SILICON LABS Si875x Isolated MOSFET Driver User Guide

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The Si875x isolated MOSFET driver is ideal for driving power switches used in a wide variety of applications, offering longer service life and dramatically higher reliability compared to common SSRs. The Si875x isolated MOSFET driver utilizes Silicon Laboratories' proprietary silicon isolation technology supporting up to 2.5 kVRMS withstand voltage per UL1577 and VDE0884. This technology enables reduced variation with temperature and age, better part-to-part matching, and extremely high reliability. High integration, low propagation delay, small installed size, flexibility, and cost-effectiveness make the Si875x ideal for a wide range of isolated MOSFET gate drive applications. The Si875x evaluation board allows designers to evaluate Silicon Labs' Si875x family of MOSFET drivers. The boards come populated with either the Si8751 (digital input) or Si8752 (LED emulator input) version of the family. The board includes screw terminals for quick evaluation of the device's key parameters and also includes test points on each of the device's pins to accommodate direct connection to the designer's end system. For more ISOdriver information, visit the Silicon Labs website at **www.silabs.com/isolation**

Contents

KEY FEATURES OR KEY POINTS

- Easy to use
- Supports both dc or ac switching
- Jumper selectable power reduction options
- Jumper to evaluate Miller Clamp function
- Digital input or diode emulation options
    - Si8751-KIT (digital input)
    - Si8752-KIT (diode emulation)

Kit Contents

The Si875x Evaluation Kit contains the following items:

- Si875x-based evaluation board shown in the figure below:

  Figure 1.1. Si8751 Evaluation Board

  Figure 1.2. Si8752 Evaluation Board

EVB Test

To run the test, follow the instructions in the following sections.

Required Equipment

The following equipment is required to demonstrate the evaluation board:

- 1 digital multimeter
- 1 dc power supply: 0 – 5 V
- 1 dc power supply: 0 – 15 V
- 1 1k – 2k 0.25 W resistor
- Assorted cables and leads as necessary to connect equipment to EVB
- Si875x Evaluation Board (board under test)
- Si827x Evaluation Board User's Guide (this document)

EVB Test

To run the test, follow the instructions in the following sections.

DC Supply Configuration

1. Set the 5 V supply to output 5 VDC.
2. Turn OFF the supply and connect the positive lead to J1 pin1.
3. Connect the negative lead to J1 pin 2.
4. Set the 15 V supply to output 15 VDC.
5. Turn OFF the supply and connect the positive lead to J3 pin 1.
6. Connect the negative lead to J3 pin 2.
7. Connect the positive lead of the multimeter, and one end of the resistor, to J4 pin 1.
8. Connect the negative lead of the multimeter, and the other end of the resistor, to J4 pin 2.
9. Turn ON the dc power supplies.
10. Ensure that the current draw is less than 25 mA in any of the supplies. If it is larger, this indicates that either the board or Si875x has been damaged or the supply is connected backwards.

Test the Si875x DC Switch

1. Place a shunt between pins 2 and 3 of J2 (Si8751) or J5 (Si8752) and JP6.
2. The multimeter should measure 0 V.
3. Move the shunt from pins 2 and 3 to pins 1 and 2 on J2 (Si8751) or J5 (Si8752).
4. The multimeter should now measure 15 V.
5. Move the shunt back to pins 2 and 3.
6. Turn off the dc supplies.

Test the Si875x AC Switch

1. Move the 15 V supply positive lead to J6 pin1 and the negative lead to J6 pin 2.
2. Move the multimeter positive lead, and the resistor lead, to J7 pin 1 and the negative lead, and the resistor lead, to J7 pin 2.
3. Move the shunt from JP6 to JP8.
4. Turn on the dc supplies. Again, there should be no current draw greater than 25 mA.
5. The multimeter should measure 0 V.
6. Move the shunt on J2 (Si8751) or J5 (Si8752) from pins 2 and 3 to pins 1 and 2.
7. The multimeter should now measure 15 V.

Schematics

Layout

Bill of Materials

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Documents / Resources

	SILICON LABS Si875x Isolated MOSFET Driver [pdf] User Guide Si875x Isolated MOSFET Driver, Si875x, Isolated MOSFET Driver, MOSFET Driver, Driver, MOSFET

References

- Silicon Labs