18M Network Search Engine (NSE) with Dual LA-1 Interface (QDR™II Interface Compliant)

Datasheet Brief
IDT75K72234

Introduction

With the expanding Internet, all levels of the network must become faster. This requires high-speed packet searches, which are essential for routing, but also necessary for higher-level functions such as Quality of Service (QoS) support and access control. To meet this need, IDT has developed network search engines that accelerate packet processing at OC-192 data rates and beyond.

Device Description

The 18M NSE with Dual LA-1 interface is intended to work with NPUs having a Look Aside Interface. Multiple devices including the 18M Dual LA-1 NSE can be connected to the same LA-1 interface. Each 18M Dual LA-1 NSE device may be optionally point-to-point expanded up to eight NSE devices.

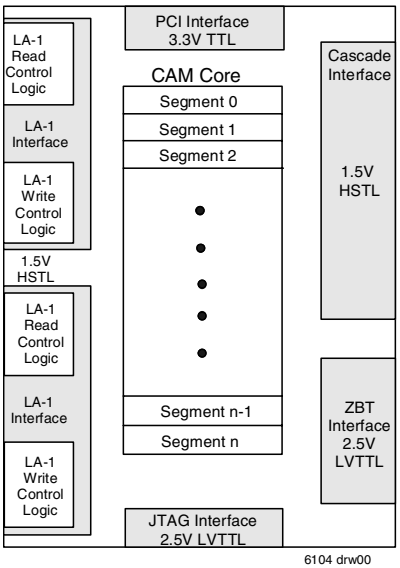
NSE Features

- 256K x 72 (18M) Data and Mask cells
- Full Ternary Content Addressable Memory
- Supports up to 250 Million searches per second
- Dynamic Database Management™
  - Configurable Database widths
  - Databases are selectable per NSE command
- Programmable Power Management
  - Only the selected Database consumes power
  - PowerSave logic provides additional power savings
- Lookup (Search) Instructions
  - Standard Lookup
  - Multi-Hit Lookup
  - Multi-Database Lookup
  - Re-Issue Multi-Database Lookup
  - Simultaneous Multi-Database Lookup
- Maintenance Features
  - Per entry aging support with notification
  - Multi Hit Invalidate
  - Learn per Database
- Search with learn
  - Automatic learning
  - Duplicate learn prevention per database
- Multiple return index formats
- Flexible Associated Data Management
  - 0, 32, 64, or 128 bits of Associated Data per entry
- Instruction Completion Notification
- Multiple contexts per interface
- Pool of 72-bit Global Mask Registers (shared across contexts)
- Parity support for interfaces and CAM core
- 35mm x 35mm thermally efficient 900 BGA Package

External Interfaces

- Two independent LA-1 (QDRII compliant) interfaces
  - Frequency range from 133MHz up to 250 MHz
  - Supports burst of 2 data transfers
  - Echo clocks supported (CQ, $\overline{CQ}$)
  - Dynamic or programmable output impedance control
- PCI 2.2 compliant interface
  - Optimized for NSE management
- Cascade Interface
  - 8 NSEs in a Point-to-Point Cascade
  - Up to 4 Multi-Drop cascades to a single LA-1 interface
  - Supports up to 32 devices per LA-1 interface
- NSE attached associated SRAM glueless ZBT® Interface
- IEEE 1149.1-2001 compliant JTAG Interface

Simplified Block Diagram



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