SN65HVS882EVM

This user's guide briefly describes the operation of the SN65HVS882EVM evaluation module. Included are the schematic and board layout.

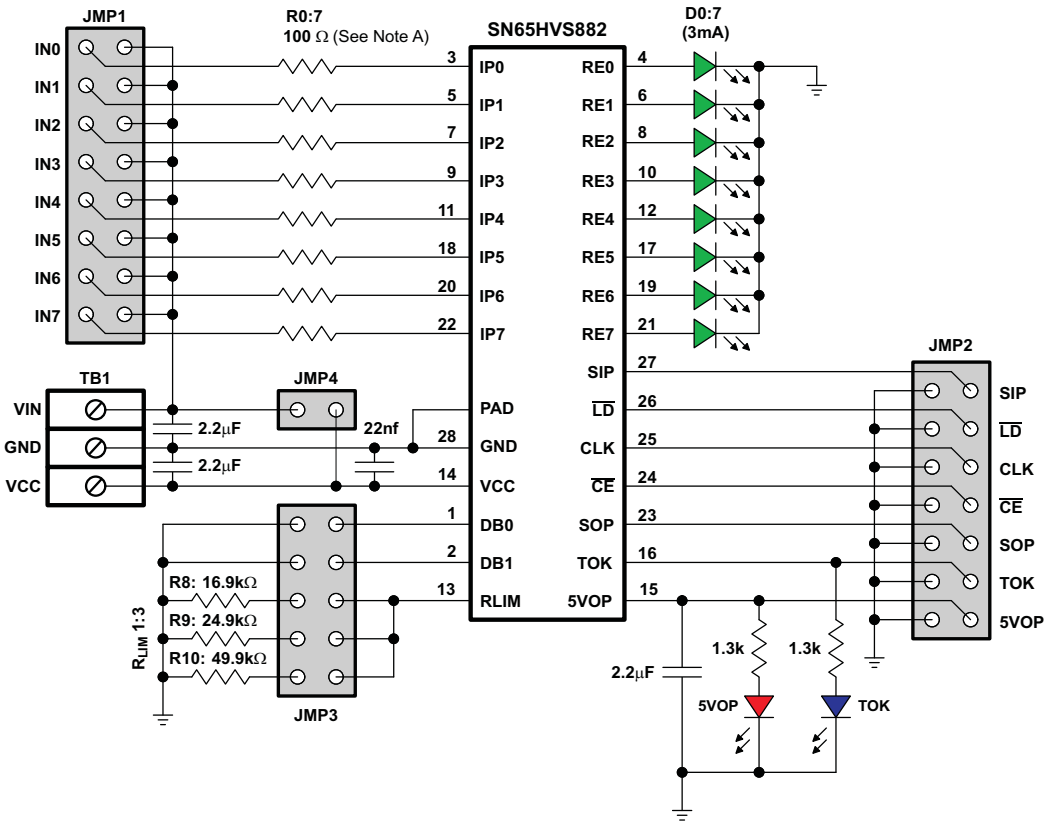
1 Introduction

The SN65HVS882 evaluation module (EVM) supports the rapid, parametric evaluation of the SN65HVS882 digital input serializer. It is intended to be used with the SN65HVS882 (SLAS601).

Note that this EVM is not intended for electromagnetic compatibility (EMC) tests.

2 EVM Schematic and Layout

Figure 1 shows the board circuit schematic, and Figure 2 shows the board layout top view. The board includes a terminal block, TB1, and four connectors, JMP1 to 4.



Note A: R0:7 had a 0-Ω resistor installed on the original EVM release.

Figure 1. SN65HVS882EVM Schematic

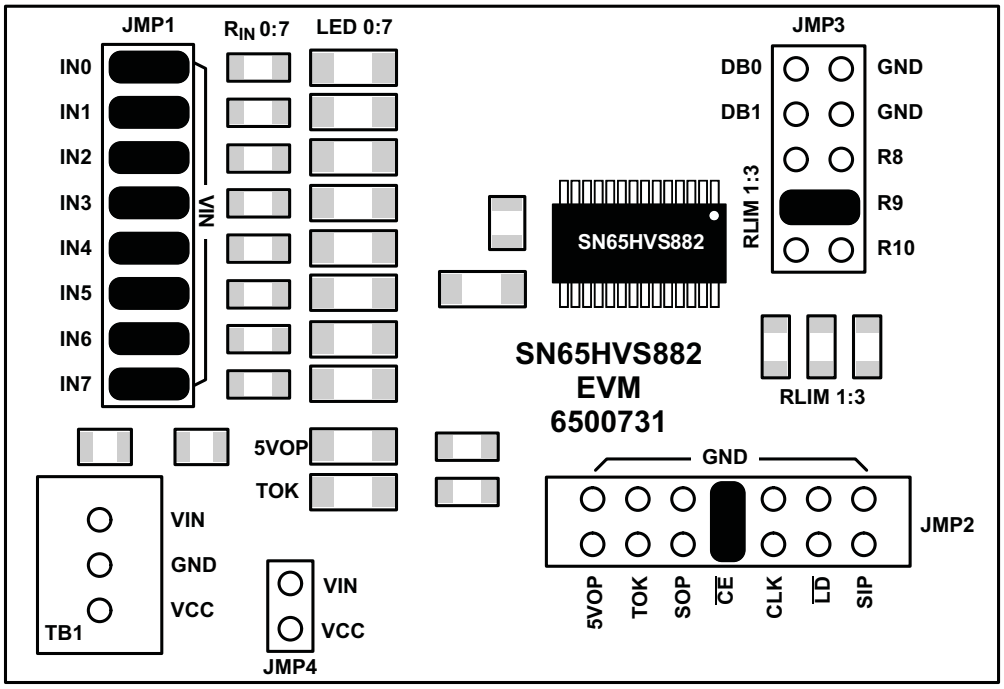


Figure 2. SN65HVS882EVM Layout

TB1 receives the board supply of 24 V, nominal. VCC supplies the SN65HVS882 device, and VIN provides the supply for sensor switches.

On the application of VCC, the blue TOK LED indicates proper board function. At the same time, the red LED indicates 5-V availability at the regulator output 5VOP.

JMP1 provides the field inputs IN0:IN7 for field voltages of 24 V, nominal. They can be applied via:

a. An external supply in series to a sensor switch connected to a field input
b. Or a sensor switch connected between and input and VIN
c. Or a direct connection between an input and VIN

CAUTION

Applying a shunt to IN0:7 inputs when VIN is greater than 24 Volts and R0:7 is less than 100 Ω can produce a transient voltage greater than the Absolute Maximum Rating for IPx Input Voltage which can lead to Electrical overstress and device damage.

In all three cases, a 24-V level represents the ON-status of a sensor switch, which is indicated by the corresponding LEDs D0:D7.

JMP2 provides access to the control and data lines of the internal serializer. To operate the serializer, CE must be connected either to ground or to CLK.

On an active-low load pulse, (a high-to-low-to-high transition) at $\overline{LD}$, the status information of the field inputs is latched into the serializer. Applying eight consecutive clock cycles at CLK, shifts out the serializer data at SOP with each rising edge of the clock.

Cascading of multiple boards is also possible by connecting the SOP output of a leading device with the SIP input of a following device.

JMP3 allows the selection of three different debounce times and 3 different current limits.

Debounce default is 3 ms and does not require any connection between the DB inputs to ground. Otherwise, for zero debounce time, connect DB1 to ground, and for 1-ms debounce time connect DB0 to ground.

Note that open DB inputs are internally pulled high and do not float.

Setting a specific current limit requires a connection between the RLIM output and one of the resistors, R_{LIM} 1:3. For a current limit of 5.3 mA, connect R_{LIM} to R8, for 3.6 mA to R9, and for 1.8 mA to R10.

JMP4 allows VIN to connect to VCC, thus driving the board with one supply only.

For detailed information on device functionality and system design recommendations, see the SN65HVS882 data sheet (SLAS601).

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EVM WARNINGS AND RESTRICTIONS

It is important to operate this EVM within the input and output voltage ranges specified in the data sheet (SLAS601).

Exceeding the specified input range may cause unexpected operation and/or irreversible damage to the EVM. If there are questions concerning the input range, please contact a TI field representative prior to connecting the input power.

Applying loads outside of the specified output range may result in unintended operation and/or possible permanent damage to the EVM. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative.

During normal operation, some circuit components may have case temperatures greater than 125°C. The EVM is designed to operate properly with certain components above 125°C as long as the input and output ranges are maintained. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors. These types of devices can be identified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during operation, please be aware that these devices may be very warm to the touch.

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