



Integrated Device Technology

# Tsi574™ Serial RapidIO® Switch

POWER MANAGEMENT | ANALOG & RF | INTERFACE & CONNECTIVITY | CLOCKS & TIMING | MEMORY & LOGIC | TOUCH & USER INTERFACE | VIDEO & DISPLAY | AUDIO

## FEATURES

### Serial RapidIO Interfaces

- 40 Gbits/s full-duplex Serial RapidIO Switch
- Open Standard Compliant
  - RapidIO Interconnect Specification (Revision 1.3)
  - IEEE 1149.6 AC-JTAG

### Configurable

- Up to four 4x links
- Up to eight 1x links
- Each 4x link can be separated into two, 1x links
- Supports 1.25, 2.5 and 3.125 Gbaud rates
- Hot Swap
  - Live insertion and extraction of field replaceable units
- I<sup>2</sup>C Master/Slave
- Multicast event control symbol
- Lane swap

*The Tsi574 enhances system scalability through device configuration and provides architects and designers with a solution for both throughput intensive and power sensitive applications.*

### Performance

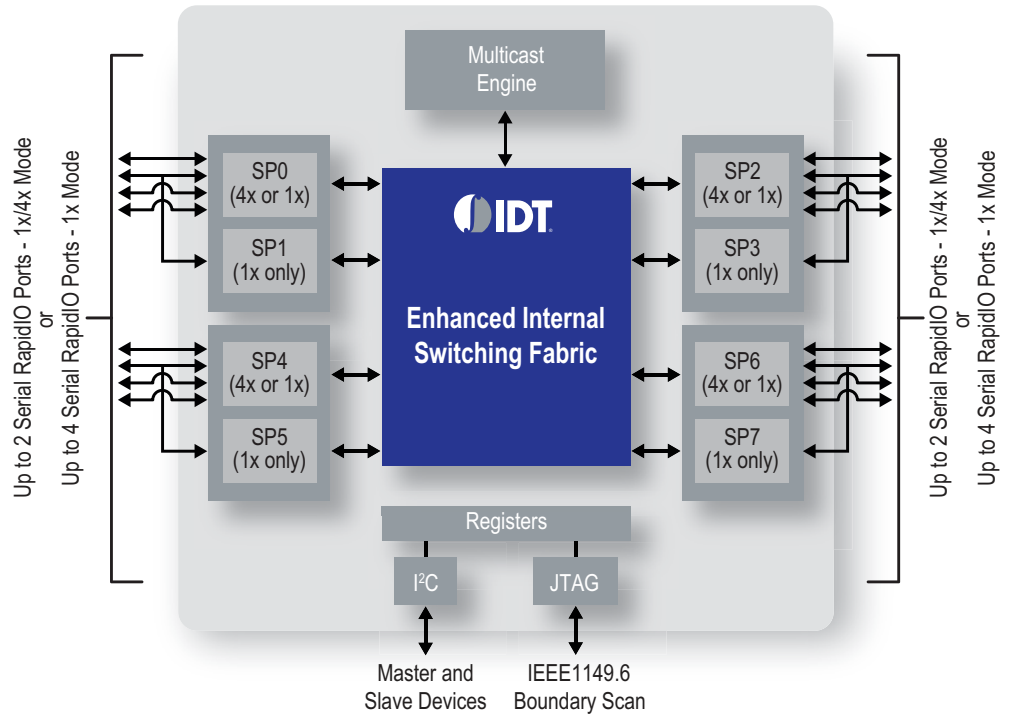
- Low latency through packet cut-through
- Full duplex, line rate termination, non-blocking fabric
- Prevention of head-of-line blocking
- Error management extensions
- Multicast
- Performance monitoring and statistic registers
- Programmable buffer management
- Additional scheduling algorithms

### Low Power

- Programmable SerDes
- Configurable on port width and speed
- Configurable port power down
- Further power savings from Tsi564A

### Cost

- Integrated SerDes
  - Small, 399 HSBGA, 21mm package



## Device Overview

The Tsi574™ is a third generation RapidIO switch supporting 40 Gbits/s aggregate bandwidth. The Tsi574 is part of a family of switches that enable customers to develop systems with robust features and high performance at low cost.

The Tsi574 provides designers and architects with maximum scalability to design the device into a wide range of applications. Flexible port configurations can be selected through multiple port width and frequency options.

Building on the industry leading Tsi564A™ 4/8 Port Serial RapidIO Switch, the Tsi574 contains all the benefits of its predecessor plus enhances the fabric switching capabilities through the addition of multicast, traffic management through scheduling algorithms, programmable buffer depth, and fabric performance monitoring to supervise and manage traffic flow.

Embedded applications further benefit from the ability to route packets to multiple endpoints through hierarchical lookup tables, independent unicast and multicast routing mechanisms, and error management extensions that provide proactive issue notification to the fabric controller. In addition, the Tsi574 supports both in-band serial RapidIO access and out-of-band access to the full fabric register set through the I<sup>2</sup>C interface.

## BENEFITS

- Scalability: Single solution for mesh, fabric, and aggregated systems
- Performance: Improved system and distributed processing performance
- Power: SerDes implementation for low power solution

## Specifications

- Technology: 0.13um
- Voltage: 1.2V and 3.3V
- Low power consumption
- Package: 399 ball, 21mm x 21mm, 1mm ball pitch FCBGA
- Rated for commercial and industrial temperatures
- Forward compatible with the Tsi564A Serial RapidIO Switch allowing easy migration for existing systems.

## Target Markets

- Wireless Infrastructure
  - Node B, Radio Network Controller, Media Gateway
- Communications Wireline Infrastructure
  - Multiservice WAN Switches, 1 to 10 Gbit Ethernet Switches, 1 to >10Gbit Routers, DSLAMs
- Storage
  - Storage Area Networks, Network Attached Storage, High-Performance Work Stations, Multi-service Access Nodes, Carrier-grade VoIP
- Video Infrastructure
  - Broadcast, imaging, and encoding
  - Architecture Standards
  - ATCA, MicroTCA, VXS, VPX

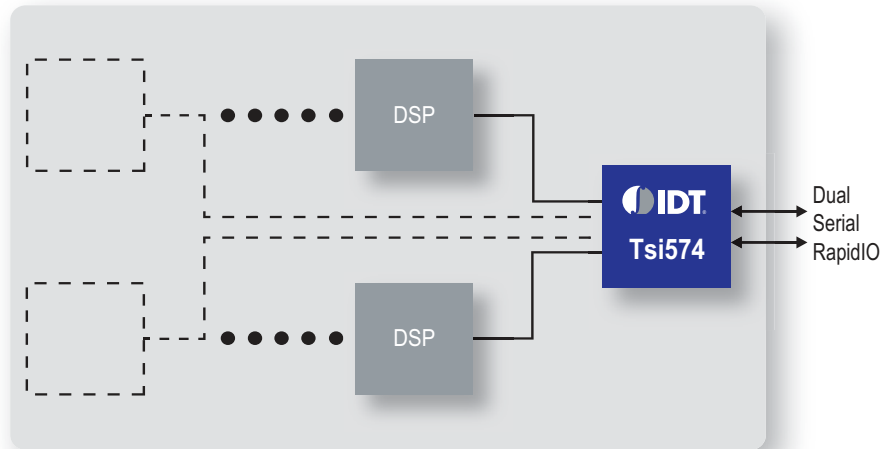
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## Typical Applications

The Tsi574 can be used in many embedded communication applications. It provides chip-to-chip interconnect between I/O devices and can replace existing proprietary backplane fabrics for board-to-board interconnect which improves system cost and product time-to-market.

The Tsi574 provides traffic aggregation through packet prioritization when it is used with RapidIO-enabled I/O devices. When it is in a system with multiple RapidIO-enabled processors it provides high performance peer-to-peer communication through its non-blocking switch fabric.

## Processor Farm Mezzanine



## Switch Carrier Blade

