DoGav Systems

SYSTEM FABRIC PLANE PROTOCOL

(SFP.1, Internal TDM)

Data Sheet
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Perliminary - Subject to change without notice

PRODUCT OVERVIEW

Freescale's PowerQUICC family are a versatile one-chip integrated microprocessor and peripheral combination that can be used in a variety of controller applications, and are particularly suitable for the communications and networking markets.

The PowerQUICC II processors and the MPC8555E/8560 PowerQUICC III processors incorporate two main components: an embedded core processor built on Power Architecture technology and a communications processor module (CPM) - a dedicated RISC engine optimized for handling communications tasks. The PowerQUICC II Pro processor family incorporates a next-generation communications engine known as QUICC (QE).

Both the CPM and the QE support a wide range of protocols, and they operate independently from the core processor. They have their own instruction set and can be programmed via "microcode". This presents the opportunity for implementing higher levels of networking protocols and/or introducing new protocols, resulting in considerable application complexity offload and an increase in the overall performance.

The SFP.1 microcode product is a unique off-the-shelf offering, designed to take advantage of the PowerQUICC features. It provides an open interface (API) for the fast and easy integration of any operating system solution running on the PowerQUICC core.

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PRODUCT DESCRIPTION

System Fabric Plane protocol (SFP.1, Internal TDM), also sometimes referred to as Pseudo-Wire, is a multiplexed voice over packet protocol.

Media processing, such as voice conferencing and voice mail, is being increasingly implemented using off-the-shelf host platforms. At low densities, VoIP works well for this, but when the density scales up, VoIP is no longer viable, as the processing overhead is too high. Even for some lower density host media processing applications, the latency of VoIP becomes an issue. SFT.1 is perfectly suited to connect high density host media processing platforms into a larger system.

In addition, as voice and data networks converge, TDM busses will migrate to packet bus implementations. However, this migration will not occur all at once, and existing telephony equipment will have to continue to inter-work with the newer packet bus equipment for some time. SFP.1 is perfectly positioned to enable this migration.

SFP.1 is also a perfect protocol for carrying many TDM voice/data calls over the packet bus itself.

FEATURES

- Fully implemented in microcode
- Supports PICMG SFP.1 1Msec mode (125sec mode will be available November 2006)
- Available for the following Freescale devices:
  - PowerQUICC II (MPC8270, MPC8275, MPC8280)
  - PowerQUICC II PRO (MPC8360, MPC8360E).
  - PowerQUICC III (MPC8560)
- Supports up to 256 MCC channels
- Encapsulation/fragmentation are conducted on the DPRAM (saving substantial number of bus transactions)
- Ethernet data frames contain up to 64 MCC channels
- Full duplex operation consumes less than 50% of the Fast Ethernet bandwidth
- Built-in grooming support
- Frames are sent when 64 MCC channels are encapsulated, or time-out expired
- API offers the facility to construct control frames using dedicated CPM/QE commands
- Statistics counters available to the user to control activities

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- Extremely fast in "direct mapping" mode (channel ID identical to logical channel number)
- Support VLAN and none-VLAN frames
- I-TDM headers can be customized to meet specific requirements
- Channels can be dynamically inserted and removed though API
- Microcode module has a small footprint, leaving enough space for other module(s) and/or enhancements

ABOUT DOGAV SYSTEMS

DoGav Systems is a leading provider of software and hardware consultancy and training services. It specializes in Freescale's processors, in particular the PowerQUICC family of communication processors. It has a proven track record of over 20 years supporting Freescale customers in developing market-leading products for the communications equipment market.

DoGav Systems is Freescale's most experienced and active microcode developer. Since receiving its license in 2000, it has developed numerous customized microcode packages for both small and large Freescale customers. These packages are now successfully deployed in commercial products. In addition, DoGav Systems also offers more than 30 off-the-shelf microcode products for the PowerQUICC I, PowerQUICC II, PowerQUICC III and PowerQUICC II Pro processors.

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