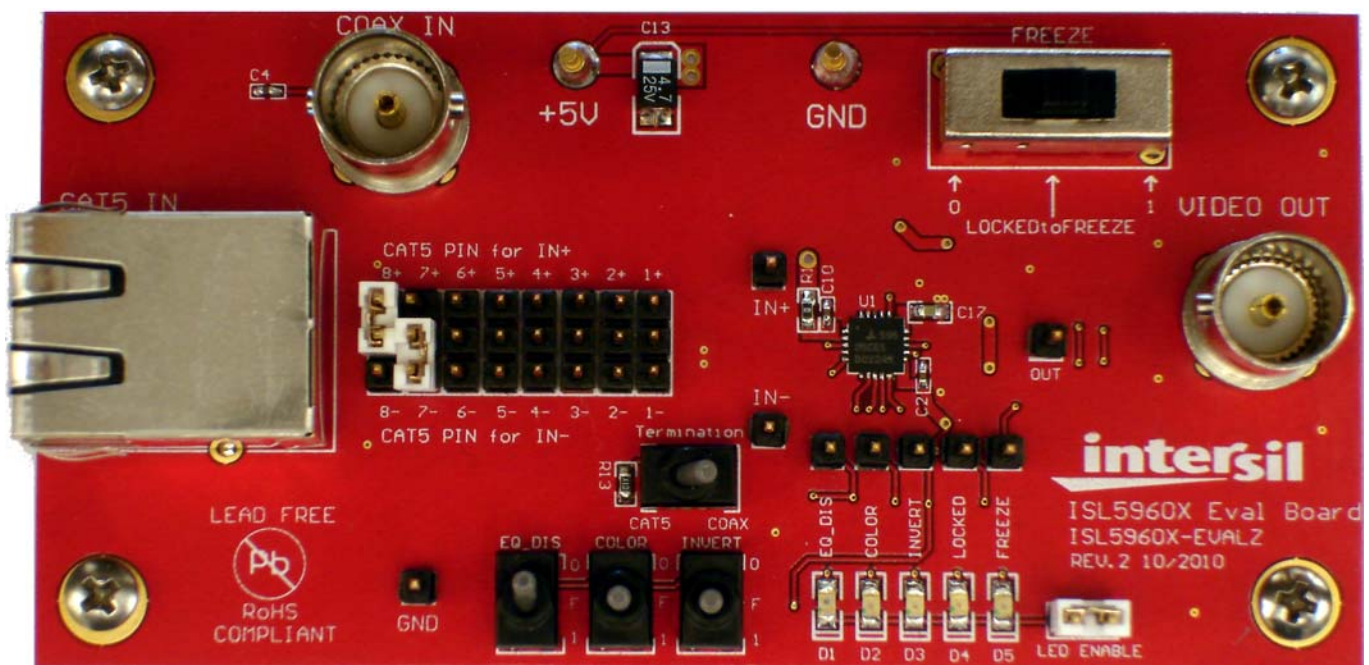
Output Connections

Standard 75Ω composite video is available at the “VIDEO OUT” BNC connector on the right, as well as the “OUT” test pin between U1 and the BNC output.

Switch Settings

There are several switches on the evaluation board that can be used to put MegaQ™ in its different operational modes:

- “EQ DIS” (EQ Enable): This can be used to disable the EQ so that an external source can drive a signal over the cable. This switch should be set to 0 for normal operation (switch in “up” position). Note: The switch used may have a middle “open” position, but it should always be set low or high.
- COLOR: The Color signal can be an input or an output (see datasheet for more information). The default position for automatic color detection is the middle position (“F” for floating, not 0 or 1).



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- **INVERT:** The Invert signal can be an input or an output (see datasheet for more info). The default position for automatic inversion detection and correction is the middle position (“F” for floating - not 0 or 1).
- **FREEZE:** The “FREEZE” switch determines the operational mode. The recommended mode is “Lock Until Reset”, which is the middle (“LOCKEDtoFREEZE”) position. Slide the switch left to the “0” position to put the part in Automatic Update mode. The “1” position freezes the equalizer in its current state. See the datasheet for more detailed information on the locking modes.

LEDs

There are 5 LEDs at the bottom right of the board that indicate the current state of the EQ_DIS, COLOR, INVERT, LOCKED, and FREEZE signals, as well as test pins for that signal directly above. The LEDs are only enabled when the LED ENABLE jumper is in place. When the LEDs are illuminated, they will draw additional supply current from the 5V supply. To accurately measure the supply current of the ISL5960x without any LED current, remove the jumper to turn off all the LEDs.

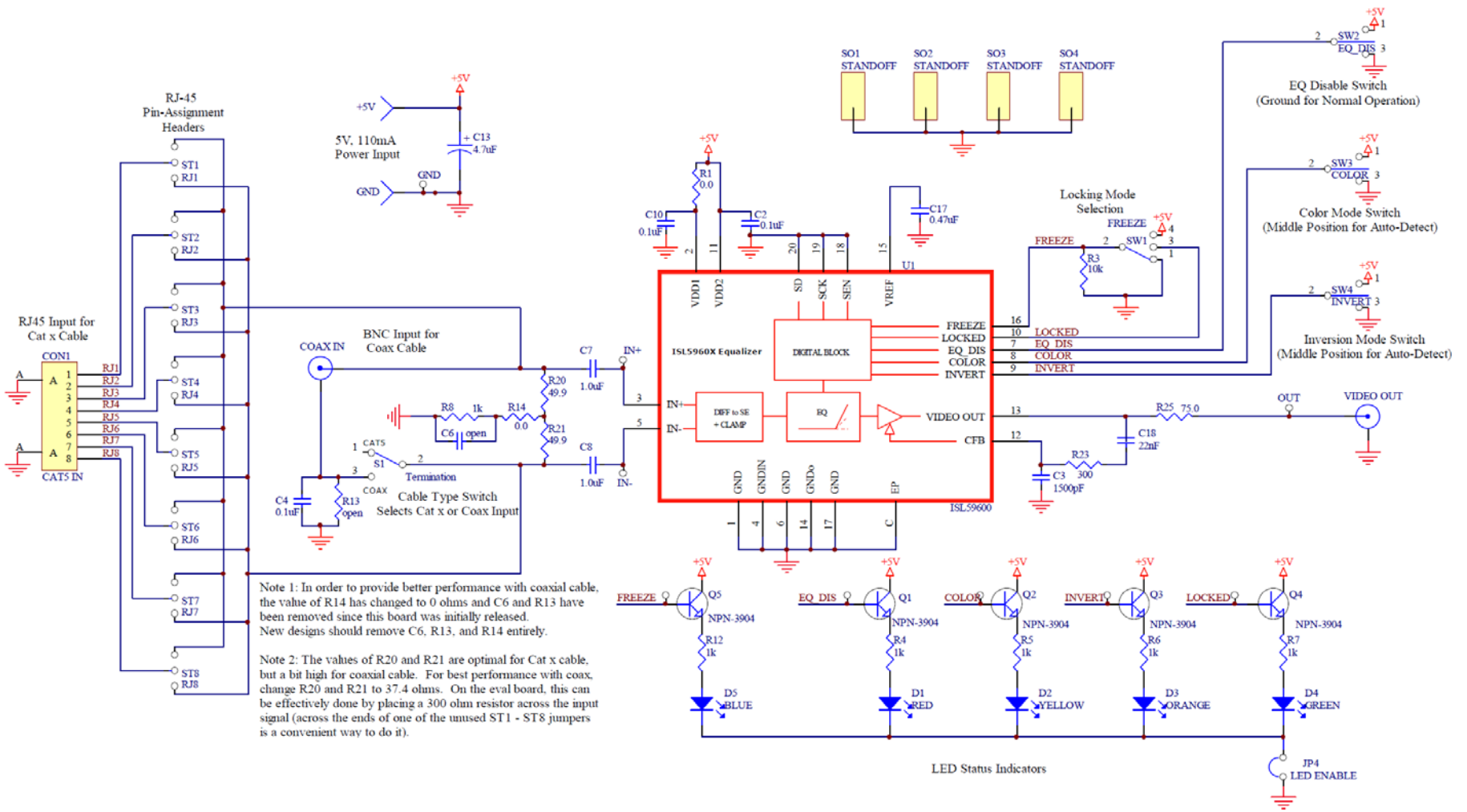
Related Documents

- ISL5960x Datasheet ([FN6739](#))
- ISL59605-SPI-EVALZ Evaluation Board (with Serial Interface) Operation (Rev 5.0) ([AN1775](#))
- ISL59605-Catx-EVZ Evaluation Board ([AN1780](#))
- ISL59603-Coax-EVZ Evaluation Board ([AN1776](#))

Troubleshooting

1. Make sure all the switches are in the correct default position as described previously.
2. Verify that there is 5V across the power supply pins, and that the board is drawing ~70mA of current. If you are seeing less current, the EQ_DIS switch may be set to the wrong position.
3. Probe the IN+ and IN- pins for a video signal. For Cat x inputs, you should see a signal on both inputs (with IN- being the inverse of the signal on IN+). For coax inputs, you should see a signal on IN+ and a DC voltage on IN-. If you do not see the expected signals, inspect your cables, video sources, etc. For Cat x signals, verify that the jumpers in the jumper block are set correctly. If you are not certain which pair of Cat x wires is carrying the signal, you can probe the middle row of 8 pins in the jumper block, where you should see the signal on 2 of them.
4. If you see the correct input signal on IN+ and IN- but are still not seeing a valid output signal, toggle the INVERT switch high and low and then back to the center position to reset the chip.
5. Probe the OUT test pin with a scope to see if there is a video signal. If you see a composite video signal, inspect your cables, video receiver, etc.

ISL59605IRZ-EVALZ Evaluation Board Schematic



ISL59605IRZ-EVALZ Board Layout

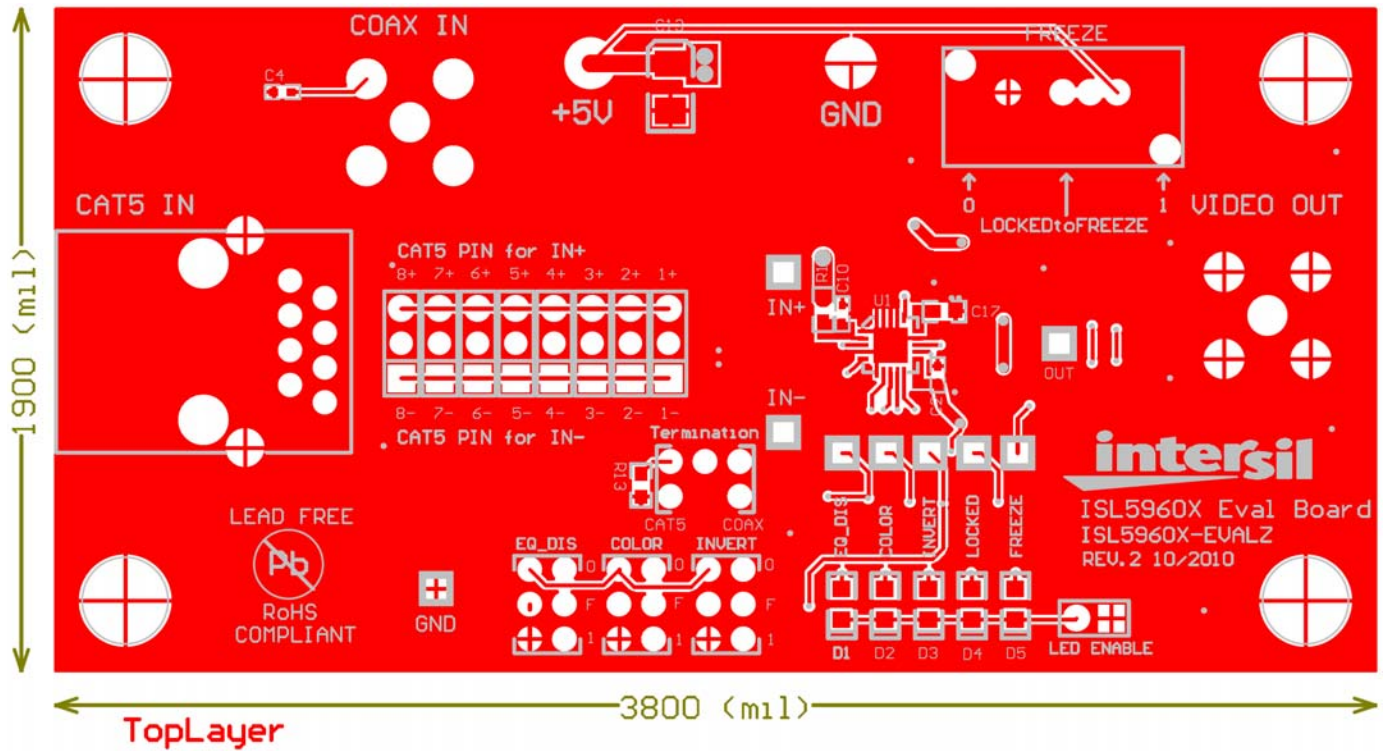


FIGURE 1. PCB TOP LAYER WITH SILKSCREEN

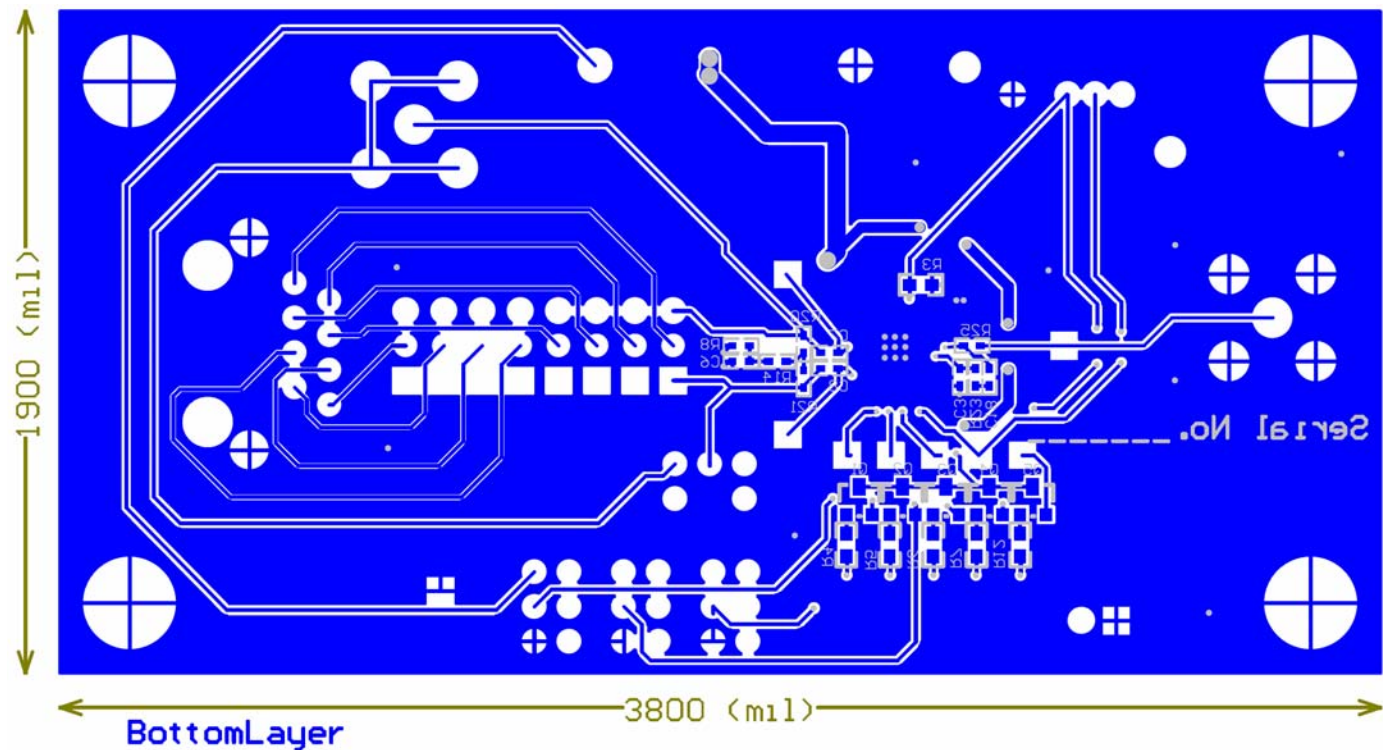


FIGURE 2. PCB BOTTOM LAYER WITH SILKSCREEN

ISL59605IRZ-EVALZ Board Layout (Continued)

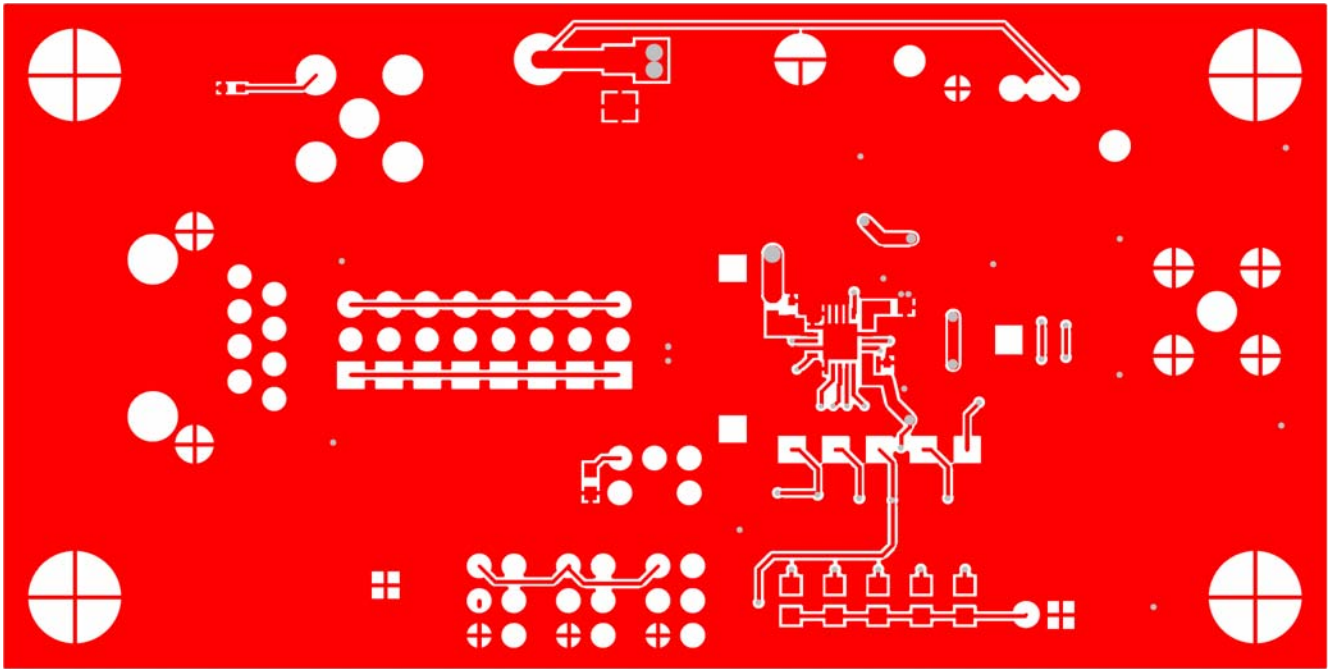


FIGURE 3. PCB TOP LAYER

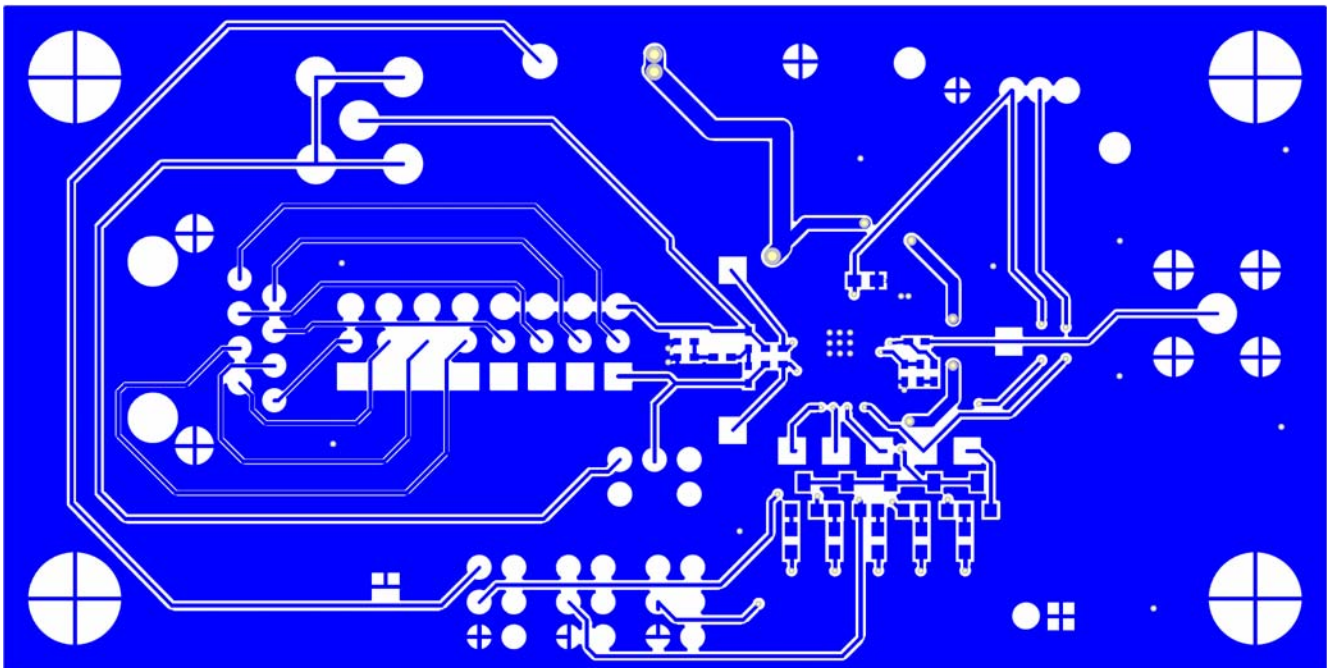


FIGURE 4. PCB BOTTOM LAYER

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Bill of Materials

QUANTITY	COMPONENT NAME	VALUE	FOOTPRINT
1	U1	ISL59600	QFN20 4MM
4	C2, C4, C6, C10	0.1 μ F	402
1	C3	1500pF	402
2	C7, C8	1.0 μ F	402
1	C13	4.7 μ F	3528
1	C17	0.47 μ F	603
1	C18	22nF	402
1	CON1	RJ-45	Modular-8S
1	D1	RED	LED-0805
1	D2	YELLOW	LED-0805
1	D3	ORANGE	LED-0805
1	D4	GREEN	LED-0805
1	D5	BLUE	LED-0805
2	J1 J4	POST	POWERPOST
9	J5, J6, J7, J11, J12, J13, J14, J15, J16	TEST POINTS	HEADER-1 PIN
1	JP4	3 PIN JUMPER	JUMPER-2PIN
2	P1, P2	BNC	BNC
5	Q1, Q2, Q3, Q4, Q5	NPN-3904	SOT-23
1	R1	0	603
1	R3	10k	603
5	R4, R5, R6, R7, R12	1k	603
1	R8	1k	402
1	R13	10	603
1	R14	50	402
2	R20, R21	49.9	402
1	R23	300	402
1	R25	75	402
1	S1	Termination	SWITCH-TOGGLE-GT11MCKE
4	S01, S02, S03, S04	STANDOFF	STANDOFF
8	ST1, ST2, ST3, ST4, ST5, ST6, ST7, ST8	3 PIN JUMPER	JUMPER-3PIN
1	SW1	SP3T SWITCH	SWITCH SP3T SLIDE-TH
3	SW2, SW3, SW4	SP2T SWITCH	SWITCH-TOGGLE-GT21MCKE

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