MC68360

Applications Information

Interfacing the MC68EN360 to an Ethernet SIA

This document describes the interface between the MC68EN360 and Ethernet. Any of the SCCs on the MC68EN360 can be configured in Ethernet mode. For performance reasons, however, not all SCCs on the MC68EN360 can be configured into Ethernet mode at the same time. If an MC68EN360 is operating at 25MHz, up to two SCCs can be configured for Ethernet simultaneously. With this configuration there will be at least 1Mbps full duplex HDLC bandwidth left for an additional SCC. If an MC68EN360 is operating at 33MHz up to three SCCs can be configured for Ethernet simultaneously.

For this application note, the AM7992B is used as the serial interface adapter (SIA). (The MC68360 user's manual shows the connection to the MC68160 EEST from Motorola.) The interface between the MC68EN360 and the SIA does not require any glue logic, as shown on Figure 1. For simplicity in the diagram the actual pin names on the MC68EN360 have been omitted for a specific SCC. The user should useTable 1 to connect the appropriate pins for the SCC in use.

The Ethernet controller on the MC68EN360 has seven basic pins that make up the interface to the external SIA chip:

1. Receive clock. Receive clock to the SCC (RCLK) may be either the CLK1, CLK2, CLK3, CLK4, CLK5, CLK6, CLK7, or CLK8 pin that is routed through the bank of clocks on the MC68EN360.

2. Transmit clock. Transmit clock to the SCC (TCLK) may be either the CLK1, CLK2, CLK3, CLK4, CLK5, CLK6 CLK7 or CLK8 pin that is routed through the bank of clocks on the MC68EN360. (The SCC RCLK and SCC TCLK should not be connected to the same CLKx pin since the SIA provides a separate receive and transmit clock signal).

3. Transmit data. This is the MC68EN360 TXD pin.

4. Receive data. This is the MC68EN360 RXD pin.

The following pins take on new meanings when the Ethernet protocol is selected for the SCC:

5. Transmit Enable (TENA). The SCC's $\overline{\text{RTS}}$ pin changes to become TENA when the SCC is configured for Ethernet operation. The polarity of TENA is active high; whereas, the polarity of $\overline{\text{RTS}}$ is active low.

6. Receive Enable (RENA). The SCC's $\overline{\text{CD}}$ pin changes to become RENA when the SCC is configured for Ethernet operation. The polarity of RENA is active high; whereas, the polarity of $\overline{\text{CD}}$ is active low.

7. Collision (CLSN). The SCC's $\overline{\text{CTS}}$ pin changes to become CLSN when the SCC is configured for Ethernet operation. The polarity of CLSN is active high; whereas, the polarity of $\overline{\text{CTS}}$ is active low.

The SIA has similar names for its connection to the seven basic MC68EN360 pins. External to the SIA are passive components required to connect to the AUI media.

If a connection to 10BASE-2 Cheaper net is desired, then the Am7996 device may be used along with the Am7992B. If a connection to 10BASE-T twisted pair is desired, then the Am7998 may be used with the Am7992B. These devices do not affect the connection of the Am7992B to the MC68EN360, and therefore are not shown here, however, circuit diagrams are available in the Ethernet/IEEE802.3 Handbook from AMD.

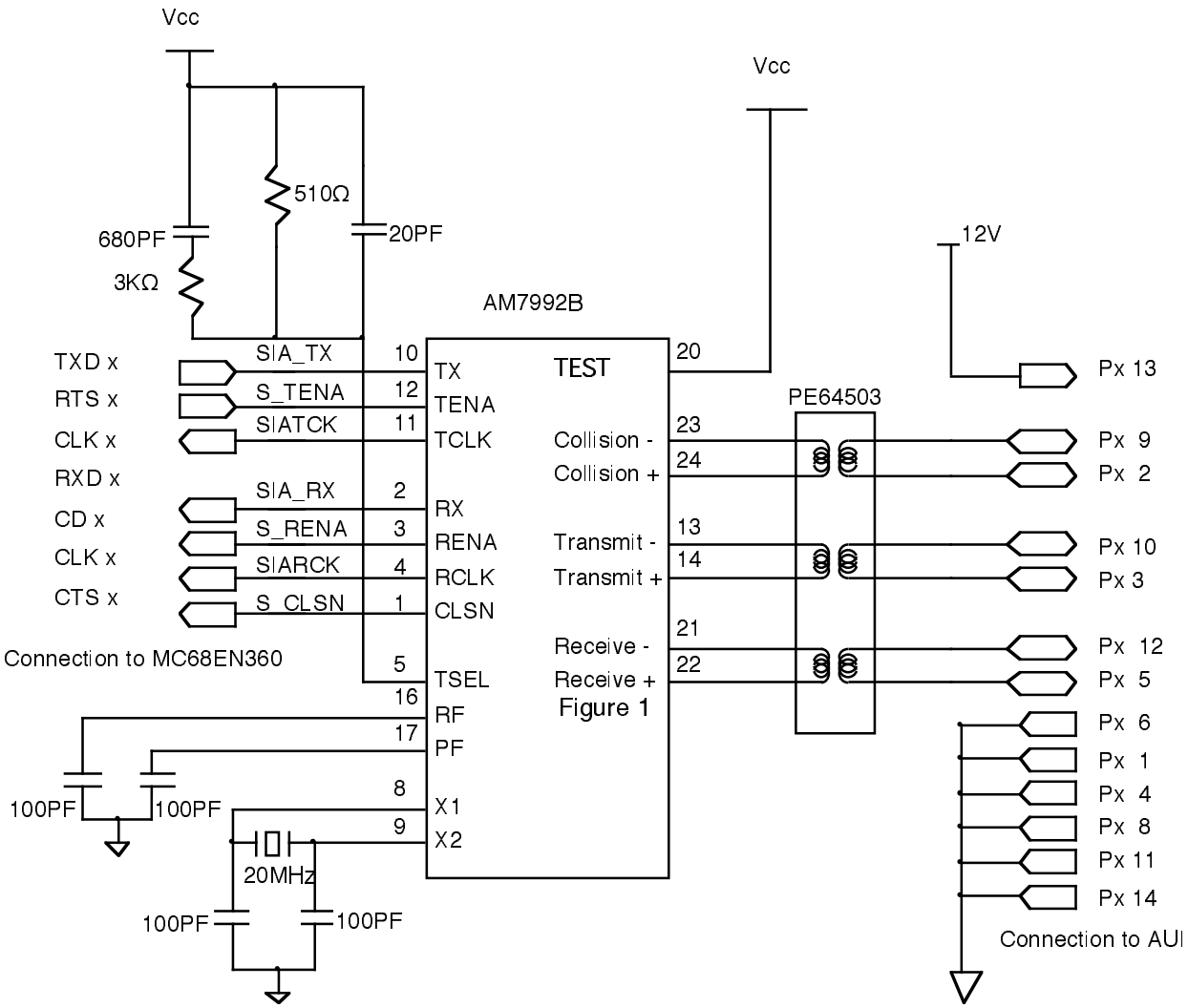

Figure 1

Table 1.

	MC68EN360 Pins			
AM7992B Pin	**SCC1**	**SCC2**	**SCC3**	**SCC4**
TX	TXD1	TXD2	TXD3	TXD4
TENA	RTS1	RTS2	RTS3	RTS4
TCLK	CLKa	CLKa	CLKb	CLKb
RX	RXD1	RXD2	RXD3	RXD4
RENA	CD1	CD2	CD3	CD4
RCLK	CLKa	CLKa	CLKb	CLKb
CLSN	CTS1	CTS2	CTS3	CTS4

Note: CLKa = CLK1, CLK2, CLK3 or CLK4
CLKb = CLK5, CLK6, CLK7 or CLK8

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