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EXAR'S XR88C92/192 COMPARED WITH PHILIPS'S SC26C92

Author: PY

1.0 INTRODUCTION

This application note describes the major difference between Exar's XR88C92/192 with Philips's SC26C92. These devices are very similar, with a few hardware, firmware-related and bus timing differences.

1.1 HARDWARE DIFFERENCES

- The Philips SC26C92 and Exar XR88C92/192 are both available in three footprints: 44-pin PLCC, 44-pin QFP and 40-pin DIP. The Exar and Philips DUARTs are pin-to-pin compatible in all three footprints.
- The Exar's 44-pin TQFP package is the same size and has the same pitch as the Philips' 44-pin QFP package. But they differ in the package thickness and the lead length. See the list below:

	Exar	Philips
Thickness:	1.4mm	1.75mm
Lead Length, Lp:	0.45mm < Lp < 0.75mm	0.55mm < Lp < 0.95mm

1.2 FIRMWARE DIFFERENCES

All the internal registers in the SC26C92 and XR88C92/192 are identical with only one exception:

- Since the XR88C192 has a 16-byte FIFO as compared to a 8-byte FIFO in the SC26C92, the selectable transmit and receive trigger levels are different.

1.3 BUS TIMING DIFFERENCES

- The XR88C92/192 is faster than the SC26C92. For example, the data access time (from -CS low to data valid) during a read is a maximum of 32 ns for the XR88C92/192, whereas it is a maximum of 55 ns for the SC26C92.

1.4 Summary of Differences

In the table below, some differences between the XR88C92/192 and SC26C92 are summarized.

Table 1: Differences Between Exar's XR88C92/192 with Philips's SC26C92

Differences	XR88C92/192	SC26C92
Data Bus Standard	Intel	Intel
Power Supply Operation	**3.3 and 5 V**	5 V only
Max Operating Current	**3 mA @ 3.3 V** **6 mA @ 5 V**	10 mA @ 5 V
Max Frequency on XTAL1	**24 MHz**	8 MHz
Max Data Rate	1 Mbps	1 Mbps
Operating Temperature Range	Commercial and Industrial	Commercial and Industrial
Package	44-TQFP, 44-PLCC, 40-PDIP	44-PQFP, 44- PLCC, 40-PDIP
44-(T)QFP package thickness	**1.4 mm**	1.75 mm
44-(T)QFP package max lead lengths	**0.75 mm**	0.95 mm
TX FIFO Size	8 (XR88C92) **16 (XR88C192)**	8
RX FIFO Size	8 (XR88C92) **16 (XR88C192)**	8
TX FIFO Trigger Levels	8, 4, 6, 1 (XR88C92) **16, 8, 12, 1(XR88C192)**	8, 4, 6, 1
RX FIFO Trigger Levels	1, 3, 6, 8 (XR88C92) **1, 6, 12, 16 (XR88C192)**	1, 3, 6, 8

1.5 Replacing the SC26C92 with the XR88C92/192

You can directly replace the Philips SC26C92 with Exar's XR88C92/192 without any hardware changes if using either the 44-TQFP, 44-PLCC or 40-PDIP packages since they are all pin-to-pin compatible.

Since the XR88C192 has a larger Transmit and Receive FIFO, the software will need to be updated to take advantage of the features of the XR88C192. The XR88C92/192 allows the hardware designer to choose either a 5 or 3.3 V power supply instead of being forced to use a 5 V power supply only. Also, the XR88C92/192 has a lower power consumption than the SC26C92.

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