
Micrel 10/100BaseT LAN and SPI Flash Memory Using iChip™ CO2064SEC

Revision History

Version	Date	Description
1.0	November 2007	Original release

Introduction

This reference design demonstrates the iChip™ CO2064SEC Secure Ethernet Controller connected to a 10/100BaseT Ethernet LAN via an RMII interface, to a host processor via an RS232 interface, and to a flash memory chip via an SPI interface.

LAN access is based on iChip CO2064SEC's internal Ethernet MAC and an external Micrel KSZ8041NL chip.

The design is intended to connect to a host device through a standard EIA RS232 serial port. Connect One's AT+i™ commands are accepted at baud rates of up to 3Mbps.

Features

- Standard RS232 serial input channel
- Supports serial host interface rates of up to 3Mbps (250K, 1M, 1.5M, 3M)
- SSL3/TLS1 security implemented in hardware
- Data and Internet connection through a 10/100BaseT Ethernet controller
- Full hardware flow control
- Supports AT+i™ commands for Internet connectivity

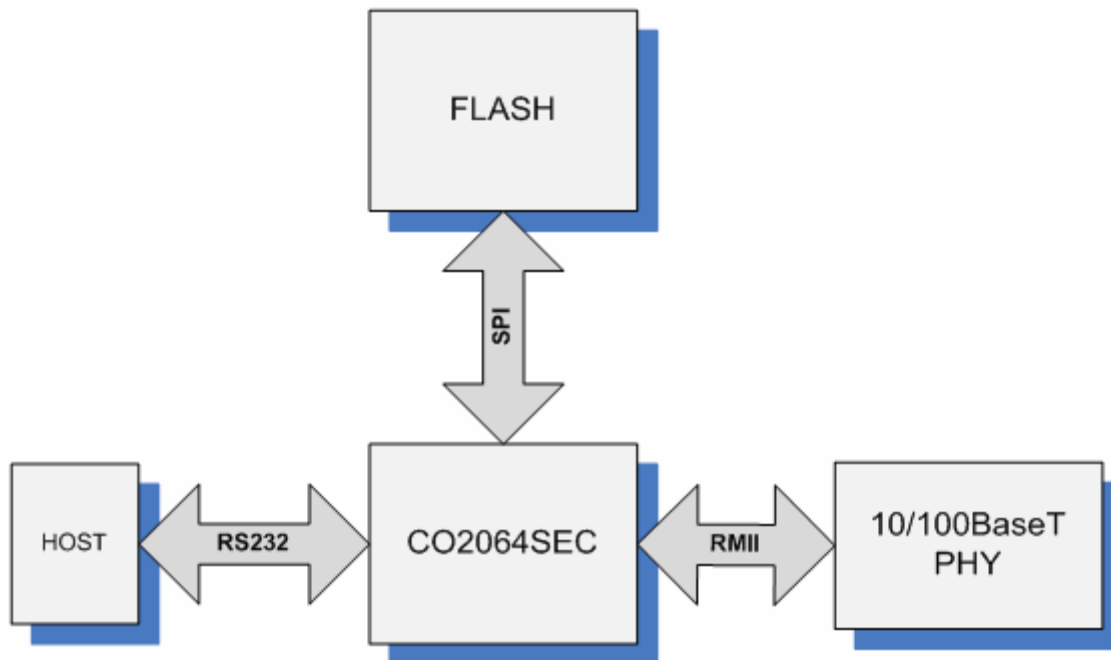
Reference Design

This reference design outlines the connections required to link an iChip CO2064SEC Secure Ethernet Controller with a 10/100BaseT Ethernet LAN and an external flash memory chip, based on the block diagram, below.

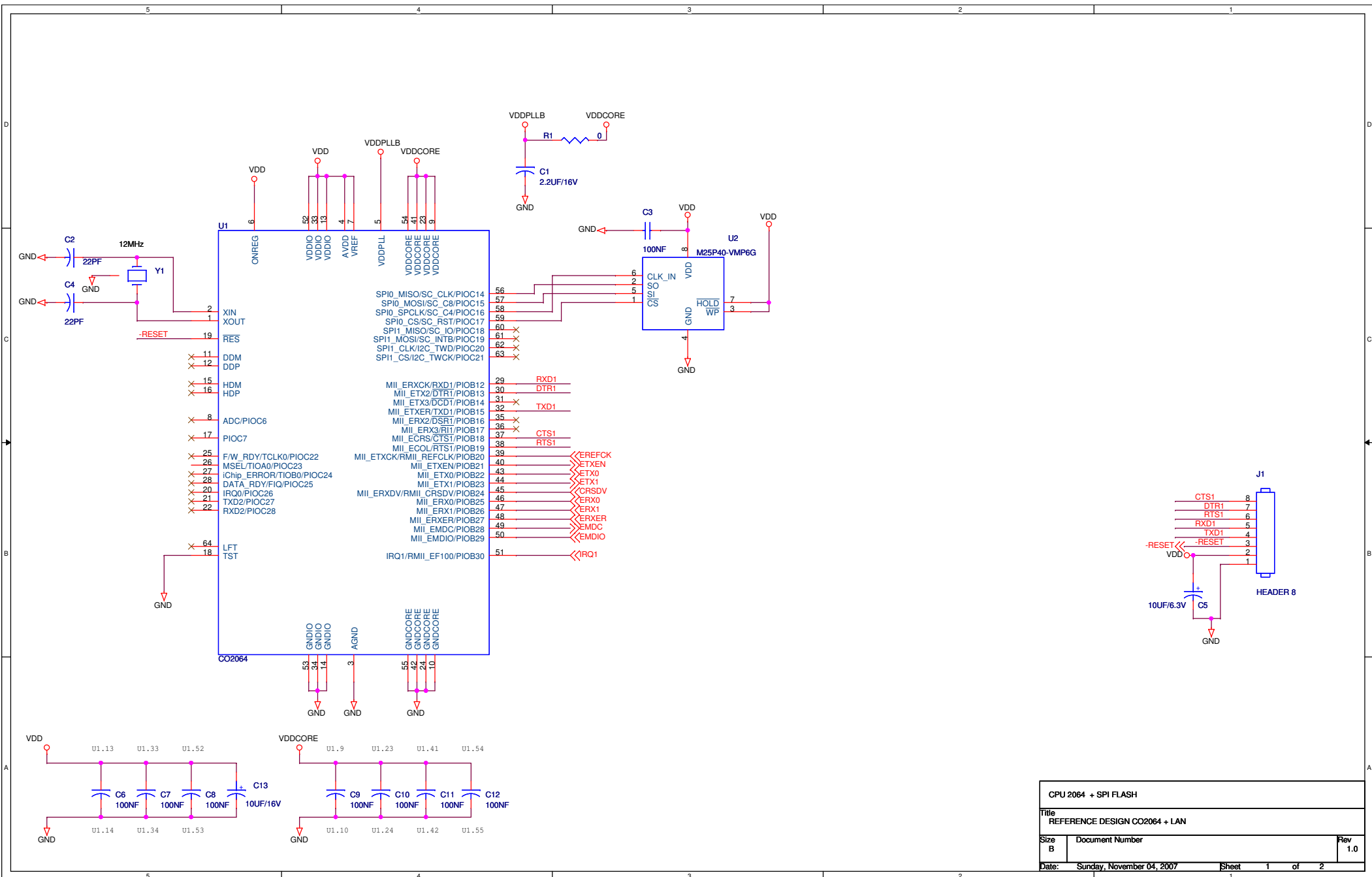
The host is connected to iChip CO2064SEC via an RS232 serial input channel. The external 10/100BaseT Ethernet PHY is connected via an RMII interface. The external flash memory (M25P40-VMP6G from STMicroelectronics) is connected via an SPI interface.

Block Diagram

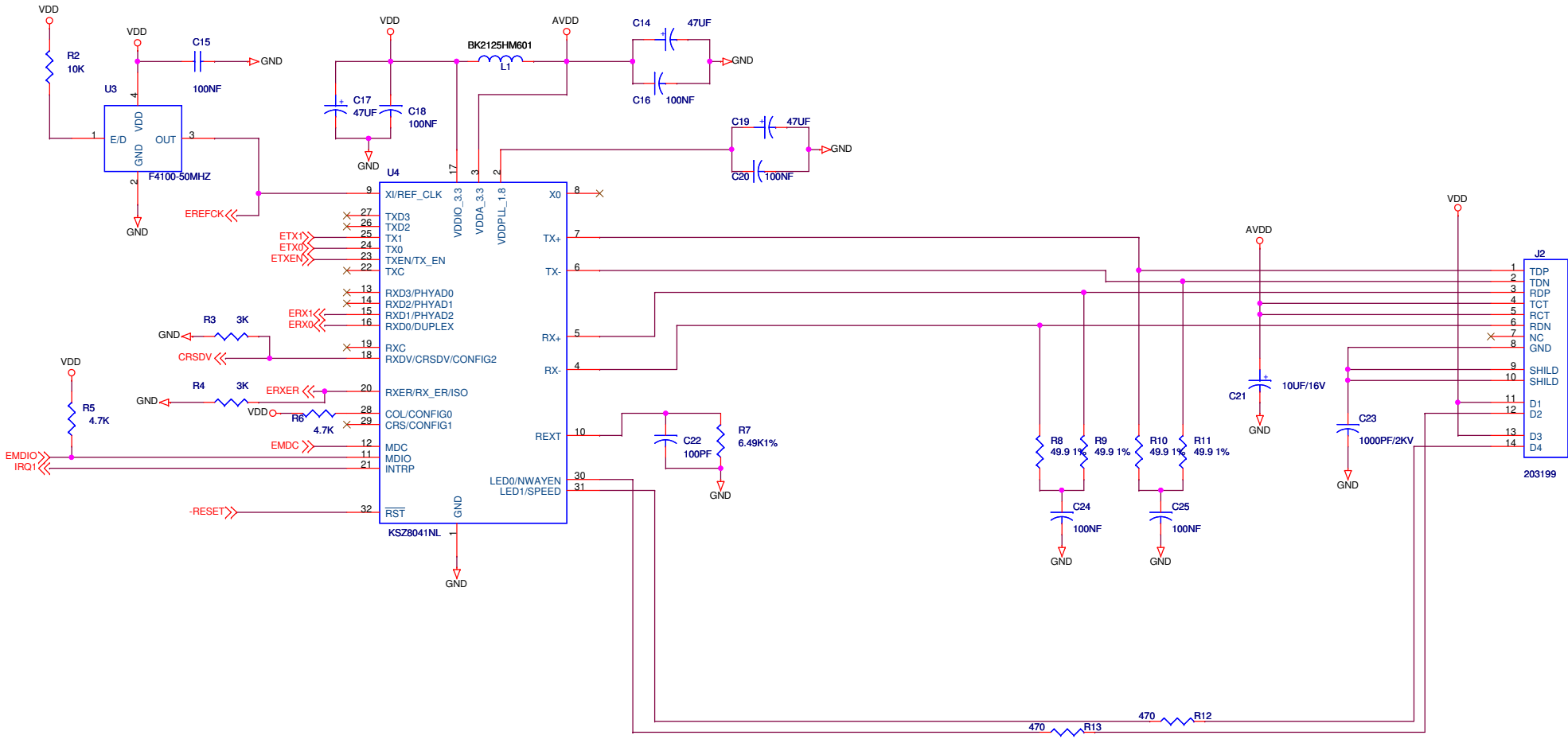
The diagram below illustrates an architecture in which the iChip CO2064SEC loads its firmware from external flash memory. All the components required for this architecture are listed in the Bill of Materials section, below.



Schematics



CPU 2064 + SPI FLASH		
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RMII INTERFACE			
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Bill of Materials

Item	Quantity	Reference	Part	Manufacturer
1	1	C1	2.2UF/16V	Any
2	2	C2, C4	22PF	Any
3	14	C3, C6, C7, C8, C9, C10, C11, C12, C15, C16, C18, C20, C24, C25	100NF	Any
4	1	C5	10UF/6.3V	Any
5	2	C13, C21	10UF/16V	Any
6	3	C14, C17, C19	47UF	Any
7	1	C22	100PF	Any
8	1	C23	1000PF/2KV	Any
9	1	J1	HEADER 8	Any
10	1	J2	203199	Any
11	1	L1	BK2125HM601	Any
12	1	R1	0	Any
13	1	R2	10K	Any
14	2	R3, R4	3K	Any
15	2	R5, R6	4.7K	Any
16	1	R7	6.49K1%	Any
17	4	R8, R9, R10, R11	49.9 1%	Any
18	2	R12, R13	470	Any
19	1	U1	CO2064	Connect One
20	1	U2	M25P40-VMP6G	STMicroelectronics
21	1	U3	F4100-50MHZ	FOX
22	1	U4	KSZ8041NL	Micrel

Item	Quantity	Reference	Part	Manufacturer
23	1	Y1	12MHZ	Any