MCS8140

Network USB Processor

Frequently Asked Questions

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MCS8140 Hardware (ASIC & System) related FAQ

Objective

Aim of this document is to provide the summary of frequently asked questions about MCS8140 ASIC, its features, System related queries & other details concerning the ASIC, hardware design. SW related applications & deliverables are not covered in this document, refer to MCS8140 Software FAQ document for these details.

a) What is MCS8140, key features & target applications

MCS8140 & its features

The MosChip MCS8140 is a highly integrated general purpose network processor that can be used in a variety of products that require network connectivity. The CPU subsystem of the MCS8140 consists of a 170 MHz ARM926EJ-S, 32-bit RISC microprocessor. The MCS8140 network processor contains four high speed USB 2.0 Ports. These ports have been designed to connect a wide range of USB-based devices to an Ethernet network (Internet or Intranet).

The 32-bit, 33MHz PCI host interface supports PCI devices which are compatible / compliant to the PCI 2.2 or 2.3 standard. The PCI controller can support up to two PCI devices. This allows the MCS8140 to connect to a variety of PCI devices such as 802.11x peripherals, Audio Controllers, PCI-SATA and PCI-IDE controllers. The Ethernet controller in the MCS8140 contains a media access controller (MAC) and physical layer (PHY). The Ethernet interface can be connected directly to external magnetics, LED's and connectors.

In addition, the MCS8140 provides an alternate Ethernet configuration that does not use the internal PHY. In this configuration all the MII pins are available on the GPIO interface. A robust Security Engine handles all IPSec functions including the DES, 3DES, AES, MD5, SHA-1, and SHA-256 algorithms. The interface pins for the on-chip I^2S audio controller are multiplexed with the GPIO pins and can be used for controlling an external I^2S Codec. The MCS8140 also has a software emulated serial interface which can be used to connect to a standard SPI EPROM. It also provides a local bus for system expansion.

Target Applications **:**

MCS8140 is programmable SOC with generic interfaces like Ethernet, PCI, USB & can be used in variety of applications. Few applications scenario's given below for example :

- Networked USB Server / Extended USB ports
- Networked USB Print Server
- Secure NAS (Network Attached Storage)
- VOIP
- WAP — Wireless Access Point / Gateway
- Serial Server

b) Where do I get additional information on MCS8140

Short Form Catalog : http://www.moschip.com/data/products/MCS8140/Short%20Form_8140.pdf

Product Brochure : http://www.moschip.com/data/products/MCS8140/Brochure_8140.pdf

White Paper : http://www.moschip.com/data/products/MCS8140/MCS8140_WP.pdf

Detailed Data Sheet of MCS8140 is shared through FTP site, write to marketing@moschip.com or sales@moschip.com or support-8140@moschip.com if same is not available.

c) Is MCS8140 available for Mass production

MCS8140 ASIC is under Mass Production, ordering information given below:

Part Type : MCS8140CV
Package : QFP 256, RoHS
Commercial Grade : 0 to 70 deg C

Contact sales@moschip.com for further information.

d) How to get MCS8140 Reference platform

MCS8140 Evaluation boards (Reference platforms) are available from MosChip, contact sales@moschip.com for Evaluation board.

Refer to MCS8140 Design Kit details for more details on MCS8140 & its offerings from MosChip http://www.moschip.com/data/products/MCS8140/MCS8140_Design Kit.pdf

e) How to estimate Power Supply requirements of MCS8140 at system level

MCS8140 ASIC requires 3.3V & 1.8V Power supplies for its operation. Customers designing system platforms can refer to Power Supply application note of MCS8140 for more details.

http://www.moschip.com/data/products/MCS8140/MCS8140_Power_AN.pdf

f) What memory sizes are supported by MCS8140

MCS8140 evaluation boards are given in two different memory sizes, by default

- 32 MB SDRAM (16MB SDRAM of 2 Units) + 16MB Flash (8bit 8MB Flash of 2 Units)
- 32 MB SDRAM (16MB SDRAM of 2 Units) + 8 MB Flash (8bit 8MB Flash of 1 Unit)

Different Memory sizes can be supported by MCS8140, refer to Memory application Note for more details : http://www.moschip.com/data/products/MCS8140/MCS8140_Memory_AN.pdf

g) Can different SDRAM & Flash makes be used with MCS8140

Micron (Part Number : MT48LC8M16A2-7E) and Integrated Circuit Solution Inc (Part Number : CSI IC42S 16800) make SDRAM's used on MosChip Evaluation boards. Any PC100 & PC133 Compliant SDRAM's can be used with MCS8140.

8bit Parallel Flash of 8MB (ST Micro, Part Number : M58LW064D) used on MosChip evaluation boards.

Refer to Memory Application Note for details on SDRAM, Flash types / Makes that can be used with MCS8140. http://www.moschip.com/data/products/MCS8140/MCS8140_Memory_AN.pdf

Contact support-8140@moschip.com for further information.

h) Do you have any known errata in MCS8140

Known errata of MCS8140 ASIC can be shared on request, write to support-8140@moschip.com for further details.

i) Can MCS8140 support MII interface for using external Ethernet Phy

Yes, MCS8140 can support MII interface for connecting external MII Phy. Refer to MII application note for details :
http://www.moschip.com/data/products/MCS8140/MCS8140_MII_AN.pdf

j) What Software support is offered by MosChip for MCS8140

MosChip is offering 4 different software builds for the following applications

- USB Server
- USB Print Server
- NAS & Secure NAS
- NAS + USB-Server Combo build

Refer to MCS8140 Design kit for further details
http://www.moschip.com/data/products/MCS8140/MCS8140_Design Kit.pdf

k) Does MosChip provide System design data

MosChip is providing Evaluation board (EVB) of MCS8140 for quick sampling by customers. MosChip offers Reference Schematics (OrCad + PDF), Allegro Board File, Gerber data of MosChip Evaluation boards, Bill of material as Excel file, Layout guide lines & EVB user manual.

Refer to MCS8140 Design Kit for further details
http://www.moschip.com/data/products/MCS8140/MCS8140_Design Kit.pdf

l) Any additional support from MosChip to ODM / OEM customers

MosChip offers Linux BSP (Board Support Package) under agreement to customers, after initial business engagement. Contact sales@moschip.com

Refer to MCS8140 Design Kit for further details
http://www.moschip.com/data/products/MCS8140/MCS8140_Design Kit.pdf

m) Can Unique MAC Address be stored into Flash, to remove SPI EEPROM from BOM

MCS8140 Evaluation board uses Serial EEPROM of 256 Bytes for storing unique MAC Address. And Parallel Flash used to store the Firmware image.

It is feasible to remove the Serial EEPROM & store the Unique MAC address into Parallel Flash. To support this feature we need to leave one sector from the flash memory for storing MAC Address.

To write Unique MAC address into Flash, we need to erase the Flash Sector reserved for MAC address and then write the Unique MAC address into same. Due to this, writing MAC address into Parallel Flash expected to take substantially more time than Serial EEPROM.

Choice is left to the customer, MosChip recommendation is to use Serial EEPROM for MAC address and Parallel Flash for Firmware image.

n) Can GPIO pins be used for Reset & Factory Defaults feature support

GPIO Pins can be used for implementing **Reset** and **Factory Defaults Switch**. This dual functionality can be implemented through one switch by calculating the hold time of the Switch in Firmware. This feature can be provided on request.

o) What is the function of JTAG interface in MCS8140

JTAG interface provided to ARM9 processor in MCS8140 for advanced software debugging.

p) Can MCS8140 JTAG interface be used for production line tests

Boundary scan is not implemented in MCS8140. Hence MCS8140 JTAG Port can be used only for Software debugging & can't be used for production line tests.

q) What is the maximum speed of MCS8140 memory interface

Memory (SDRAM) interface of MCS8140 is designed to operate at 100MHz speed

r) Can MCS8140 PCI interface function as Mini-PCI host

Yes, Mini-PCI interface can be provided on MCS8140. This interface is provided in one of the MCS8140 EVBs. Refer to Mini-PCI application Note for more details.

http://www.moschip.com/data/products/MCS8140/MCS8140_MiniPCI.pdf

Technical Support

Contact support-8140@moschip.com for any further information

Revision History

Revision	Date	Remarks
1.0	July 15, 2007	Initial Release
1.1	8th Sept 2007	Document limited to HW FAQ only

Important Notice

All information in this document is believed to be accurate as of the publish date.

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