TMP10xEVM (EValuation Module)

INSTALLATION

To install the TMP10xE VM, simply unpack it and plug it into a 9-pin RS-232 port. You can connect it to an RS-232 cable, as long as the cable carries the proper conductors. Note that this EVM requires the serial port of the to PC supply signals at the +/-12V level. Some PCs have 3.2V serial ports. The EVM will not work with these PCs.

WINDOWS SOFTWARE INSTALLATION

To install the program in the Windows environment locate the file "setup.exe" on the CD. Double click on the executable file and follow the on screen instructions.

SOFTWARE OPERATION

The TMP10x evaluation software functions as a simple digital thermometer. Each feature of the TMP10x can be exercised using the program. When the program is run, it scans the system to see what serial ports are available. If it finds at least one, it searches each serial port for a TMP10xEVM, and uses the first one it finds. If the program does not find any TMP10xEVMs, it displays a warning message. At any time, you can perform the scan again by clicking the "Rescan" button. After the board search is complete, the program's window, shown in Figure 1, will appear.
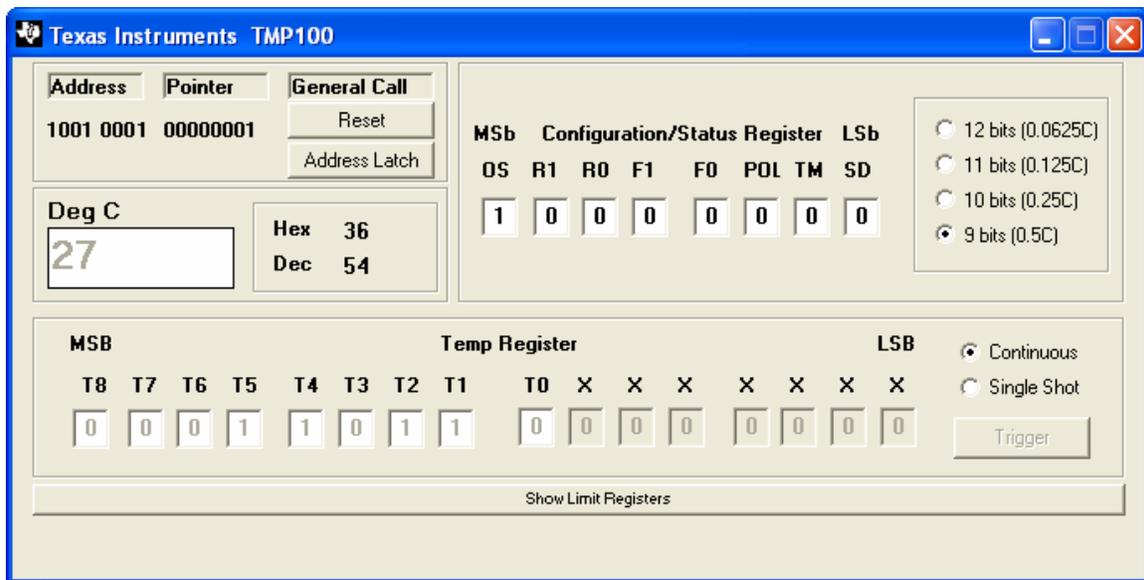
This screen has several areas of interest:

? Near the top left corner of the window is the area that shows the address of the device and also allows a user to reset the settings to its default state

? Below that is the area that displays measured temperature. User can toggle between Celsius or Fahrenheit by simply clicking on (Deg C) or (Deg F) above the actual display

? On the top right half of the window is the window that shows the content of the configuration register. User can change those values by simply typing the appropriate bit values in the appropriate bits and pressing ENTER. If user positions cursor over the label for a certain bit an explanation of that bit function will appear on the bottom of the window.

? User can also (in addition to changing directly configuration register) change the resolution of TMP10x by simply clicking on the appropriate place holder on the right side of the screen.

? On the bottom part of the screen is the display of the Temp Register that holds the results of the temperature measurements. IN the same part of the window user has the ability to choose between

single shot and continuous mode of operation, when the single shot is chosen then Trigger button is highlighted and has to be pressed in order to execute the measurement. Single shot mode is very useful in power constrained applications.

? On the bottom of the screen there is a "Show Limit Registers" bar that when pressed will reveal the additional part of the TMP10xEVM window.
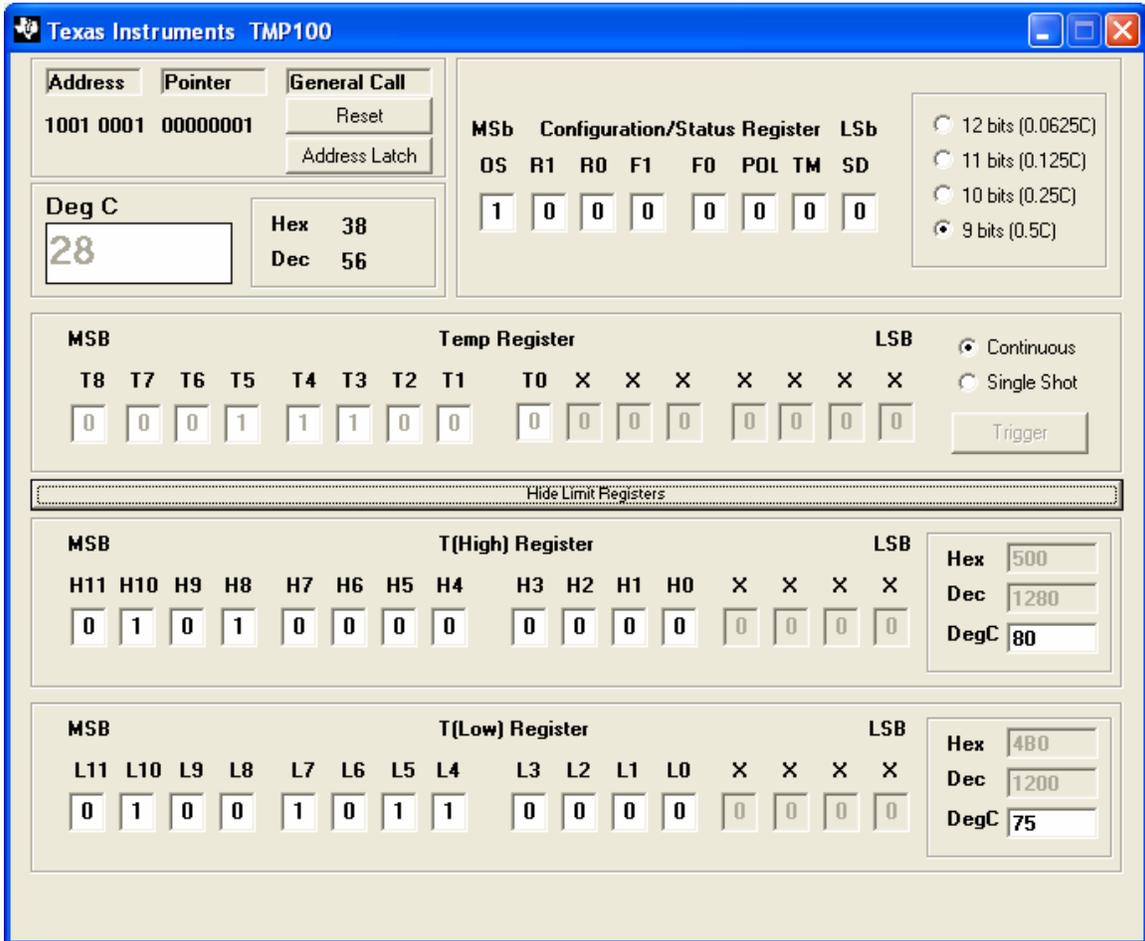
? User can set the Limit values by typing the values in either register directly or in the boxes that are located right of the registers. It is always desirable that value of T(Low) Register to be lower than T(High) Register.

CIRCUIT DESCRIPTION

The TMP10xEVM is designed to be as simple as possible. It derives power from the RS-232 port to which it is connected, and interfaces the TMP10x's I2C connection to the RS-232 port using a FET pair and an op-amp.

Only three inputs from the computer are available, but this is enough to control the TMP10x. One pin, DTR, is used to supply power for the board. When at positive voltage, most systems will generate 10V to 12V, which is enough to drive low-dropout regulator U3 through reverse-voltage protection diode D1B. A regulator with extremely low quiescent current was chosen for this.

To control SCL and SDA, the DSR and transmit-data lines are used. Dual MOSFET Q1 is used to translate the high voltage RS-232 levels into the TMP10x's logic levels. The pull-up resistors R1 and R2 are made relatively large so as to consume minimal current in the logic LOW state; since we communicate with the device slowly, the slow rise times caused by these values are of no concern.

SCHEMATICS
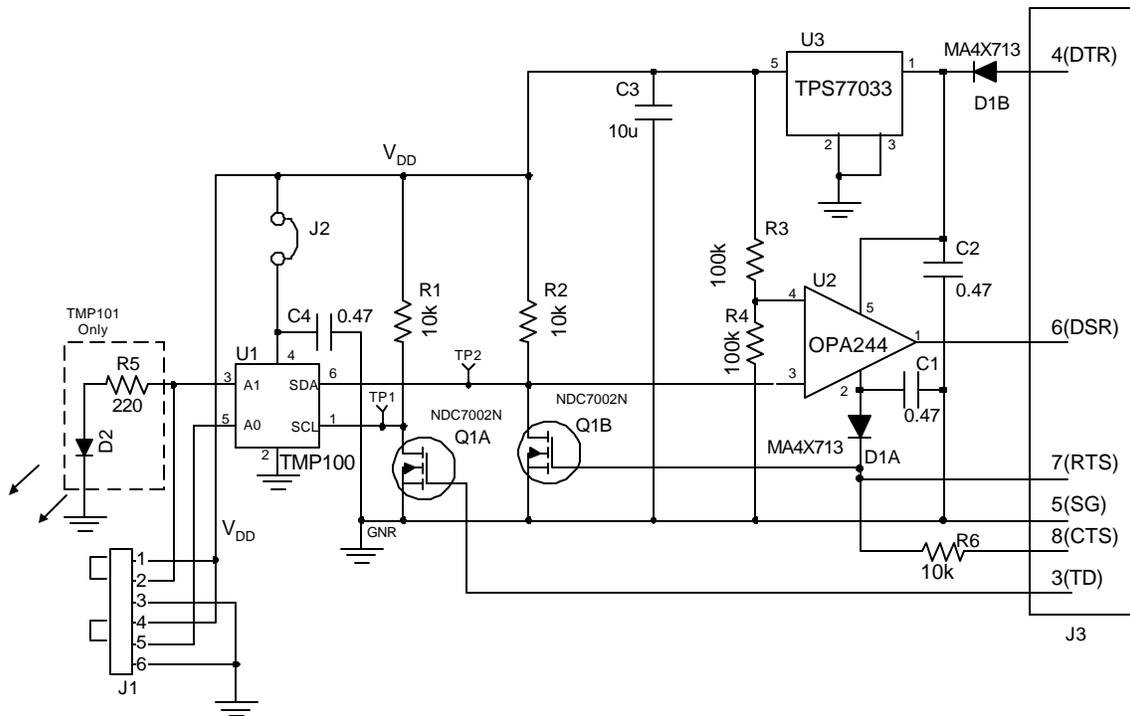
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