Digital Signal Processors

MSC711xPFC Farm Card Reference Design

A Powerful Evaluation Tool for Telephony Gateway Designers

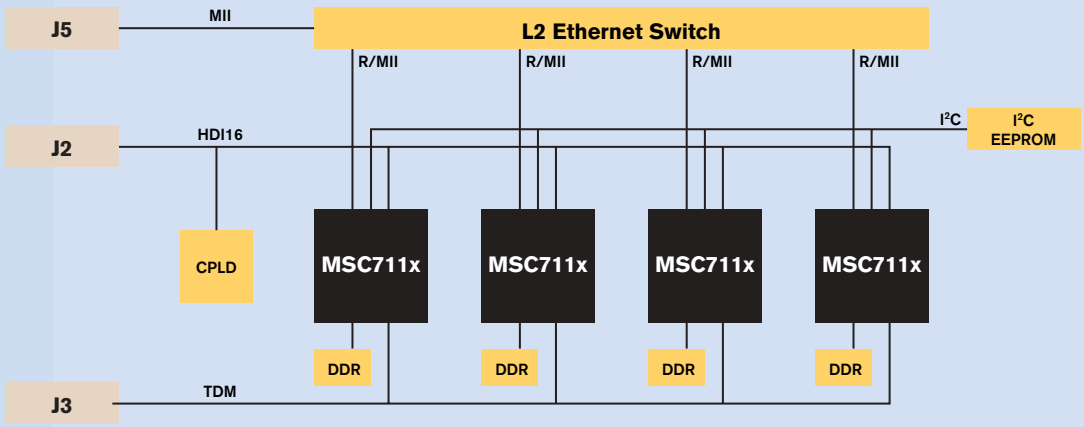
The MSC711xPFC (packet telephony farm card) provides designers with tools to evaluate and prototype media gateway DSP farms to accelerate time to market. It can also be used for system verification, software development, demonstrations and customer evaluations.

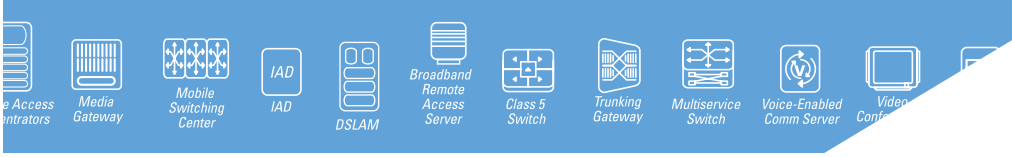
The Freescale MSC711xPFC is a type 2-compliant PCI telephony mezzanine card (PTMC). It uses four Freescale MSC711x 16-bit fixed-point DSPs based on StarCore™ technology, each with an associated high throughput external 32-bit DDR memory device. The MSC711xPFC interfaces with Freescale's Smart Packet Telephony (SPT) baseboard for a fully integrated demonstration system, or with standard customer PTMC type 2 baseboards.

Wide Variety of Telecom Interfaces

The MSC711xPFC interfaces with a baseboard platform through its PTMC site. The PTMC standard conforms to the PMC standard for P1 and P2, but uses P3 and P4 to support a variety of telecom interfaces. The MSC711xPFC is fully compatible with a key subset of these PTMC standard features. Instead of PCI on P1 and P2, the MSC711xPFC has a bus interface. The bus interface can be disabled and the PTMC site on the media gateway can be configured as PT3MC, a subset of the PTMC specification, which supports RMII, and CT bus interfaces on P3. An additional proprietary MII interface is available on a fifth connector. Data movement around the board is primarily through an onboard 10/100 Ethernet switch, an HDI16 bus interface on P2, or both.

MSC711xPFC BLOCK DIAGRAM





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Features

> Digital support for up to 128 voice channels

> Four MSC7115 or MSC7116 DSPs each with the following:

- Standard CT bus TDM interface via PTMC interface
- 16-bit HDI16 host port interface for control or data DMA to a Freescale network processor on the baseboard
- RMII Ethernet interface for packet or control traffic
- I^2C for remotely booting over Ethernet
- DDR SDRAM

> Enhanced PTMC type 2 or P2TMC configuration with the following:

- P1: +5V and CPLD programming
- P2: All signals tristated (standard) or HDI16 (proprietary)
- P3: CT bus, Ethernet-RMII (standard)
- P4: Not populated
- P5: Proprietary MII

Capabilities

> Packet data transport into the system via Ethernet or a 16-bit HDI16 interface from a host processor or both

> To accelerate host bus transfers, a CPLD maps DMA request and acknowledge signals to the host

> HDI16 host bus management and reset management can be performed through the CPLD using a small 4- or 8-bit bus interface

> Board-level hard reset (HRESET) can be accomplished through the debugger, through the PMC_HRESET signal from P2 PTMC connector or under software control by writing to the CPLD register

> Individual DSPs can also be reset under software control

> System can boot over an I^2C EEPROM and requests its program over Ethernet or boot via HDI16

> Each DSP is identified by its own unique ID designated by two resistors on DSP GPIO pins

> A standard I^2C management interface is provided between the DSP farm and P1

> For debugging, the chained DSP enhanced on-chip emulation (EOnCE) port with optional jumpers allows de-populating individual MSC711x DSPs from the card

About the MXSC711x Family

The MSC71xx Family is a high-performance, cost-effective family of DSPs based on StarCore technology. The MSC71xx Family is designed for high-bandwidth highly computational DSP applications. It is optimized for packet telephony applications, such as VoIP, providing a competitive price per channel for voice over packet systems.

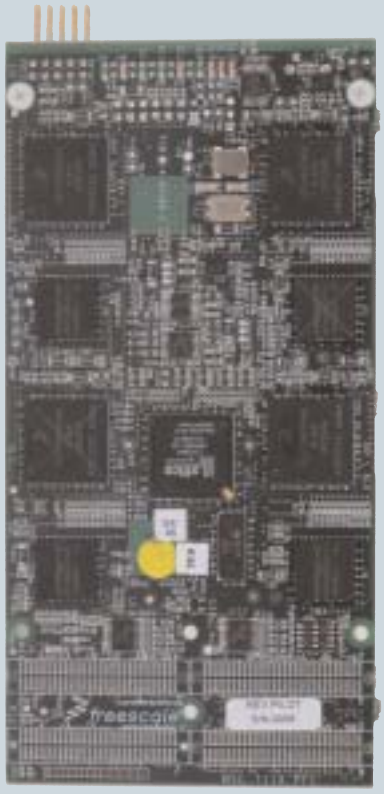
Specifications

> 5V/3.3V supplied externally via P1 connector for stand-alone operation

> 711x core voltage generated on the MSC711xPFC

> PTMC standard dimensions

MSC711xPFC BOARD



Learn More: For more information about Freescale's networking and computing solutions, please visit **www.freescale.com/networking**.

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