

# M52259DEMOCOM

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COM Expansion Board for use with  
M52259DEMOMCU Board

## HARDWARE USER GUIDE

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# REVISION

Date	Rev	Comments
September 10, 2008	A	Initial Release.

## CAUTIONARY NOTES

- 1) Electrostatic Discharge (ESD) prevention measures should be used when handling this product. ESD damage is not a warranty repair item.
- 2) Axiom Manufacturing does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under patent rights or the rights of others.
- 3) EMC Information on the M52259DEMOCOM board:
  - a) This device complies with FCC Rules, Part 15. Operation is subject to the following conditions:
    - i) This device may not cause harmful interference, and
    - ii) This device must accept any interference received, including interference that may cause undesired operation.
  - b) This product, as shipped from the factory with associated power supplies and cables, has been verified to meet with FCC requirements as a CLASS A product.
  - c) This product is designed and intended for use as a development platform for hardware or software in an educational or professional laboratory.
  - d) In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate prevention measures.
  - e) Attaching additional wiring to this product or modifying the product operation from the factory default as shipped may effect its performance and cause interference with other apparatus in the immediate vicinity. If such interference is detected, suitable mitigating measures should be taken.

## TERMINOLOGY

This development board uses option selection jumpers. A jumper is a plastic shunt that connects 2 terminals electrically. Terminology for application of the option jumpers is as follows:

Jumper on, in, or installed - jumper is installed such that 2 pins are connected together.

Jumper off, out, or idle - jumper is installed on 1 pin only.

Cut-Trace – a circuit trace connection between component pads. The circuit trace may be cut using a knife to break the default connection. To reconnect the circuit, simply install a suitably sized 0-ohm resistor or attach a wire across the pads.

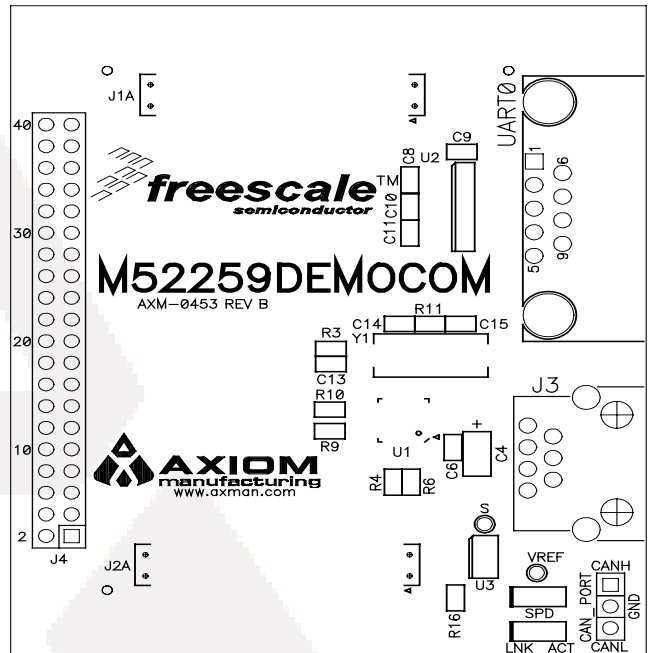
Signal names document followed by an asterisk (\*) denote active-low signals.

# FEATURES

The M52259DEMOCOM is an expansion board designed to connect directly to the M52259DEMOMCU board. The M52259DEMOCOM provides 10/100 Ethernet, RS-232, and Hi-Speed CAN functionality. Board stack connectors mounted also support additional expansion.

## Features:

- 10/100 Ethernet
  - KZS8041 Ethernet PHY
  - Configured for MII Operation
  - Tab-down RJ-45 Connector w/ integrated Magnetics
  - Speed and Link Active Indicator LEDs
- RS-232 PHY
  - 1-Channel w/ Handshaking
  - 2-wire Operation
  - DB-9 Connector
- HS CAN PHY
  - 1 Mbaud Transfer Rate
  - Configured for Slave Mode operation
  - 3-pos Pin Header Connector
- IO signal Header
  - 40-pos Header
  - Not populated



## Specifications:

Board Size 2.0" x 2.0"

Power Input: Derived from M52259DEMOMCU board

## REFERENCES

Reference documents are provided on the support CD in Acrobat Reader format.

M52259DEMOCOM_UG.pdf	M52259DEMOCOM User Guide (this document)
M52259DEMOCOM_SCH_B.pdf	M52259DEMOCOM Schematic
M52259DEMOCOM_Silk_B.pdf	M52259DEMOCOM Top Silkscreen

## OVERVIEW

The M522259DEMO consists of the M52259DEMOMCU and the M52259DEMOCOM boards connected via 0.5mm stack connectors. The M52259DEMO allows the user to easily add functionality by simply matching the stack connector pin-out.

The M52259DEMOMCU board features the MCF52259 ColdFire microcontroller. An, open-source, USB-BDM has been integrated to simplify application development and debug. A USB port with mini-AB USB connector is also provided. Four user LEDs and 2 user push buttons complete the M52259DEMOCOM board features. Additional MCU features are available at the stack connector.

The M52259DEMOCOM board expands the M52259DEMO feature set. The M52259DEMOCOM supports 10/100 Ethernet, high-speed CAN, and RS-232 functionality. Please refer to the M52259DEMOCOM User Guide for details.

## GETTING STARTED

To get started quickly, please refer to the M52259DEMO Quick Start Guide. This quick start will illustrate connecting the board to a PC, installing the correct version of CodeWarrior Development Studio, and running a simple application.

## POWER

Power for the M52259DEMOCOM board is provided through the stack connectors from the M52259DEMOMCU board.

## RESET

Reset to the Ethernet PHY is provided through the stack connectors from the M52259DEMOMCU board.

# CONNECTORS

## J3

An Ethernet connector at J3 supports 10/100 Ethernet network connectivity. The connector is arranged tab-down and includes integrated magnetics. The Ethernet Port applies a Micrel KZS8041 10/100 Ethernet PHY configured for MII operation only. The PHY connects to the Fast Ethernet Controller (FEC) signals from the MCF52259 MCU on the M52259DEMOMCU board.

Two, green, status indicators are provided to indicate network traffic connection status

**Figure 1: Ethernet Status Indicators**

SPD	ON – 100BaseT connection, OFF – 10BaseT connection
LNK_ACT	ON – indicates network traffic activity

## UART0

A right angle, 9-pin Dsub connector supports serial communications to the target MCU on the M52259DEMOMCU boards. The RS-232 PHY is connected to UART 0 on the target MCU. A ferrite bead on shield ground provides conducted immunity protection. Handshaking signals RTS and CTS are also routed to the target MCU. RTS is biased for handshaking during 2-wire operation.

**Table 1: COM Connections**

MCU Port	COM Signal	UART0 CON- NECTOR
UTXD0	TXD	UART0 – 5
URXD0	RXD	UART0 – 7
URTS0	RTS	UART0 – 8
UCTS0	CTS	UART0 – 7

## CAN\_PORT

A 3-pos connector at CAN\_PORT provides CAN port access for the M52259DEMOCOM. A TJA1050 device provides the CAN PHY interface. This device is capable of communicating up to 1 Mbaud.

Differential CAN signal termination is applied. A 120-ohm termination resistor with option jumper allows termination to be applied or removed. The CANT\_EN option jumper applies or removes the CAN termination.

# USER OPTIONS

The M52259DEMOCOM applies no user selectable options.

## I/O PORT CONNECTOR

The IO Port connector consists of 2 stack connectors mounted on the bottom layer. These connectors allow the M52259DEMOCOM to be easily expanded by simply adding functionality. The figures below show the pin-out of connectors J1 and J2.

**Figure 2: Connector J1**

		J1			
+3.3V		1	2	RSTIN*	
GND		3	4	RESET*	
ICOC0		5	6	ICOC1	
ICOC2		7	8	ICOC3	
UTXD2/CANTX		9	10	URTS2*/I2C_SDA1	
URXD2/CANRX		11	12	UCTS2*/I2C_SCL1	
TIN1		13	14	TIN0	
TIN3		15	16	TIN2	
IRQ1*		17	18	IRQ7*	
QSDO		19	20	PCS3	
		21	22	PCS2	
QSDI		23	24	PCS0	
SCK		25	26	SCL	
SDA		27	28		
AN0		29	30	AN1	
AN2		31	32	AN3	
AN6		33	34	AN7	
AN5		35	36	AN4	
GND		37	38	GND	
+3.3V		39	40	+3.3V	