Microcontroller

S3F8235

For more details about product specifications or technical files, please inquire through 'Contact us' Some information may be limited to the authorized person or company.

General Description

A microcontroller (MCU) consists of a CPU core, memory (both volatile and nonvolatile), and programmable peripheral devices fabricated as a single integrated circuit. An MCU is also known as a "computer on a chip". MCUs are available with different word lengths, starting from 4 bits, right up to 32 bits, and with a variety of on-chip peripherals, such as timers, counters, and A/D and D/A converters. MCUs are used in almost every embedded system for their flexibility, low cost, high speeds of operation, and low power consumption. Advances in semiconductor technology have made possible the production of MCUs for deployment in every commercial and industrial segment.

The newest design, engineering, and fabrication processes are steadily increasing the number of features available on the same-sized silicon die for each MCU type. For example, MCUs with inbuilt support for LCD display screens are becoming widely popular in the one-time password, consumer, and home appliance markets across 8-, 16-, and 32-bit devices. MCUs are the default choice for designers of specific applications, such as battery-powered remote controllers, which have low power consumption as one of their principal design goals. Low-end MCUs with 8-bit cores are used as general-purpose controllers running at low frequencies, and mid-range and high-end cores are targeted at specific segments, such as high-speed, high performance, and low power applications. The highest-end 32-bit ARM-based RISC MCUs are used in several high-end applications, such as integrated industrial control, and scientific and medical equipment. A wide range of everyday home appliances in use today, such as air-conditioners, refrigerators, washing machines, and microwave ovens, are intelligently controlled by MCUs, which act as the "brains" for these appliances. The automotive segment is yet another sector to benefit tremendously from the rapid developments in semiconductor and MCU technology. Today's intelligent automobiles use a vast combination of MCUs embedded in several parts of the vehicle for information monitoring and control, as well as for preventive maintenance. For example, MCUs are used to record and analyze temperature data gathered from various sensors mounted around the vehicle and alert the driver when temperatures reach abnormally high levels. Samsung is a worldwide leader in semiconductor technology, and one of the leading suppliers of the most advanced and efficient MCU solutions for deployment on any application in any industry segment. Samsung's range of MCU products based on industry-standard platforms deliver exceptional computing power at significantly lower power consumption levels. Samsung's extensive suite of MCU products enables designers, developers, and OEMs to bring the newest technologies to market in the shortest possible time.

Specifications

Production Status	Mass Production
Application	LCD
Product Type	S3C8(KS88) Series
ROM(KB)	16
RAM	552
I/O Pins	32
Timer/Counters	BT, 8TCX5, 16TC
LCD (Seg/Com)	24/8
ADC (BitxCh)	10x4
PWM(BitxCh)	8x2
Max. OSC.Freq. (MHz)	8
Total Pins	64
Other Features	LCD with ADC, General Purpose
Temperature	-25~85
Package	64QFP, 64LQFP

Detail Features

CPU
- SAM88RC CPU core

Memory
- 552-byte internal register file (including LCD display RAM)
- 16K-byte program memory

Oscillation Sources
- Crystal, Ceramic or RC for main clock
- Crystal for sub clock (32.768 kHz)
- CPU clock divider (1/1, 1/2, 1/8, 1/16)

Instruction Set
- 78 instructions
- Idle and Stop instructions

Instruction Execution Time

Analog to Digital Converter
- 8-channel analog input
- 10-bit conversion resolution
- 25ms conversion

Voltage Booster
- LCD drive voltage supply
- S/W control (Enable/Disable)

Low Voltage Reset(LVR)
- Low Voltage Check to make system reset
- VLVR = 2.3V/2.8V/3.7V

Pattern Generation Module
- Pattern generation module triggered by timer match signal and S/W.

Voltage Detector for Indication

- 500ns at fx = 8 MHz (minimum, main clock)
- 122ms at fxt = 32.768 kHz (sub clock)

Interrupts
- 8 interrupt levels and 16 internal source

32 I/O Ports
- 16 normal I/O pins
- 16 pins sharing with LCD signals

Timers and Timer/Counters
- One programmable 8-bit basic timer (BT) for oscillation stabilization control or watchdog timer function
- One 8-bit timer/counter (Timer A) with three operating modes; Interval mode, capture mode and PWM mode.
- One 8-bit timer/counter (Timer B)

Carrier frequency (or PWM) generator.
- One 16-bit capture timer/counter (Timer 1) with two operating modes; Interval mode, Capture mode for pulse period or duty.

Watch Timer
- Interval Time: 3.19ms, 0.25s, 0.5s, 1.0s at 32.768 kHz
- 0.5/1/2/4 kHz buzzer output selectable

LCD Controller/Driver
- 24 segments and 8 common terminals
- 4 and 8 common selectable
- Internal resistor circuit for LCD bias

- Voltage Detector to indicate specific voltage.
- S/W control (2.35V, 3.3V, 4.5V)

Key Strobe Mode
- Support automatic key strobe output with LCD driver(Maximum 4 x 12 key matrices)

Two Power-Down Modes
- Idle mode: only CPU clock stops
- Stop mode: system clock and CPU stop

Operating Temperature Range
- -25°C to + 85°C

Operating Voltage Range
- 2.0 V to 5.5 V at 4 MHz (main clock)
- 2.7 V to 5.5 V at 8 MHz (main clock)
- 2.0 V to 5.5 V at 32.768 kHz (sub clock)

Package Type
- 64-QFP-1420F, 64-LQFP-1010

Smart Option
- Low Voltage Reset(LVR) level and enable/disable are at your hardwired option. (ROM address 3EH,3FH)

Users Manual	User's Manual	Ver 2.0	(Jan, 01, 2012)

File Download

Product information is accurate at the time of publication.
However, subsequent product improvements may render some details inaccurate.

RoHS Information

For more information, please **click** the button next to the product name

- Declaration letter
- Does not contain hazardous materials defined in China RoHS
- Contains hazardous materials defined in China RoHS

S3F8235BZZ-C0C5 is Lead-free and RoHS compliant.	D
S3F8235BZZ-ET85 is Lead-free and RoHS compliant.	D
S3F8235BZZ-ETR5 is Leaded and RoHS 5 of 6.	D
S3F8235BZZ-QT85 is Lead-free and RoHS compliant.	D
S3F8235BZZ-QTR5 is Leaded and RoHS 5 of 6.	D
S3F8235X18-QTR5 is Leaded and RoHS 5 of 6.	D
S3F8235XZZ-C0C5 is Lead-free and RoHS compliant.	D
S3F8235XZZ-ETR5 is Leaded and RoHS 5 of 6.	D
S3F8235XZZ-QTR5 is Leaded and RoHS 5 of 6.	D

Related Document

Product information is accurate at the time of publication.
However, subsequent product improvements may render some details

Application Note	Source Code of BLDC Sensorless Control with S3FN429		(Jun, 26, 2012)
Application Note	Board Schematic of BLDC Sensorless with S3FN429		(Jun, 26, 2012)
Application Note	S3FN429 BLDC Sensorless Control application note		(Jun, 18, 2012)
Application Note	S3F8S39 - Software Touch Solution Design Guide		(May, 22, 2012)

inaccurate.

Application Note	Motor reference solution monitor program		(Mar, 15, 2012)
Application Note	Motor reference solution monitor program		(Mar, 15, 2012)
Application Note	S3P8245 - ARM Blood Pressure Monitor	(V.0.00)	(Feb, 21, 2012)
Application Note	S3P8245 - ARM Blood Pressure Monitor	(V.0.00)	(Feb, 21, 2012)
Application Note	Inverter motor vector control application note		(Jan, 25, 2012)
Application Note	Inverter motor vector control application note		(Jan, 25, 2012)
Application Note	S3F84U8/UA - Watt-Hour Meter	(V.0.00)	(Jan, 25, 2012)
Application Note	S3F82I9 - Timepiece Application Note	(V.1.0)	(Jan, 25, 2012)
Application Note	S3F82I9 - Timepiece Application Note	(V.1.0)	(Jan, 25, 2012)
Application Note	S3F84B8 - All-in-One IH Cooker Application Note		(Jan, 25, 2012)
Application Note	S3F84B8 - All-in-One IH Cooker Application Note		(Jan, 25, 2012)
Application Note	S3F401F - Inverter Motor Application Note		(Jan, 25, 2012)
Application Note	S3F401F - Inverter Motor Application Note		(Jan, 25, 2012)
Application Note	S3F84P4 - LED Lighting Application Note		(Jan, 25, 2012)
Application Note	S3F84P4 - LED Lighting Application Note		(Jan, 25, 2012)
Application Note	S3F84P4 - Bolier Controller Application Note	(V.0.00)	(Jan, 25, 2012)
Application Note	S3F84P4 - Bolier Controller Application Note	(V.0.00)	(Jan, 25, 2012)
Application Note	S3F82NB - OTP Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F82NB - OTP Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F82MA - OTP Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F84A5 - E-Bike Application Note		(Jan, 25, 2012)
Application Note	S3F84ZB - Thermostat Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F84ZB - Thermostat Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F94xx - Battery Charger_Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F94xx - Battery Charger_Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F84A5 - ADC for E-Bike Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F84A5 - PWM for E-Bike Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F84K4 - Battery Charger Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F84K4 - Battery Charger Application Note	(V.0.0)	(Jan, 25, 2012)
Application Note	S3F80KB - Remote Controller Application Note		(Jan, 25, 2012)
Application Note	S3F80KB - Remote Controller Application Note		(Jan, 25, 2012)
Application Note	Borad Design for Noise Immunity User's Guide		(Jan, 25, 2012)
Application Note	Flash Programming with AXD User's Guide		(Jan, 25, 2012)
Application Note	Flash Programming with RVD User's Guide		(Jan, 25, 2012)
Application Note	IDE(RVDS3.x with Eclipse) User's Guide		(Jan, 25, 2012)
Application Note	S3F8S28 - Battery Charger		(Jan, 25, 2012)

Application Note	S3F8S28 - Battery Charger		(Jan, 25, 2012)
Application Note	S3F8S28 - Smoke Detector		(Jan, 25, 2012)
Application Note	S3F8S28 - Smoke Detector		(Jan, 25, 2012)
Application Note	S3FM02G - PFC & PMSM Sensorless control		(Jan, 25, 2012)
Application Note	S3FM02G - PFC & PMSM Sensorless control		(Jan, 25, 2012)
Application Note	SFN429 - BLDC Speed Control		(Jan, 25, 2012)
Application Note	SFN429 - BLDC Speed Control		(Jan, 25, 2012)
Application Note	S3F82MA - OTP Application Note	(V.0.0)	(Jan, 25, 2012)
Brochure	S3FM04D		(Feb, 21, 2012)
Brochure	S3FM43C		(Feb, 21, 2012)
Brochure	S3FN60D		(Feb, 21, 2012)
Brochure	S3FN429		(Feb, 21, 2012)
Brochure	S3FN21D		(Feb, 21, 2012)
Brochure	S3FM02G		(Feb, 21, 2012)
Brochure	S3FN41F		(Feb, 21, 2012)
Brochure	MCU / EEPROM Selection Guide		(May, 31, 2011)
Brochure File	MCU / EEPROM Selection Guide		(May, 01, 2011)
Part number Decoder	Part No. Decoder		(Jan, 25, 2012)
Product Guide	Selection Guide		(Jan, 25, 2012)

Label & Code Information **Read more**

Selection Tools **Read more**

Package Information **Read more**

Related Link

Download product information and technical file.
Product information is accurate at the time of publication. However, subsequent product improvements may render some details inaccurate.

BACK TO LIST

News & Events
Sales Network

How can we help you?

Support by Task
Label & Code Information
Package Information
Selection Tools
Quality Assurance
Development Tools

Computing DRAM
Consumer DRAM
Graphic DRAM

V-NAND
eMMC
UFS
SSD
Card

Mobile DRAM
MCP

Display
Optical Disc Drive

Others

MemoryLink
Green Memory
Exynos
B2B Workplace
Worker Safety

CMOS Image Sensor

System Logic

Display Solution
Security Solution
Power IC

Foundry Solutions

About Samsung Foundry
Manufacturing
Process Technology
Design Solution
Service
Press Center

Solution by Application

Computing Devices
Mobile Devices
Consumer Devices
Security Solution

Privacy & Legal Sitemap