



# Tsi108™ Host Bridge for PowerPC® Product Brief

## Device Overview

The Tundra Tsi108 is an advanced host bridge for PowerPC processors that supports PCI-X, DDR2-400 SDRAM, Gigabit Ethernet, and Flash. The device contains numerous integrated features that enable customers to reduce system design complexity and system costs. As a result, the Tsi108 has the best price/benefits ratio on the market.

The Tsi108 builds on a decade of Tundra design experience in PowerPC host bridging. It delivers industry-leading performance for customers in the wireless infrastructure, storage networking, network access, printer, military, and industrial automation markets.

## Enhancing System Performance

The advanced Switch Fabric architecture of the Tsi108 allows designers to significantly enhance system performance. The Ethernet Controller and PCI-X Interface offer superior data transfer rates. In addition, CPU to memory performance is exceptional due to features like configurable port arbitration priority and queuing reads ahead of writes.

## Minimizing System Cost

The Tsi108 feature set provides system designers with an array of integrated functionality to assist in lowering overall system cost, such as an integrated Clock Generator with spread-spectrum capabilities, a DDR2-400 Memory Controller, and internal processor and PCI/X bus arbiters.

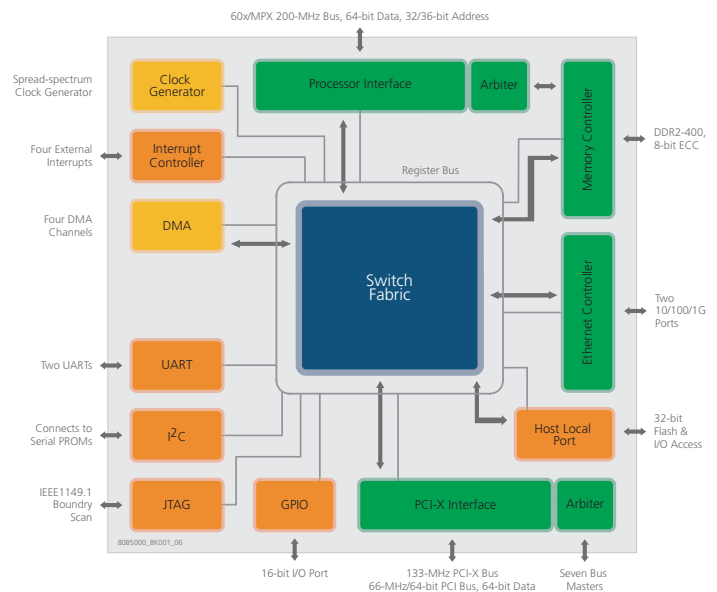
## Simplifying Design

Tsi108's flexible configuration options empower designers to develop their systems quickly and efficiently. Selection of PCI/PCI-X modes, an integrated Clock Generator, DDR2 support, and the ability to configure it as a PCI Host/Agent, all enable the Tsi108 to be used in a range of applications. The JTAG Interface also simplifies the debug process by allowing access to Tsi108's registers without impacting active transactions.

## Effective Power Management

The Tsi108 is the lowest power consuming host bridge on the market. It minimizes active power by disabling unused ports and clocks, while its integrated Clock Generator saves power over discrete devices. Its support for DDR2 provides memory power savings of up to 50 percent when compared with DDR. The Tsi108 also conforms to the PCI Bus Power Management Interface Specification.

## Block Diagram



## Features

### Processor Interface

- Supports PowerPC processors:
  - Freescale MPC74xx
  - IBM PPC 750xx
- Operates up to 200 MHz

### PCI/X Interface

- Supports PCI 2.3 and PCI-X 1.0 modes
- Operates up to 133 MHz
- Supports PCI/X Host or Agent operation
- Supports CompactPCI Hot Swap

### Memory Controller

- Supports DDR2-400 devices
- Operates up to 200 MHz

### Other

- Integrated bus arbiters for processor and PCI/X devices
- Power-down modes on numerous interfaces
- Four independent DMA/XOR channels
- Clock generator with spread-spectrum capability
- Two independent Gigabit Ethernet ports
- HLP Interface for Flash and other simple I/O devices
- Two UARTs

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- 16-bit parallel GPIO port
- I2C/EEPROM Interface
- Programmable Interrupt Controller
- JTAG support (Boundary scan) with register access capability
- Packaging: 1023-pin, 33x33 mm, fcBGA, RoHS-compliant
- Power consumption: 2.5W typical, 3.7W maximum

## Benefits

- Enhances system performance by delivering low latency and high throughput across its Processor, PCI-X, and Ethernet interfaces
- Simplifies system design by offering numerous, highly configurable features
- Reduces system cost by providing a variety of integrated functions
- Enables designers to use the lowest power consuming interconnect product on the market

## Typical Applications

This section illustrates the advantages of the Tsi108 in two typical applications.

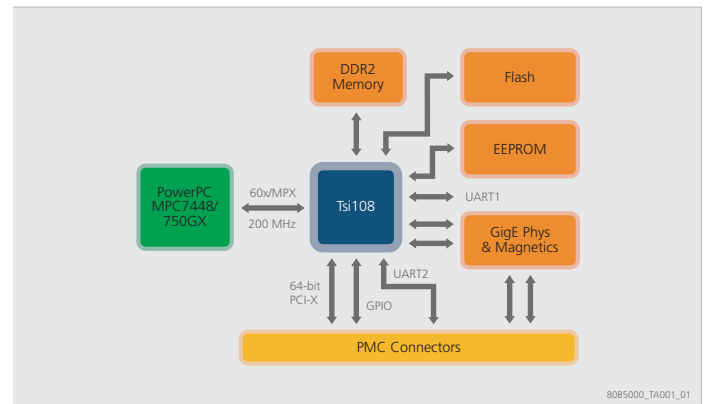
### Printer Controller Board

The Tsi108 feature set is ideally suited for printer applications. The Clock Generator eliminates the need for external clock circuitry and provides spread-spectrum capability for reducing EMI. In addition, the Tsi108's support of various PowerPC processor lines allows performance scalability with a common design.

### Processor PMC

The Tsi108 is well suited for a variety of Processor PMC (PrPMC) embedded applications. The Clock Generator eliminates the need for external circuitry on the limited real estate of the PrPMC form factor, while the DDR2 Memory Controller provides cost, power, and life expectancy advantages over DDR.

## Application Diagram – Processor Farm Mezzanine



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