

SN65HVS880 EVM User's Guide

1 Introduction

The SN65HVS880 evaluation module (EVM) supports the parametric evaluation of the SN65HVS880 digital input serializer. It is intended to be used in conjunction with the SN65HVS880 data sheet, ([SLAS252](#)).

Note: 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.

TB1 receives the board supply of 24V nominal. V24 supplies the SN65HVS880 device, and VFIELD provides the supply for sensor switches.

Upon the application of V24, the blue Chip-Okay LED (CHOK) indicates proper board function. At the same time, the red LED indicates 5V availability at the regulator output 5VOP.

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

- an external supply in series to a sensor switch connected to a field input,
- or a sensor switch connected between an input and VFIELD,
- or a direct connection between an input and VFIELD.

In all three cases, a 24V 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, \overline{CE} must be connected either to ground or to CLK.

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

Note: the open DB inputs are internally pulled high and will not float.

Setting a specific current limit requires a connection between the R_{LIM} output and one of the resistors, R_{LIM} 1:3. For a current limit of 3.6mA connect R_{LIM} to 24.9k Ω , for 3mA to 30.1k Ω , and for 2.5mA to 36.1k Ω .

JMP4 allows to connect VFIELD to V24, thus driving the board with only one supply.

For detailed information on device functionality and system design recommendations, see the SN65HVS880 data sheet.

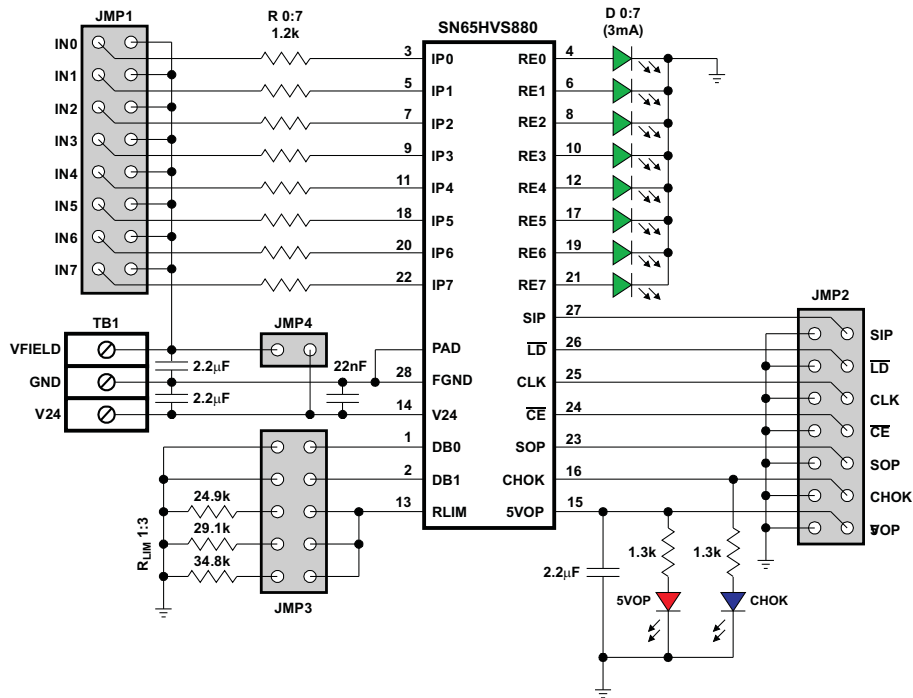


Figure 1. SN65HVS880 EVM Schematic

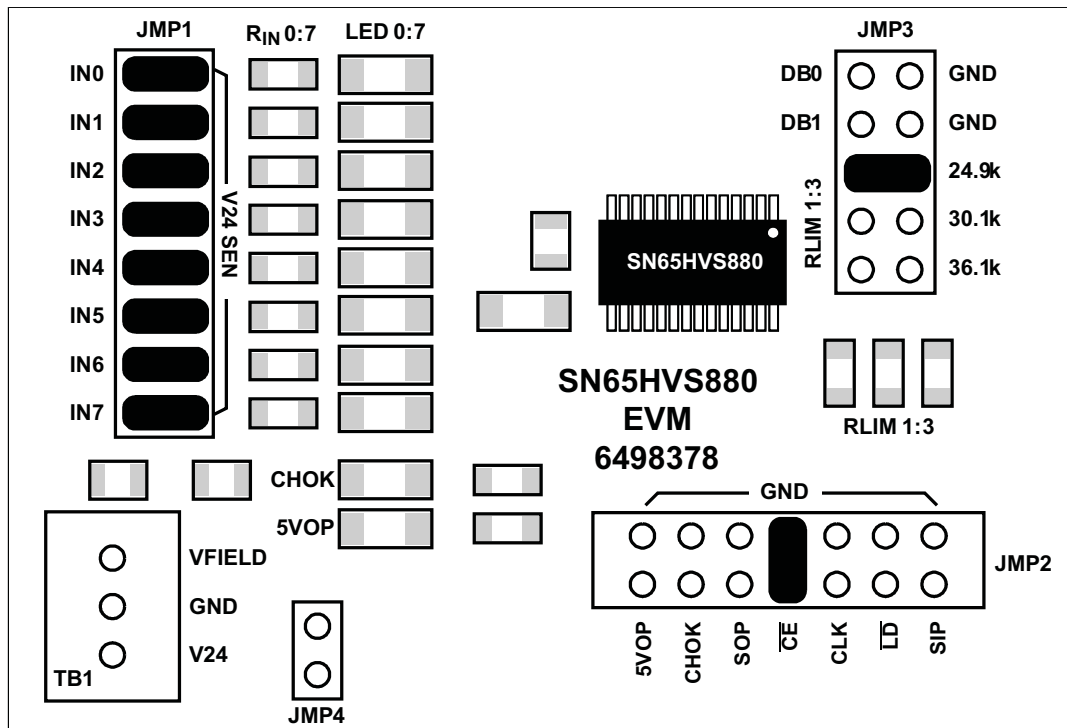


Figure 2. SN65HVS880 EVM layout

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EVM WARNINGS AND RESTRICTIONS

It is important to operate this EVM within the input voltage range of 0 V to 30 V and the output voltage range of 0 V to 5 V.

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 85°C. The EVM is designed to operate properly with certain components above 85°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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