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APPLICATION NOTE 4938

Differences Between Maxim's Advanced UART Devices

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Abstract: Maxim advanced universal asynchronous receivers/transmitters (UARTs) ease the burden of physical layer management in an asynchronous communications network. The devices include a single UART with two package options (MAX3107/MAX3108), a dual UART (MAX3109), and a quad UART (MAX14830).

These UARTs share a common register set, which eases the task of adapting firmware from one UART to another. This article discusses each UART's unique set of features. It also examines the care that must be taken when adapting software and hardware from one device to another.

Introduction

Maxim's advanced universal asynchronous receivers/transmitters (UARTs) help the host processor manage the physical layer in an asynchronous communications network. These advanced devices include a single UART with two package options (MAX3107/MAX3108), a dual UART (MAX3109), and a quad UART (MAX14830).

Why So Many UARTs?

Maxim produces four similar types of advanced UARTs to serve the needs of a wide variety of applications, including mobile Internet devices, point-of-sale (POS) systems, and airplane communication buses. **Table 1** compares the features of each UART. For a detailed description of features and other specifications common to a UART, see the associated device's data sheet.

Table 1. Comparison of Maxim's Advanced UART Features

Feature	MAX3107	MAX3108	MAX3109	MAX14830
Number of UARTs	1	1	2	4
Package	24-pin SSOP/TQFN	25-pin WLP	32-pin TQFN	48-pin TQFN
Number of GPIOs	4	4	8	16
LED-driving capability for GPIOs		√	√	√
Maximum I²C frequency (Hz)	400k	1M	1M	1M
Minimum width IrDA® pulses	√			√
Automatic sleep control	√	√	√	
Manual sleep control	√	√	√	
Line noise indication	1x rate mode only	1x or 2x rate mode only	1x or 2x rate mode only	1x or 2x rate mode only
Automatic transmitter disable			√	√
Tx synchronization			√	√
Enhanced I²C addressing		√	√	√
Basic register set (0x00–0x1E)	√	√	√	√
Extended register set (0x20–0x25)			√	√
RevID register	0x1F	N/A	0x25	0x25

Extended Registers and Serial Interface

Unlike the single UARTs, the dual and quad UARTs have registers 0x20 to 0x25. This extended register set provides advanced synchronization features and general-purpose I/O (GPIO) timer options.

The MAX3109 and MAX14830 have a separate register set for each on-chip UART. In order for the host to write to a specific UART's registers, each UART has its own I²C address. There are also two UART select bits (U1 and U0) in the SPI™ command word.

RevID Register

The RevID register is 0x1F for the MAX3107, and 0x25 for the MAX3109 and MAX14830. The MAX3108 does not have a RevID register. Therefore, the RevID register is not compatible among the devices. Do not poll RevID during startup to determine when the UART is ready for programming in order to ensure driver compatibility.

Conclusion

Maxim's advanced UARTs have registers that are compatible among the devices. This allows firmware that was used for one UART to be used with another, as long as only the unique features of the implemented device are utilized in software.

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Related Parts		
MAX14830	Quad Serial UART with 128-Word FIFOs	
MAX3107	SPI/I²C UART with 128-Word FIFOs	Free Samples
MAX3108	SPI/I²C UART with 128-Word FIFOs in WLP	
MAX3109	Dual Serial UART with 128-Word FIFOs	Free Samples

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