

P89C669



Features

- Extended features of the 51MX Core:
 - 23-bit program memory space and 23-bit data memory space
 - Linear program and data address range expanded to support up to 8 MB each
 - Program counter expanded to 23 bits
 - Stack pointer extended to 16 bits enabling stack space beyond the 80C51 limitation
 - New 23-bit extended data pointer and two 24-bit universal pointers greatly improve C compiler code efficiency in using pointers to access variables in different spaces.
- 100% binary compatibility with the classic 80C51 so that existing code is completely reusable
- Up to 24 MHz CPU clock with 6 clock cycles per machine cycle
- 96 KB of on-chip program FLASH with ISP and IAP capability
- 2 KB of on-chip data RAM
- Programmable Counter Array (PCA)
- Two full-duplex enhanced UARTs
- Byte wide 400 KHz I²C serial interface
- 2nd pair of optional V_{DD} and V_{SS} pins to minimize EMC

Benefits

- Large on chip memory that eliminates the need for external memory in many applications
- Increases program/data address range to 8 MB each
- Enhances performance and efficiency for C programs
- Fully 80C51 compatible
- Provides seamless and compelling upgrade path from classic 80C51

Applications

- Monitors and Consumer Goods
- Hand Held Devices
- White Goods
- Security Systems
- HVAC

8-bit 80C51 with extended memory
96 KB Flash with 2 KB RAM, PCA and
400 KHz I²C

Semiconductors

Description

The P89C669 represents the first FLASH microcontroller based on Philips Semiconductors' new 51MX core. The P89C669 features 96 KB of FLASH program memory and 2 KB of data SRAM. In addition, this device is equipped with a Programmable Counter Array (PCA), a watchdog timer that can be configured to different time ranges through SFR bits, as well as two enhanced UARTs and byte wide 400 KHz I²C serial interface.

Philips Semiconductors' 51MX (Memory eXtension) core is an accelerated 80C51 architecture that executes instructions at twice the rate of standard 80C51 devices. The linear address range of the 51MX has been expanded to support up to 8 megabytes (MB) of program memory and 8 MB of data memory. It retains full program code compatibility to enable design engineers to re-use 80C51 development tools, eliminating the need to move to a new, unfamiliar architecture. The 51MX core also retains 80C51 bus compatibility to allow for the continued use of 80C51-interfaced peripherals and Application Specific Integrated Circuits (ASICs).

The P89C669 provides greater functionality, increased performance and overall lower system cost. By offering an embedded memory solution combined with the enhancements to manage the memory extension, the P89C669 eliminates the need for software work-arounds. The increased program memory enables design engineers to develop more complex programs in a high-level language like C, for example, without struggling to contain the program within the traditional 64 KB of program memory. These enhancements also greatly improve C Language efficiency for code size below 64 KB.

Ordering information

Part Number	Temperature Range	Flash Memory	RAM	Description	Drawing Number
P89C669FA	-40° to +85° C	96 KB	2 KB	44-pin PLCC	SOT-187-2
P89C669BBD	0° to +70° C	96 KB	2 KB	44-pin LQFP	SOT-389-1

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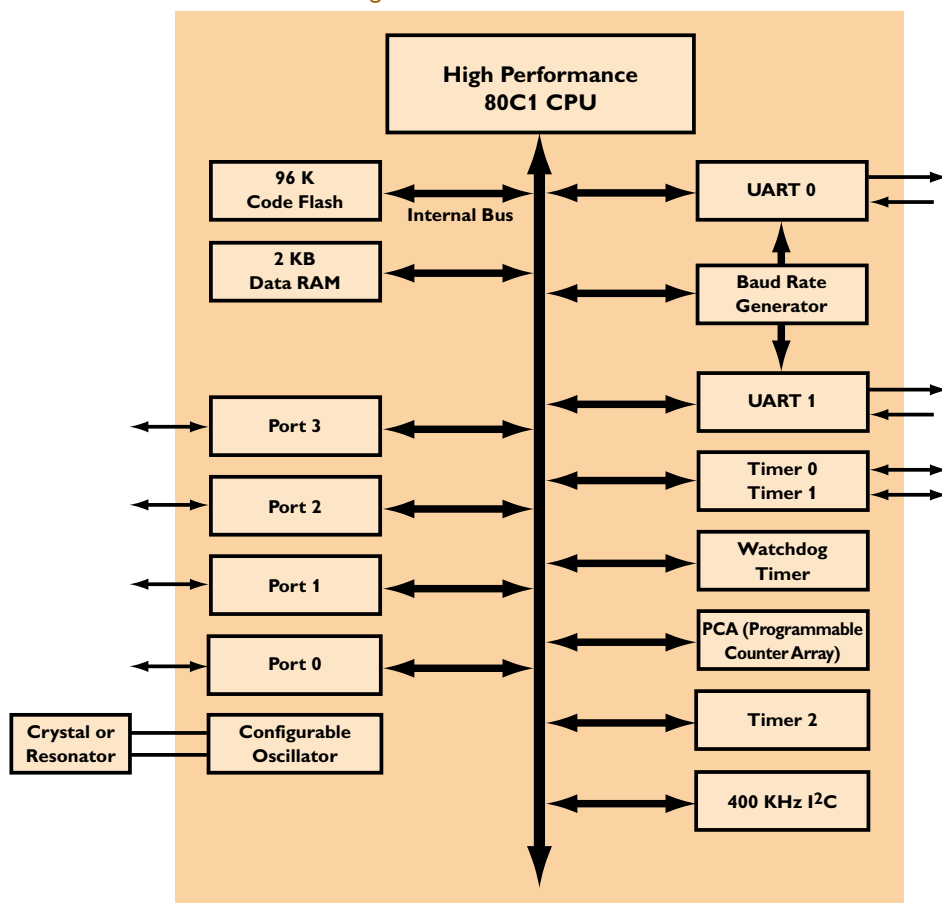
P89C669

8-bit 80C51 with extended memory

96 KB Flash with 2 KB RAM, PCA and 400 KHz I²C



P89C669 block diagram



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Date of release: February 2003
document order number: 9397 750 11088

Published in U.S.A.



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