Application Report

TMP139 Breakout Board Overview

ABSTRACT

The TMP139 WCSP Breakout Board is a small footprint board designed for the TMP139YAH. The 100-mil spaced vias are made to solder 100-mil header pins for easy evaluation. R1 or R2 are used to set the serial address of the TMP139. Only one of the two resistor position (R1 and R2) should be populated. C1 and C2 are used as bypass capacitors for V_{DDIO} and V_{DDSPD}, respectively.

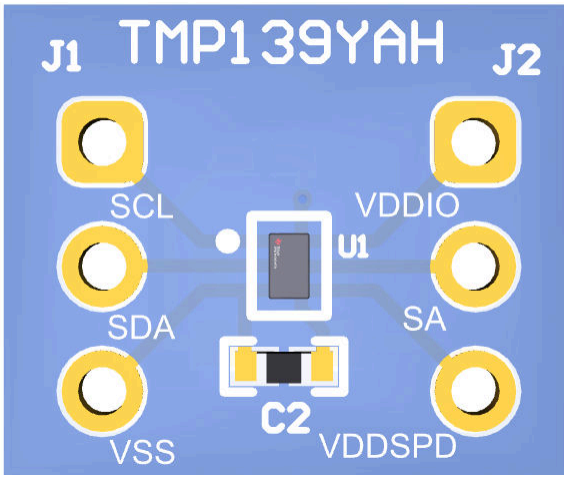

Figure 1-1. Top of TMP139 Breakout Board

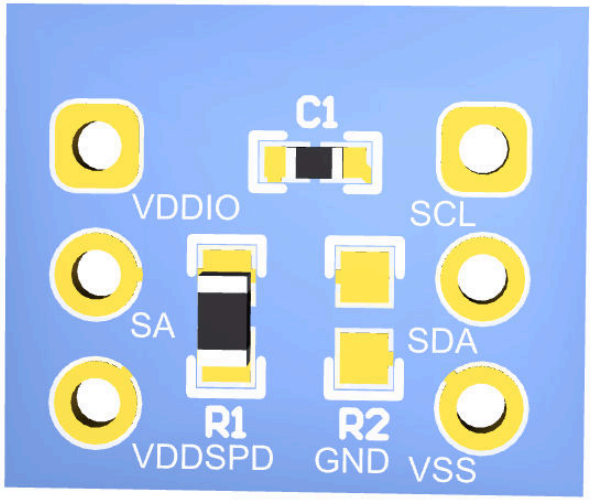

Figure 1-2. Bottom of TMP139 Breakout Board

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Table of Contents

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1 Usage Instructions

First, insert and align the terminal strips (Samtec part number TS-103-G-AA) into the via and on each side of the breakout board as shown in Figure 1-1. A spare DIP socket can be used to align pins.

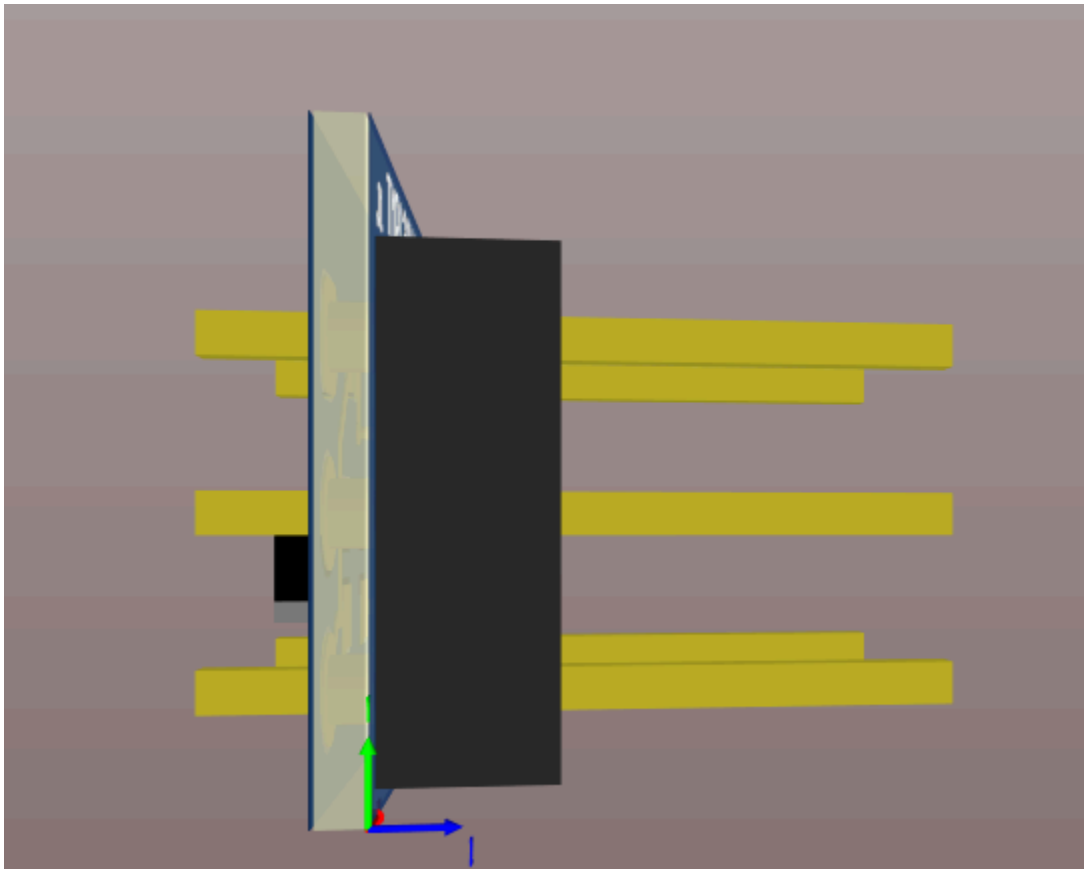

Figure 1-1. Header Installation

Then solder the connections and carefully remove from DIP socket, if applicable.

2 Changing Device Address

Footprints for R1 and R2 can be used to set the address of the TMP139. Only one of these footprints should be populated at a time with a 0-Ω resistor. R1 will tie the SA pin to V_{DDSPD} and encode the serial address as 7'b0110111. R2 will tie the SA pin to GND and encode the serial address as 7'b0010111.

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3 TMP139 Breakout Board Layout

Figure 3-1 and Figure 3-2 show the board layout of the TMP139 Breakout board.

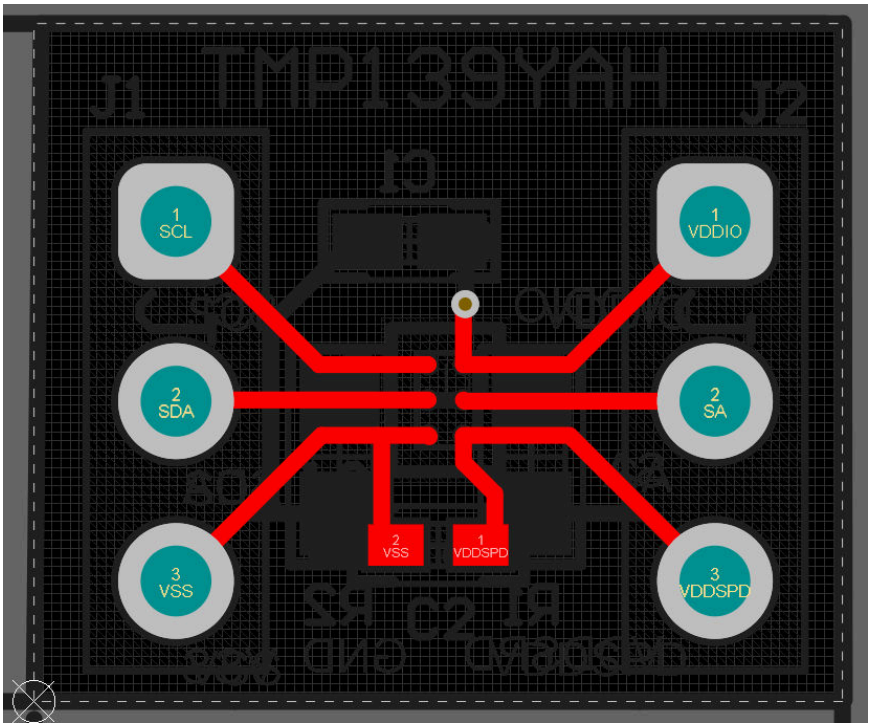

Figure 3-1. TMP139 Breakout Board Top Layer

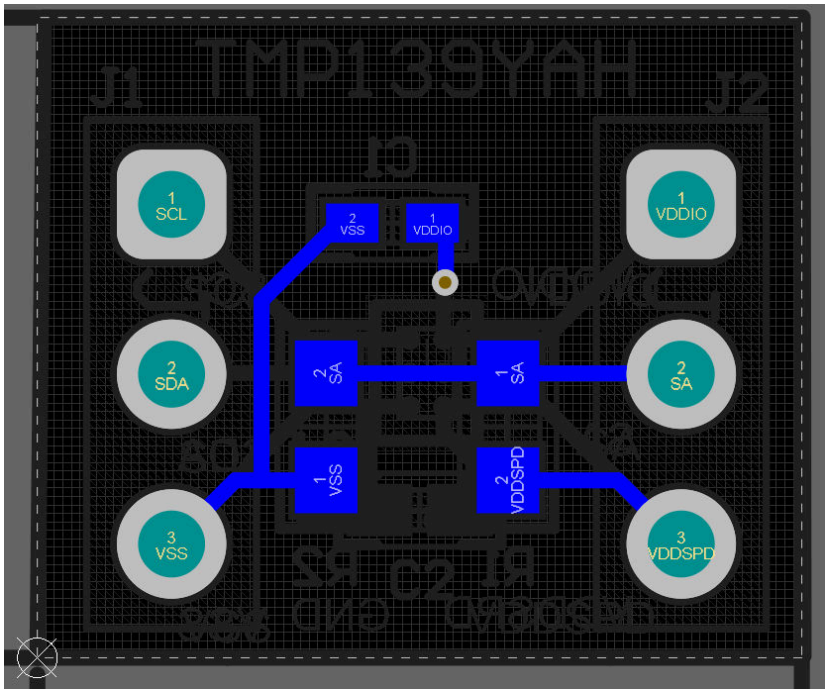

Figure 3-2. TMP139 Breakout Board Bottom Layer

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4 Schematic and Bill of Materials

Figure 4-1 shows the schematic of the TMP139 Breakout Board.

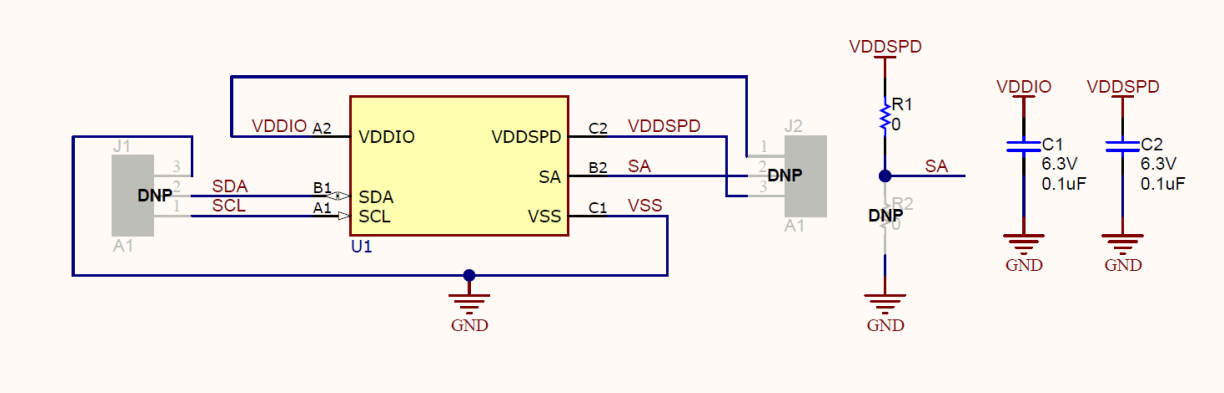

Figure 4-1. TMP139 Breakout Board

Table 4-1 contains the bill of materials for the TMP139 Breakout board.

Table 4-1. TMP139 Breakout Board Bill of Materials

Description	Designator	Part Number	Quantity	Manufacturer	Package Reference	Value
CAP, CERM, 0.1 uF, 6.3 V, +/- 10%, X7R, 0402	C1, C2	GRM155R70J104 KA01D	2	MuRata	0402	0.1uF
RES, 0, 0%, 0.25 W, AEC-Q200 Grade 0, 0603	R1	RCS06030000Z0 EA	1	Vishay-Dale	0603	0
0.5 °C accuracy, JEDEC DDR5 Grade B, digital temperature sensor with I3C interface	U1		1	Texas Instruments	DSBGA6	
Header, 100mil, 3x1, Gold, TH	J1, J2	TSW-103-07-G-S	0	Samtec	3x1 Header	
RES, 0, 0%, 0.25 W, AEC-Q200 Grade 0, 0603	R2	RCS06030000Z0 EA	0	Vishay-Dale	0603	0

5 Design Files

To download the design files, see the design files at https://www.ti.com/lit/zip/snic016.zip

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