CONTENT ADDRESSABLE MEMORIES
FAST STATIC RAMS FOR HIGH PERFORMANCE INTERNETWORKING AND FULLY ASSOCIATIVE DISK DRIVE CACHE APPLICATIONS

Product Description

The MCM69C232 and the MCM69C432 are flexible content-addressable memories (CAM) that can contain 4096 and 16,384 entries of 64 bits, respectively. They are implemented with standard 4-transistor SRAM cells that provide a CAM solution at a fraction of the cost of existing CAMs. The widths of the match field and the output field are programmable, and the match time is designed to be ≤ 180 nanoseconds. As a result, the MCM69C232 and the MCM69C432 are well suited for datacom applications such as Virtual Path Identifier/Virtual Circuit Identifier (VPI/VCI) translation in ATM switches up to OC12 (622 Mbps) data rates and Media Access Control (MAC) address lookup in Ethernet/Fast Ethernet bridges. CAMs are also well suited for fully associative disk drive cache and RAID applications. The match duty cycle of the MCM69C232 and the MCM69C432 is user defined, with a trade-off between the time between matches and the number of new entries added to the CAM per second.

MCM69C232 Features

- 4096 Entries
- Programmable 12- to 64-Bit Wide Match Field
- 160 ns Match Time
- 150 ns Insertion Time if 1 of 12 Entry Queue Locations is Empty

MCM69C432 Features

- 16,384 Entries
- Programmable 14- to 64-Bit Wide Match Field
- 180 ns Match Time
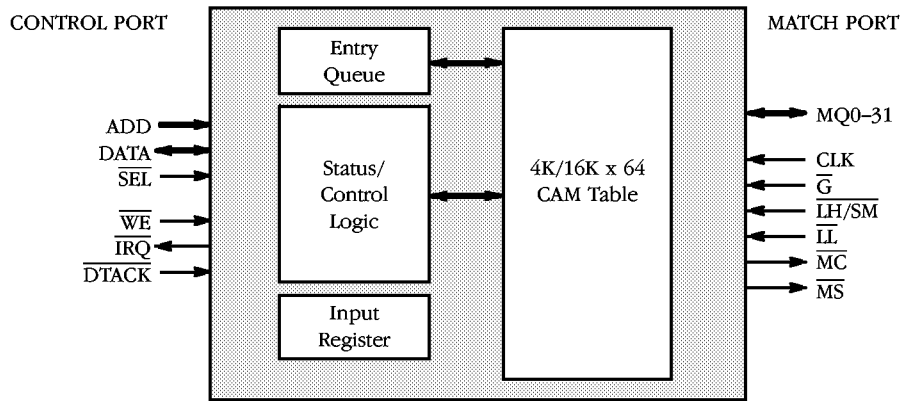- 150 ns Insertion Time if 1 of 14 Entry Queue Locations is Empty

Common Features

- Mask Register to "Don't Care" Selected Bits
- Depth Expansion by Cascading Multiple Devices
- Programmable 0- to 32-Bit Output Value
- Separate Ports for Control and Match Operations
- 10 ms Initialization Time after Fast Insertion (at Power-Up Only)
- Single 3.3 V ± 5% Supply
- IEEE Standard 1149.1 Test Port (JTAG)

Available Products

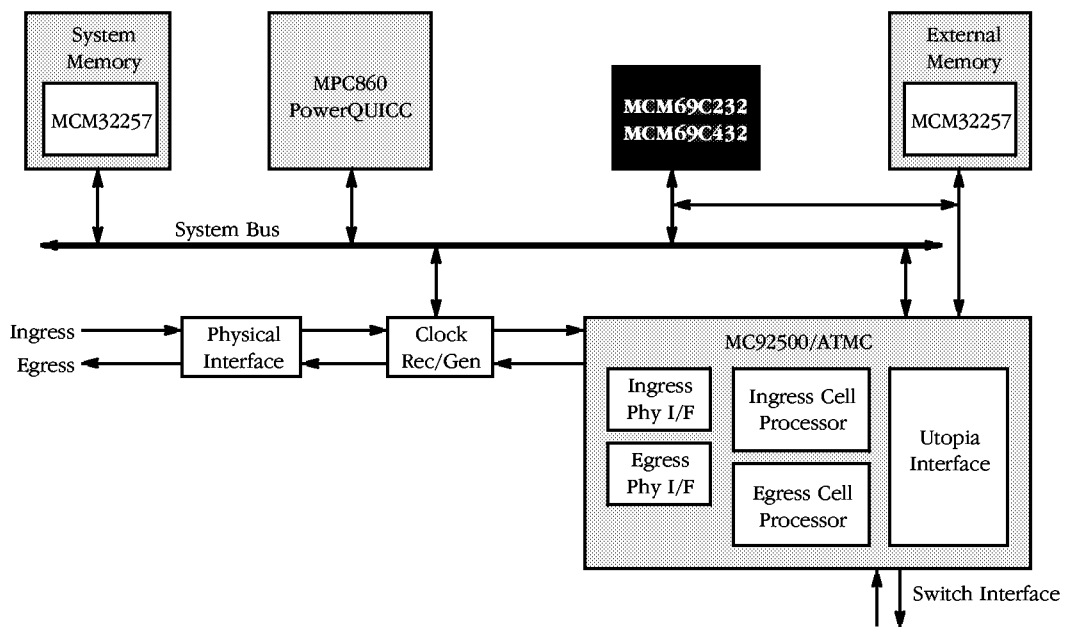| Part Number	Configuration	V_{DD}	Speed	Package
MCM69C232TQ	4K x 64	3.3 V	160 ns Match Time	100-Pin TQFP
MCM69C432TQ	16K x 64	3.3 V	180 ns Match Time	100-Pin TQFP

(M) MOTOROLA

MCM69C232 and MCM69C432 Block Diagram

CONTROL PORT

MATCH PORT

Entry
Queue

ADD
DATA
$\overline{SEL}$

Status/
Control
Logic

4K/16K x 64
CAM Table

MQ0–31
CLK
$\overline{G}$
$\overline{LH}/\overline{SM}$
$\overline{LL}$
$\overline{MC}$
$\overline{MS}$

$\overline{WE}$
$\overline{IRQ}$
$\overline{DTACK}$

Input
Register

Line Card Block Diagram

System
Memory

MCM32257

MPC860
PowerQUICC

MCM69C232
MCM69C432

External
Memory

MCM32257

System Bus

Ingress
Egress

Physical
Interface

Clock
Rec/Gen

MC92500/ATMC

Ingress
Phy I/F

Ingress Cell
Processor

Egress
Phy I/F

Egress Cell
Processor

Utopia
Interface

Switch Interface

Contact Information

- Motorola offers data sheets, application notes and models for Fast Static RAM products. In addition, more information is provided for these products at:

  http://motorola.com/fastsrams

- For all other inquiries about Motorola products, please contact the Motorola Customer Response Center:

  Phone: 800–521–6274
  Email: crc@crc.email.sps.mot.com