



The Infinite Bandwidth Company™

MIC280 Evaluation Board

DemoWare™ Software

General Description

The Micrel MIC280 evaluation board and DemoWare™ software demonstrate the operation and features of the MIC280 Precision IttyBitty™ Thermal Supervisor. The MIC280 is a versatile digital thermal supervisor capable of measuring internal temperature and remote temperature. This manual describes how to use the evaluation board and the companion software.

Getting Started

What is Included

Review the packing list in Table 1 to confirm that you received all listed items. If any of the items are missing or damaged, contact Micrel Semiconductor. The latest version of all Micrel data sheets may be obtained from our website at www.micrel.com.

Item	Qty	Description
1	1	MIC280 Evaluation Board with Jumpers Installed
2	1	MIC280 Evaluation Board and DemoWare Software Manual (this document)
3	1	MIC280 Data Sheet
4	2	MIC280-0BM6 Samples

Table 1. Packing List

What You Must Provide

If the board is to be used with the MIC280 DemoWare, no additional items are required except for a suitable host PC. All power for the board will be drawn from the PC parallel port. The board may be plugged directly into the DB25 connector on the host PC. It may be more convenient, however, to use a cable between the PC and the board. A standard, straight-through, DB25 male-to-female cable may be used. The MIC280 DemoWare software may be downloaded from Micrel's website at <http://www.micrel.com>. Instructions for installing this software are included.

If a non-PC host is used, the following items are required for use with the MIC280 evaluation board:

- 3.3V, 100mA regulated power supply
- Power supply leads or cables
- SMBus™/I²C™ compatible serial bus host for communication with the MIC280
- Cable for serial host connection, as appropriate

In either case, the following additional items are useful, but not required:

- Logic probe(s)
- Voltmeter(s)
- SMBus/I²C bus analyzer
- Component cooling spray
- Heat gun

General Description of the Evaluation Board

This board demonstrates use of the MIC280 Precision IttyBitty Thermal Supervisor. It is designed to support rapid prototyping of circuits employing the MIC280. A MMBT3906 transistor (surface mount equivalent to 2N3906) is included on the board in order to demonstrate the MIC280's ability to measure the temperature of a remote PN junction. A connector permits use of an external remote diode or transistor in place of the on-board remote transistor. User configurable jumpers select the remote sensor connections and the voltage source for powering the MIC280. An LED reports the status of the MIC280's interrupt request output when enabled.

For use with Micrel's DemoWare demonstration software, the MIC280 Evaluation Board may be connected directly to a PC parallel port via a DB25M connector. As an option, the user may install a four-pin ACCESS.bus™ type connector to interface the evaluation board with a serial bus host such as the IPort™ I²C Host Adapter from MCC Corporation. An additional general-purpose 5-pin header can also be used to interface any I²C/SMBus host to the board.

DemoWare is a trademark of Micrel, Inc.

IttyBitty is a trademark of Micrel, Inc.

SMBus is a trademark of Intel Corporation.

I²C is a trademark of Philips Electronics N.V.

ACCESS.bus is a trademark of the ACCESS.bus Industry Group.

IPort is a trademark of Microcomputer Control Corporation.

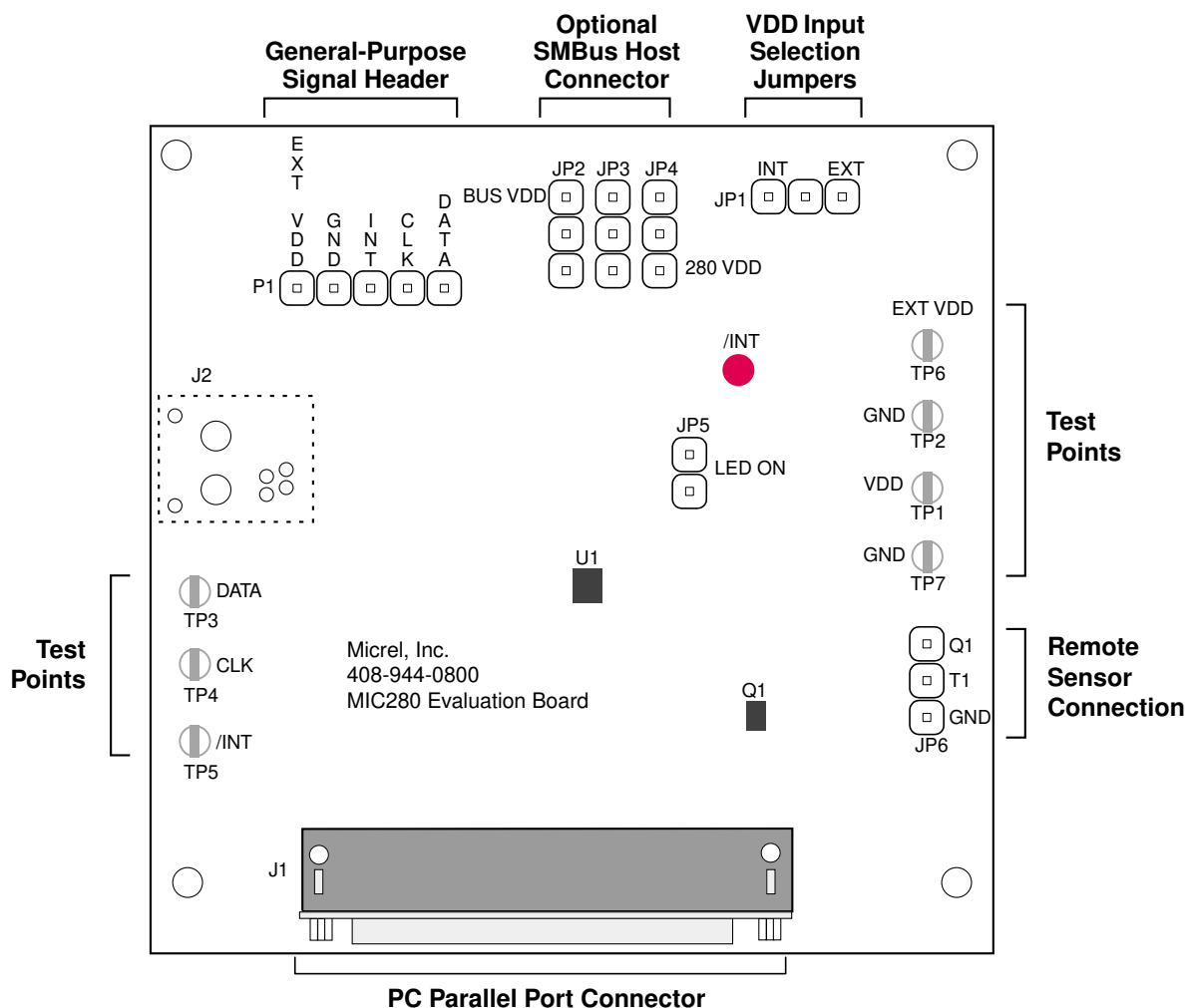


Figure 1. MIC280 Evaluation Board

Powering the Board

The MIC280 evaluation board can be powered via the host PC's parallel printer port or an external power supply. Three options are available for powering the evaluation board.

Option 1: For use with Micrel's DemoWare demonstration software and a host PC, connect the board to the PC's parallel printer port via the DB-25M connector (refer to schematic in the *Hardware Reference* section). Pins 1 and 2 of JP1 should be shorted.

Option 2: The board can be powered by an external power supply via TP6 and TP7 test points. The positive connection should be made to TP6 and the ground connection should be made to TP7. Pins 2 and 3 of JP1 should be shorted.

Option 3: The board can be powered by a serial bus host connector such as the MCC IPort™ via an optional user-installed 4-pin Molex connector, J2. Pin 3 of this connector is assigned to carry the power supply voltage from the host. (See Figure 2) Pins 1 and 2 of JP1 should be shorted.

Serial Bus Host Connector

The optional user-installed SMBus host connector is Molex part #15-83-0064 shown in Figure 2. This Molex connector is a 4-conductor shielded receptacle. The pinout of this connector is shown below. The mating connector is a Molex part #15-83-1564. See Appendix A for more information on these connectors. The serial bus signals are also present on single-row header P1 and at test points TP3 and TP4. One or more of these connection points can be used in lieu of the specialized connector. The various serial bus connection points are summarized in Table 2.

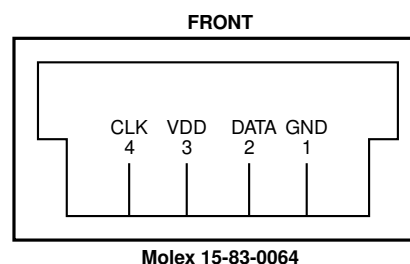


Figure 2. Pinout of J2 Serial Bus Host Connector

Signal	Molex 15-83-0064 Pin #	P1 Pin #	TestPoint
Serial Data	2	5	TP3
Serial Clock	4	4	TP4
VDD	3	1	TP1
GND	1	2	TP2
/INT	N/A	3	TP5

Table 2. Serial Bus Connection Points

Personal computer based host adapters, cables, bus analyzers and other useful items can be obtained from the sources listed in Appendix A.

Pull-Up Voltage for /INT, DATA and CLK

The DATA, CLK and /INT pins of MIC280 can be pulled up to either the SMBus voltage or to MIC280 V_{DD} voltage. JP2, JP3 and JP4 are used for setting the pull-up voltage for /INT, DATA and CLK respectively. Table 3 summarizes the jumper selection required for setting the pull-up voltage. Some host adapters have internal pull-up resistors. Often these resistors can be switched on and off. Be sure to check the status of the host adapter's pull-ups, if any, before setting JP2/3/4.

Voltage Level	/INT	DATA	CLK
(3.3V) MIC280 V_{DD} voltage	2-3 of JP2 Shorted	2-3 of JP3 Shorted	2-3 of JP4 Shorted
(3.3V to 5V) SMBus voltage	1-2 of JP2 Shorted	1-2 of JP3 Shorted	1-2 of JP4 Shorted

Table 3. Pull-Up High Voltage for DATA, CLK and /INT Pins

Remote Diode Selection

The MIC280 can sense the temperature of a remote PN junction connected to the T1 pin. This PN junction is generally either a diode-connected bipolar junction transistor or the embedded thermal diode inside an integrated circuit such as a CPU. A diode-connected 2N3906-type transistor, Q1, is provided on the evaluation board. An off-board PN junction can be used for temperature measurement by connecting it to pin 2 and 3 of JP6. (Refer to Table 4.)

Figure 3 shows several examples of remote diode connections. To minimize noise pickup, connections to an off-board diode should be made using twisted-pair or shielded twisted-pair cable. Connections longer than a few inches or any connection in an electrically noisy environment should use shielded twisted-pair cable for optimal performance. (Note that the shield should be grounded only at JP6 on the evaluation board.) Suitable cable types include Belden's part number 8442 unshielded twisted-pair (UTP) and Belden's part number 8451 shielded twisted-pair (STP).

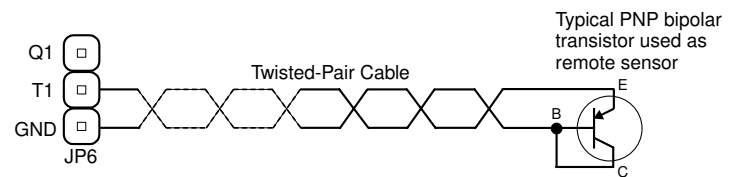
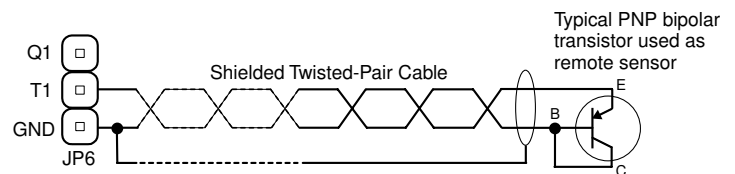
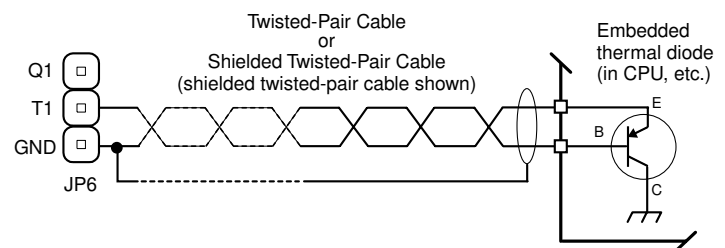
If using a transistor, the base and collector should be shorted together at the transistor. The emitter and base-collector terminals are then connected to JP6. The emitter is connected to pin 2 of JP6; the base-collector junction should be connected to pin 3 of JP6.

Remote Diode Selection	Jumper Setting
On-Board Remote Diode Q1	Short Pin 1 and 2 of JP6
Off-Board Remote Diode	Connect the off-board diode to Pin 2 and 3 of JP6.

Table 4. Remote Diode Selection

Factory Settings

The MIC280-0BM6 is used for the evaluation board. Its slave address is $1001000_b = 48_h$. Remote on-board diode Q1 is used for remote temperature measurement. Pins 2 and 3 of JP2, JP3, and JP4 are shorted to pull DATA, CLK, and /INT up to the MIC280's V_{DD} voltage.

**Figure 3a. Remote Transistor Connection via JP6****Figure 3b. Remote Transistor Connection Using Twisted Pair Cable via JP6****Figure 3c. Embedded Thermal Diode Connection via JP6**

Hardware Reference

Terminals

Designator	Description
P1	General purpose signal header
JP6	Off-board remote sensor connection
J1	PC Parallel port connector, DB25M, for use with Micrel DemoWare software.
J2	Optional serial bus host connector, 4-pin

Test Points

Designator	Description
TP1	V _{DD}
TP2	Ground
TP3	Serial Data
TP4	Serial Clock
TP5	Interrupt
TP6	External V _{DD}
TP7	Ground

Jumper Options

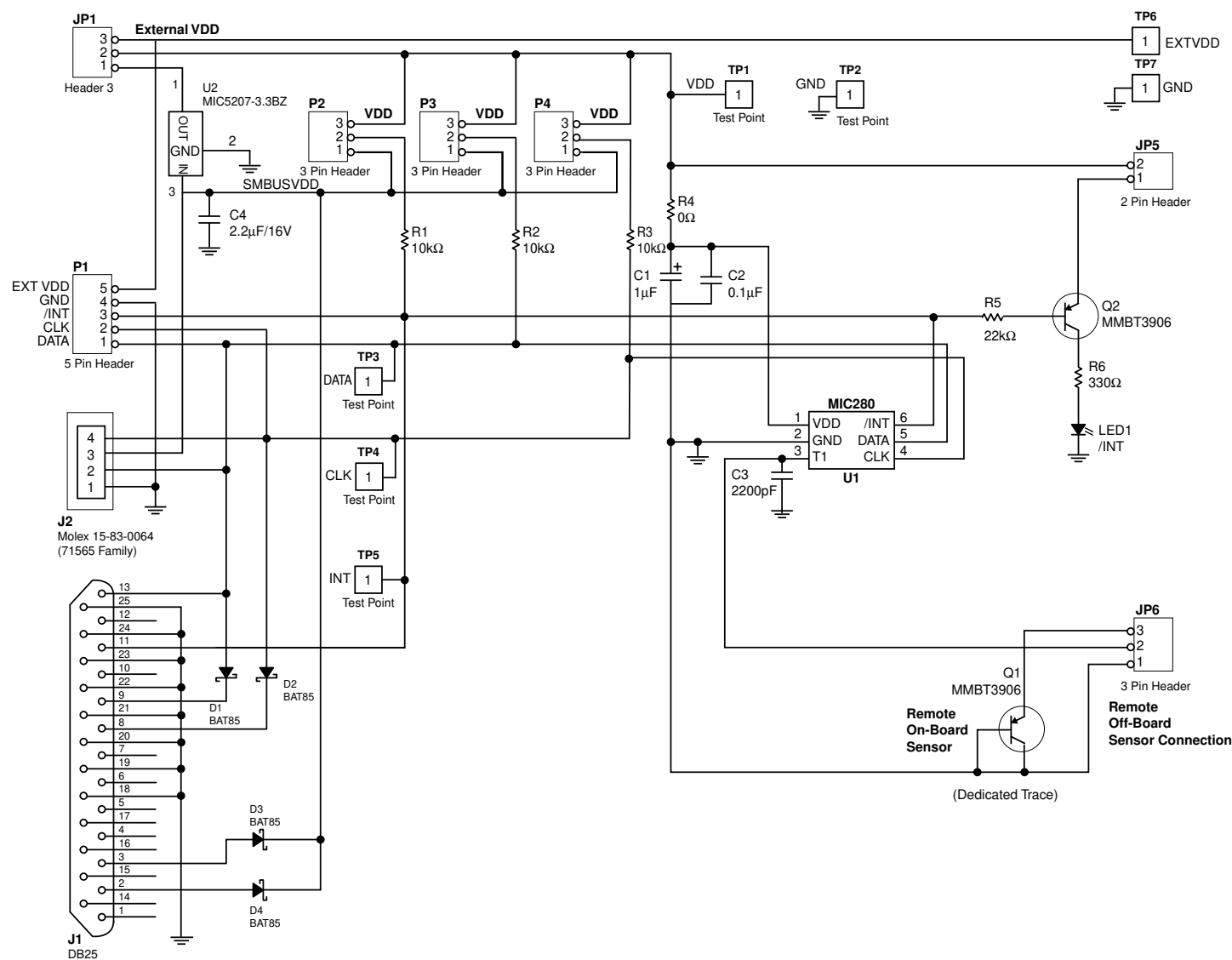
Jumper	Position	Function	Factory Setting
JP1	1-2 2-3	Use V _{DD} from PC parallel port (output of MIC5207 LDO) Use External V _{DD} via TP6, JP1, or P1	Shorted Open
JP2	1-2 2-3	Use V _{DD} from J2 or PC port as pull-up voltage for /INT Use MIC280 V _{DD} as pull-up voltage for /INT	Shorted Open
JP3	1-2 2-3	Use V _{DD} from J2 or PC port as pull-up voltage for DATA Use MIC280 V _{DD} as pull-up voltage for DATA	Shorted Open
JP4	1-2 2-3	Use V _{DD} from J2 or PC port as pull-up voltage for CLK Use MIC280 V _{DD} as pull-up voltage for CLK	Shorted Open
JP5	Shorted Open	Enables LED Disables LED	Shorted
JP6	1-2 Open	On-board transistor Q1 is used as remote sensor. Connect remote diode between 2-3 for off-board sensor connection.	Shorted

* Pin number one of each header is denoted by a square pad on the PCB versus a round pad for all other pins. The pads are visible on the back side of the printed circuit board.

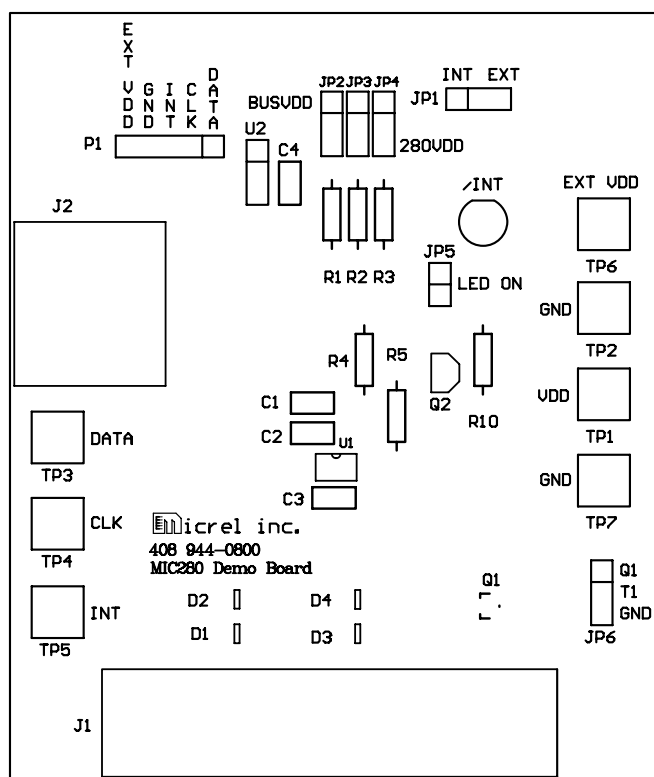
Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1	ECS-F1CE105K	Panasonic - ECG	1 μ F, 16V, tantalum capacitor	1
C2	ECU-S1H104KBB	Panasonic - ECG	0.1 μ F, 50V, 20% ceramic capacitor	1
C3	K222J15C0GF5TL2	BC Components	2200pF, 50V, 5% ceramic capacitor	1
C4	ECS-F1CE225K	Panasonic - ECG	2.2 μ F, 16V, tantalum capacitor	1
D1	MA741-(TX)	Panasonic - SSG	Schottky diode, 30V, 30MA, S-MINI, 3-pin	1
D2	MA741-(TX)	Panasonic - SSG	Schottky diode, 30V, 30MA, S-MINI, 3-pin	1
D3	MA741-(TX)	Panasonic - SSG	Schottky diode, 30V, 30MA, S-MINI, 3-pin	1
D4	MA741-(TX)	Panasonic - SSG	Schottky diode, 30V, 30MA, S-MINI, 3-pin	1
J1	DB25M	Any	Male parallel port connector	1
J2	15-83-0064	Molex	SMBus host connector	1
JP1	Any	Any	3-pin header	1
JP2	Any	Any	3-pin header	1
JP3	Any	Any	3-pin header	1
JP4	Any	Any	3-pin header	1
JP5	Any	Any	2-pin header	1
JP6	Any	Any	3-pin header	1
P1	Any	Any	5-pin header	1
LED1	LTL-4203	Lite-On Inc.	Red LED	1
Q1	MMBT3906	Motorola	PNP transistor, SOT-23	1
Q2	2N3906	Motorola	PNP transistor, TO-92	1
R1	CFR-25JB-10K	Yageo	10k Ω , 1/4W, 5% resistor	1
R2	CFR-25JB-10K	Yageo	10k Ω 1/4W, 5% resistor	1
R3	CFR-25JB-10K	Yageo	10k Ω 1/4W, 5% resistor	1
R4	ZOR-25-B	Yageo	0 Ω 1/4W, 5% resistor	1
R5	CFR-25JB-22K	Yageo	22k Ω 1/4W, 5% resistor	1
R6	CFR-25JB-330R	Yageo	330 Ω 1/4W, 5% resistor	1
TP1	1502-2	Keystone Electronics	Turret terminal	1
TP2	1502-2	Keystone Electronics	Turret terminal	1
TP3	1502-2	Keystone Electronics	Turret terminal	1
TP4	1502-2	Keystone Electronics	Turret terminal	1
TP5	1502-2	Keystone Electronics	Turret terminal	1
TP6	1502-2	Keystone Electronics	Turret terminal	1
TP7	1502-2	Keystone Electronics	Turret terminal	1
U1	MIC280BMM	Micrel Semiconductor	Local/Remote Thermal Supervisor	1
U2	MIC5207-3.3BZ	Micrel Semiconductor	180mA Low Noise LDO Regulator	1

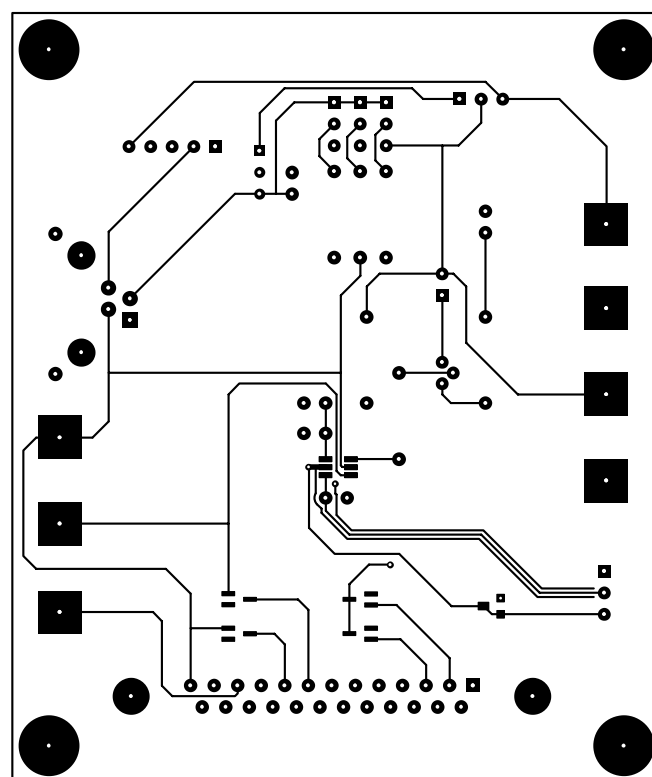
Schematic



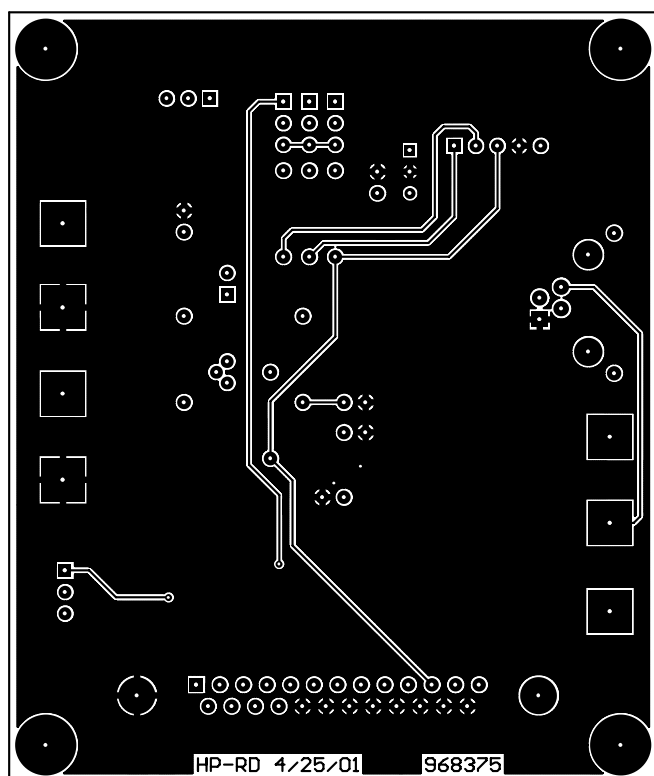
PC Board Layout



PC Board Layout - Top Silkscreen



PC Board Layout - Component Side



PC Board Layout - Solder Side

MIC280 DemoWare™ Software

System Requirements

The DemoWare software is designed to run on any personal computer running Microsoft Windows 95, Windows 98, and compatible operating systems. A standard parallel printer port is required for communication with the MIC280 evaluation board. (The software requires direct access to the parallel printer port at the hardware level. Operating systems such as Windows NT and Windows 2000 do not permit such access.) Once decompressed and installed, the DemoWare files will occupy approximately 1.7MB of hard disk space.

Installing the Software

The MIC280 DemoWare is available for download at: <http://www.micrel.com>.

If you are unable to obtain the software from the Micrel website, please contact a Micrel sales representative for assistance. To install the MIC280 DemoWare:

1. Download the file "MIC280dwzip.exe" into a temporary directory. This file is a self-extracting ZIP archive containing the files *MIC280DemoWare.exe* and *Mfc42.dll*. *MIC280DemoWare.exe* is the program itself. *Mfc42.dll* is a library containing code used by *MIC280DemoWare.exe*.
2. Start the extraction process by selecting **Run** on the **Start** menu and choosing the file *MIC280DemoWare.exe*. *MIC280DemoWare.exe* and *Mfc42.dll* will be extracted and saved into a subdirectory named *MIC280DemoWare* in the root directory of the hard disk. If you wish to use a different directory, enter its name in the "Unzip to folder" text box or select the **Browse** option. This directory will be created if necessary.
3. Select "Unzip" and the files will be extracted.
4. A message stating "2 file(s) unzipped successfully" will be displayed when the process is finished. Click "OK" to proceed.
5. Click "Close" to complete the process and exit the installation utility.

Running the Software

Launch the software by selecting **Run** on the **Start** menu and selecting the file *MIC280DemoWare.exe*. If the installation defaults were used, this file will be in a subdirectory called "MIC280DemoWare" in the root directory on the hard disk. Once the program starts, the main window will be displayed and power to the evaluation board will be off. Any status or error messages displayed are not valid until the software is properly configured and the board is powered on.



Figure 4. MIC280 DemoWare Main Window

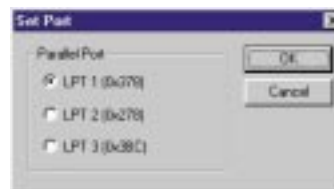


Figure 5. Selecting The Printer Port



Figure 6. Selecting the Device Type and Base Address



Figure 7. Selecting the Chart Recorder Scale



Figure 8. Turning on Power to the Evaluation Board

Using the Software

The software must be configured prior to use:

1. Select the printer port to which the board will be connected using the **Port** item on the **Configure** Menu as shown in Figure 5.
2. Select the device base address using the **Device** item on the **Configure** menu as shown in Figure 6. The factory populates the evaluation board with a MIC280-0BM6. The base address therefore defaults to 0x48.
3. Adjust the chart recorder scale using the **Scale** item on the **Configure** menu. (Figure 7) Only temperature values between **Upper Scale Limit** and **Lower Scale Limit** will be displayed in the chart recorder window. Enter the desired values in the text boxes.

Clicking the **Get Current** button or any of the temperature acquisition buttons will automatically turn on power to the board. The power may also be turned on using the **Device Power** item on the **Configure** menu, as shown in Figure 8. When power is on, a checkmark will appear next to **Device Power** on the **Configure** menu. (In any case, the power should be turned off before removing the board from the PC by selecting the **Device Power** item on the **Configure** menu!) Once power is turned on, the MIC280 registers will be read and the current values will be displayed. The main window should now appear similar to Figure 4.

The main window has several components:

- Temperature acquisition buttons and chart recorder (Figure 11): A single temperature sample may be taken by clicking the **MANUAL** button. Automatic temperature samples can be taken at specific intervals by clicking the **.5s**, **1s**, **2s**, **5s**, **10s**, or **20s** button. Any temperature samples taken will be displayed in the chart recorder area. Data for Zone 0, the internal zone, will be plotted in green, data for Zone 1, the external zone, will be plotted in blue.
- Status line (Figure 10): Status messages are displayed on the status line, including the state of the serial bus link, the logic state of the /INT pin, and the states of the Shift Lock and Num Lock keys.
- Thermometer display (Figure 9): The two thermometers will display the reported temperature in degrees Centigrade, binary and hexadecimal format for both zones.
- Register display (Figure 12): The Internal Temperature Limits and Remote Temperature Limits are displayed. The Mask register bits and Status register bits are also displayed. The Mask register bits must be set to allow the corresponding interrupt event to occur. *The **Set New** button must always be used to write any changes to the part.* Interrupt events are handled either by clicking the **Read Status** or **Read ARA** button. *Always click the **Read Status** button after using the **Read ARA** button.*

- Control display (Figure 13): The **Set New** button, **Get Current** button, **Reset** button and **INTERRUPT** indicator are displayed in this box. The **Set New** button must always be used to write any changes to the part. Clicking **Get Current** updates the display of MIC280 register values. The **Reset** button initiates a warm reset on MIC280, returning it to its power-up state. The **INTERRUPT** indicator shows the current state of the MIC280's /INT output. Interrupts can be handled by either reading STATUS by clicking **Read Status** or by clicking the **Read ARA** button. *Always click the **Read Status** button after using the **Read ARA** button.*



Figure 9. Thermometer Displays



Figure 10. Status Line

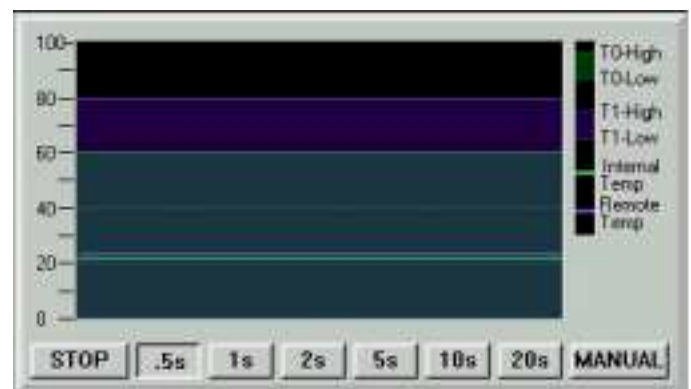


Figure 11. Temperature Acquisition Window

MIC280 Precision Itty-Bitty Thermal Supervisor

T0 Internal Temperature Limits
 Low: High: Critical:

T1 Remote Temperature Limits
 Low: High: Critical:

Mask Bits: ☒ Local Critical, ☒ Remote Critical, ☒ Diode Fault, ☒ Remote Low, ☒ Remote High, ☒ Local Low, ☒ Local High, ☒ Data Ready

Events: ☐ Local Critical, ☐ Remote Critical, ☐ Diode Fault, ☐ Remote Low, ☐ Remote High, ☐ Local Low, ☐ Local High, ☐ Data Ready

Status Bits: ☐ Local Critical, ☐ Remote Critical, ☐ Diode Fault, ☐ Remote Low, ☐ Remote High, ☐ Local Low, ☐ Local High, ☐ Data Ready

Configuration: ☒ Interrupt Enable, ☐ Shutdown

Result:

Figure 12. Register Display

Configuration

Resolution: ☒ 9 bits, ☐ 10 bits, ☐ 11 bits, ☐ 12 bits

Fault Queue: ☒ 1, ☐ 2, ☐ 4, ☐ 6

Figure 14. Resolution and Fault Queue

INTERRUPT ☐

Figure 13. Control Buttons

Security Register

Security Lock Register:

☐ L0: Local over-temperature event lock bit

☐ L1: Remote over-temperature event lock bit

☐ L2: Diode fault event lock bit

☐ L3: Shutdown mode lockout bit

☐ L4: Warm reset lockout bit

Figure 15. Security Lock

All Registers

All Registers	Hexadecimal	Decimal
Local temperature result	1E	22
Remote temperature result	17	23
Status	0	0
Configuration	8c	140
Interrupt mask register	7	7
Local temperature high limit	3c	60
Local temperature low limit	0	0
Remote temperature high limit, high byte	50	80
Remote temperature low limit, high byte	0	0
Security register	0	0
Remote temperature result, low byte	c0	192
Remote temperature high limit, low byte	0	0
Remote temperature low limit, low byte	0	0
Remote over-temperature limit	64	100
Local over-temperature limit	46	70
Manufacturer Identification	2a	42
Device and revision identification	0	0

Figure 16. Register Values

Acquiring Temperature Data

Single Conversions

Clicking the **MANUAL** button will cause a single temperature reading to be acquired from each zone. These readings will be displayed on the appropriate thermometer display and plotted on the chart recorder in the appropriate color. It will also be recorded to the log file if data logging is turned on. See “**Logging Data To a File**” below.

Periodic Sampling

Clicking any one of **.5s** or **1s** or **2s** or **5s** or **10s** or **20s** buttons will initiate repetitive temperature sampling at the indicated interval. The data acquired will be displayed on the appropriate thermometer display and plotted on the chart recorder in the appropriate color. The samples will also be recorded to the log file if data logging is turned on.

Viewing and Modifying Registers

Displaying Current Values

The current values of the Internal and Remote temperature limits and mask bit settings can be displayed at any time by clicking the **Get Current** button.

Restoring Register Defaults

Clicking the reset button will return all registers to their default values.

Setting Temperature Limits and Mask Bits

The internal and remote temperature limit registers can be modified by typing the desired values into the **Low**, **High** and **Critical** edit boxes for each zone and then clicking the **Set New** button. Individual interrupt events are enabled by setting the appropriate Mask Bits box and then pressing the **Set New** button. *The **Set New** button must always be used to write new values to the MIC280 after any setting is modified on the screen.*

Interrupt Handling

Pending interrupts are indicated by the **INTERRUPT** indicator button. Interrupts are handled by either clicking the **Read Status** button or the **Read ARA** button. **Read Status** must always be used after reading the ARA using **Read ARA**. This resets the MIC280's interrupt logic, permitting /INT to be activated for the next event. Updated status bits are displayed on clicking **Read Status**. When an interrupt occurs, the corresponding bit is cleared in the interrupt mask register, IMASK. Setting the mask bit(s) and clicking **Set New** will allow future interrupts to occur.

Changing Resolution and Fault Queue

Resolution and fault queue settings can be made by selecting the **Configuration** item in the **Registers** menu. See Figure 14.

Configuration Locking

The lock bits can be altered by selecting the **Lock** item in the **Registers** menu. See Figure 15.

Displaying All Register Values

The values of all the MIC280 registers can be displayed by selecting the **ALL** item on the **Registers** menu.

Logging Data to a File

All temperature data acquired during a given period may be logged to a file by activating the recording function. Recording is started by selecting the **Record to File...** item on the **File** menu.

1. Configure the device as desired via the register display window.
2. Click **Set New** to update the MIC280's configuration.
3. Activate data logging by selecting the **Record to File...** item on the **File** menu. Enter the desired file and path name and click **Save**. Note that the log file is a comma-delimited or *.csv file.
4. Acquire temperature data by clicking the **.5s**, **1s**, **2s**, **5s**, **10s**, **20s**, or **MANUAL** buttons.
5. When finished recording data, stop data logging by once again selecting the **Record to File...** item on the **File** menu.

Micrel Data Log File created 07/27/2001 15:48:38					
DATE	TIME	ELAPSED	SAMPLE	INTERNAL	REMOTE
7/27/01	15:48:38	0	0	23	24.4375
7/27/01	15:48:39	542	1	23	24.4375
7/27/01	15:48:39	1091	2	23	24.4375
7/27/01	15:48:40	1611	3	23	24.4375
7/27/01	15:48:42	3661	4	23	24.5
7/27/01	15:48:42	3673	5	23	24.4375
7/27/01	15:48:42	3687	6	23	24.4375
7/27/01	15:48:42	3742	7	23	24.4375
7/27/01	15:48:42	4291	8	23	24.4375
7/27/01	15:48:43	4840	9	23	24.4375
7/27/01	15:48:44	5342	10	23	24.4375
7/27/01	15:48:44	5884	11	23	24.4375
7/27/01	15:48:45	6433	12	23	24.4375

Figure 17. Example Data Log

An example data file is shown in Figure 17. This file may be opened in a program such as Microsoft Excel for graphing, filtering, sorting, manipulation, etc. The first line of the file identifies the file and the time and date when it was created. The second line lists the field names for the succeeding lines. The fields are as follows (in order):

- **DATE**: The date, according to the PC's system clock, that the sample was taken.
- **TIME**: The time, according to the PC's system clock, that the sample was taken.
- **ELAPSED**: The total elapsed time, in milliseconds, since the first sample was taken.
- **SAMPLE**: The sample number; samples are numbered sequentially starting with one.
- **INTERNAL**: The measured temperature for the internal zone, zone 0.
- **REMOTE**: The measured temperature for the remote zone, zone 1.

Appendix A: SMBus Resources*

PC host adapters and software, bus analyzers, cables, and other items can be purchased from:

Micro Computer Control Corporation

PO Box 275/ 17 Model Ave.
Hopewell, New Jersey 08525 USA
Tel.: 609-466-1751
Email: info@mcc-us.com
<http://www.mcc-us.com>

Saelig Company

Tel.: 716-425-3753
Fax: 716-425-3835
Email: saelig@aol.com
<http://www.memo.com/saelig>

The 4-conductor serial bus connector is available from Molex as part number 15-83-0064. Mating plugs for constructing cable assemblies are also available. A list of distributors is available on the Molex website.

Molex Incorporated

2222 Wellington Court
Lisle, IL 60532-1682
Tel.: 800/78MOLEX,
630-969-4550 (Outside USA)
Fax: 630-968-8356
Tel.: 254069
E-mail: amerinfo@molex.com
<http://www.molex.com>

The current **SMBus** specification and other information regarding SMBus may be obtained from the SMBus website <http://www.smbus.org>.

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