Application Note

KSZ8999 9th Port MII Modes and Cascading Two Devices

Introduction

This Application Note addresses the names and conventions used in the KSZ8999 datasheet for the MII modes. This Application Note also provides information on connection of two KSZ8999 chips using the 9th Port MII interface.

The KSZ8999 MII interface is referred to as Forward MII and Reverse MII. The definition of each is as follows:

Forward MII: The 9th port is acting as a MAC that expects to see a PHY tied to it.

Reverse MII: The 9th port is acting MAC that expects to see another MAC tied to it.

MII Interface Connection on Port 9

There are three different MII interfaces to connect other device for KSZ8999 as shown in Figure 1, 2 and 3.

Notes:

1. Both MTXC/MRXC are output clocks when KSZ8999 is PHY mode, these two output clocks are same phase so you can connect MTXC to MTXC and MRXC to MRXC without error.
2. Both MTXC/MRXC are input clocks when KSZ8999 is MAC mode.
3. There is no MRXER output signal from KSZ8999 because the switch is filtering out all error packets.
4. MTXC/MRXC, MCOL, MCRS are always output clocks/signals from PHY device to external MAC device.
5. MRXD[3:0] need external 1K pull-up for default MII setting because the MTXD[3:0] are internal pull-down pins.

When using Two KSZ8999's connected together it may become necessary to set the following registers by using Pull Downs on the Pins indicated below to reduce traffic congestion and allow higher throughput in cascaded switches. Your final network configuration and the type of traffic will factor into this setup.

LED6[3] Install a 1K Pull Down "pin strap" resistor to enable a less aggressive back-off for Half Duplex Mode.

LED6[2] Install a 1K Pull Down "pin strap" resistor to set the switch to drop a packet after 16 re-tries.

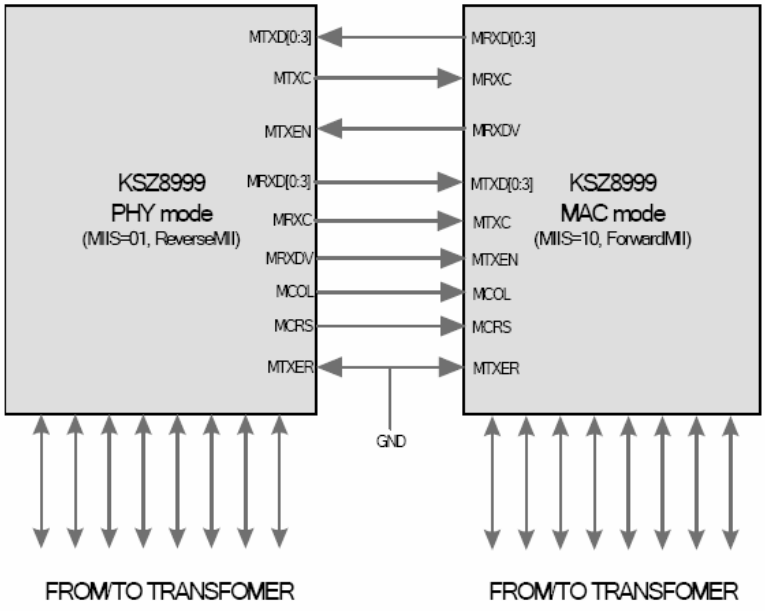

Figure 1: KSZ8999 MAC mode interfacing with KSZ8999 PHY mode

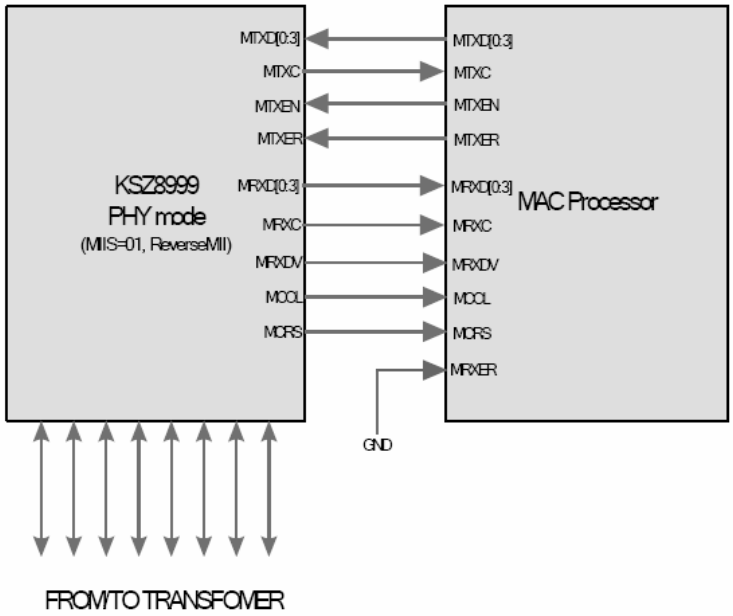

Figure 2: KSZ8999 PHY mode interfacing with External MAC Device

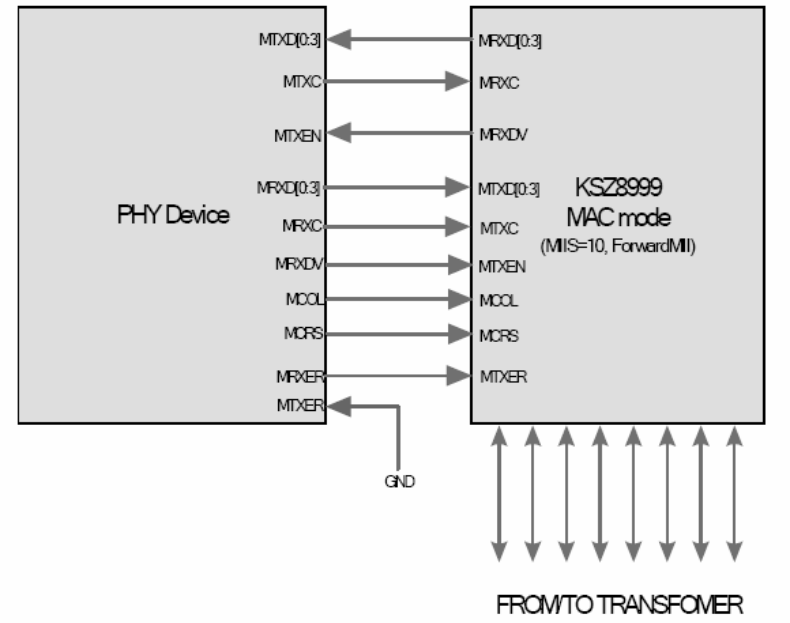

Figure 3: KSZ8999 MAC mode interfacing with External PHY Device

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA
TEL +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB http:/www.micrel.com