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S3F84B8 Product Brief

PB024803-0713

Microcontrollers

From Zilog's New S3 Family of Microcontrollers: the S3F84B8 8-Bit CMOS MCU

Overview

The S3F84B8 MCU, a member of Zilog's S3 Family of MCUs, offers a fast and efficient Z8-compatible CPU, 8 KB of Flash memory, and a wide range of integrated peripherals. The S3 Family CPU features an efficient register-oriented architecture and a sophisticated interrupt controller that allow for fast context switching. Flash memory is CPU-programmable and offers a 128-byte sector size. The S3F84B8 MCU is designed specifically for induction heating cookers and related applications. An integrated operational amplifier, four comparators, and a specialized PWM module interoperate to provide autonomous control of the cooking power and system protection. The 8-channel, 10-bit ADC can be used for current measurement and user input control.

Features

- SAM88 Z8-Compatible CPU Core
- Flash Memory
  - 8 KB internal multi-time program full-Flash memory
  - Sector size: 128 bytes
  - CPU-programmable with LDC instruction
  - Fast 25 µs byte programming time
  - Endurance: 10,000 erase/program cycles
  - 10 years data retention
- RAM
  - 272-byte general-purpose register RAM area
- Instruction Set
  - 78 CISC instructions
  - Idle and Stop instructions added for power-down modes
  - LDC for reading and writing to Flash memory
- Interrupts
  - 17 vectored interrupt sources with programmable polarity
- General-Purpose I/O
  - 18 programmable GPIO pins (20-pin packages)
  - Bit-programmable ports
- Timers
  - 1-channel, 10-bit IH PWM
    - Operates with comparators
    - Delayed trigger and anti-mistrigger functions
  - One 8-bit basic timer for watchdog timer function
  - One 8-bit timer/counter with time interval and PWM modes
  - One 16-bit timer/counter with event counting from comparator

ADVANTAGES

- 10-bit PWM specialized for Induction Heating Cooker applications
- 4 Comparators and integrated op amp reduces BOM and PCB area
- 10 bit ADC for temperature, current or voltage measurement
- Small Flash sector size allows Flash to be used as EEPROM
- Programmable Low Voltage Reset ensure stable system operation
- Small package size minimizes PCB footprint

APPLICATIONS

- Induction Heating Cookers
- Small Kitchen/Home Appliances
  - Boilers
  - Rice Cookers
  - Pressure Cookers

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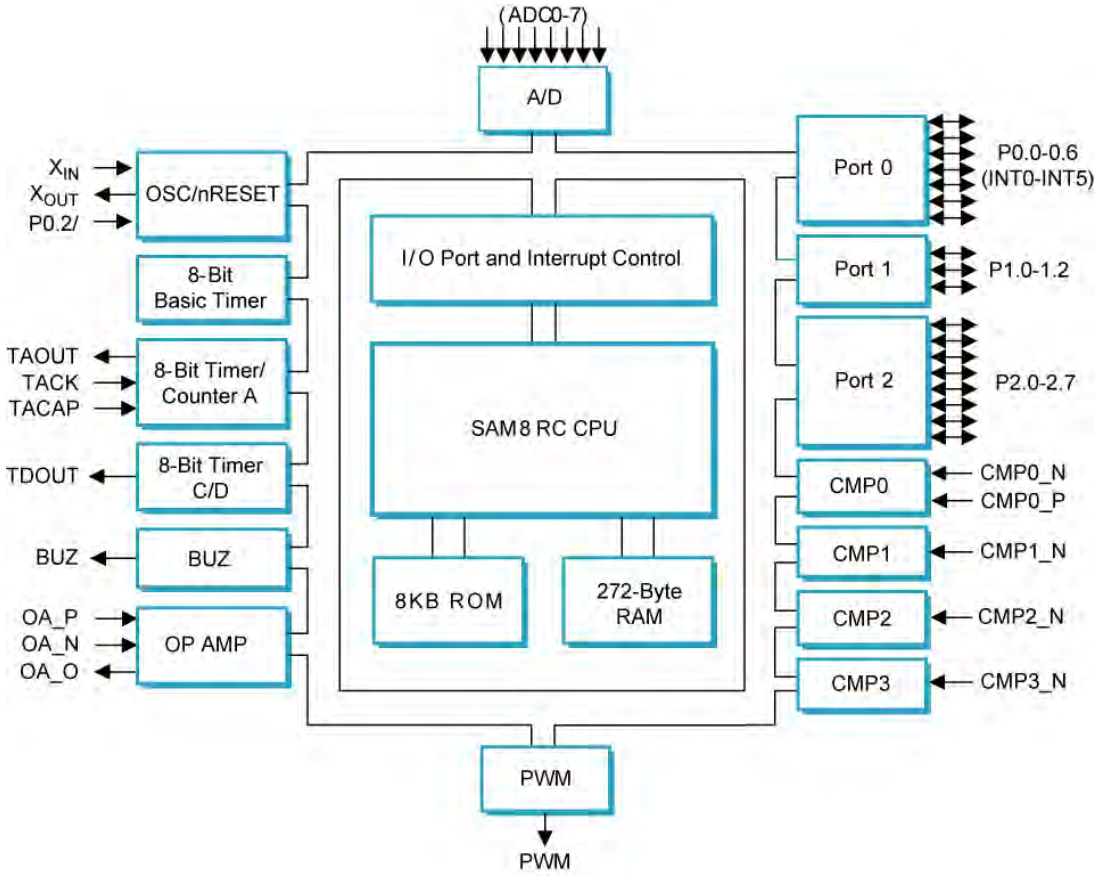
Features (continued)

- Analog Peripherals
  - 10-bit SAR A/D Converter
    - 8 channels
  - 4 comparators
  - 1 operational amplifier
  - Programmable Low Voltage Reset controller (LVR)
    - 1.9V, 2.3V, 3.0V, 3.6V and 3.9V
- Clock Sources
  - Internal oscillator: 8 MHz or 0.5 MHz
  - External RC oscillator: 4 MHz max
  - External crystal oscillator: 10 MHz max

Block Diagram



S3F84B8 Block Diagram

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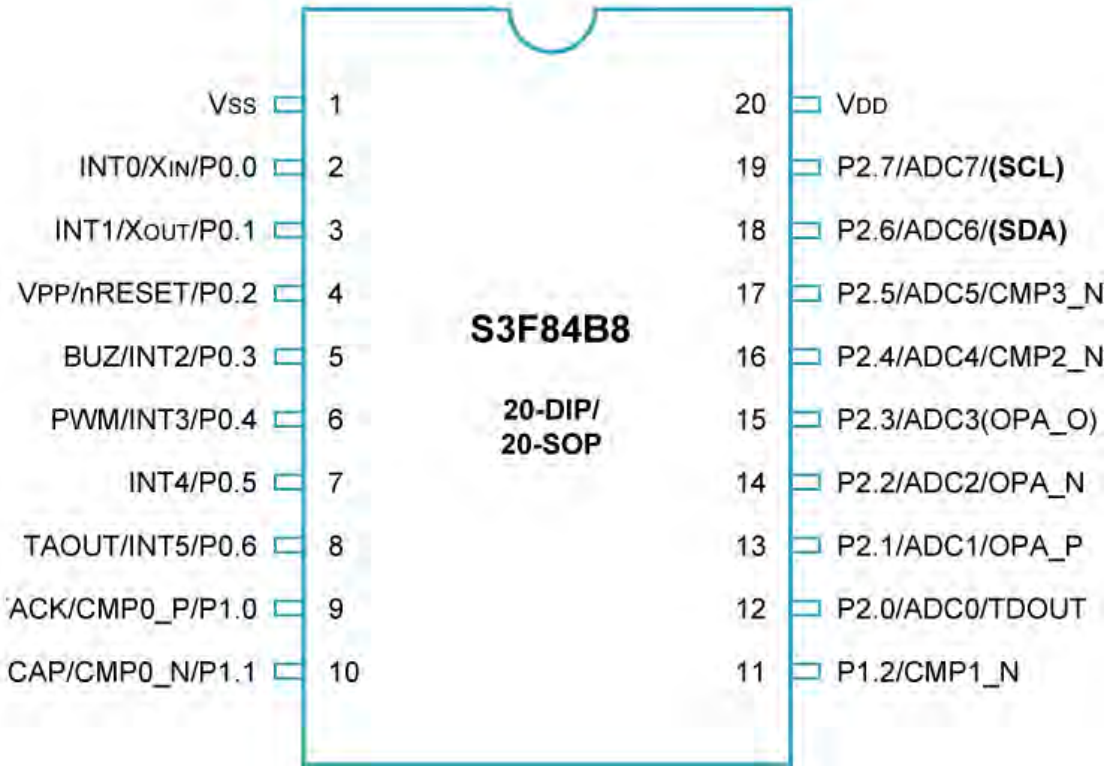
Pin Signals



S3F84B8 MCU 20-Pin DIP/SOP Packages

Operating Characteristics

- Operating Voltage Range
  - 1.8V to 5.5V at 0.4–2 MHz
  - 2.0V to 5.5V at 0.4–4 MHz
  - 2.7V to 5.5V at 0.4–10 MHz
- Operating Temperature Range: –40°C to 85°C

Development Tools

A complete line of development tools are available for Zilog's S3 Microcontroller Family. The development environment is composed of your application board, a target board, an emulator, and a host PC running the IDE. Production programmers are also available from third party sources. Zilog's in-circuit emulator solution provides a wide range of capabilities and prices to suite most budgets and system complexities.

In-Circuit Emulators that support the S3 Family

- OpenICE-i500
- OpenICE-i2000
- SmartKit SK-1200

Target Boards for the S3F8S19 and S3F8S15 MCUs

- TB8S19, TB8S28 and TB8S39

Programmers

- SPW-uni: single-device programmer
- GW-uni: 8-device gang programmer
- AS-pro

Development Tools Suppliers

Please contact your local Zilog Sales Office, or contact your Third Party Tools supplier directly.

Ordering Information

Order your S3 Family parts from your local Zilog distributor using the part numbers listed below. For more information, or to download product collateral and software, please visit us at www.zilog.com.

Part Number	Package Type	Flash Program Memory	GPIO
S3F84B8XZZ-DK98	20-Pin DIP	8 KB	18
S3F84B8XZZ-SK98	20-Pin SOP	8 KB	18

Warning: DO NOT USE THIS PRODUCT IN LIFE SUPPORT SYSTEMS.

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As used herein

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ENGINEERING NOTES