

MOD5234

Ethernet Core Module

1588 Version



DATASHEET

Key Points

- Use as a high-performance single board computer or add Ethernet connectivity to a new or existing design
- Customize to suit any application with a low-cost development kit.

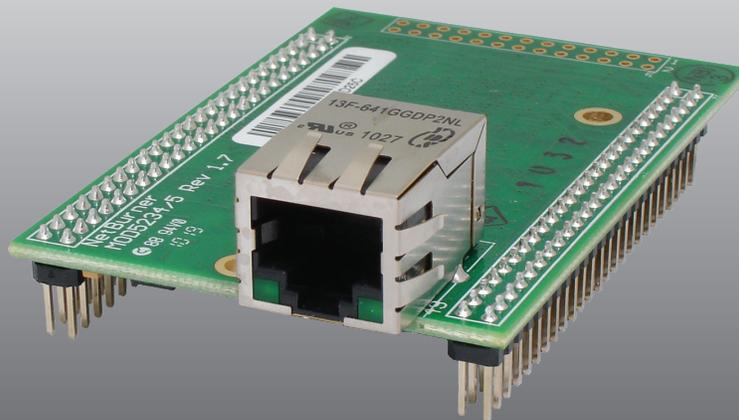
Features

- 32-bit ColdFire 5234 processor with eTPU Co-processor
- 8MB SDRAM and 2MB of Flash Memory
- 10/100 Ethernet
- 3 Serial Ports, SPI & I²C peripheral interface , access to address & data bus, and digital I/O
- SD/MMC card interface with included flash file system
- 8 timers
- Interrupts
- Industrial Temperature Range -40° to 85° C
- DHCP/Static IP Support
- Serial data rates up to 230 Kbps
- 90+ Mbps UDP total throughput
- 50+ Mbps TCP data payload throughput

Optional

The following options are available with the optional development kit:

- SD/MMC Card interface with included flash file system
- Additional baud rates available
- SSL/TLS 1.3



Overview

The industrial temperature rated Mod5234 is based on the 32-bit Freescale MCF5234 running at 147MHz. In addition to the eTPU features the module provides 10/100 Ethernet, 2MB of Flash memory, 8MB of SDRAM, SPI, I²C, 3 UARTS and CAN.

eTPU for Complex Timing and I/O Management

The programmable I/O controller has its own core and memory system, enabling it to perform complex timing and I/O management independently of the primary CPU. The eTPU is essentially an independent microcontroller designed for timing control, I/O handling, serial communications, motor control and engine control applications.

Network-Enable New or Existing Applications

Add this module to an existing application to network enable your device through its serial ports, GPIO pins, or serial bit streams. If you have an application-specific motherboard, you can add a module to have a powerful processing platform that can function as the control processor for your product, or as a low cost network interface processor.

Customize to Suit Any Application

The NetBurner Network Development kit enables you to quickly and easily create custom applications. NetBurner has a solid reputation for development platforms to facilitate rapid product development, and the module kits are no exception. The kit includes the hardware platform, IDE, TCP/IP Stack, uC/OS Real-time operating system, Web Server, GNU C/C++ compiler and linker, Flash File System, GDB graphical debugger, end-user device configuration and flash update utilities, and much more.

Specifications

Processor & Memory

32-bit Freescale ColdFire 5234 running at 147.5MHz with 2Mbytes of on-chip flash, 8Mbytes SDRAM.

Network Interface

10/100 BaseT with RJ-45 connector.

Connectors

Two dual inline 50-pin headers
RJ-45 Ethernet jack.

Serial Interfaces

3 UART, I²C, SPI and up to 49 Digital I/O

Flash Card Support

FAT32 support for SD Cards up to 8GB (requires exclusive use of SPI signals). Card types include SD/MMC (up to 2GB) and SDHC.

Physical Characteristics

Dimensions (inches): 2.95" x 2.00"
Mounting Holes: 2 x 0.125" dia

Power

DC Input Voltage: 3.3V @ 380mA

Environmental Operating Temperature

-40° to 85° C

RoHS Compliance

The Restriction of Hazardous Substances guidelines ensure that electronics are manufactured with fewer environment harming materials.

MOD5234 Pinout and Signal Description

The MOD5234 module has two dual in-line 50 pin headers which enable you to quickly and easily connect to one of our standard NetBurner Carrier Boards, or a board you create on your own. Table 1 provides descriptions of pin function of the MOD5234 header.

Table 1: NetBurner MOD5234 Pinout and Signal Descriptions ⁽¹⁾ for J1 Connector

J1 Connector						
Pin	CPU Pin	Function 1	Function 2	General Purpose I/O	Description	Max Voltage
1		GND			Ground	-
2		GND			Ground	-
3		VCC3V			Input power 3.3 VDC	3.3VDC
4	L16	R/W			Read / NOT Write ¹	3.3VDC
5	B13	CS1		PCS1	Chip Select 1 ¹	3.3VDC
6	D12	CS2	SD_CS0	PCS2	Chip Select 2 ¹ or SDRAM Chip Select 0 ¹	3.3VDC
7	B12	CS3	SD_CS1	PCS3	Data Bus - Chip Select 3 ¹ or SDRAM Chip Select 1 ¹	3.3VDC
8	T7	OE			Output Enable ¹	3.3VDC
9	B9	BS2	CAS2		Byte Strobe for D16 to D23 (8 bits) ¹ or Column Address Strobe 2 ¹	3.3VDC
10	C9	BS3	CAS3		Byte Strobe for D24 to D31 (8 bits) ¹ or Column Address Strobe 3 ¹	3.3VDC
11		TIP			Transfer in Progress ^{1,2}	3.3VDC
12	R1	D16			Data Bus - Data 16	3.3VDC
13	K14	TA		PBUSCTL6	Transfer Acknowledge ¹	3.3VDC
14	P2	D18			Data Bus - Data 18	3.3VDC
15	P1	D17			Data Bus - Data 17	3.3VDC
16	N2	D20			Data Bus - Data 20	3.3VDC
17	N1	D19			Data Bus - Data 19	3.3VDC
18	M2	D22			Data Bus - Data 22	3.3VDC
19	M1	D21			Data Bus - Data 21	3.3VDC
20	L1	D24			Data Bus - Data 24	3.3VDC
21	M3	D23			Data Bus - Data 23	3.3VDC
22	L3	D26			Data Bus - Data 26	3.3VDC
23	L2	D25			Data Bus - Data 25	3.3VDC
24	K1	D28			Data Bus - Data 28	3.3VDC
25	L4	D27			Data Bus - Data 27	3.3VDC

Note:

1. Active low signals, such as $\overline{\text{RESET}}$, are indicated with an overbar
2. The TIP signal is the logical AND of *CS1, *CS2 and *CS3. TIP can used to control an external data bus buffer for the data bus signals. An example circuit design can be found on the Module Development Board schematic. An external data bus buffer is recommended for any designs that use data bus signals D16-D31. The CLKOUT signal is 1/2 the system frequency of 147.456 MHz.
3. The CLKOUT signal is 1/2 the system frequency of 147.456 MHz.
4. Each UART can be clocked from an internal or external source. For external clocks, each UARTn, can be clocked by the corresponding DTn_IN vinput pin.
5. If using I²C, the module must add pull-up resistors to SDA/SCL.

J1 Connector (continued)					
Pin	CPU Pin	Function	General Purpose I/O	Description	Max Voltage
26	K3	D30		Data Bus - Data 30	3.3VDC
27	K2	D29		Data Bus - Data 29	3.3VDC
28	T15	<u>RESET</u>		Processor Reset Input ¹	3.3VDC
29	K4	D31		Data Bus - Data 31	3.3VDC
30	T14	<u>RSTOUT</u>		Processor Reset Output ¹	3.3VDC
31	M16	CLK_OUT ³		Buffer Clock Out (CLKOUT-73.728 Mhz) ³	3.3VDC
32	H13	A0		Data Bus - Address 0	3.3VDC
33	H14	A1		Data Bus - Address 1	3.3VDC
34	H15	A2		Data Bus - Address 2	3.3VDC
35	H16	A3		Data Bus - Address 3	3.3VDC
36	G13	A4		Data Bus - Address 4	3.3VDC
37	G14	A5		Data Bus - Address 5	3.3VDC
38	G15	A6		Data Bus - Address 6	3.3VDC
39	F13	A7		Data Bus - Address 7	3.3VDC
40	F14	A8		Data Bus - Address 8	3.3VDC
41	F15	A9		Data Bus - Address 9	3.3VDC
42	E13	A10		Data Bus - Address 10	3.3VDC
43	E14	A11		Data Bus - Address 11	3.3VDC
44	E15	A12		Data Bus - Address 12	3.3VDC
45	E16	A13		Data Bus - Address 13	3.3VDC
46	D14	A14		Data Bus - Address 14	3.3VDC
47	D15	A15		Data Bus - Address 15	3.3VDC
48		VCC3V		Input power 3.3 VDC	3.3VDC
49		GND		Ground	-
50		GND		Ground	-

Note:

- Active low signals, such as RESET, are indicated with an overbar.
- The TIP signal is the logical AND of *CS1, *CS2 and *CS3. TIP can be used to control an external data bus buffer for the data bus signals. An example circuit design can be found on the Module Development Board schematic. An external data bus buffer is recommended for any designs that use data bus signals D16-D31. The CLKOUT signal is 1/2 the system frequency of 147.456 MHz.
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- If using I²C, the module must add pull-up resistors to SDA/SCL.

Table 2: NetBurner MOD5234 Pinout and Signal Descriptions ⁽¹⁾ for J2 Connector

J2 Connector						
Pin	CPU Pin	Function 1	Function 2	General Purpose I/O	Description	Max Voltage
1		GND			Ground	-
2		VCC3V			Input power 3.3 VDC	3.3VDC
3	G2	UART0_RX		PUARTL0	UART 0 Receive ⁴	3.3VDC
4	H2	UART0_TX		PUARTL1	UART 0 Transmit ⁴	3.3VDC
5	A6	TPUCH1		ETPU1	eTPU Channel 1	3.3VDC
6	A7	TPUCH0		ETPU0	eTPU Channel 0	3.3VDC
7	B4	TPUCH3		ETPU3	eTPU Channel 3	3.3VDC
8	A4	TPUCH2		ETPU2	eTPU Channel 2	3.3VDC
9	B3	TPUCH5		ETPU5	eTPU Channel 5	3.3VDC
10	A3	TPUCH4		ETPU4	eTPU Channel 4	3.3VDC
11	B2	TPUCH7		ETPU7	eTPU Channel 7	3.3VDC
12	A2	TPUCH6		ETPU6	eTPU Channel 6	3.3VDC
13	C2	TPUCH9		ETPU9	eTPU Channel 9	3.3VDC
14	B1	TPUCH8		ETPU8	eTPU Channel 8	3.3VDC
15	D2	TPUCH11		ETPU11	eTPU Channel 11	3.3VDC
16	C1	TPUCH10		ETPU10	eTPU Channel 10	3.3VDC
17	E2	TPUCH13		ETPU13	eTPU Channel 13	3.3VDC
18	D1	TPUCH12		ETPU12	eTPU Channel 12	3.3VDC
19	F2	TPUCH15		ETPU15	eTPU Channel 15	3.3VDC
20	E1	TPUCH14		ETPU14	eTPU Channel 14	3.3VDC
21	A11	UART1_RX	CAN0_RX	PUARTL4	UART 1 Receive ⁴ or CAN 0 Receive	3.3VDC
22	A12	UART1_TX	CAN0_TX	PUARTL5	UART 1 Transmit ⁴ or CAN 0 Transmit	3.3VDC
23	B11	<u>UART1_RTS</u>	<u>UART2_RTS</u>	PUARTL6	UART 1 Request To Send ^{1,4} or UART 2 Request to Send ^{1,4}	3.3VDC
24	C11	<u>UART1_CTS</u>	<u>UART2_CTS</u>	PUARTL7	UART 1 Clear To Send ^{1,4} or UART 2 Clear to Send ^{1,4}	3.3VDC
25	B8	SPI_CLK	I2C_SCL	PQSPI2	SPI Clock or I ² C Serial Clock ⁵	3.3VDC

Note:

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3. The CLKOUT signal is 1/2 the system frequency of 147.456 MHz.
4. Each UART can be clocked from an internal or external source. For external clocks, each UARTn can be clocked by the corresponding DTn_IN input pin.
5. If using I²C, the module must add pull-up resistors to SDA/SCL.

J2 Connector (continued)							
Pin	CPU Pin	Function 1	Function 2	Function 3	General Purpose I/O	Description	Max Voltage
26	F1	TCR_CLK			PETPU2	eTPU Time Base Clock	3.3VDC
27	C8	SPI_DIN	I2C_SDA		PQSPI1	SPI Data In or I ² C Serial Data ⁵	3.3VDC
28	D8	SPI_DOUT			PQSPI0	SPI Data Out	3.3VDC
29	G1	UART0_CTS			PUARTL3	UART 0 Clear To Send ^{1,4}	3.3VDC
30	D9	SPI_CS0			PQSPI3	SPI Chip Select 0	3.3VDC
31	G4	T0IN	DREQ0		PTIMER1	Timer Input 0 or DMA Request 0 ¹	3.3VDC
32	J13	UTPUODIS			PETPU1	eTPU Channel Output Disable Signal (Upper)	3.3VDC
33	R10	T2OUT	DACK2		PTIMER4	Timer Output 2 or DMA Acknowledge 2	3.3VDC
34	R7	T1OUT	DACK1		PTIMER2	Timer Output 1 or DMA Acknowledge 1	3.3VDC
35	J14	LTPUODIS			PETPU0	eTPU Channel Output Disable Signal (Lower)	3.3VDC
36	G3	T0OUT	DACK0		PTIMER0	Timer Output 0 or DMA Acknowledge 0	3.3VDC
37	P7	T1IN	DREQ1	T1OUT	PTIMER3	Timer Input 1 or DMA Request 1 ¹ or Timer Output 1	3.3VDC
38	H3	UART0_RTS			PUARTL2	UART 0 Request To Send ^{1,6}	3.3VDC
39	L15	I2C_SDA	CAN0_RX		PFECI2C0	I ² C Serial Data ⁵ or CAN 0 Receive ⁴	3.3VDC
40	B10	SPI_CS1	SD_CKE		PQSPI4	SPI Chip Select 1 ¹ or SDRAM Clock Enable	3.3VDC
41	D10	UART2_RX			PUARTH0	UART 2 Receive ⁴	3.3VDC
42	L14	I2C_SCL	CAN0_TX		PFECI2C1	I ² C Serial Clock ⁵ or CAN 0 Transmit	3.3VDC
43	N10	IRQ1			PIRQ1	External Interrupt 1 ¹	3.3VDC
44	D11	UART2_TX			PUARTH1	UART 2 Transmit ⁴	3.3VDC
45	R9	IRQ3			PIRQ3	External Interrupt 3 ¹	3.3VDC
46		GND				Ground	-
47	N9	IRQ5			PIRQ5	External Interrupt 5 ¹	3.3VDC
48	R8	IRQ7			PIRQ7	External Interrupt 7 ¹	3.3VDC
49		GND				Ground	-
50		VCC3V				Input power 3.3 VDC	3.3VDC

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Part Numbers

MOD5234 Ethernet Core Module (1588 Version)

Part Number: MOD5234-1588IR

Ordering Information

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