S3F82NB Product Brief

PB025303-1013

From Zilog's New S3 Family of Microcontrollers: the S3F82NB 8-Bit MCUs

Overview

The S3F82NB is a 128-pin member of Zilog's S3 Family of MCUs, which offer a fast and efficient Z8-compatible CPU, 64KB 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, allowing for fast context switching. The Flash memory is CPU-programmable and offers a 128-byte sector size. The large 16/80 LCD controller makes the device ideal for controlling large displays in consumer and home appliance applications.

ADVANTAGES

- 16/80 LCD controller for controlling large displays
- 10-bit ADC for temperature, current, or voltage measurement
- Small Flash sector size allows Flash to be used as EEPROM

APPLICATIONS

- Vending Machines
- Security Panels
- Thermostats
- Home Automation User Interface
- Washing Machines
- Dryer Controller
- Oven Controller

Features

- SAM88 Z8-Compatible CPU Core
- Flash Memory
  - 64 KB internal Flash program 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
  - 4112-byte general-purpose register RAM area (including LCD)
- Instruction Set
  - 78 CISC instructions
  - Idle and Stop instructions for power-down modes
  - LDC for reading and writing Flash memory
- Interrupts
  - 19 interrupt sources with 8 programmable priorities
- General-Purpose I/O
  - 83 programmable GPIO pins (including 64 shared with LCD)
  - Bit-programmable ports
  - Programmable pull-up on ports 1 and 2
- LCD Controller
  - 16 common and 80 segment pins
  - LCD Bias voltage generator
  - Programmable contrast
- Timers
  - One 8-bit timer for watchdog or periodic interrupt generation
  - One 8-bit timer with input capture, event and PWM
  - One 16-bit timer with PWM capability (or can be used as two 8-bit counters)
  - Low-power wake-up timer
- Communications
  - 8-bit serial I/O with internal/external clock

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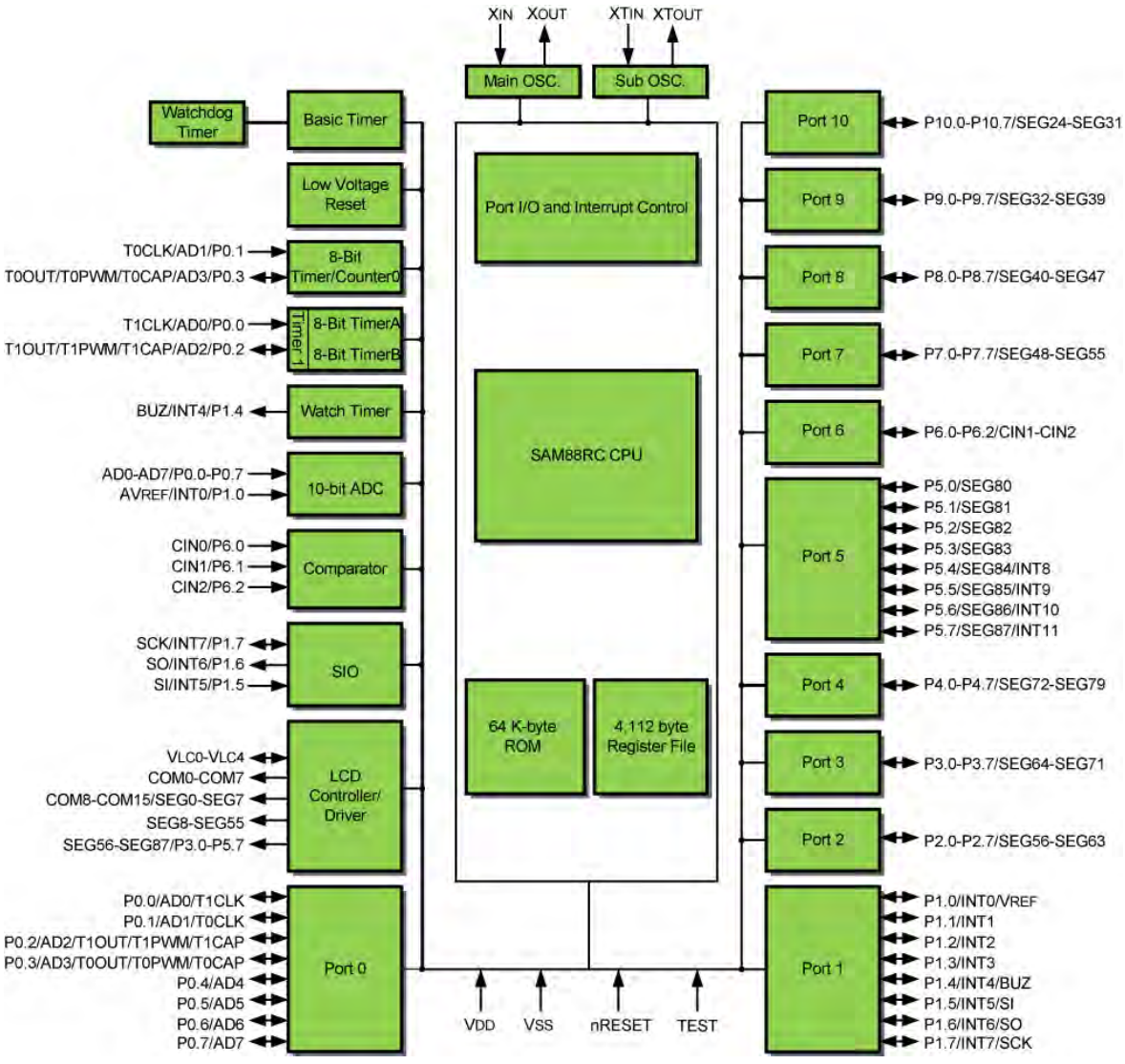
Features (continued)

- Low-Voltage Reset Controller (LVR)
  - 1.9V
- Analog Peripherals
  - 10-bit SAR A/D Converter with 8 analog inputs
- Clock Sources
  - External RC oscillator: 4 MHz max. (capacitor is integrated on-chip)
  - External crystal oscillator: 12 MHz max.
  - Low-power ring oscillator: 32 kHz

Block Diagram



S3F82NB Block Diagram

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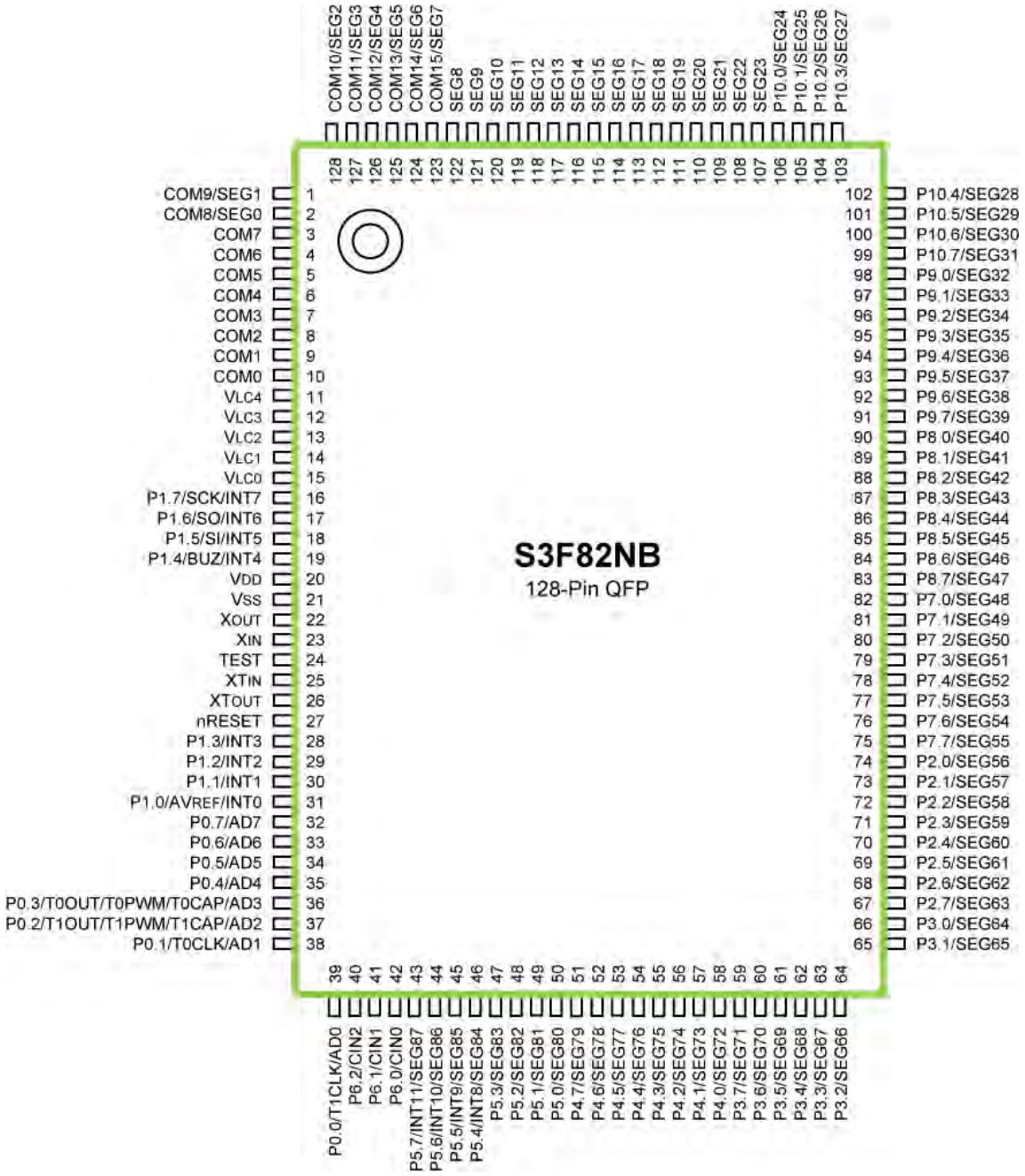
Pin Signals



S3F82NB 128-Pin QFP Pin Assignments

Operating Characteristics

- Operating Voltage Range
  - 1.8V to 5.5V up to 4 MHz (LVR disable)
  - 2.7V to 5.5V up to 12 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 S3F82NBand S3F94C4 MCUs

- TB94C8 and TB94C4

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
S3F82NBXZZ-QA8B	128-Pin QFP	64 KB	83

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

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