PRELIMINARY

CYM74A590
CYM74S590
CYM74S591

VLSI 82C590 Chip Set Level II Cache Module Family

Features

- **Pin-compatible secondary cache module family**
- **Asynchronous (CYM74A590) or synchronous (CYM74S590, CYM74S591) configurations with presence and configuration detect pins**
- **Ideal for Intel P54C-based systems with the VLSI 82C590 chip set**
- **Operates at 60 and 66 MHz**
- **Uses cost-effective CMOS asynchronous SRAMs or high-performance synchronous SRAMs**
- **160-position Burndy DIMM CELP2X80SC3Z48 connector**
- **3.3V inputs/outputs**

Functional Description

This family of secondary cache modules is designed for Intel P54C systems with the VLSI 82C590 chip set.

CYM74A590 is an asynchronous 256-Kbyte cache module that provides a low-cost, high-performance solution for CPU bus speeds up to 66 MHz. The CYM74A590 is organized as 32K by 64.

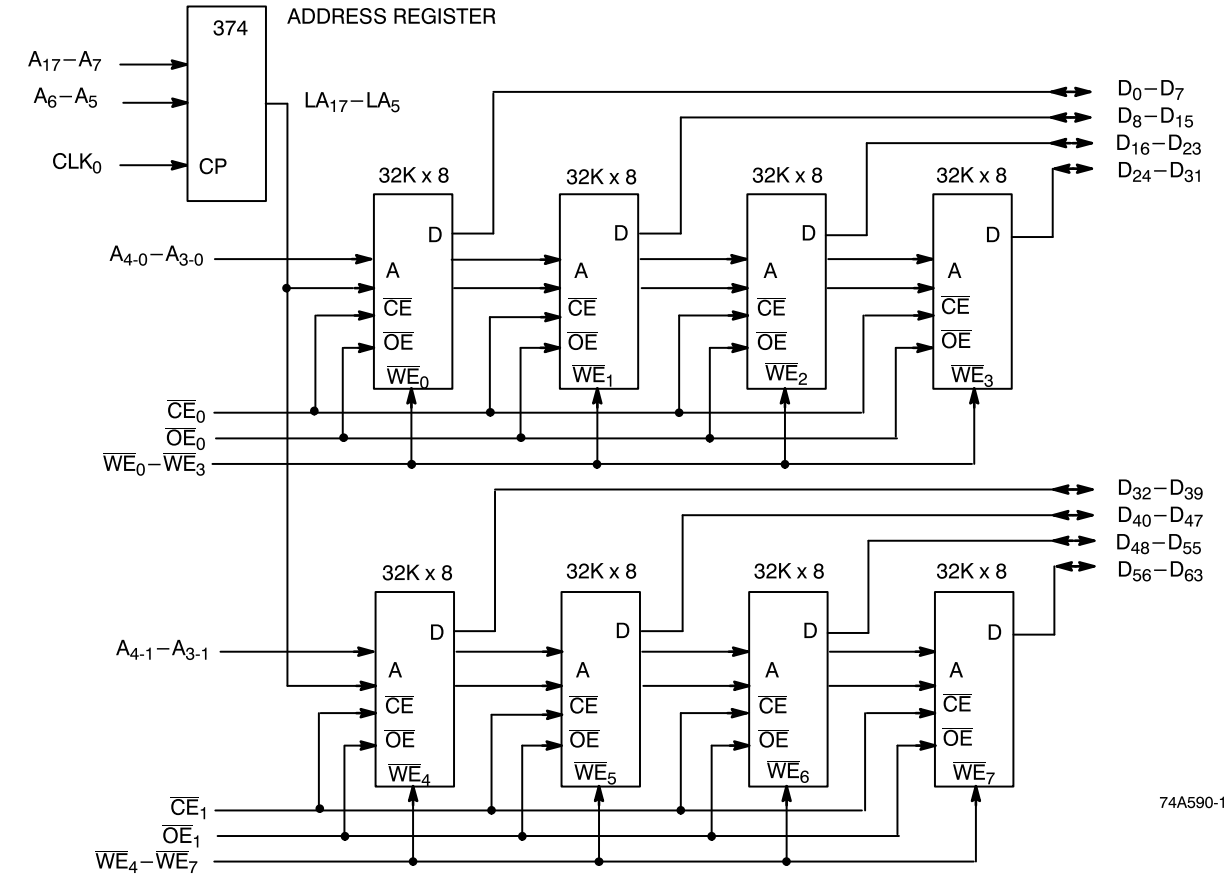
The CYM74S590 and CYM74S591 are synchronous cache modules that provide zero wait-state performance at a bus speed of 66 MHz. The CYM74S590 is a 256-Kbyte cache module with byte parity.

The CYM74S591 is a 512-Kbyte cache module with byte parity.

Multiple ground pins and on-board decoupling capacitors ensure high performance with maximum noise immunity.

All components on the cache modules are surface mounted on a multi-layer epoxy laminate (FR-4) substrate. All inputs and outputs of this family of modules are (3.3V) TTL compatible. Provisions are made on-board to support both mixed-mode (5V/3.3V) and 3.3V-only SRAMs. The contact pins are plated with 100 micro-inches of nickel covered by 10 micro-inches of gold flash.

Logic Block Diagram – CYM74A590



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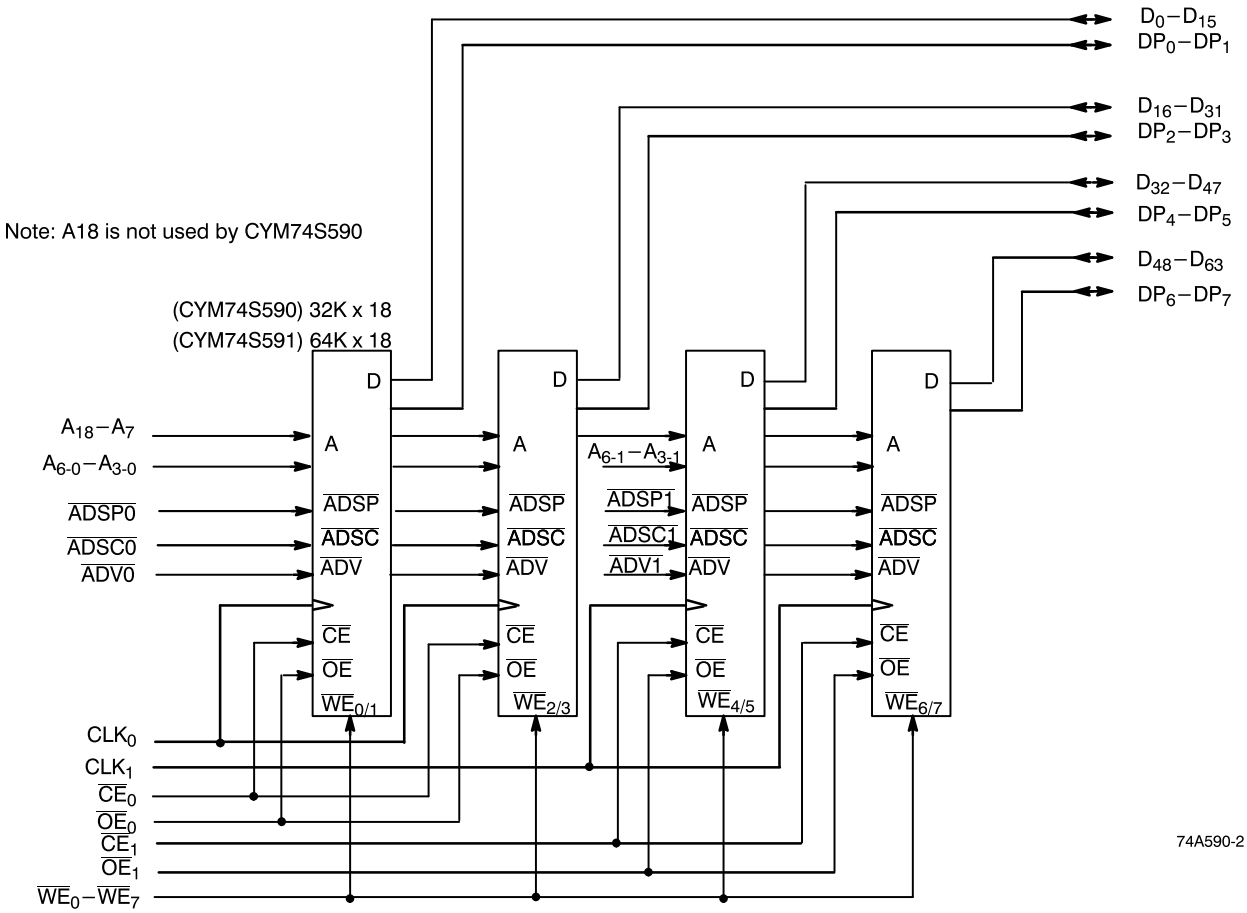
Logic Block Diagram – CYM74S590/CYM74S591

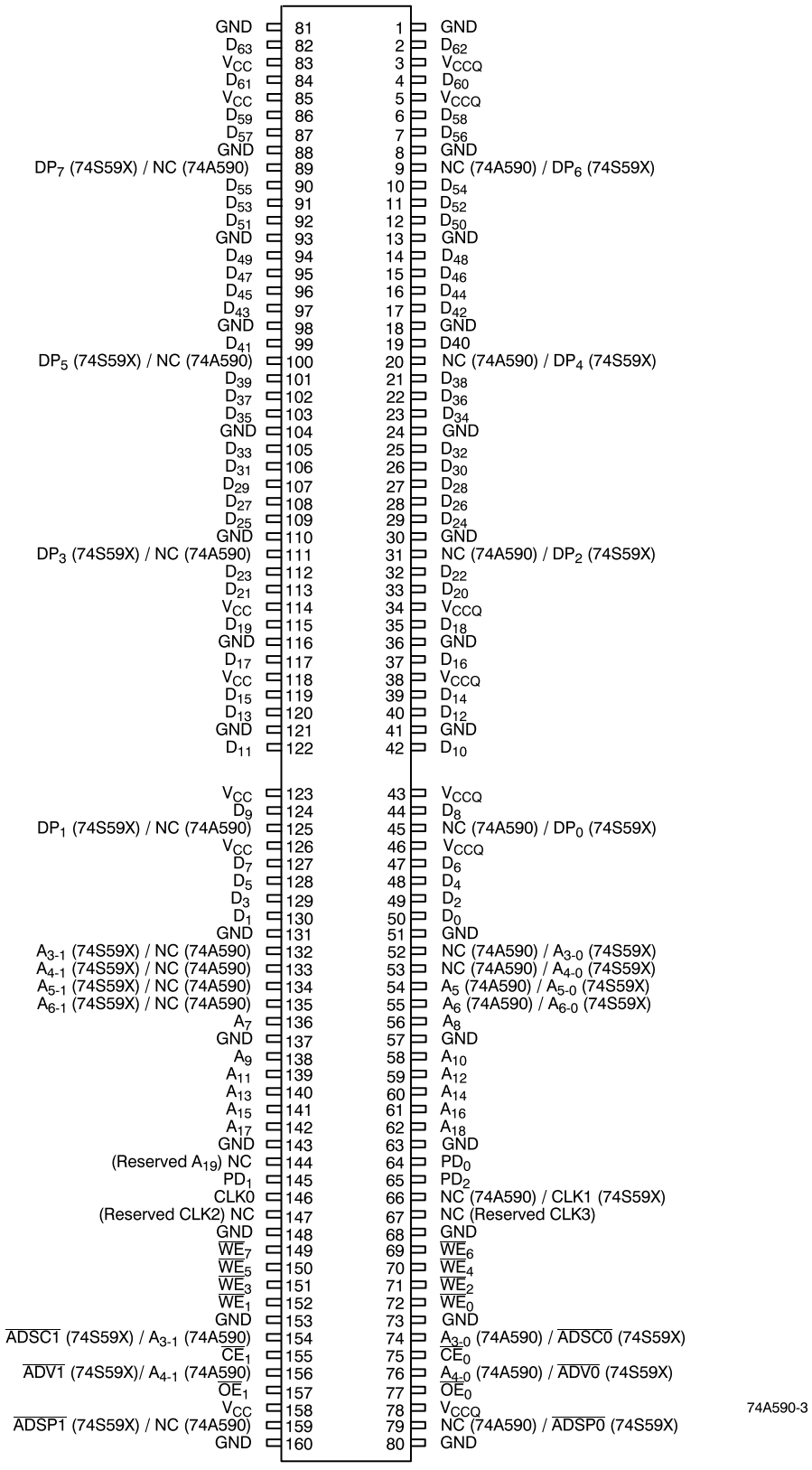


Selection Guide

	74A590–60	74A590–66	74S590–60	74S590–66	74S591–60	74S591–66
Cache Size (KB)	256	256	256	256	512	512
System Clock (MHz)	60	66	60	66	60	66
RAM Clock	Asynchronous	Asynchronous	Synchronous	Synchronous	Synchronous	Synchronous
RAM Speed	t_{AA}=15 ns	t_{AA}=15 ns	t_{CDV}=10.5 ns	t_{CDV}=8.5 ns	t_{CDV}=10.5 ns	t_{CDV}=8.5 ns

Pin Configuration

Dual Read-Out SIMM (DIMM)
Top View



74A590-3

Pin Definitions

Signal Name	Description
V_{CC}	5V Supply
V_{CCQ}	3.3V Supply
GND	Ground
A_7-A_{19}	Addresses from processor
A_{3-0}, A_{4-0}, A_{5-0}, A_{6-0}	Lower address from chip set for bank0, identical to the bank1 addresses
A_{3-1}, A_{4-1}, A_{5-1}, A_{6-1}	Lower address from chip set for bank1, identical to the bank0 addresses
$\overline{CE}_0$, $\overline{CE}_1$	Chip Enable (same signal)
$\overline{OE}_0$, $\overline{OE}_1$	Output Enable (same signal)
$\overline{WE}_0$, $\overline{WE}_1$, $\overline{WE}_2$, $\overline{WE}_3$ $\overline{WE}_4$, $\overline{WE}_5$, $\overline{WE}_6$, $\overline{WE}_7$	Byte Write Enables
CALE	Latch Enable − CYM74A590 only
PD_0-PD_2	Presence Detect pins
D_0-D_{63}	Data lines from processor
DP_0-DP_7	Data Parity lines (Optional), CYM74S590 or CYM74S591 only
$\overline{ADSP0}$, $\overline{ADSP1}$	Processor Address Strobe, CYM74S590 or CYM74S591 only
$\overline{ADSC0}$,$\overline{ADSC1}$	Cache Controller Address Strobe, CYM74S590 or CYM74S591 only
$\overline{ADV0}$, $\overline{ADV1}$	Burst Address Advance − CYM74S590 or CYM74S591 only
CLK0, CLK1, CLK2, CLK3	Clock signals
NC	Signal not connected on module.

Presence Detect Pins

	PD_2	PD_1	PD_0
Asynchronous − CYM74A590	NC	GND	NC
Synchronous − CYM74S590	GND	GND	NC
Synchronous − CYM74S591	GND	GND	GND

Maximum Ratings

(Above which the useful life may be impaired. For user guidelines, not tested.)

Storage Temperature ..... −55°C to +125°C

Ambient Temperature with Power Applied ..... −0°C to +70°C

3.3V Supply Voltage to Ground Potential .... −0.5V to +4.6V

5V Supply Voltage to Ground Potential ..... −0.5V to +5.25V

DC Voltage Applied to Outputs in High Z State ..... −0.5V to +4.6V

DC Input Voltage ..... −0.5V to +4.6V

Output Current into Outputs (LOW) ..... 20 mA

Operating Range

Range	Ambient Temperature	V_{CC}
Commercial	0°C to +70°C	5V ± 5% 3.3V ± 5%

Electrical Characteristics Over the Operating Range

Parameter	Description	Test Condition	Min.	Max.	Unit
V_{IH}	Input HIGH Voltage		2.2	V_{CCQ} + 0.3	V
V_{IL}	Input LOW Voltage		−0.3	0.8	V
V_{OH}	Output HIGH Voltage	V_{CC}=Min. I_{OH} = −4 mA	2.4		V
V_{OL}	Output LOW Voltage	V_{CC}=Min. I_{OL} = 8 mA		0.4	V
I_{CC} (74A590)	V_{CC} Operating Supply Current	V_{CC}=Max., I_{OUT}=0 mA, f=f_{MAX}=1/t_{RC}		1500	mA
I_{CC} (74S590)	V_{CC} Operating Supply Current	V_{CC}=Max., I_{OUT}=0 mA, f=f_{MAX}=1/t_{RC}		1500	mA
I_{CC} (74S591)	V_{CC} Operating Supply Current	V_{CC}=Max., I_{OUT}=0 mA, f=f_{MAX}=1/t_{RC}		1500	mA

Ordering Information

Speed (MHz)	Ordering Code	Package Name	Package Type	Description	Operating Range
60	CYM74A590PM−60C	PM25	160-Pin Dual-Readout SIMM	Asynchronous 256 KB	Commercial
	CYM74S590PM−60C	PM26	160-Pin Dual-Readout SIMM	Synchronous 256 KB	
	CYM74S591PM−60C	PM26	160-Pin Dual-Readout SIMM	Synchronous 512 KB	
66	CYM74A590PM−66C	PM25	160-Pin Dual-Readout SIMM	Asynchronous 256 KB	Commercial
	CYM74S590PM−66C	PM26	160-Pin Dual-Readout SIMM	Synchronous 256 KB	
	CYM74S591PM−66C	PM26	160-Pin Dual-Readout SIMM	Synchronous 512 KB	

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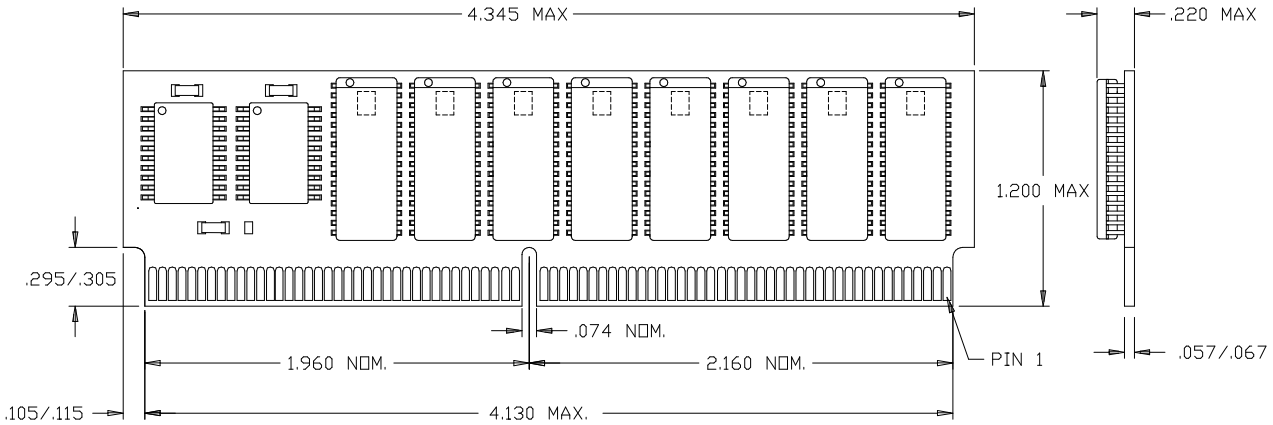
Package Diagrams

160-Pin Dual-Readout SIMM PM25



160-Pin Dual-Readout SIMM PM26