STANDARD
MICROSYSTEMS
CORPORATION

APPLICATION NOTE 6.20

LAN91C100 and LAN91C100FD Design Consideration in 10Mbps Half Duplex Mode

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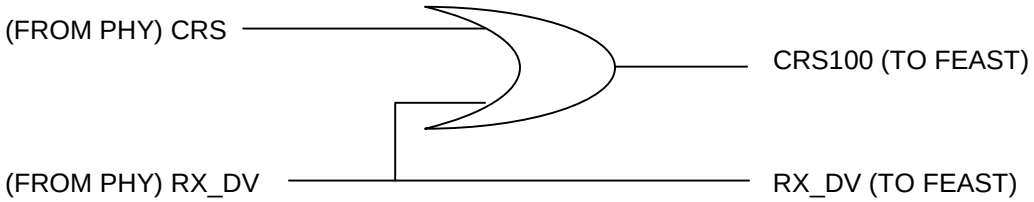
LAN91C100 (FEAST) and LAN91C100FD (FEAST Full Duplex), SMSC Ethernet MACs, can be used with many 10/100 Mbps PHYs from different manufacturers. The FEAST and the PHY can be connected to each other over the Media Independent Interface (MII). Both FEAST and PHY can communicate at 10 or 100 Mbps over the MII. However, special care needs to be taken.

In 10 Mbps half duplex mode, some PHYs de-assert Carrier Sense (CRS) before the end of Receive Data Valid (RX_DV) for receives. The early de-assertion of the CRS signal leads the FEAST to believe that the end of the receive-packet has been reached and there is no more data to follow. The FEAST does not look at any data that may be following. The last four bytes received (at the time of CRS de-assertion) are treated as the CRC. The packet is dropped as the internally calculated CRC does not match with these four bytes.

The problem is resolved by extending the CRS to the end of RX_DV. This can be achieved by ORing the CRS with RX_DV as shown in the following figure:



The above logic will work fine with any PHY, including the PHYs from SMSC, using the MII interface, as its only effect will be to make the FEAST look at the receive data through the end of RX_DV, in case CRS de-asserts before the RX_DV de-assertion.