Fujitsu offers an extensive family of application specific standard products and platform solutions, including:

- **Microcontrollers**
- **Graphics Solutions**
- **Analog Products**
- **Imaging Solutions**
- **Wireless ICs**
- **Memory ICs**

For more information, please visit http://us.fujitsu.com/semi.

**Microcontrollers**

The Fujitsu MCUs are widely used in automotive, home, industrial and consumer applications. Development kits, in-circuit emulators, and compiler and debugger IDEs accelerate software development. To learn more, visit http://us.fujitsu.com/semi/mcu.

**Fujitsu ARM® Cortex™-M3 MCUs**

The Fujitsu FM3 family of 32-bit, general-purpose, ARM-based microcontrollers provides a scalable platform for a variety of industrial and consumer applications.

**Features**

- Operating speed up to 144 MHz
- Reliable, high-speed and secure embedded Flash memory
- Low-power, low-leak products for a wide voltage range: 1.8V to 5.5V
- Built-in 1 MSPS high-performance multiple 12-bit ADCs
- CAN 2.0B, LIN, USB 2.0 (host and function) full-speed, dual Ethernet MAC that supports IEEE-1588
- Multifunction high-speed serial interfaces – SPI, I²C and UART up to 10Mbps
- Multifunction timer for motor control, reload timer, PPG, PWM and PW timers
- Integrated safety functions to meet IEC60730 requirements

**Applications**

- Industrial automation, motor control, power tools
- Home/consumer appliances and white goods
- Home automation and sensor control
- Handheld digital, medical and healthcare products

**Fujitsu FR Family MCUs**

The 32-bit MCUs in the Fujitsu FR family serve many markets and are especially strong in the automotive industry. These MCUs are based on Fujitsu’s proprietary 32-bit RISC CPU core. The newest series, the FR81A group, supports the most demanding automotive applications.

**Features**

- Operating speed up to 128 MHz, 160 DMIPS performance
- FPU integration for higher calculation performance
- Highly reliable, high-speed and secure embedded Flash memory technology with ECC
- Up to 3ch 64 message buffers CAN2.0B, hardware-assisted LIN, FlexRay I/F, multifunctional serial I/O capable of supporting high-speed SPI, I²C, or UART with FIFO buffer
- Timer-synchronized, high-performance, multiple 12-bit ADCs
• Multifunction timer for 3-phase motor control with RDC (Resolver-Digital Converter), up to 6 stepper motor control, reload timer, PPG, PWM and PW timers
• Integrated safety functions to meet ASIL requirements

Applications
• Automotive motor/inverter control, meter cluster, body control
• Industrial and factory automation, motor/inverter control

Fujitsu F²MC-16FX Family MCUs
Fujitsu's flexible and scalable 16-bit RISC microcontroller 16FX family is designed for a variety of automotive, consumer and industrial applications.

Features
• 48-pin to 144-pin packaged products
• 5-stage pipeline RISC CPU operating speed up to 56 MHz, minimum instruction cycle 17.8 ns
• Wide operating voltage range from 2.7V to 5.5V
• On-chip RC OSC and on-chip debug unit
• Embedded dual-operation Flash memory
• Hardware watchdog timers, alarm comparator and brownout detect
• Inverter motor control, up to 6ch stepper motor control and LCD control
• Up to 3ch CAN with 32 message buffers
• USB, LIN-UART, SPI, and I²C interfaces
• Selectable GPIO port levels for CMOS, TTL and automotive levels

Applications
• Automotive
• Industrial

Fujitsu F²MC-8FX Family MCUs
The Fujitsu F²MC-8FX family of 8-bit RISC MCUs features high-performance, low-voltage, embedded Flash; a precision on-chip RC oscillator; and on-chip debug capability.

Features
• 8-pin to 80-pin packaged products
• CPU operating speed up to 16.25 MHz
• Embedded dual-operation Flash memory
• Flash memory with 100K erase cycles, 20-year data retention
• Hardware and software watchdog timers, clock supervisor and brownout detection
• Wide operating voltage range: 2.4V to 5.5V
• Motor/inverter control and LCD control
• Analog peripherals such as an ADC and comparator
• LIN-UART, SPI, I²C interfaces

Applications
• PCs
• Digital TVs
• Mobile products

Analog Products

Power Management ICs
The Fujitsu PMICs meet customer requirements for compact design, high performance and low power consumption. An online design simulator, the Easy DesignSim™, facilitates design of circuit diagrams. For more information visit http://us.fujitsu.com/semi/pmic.

Features
• DC/DC converters with low power consumption, low-voltage operation, multiple channels, high efficiency, fast response time and built-in FET
• Battery-charger ICs and reset ICs with low power consumption and high-precision voltage detection
• Power-switching ICs with low on-state resistance
• Comprehensive online design simulation tool

Applications
• PCs
• Digital TVs
• Mobile products

Spread Spectrum Clock Generators
The Fujitsu SSCGs reduce the electromagnetic interference that results from system clock operation, and minimize the need for other shielding components like bypass capacitors, choke coils and ferrite beads. Visit http://us.fujitsu.com/semi/sscg for more information.

Features
• Digital frequency modulation
• Multiple output clocks
• Programmability
• Several package options
• Low voltage and low power

Applications
• Computers
• Printers

Digital-to-Analog Converters
The Fujitsu high-speed, high-resolution DACs combine leading-edge CMOS technology and patented architectures. Visit http://us.fujitsu.com/semi/dac for more information.
Features
• High-performance data converters that enable direct IF digitization and direct IF synthesis
• 14-bit DACs include dual 1GSa/s, single 1GSa/s and 12GSa/s resolution
• Low-power consumption that eliminates costly heat sink
• Triple-well technology that assures superior analog/digital noise isolation

Applications
• Communication infrastructure
• Test equipment
• Wireless systems (e.g., base stations)

Phase Locked Loops
The Fujitsu BiCMOS single and dual PLL frequency synthesizers range from 100MHz to 3GHz, and support many communication standards. Both integer-N and sigma-delta architecture are available to suit customer applications and requirements. Visit http://us.fujitsu.com/semi/pll for more information.

Features
• Low power consumption
• Ultra-fast frequency-acquisition times
• Excellent spurious, phase noise performance
• High frequency resolution

Applications
Clock generation for a wide array of wireless systems including:
• Base stations
• Audio-visual equipment
• Security cameras

Graphics Solutions
Graphics Display Controllers
The Fujitsu GDCs, which offer different levels of integration for various applications, are optimized for embedded graphics applications and feature low power consumption. The Fujitsu GDCs have either comprehensive interfaces to external host processors or an embedded ARM CPU. Visit http://us.fujitsu.com/semi/gdc for more information.

Features
• 2D and 3D rendering functions
• Flexible layer concept
• Support for screen resolutions up to SXGA (1280x1024)
• Alpha-blending and anti-aliasing
• HMI tools support
• OpenGL for selected GDCs

Applications
• Automotive, marine and avionics
• Medical
• Industrial

Imaging Solutions
Image Processing ICs
The Fujitsu image processing ICs integrate the various functions necessary for image processing—such as color interpolation, compression, and a variety of interfaces—into a single chip. Equipped with a Fujitsu high-performance, 32-bit ARM9 CPU core, the ICs can easily perform complex color processing independently from the host. High-speed processing and low power consumption make the IC suitable for battery-powered products.

Features
• Sensor interfaces: MIPI (CSI-2) 4 lanes, subLVDS x 2 lanes or 12-bit parallel
• Host interfaces: MIPI (CSI-2) x 4 lanes or 8/16-bit parallel
• Command communication via I2C and SPI
• Wide range of resolution options: 3M to 20M pixels
• Integrated image stabilizer for moving and still pictures
• Advanced noise-reduction functions
• Face detection
• Wide-dynamic-range camera

Applications
• Digital cameras
• Mobile phone cameras

H.264 Video Processing
The latest Fujitsu video-processing IC includes transcoder devices that convert between High-Definition (HD) H.264 video data and HD MPEG-2 video data. The low-power-consumption LSI module also includes a 1-Gbit FCRAM unit, USB 2.0/PCI Express connect, audio-transcoding function, security functions (AES, MULTI2-decryption), and video scaling. Visit http://us.fujitsu.com/semi/h264 for more information.

Features
• Built-in bi-directional H.264/MPEG-2 transcoding, H.264 transrating, and audio-transcoding functions
• Industry-leading low power consumption with built-in memory
• Small form factor for compact products

Applications
• Mobile products (e.g., smart phones, tablet PCs)
• Home recording equipment (e.g., TVs, PVRs, PCs)
Wireless ICs

RF Transceivers

The Fujitsu MB86Lxxx RF transceiver family features the industry's first commercial multimode transceivers to eliminate 3G and 4G interstage TX and RX SAW filters and LNAs. Fujitsu's single-chip transceivers enable cell-phone manufacturers to reduce power consumption, component count, board space and bill of materials for the most competitive solutions. Visit http://us.fujitsu.com/semi-wireless for more information.

Features

- Multiband support from 700-2700 MHz
- Multimode support for 2G/3G/4G (LTE-FDD/LTE-TDD, HSPA+, WCDMA, TD-SCDMA, CDMA, EDGE, GSM)
- Low current architectures
- Open standard MIPI-baseband interface
- High-level simplified layer-one programming and embedded intelligence API
- Simplified factory calibration
- No TX and RX interstage SAW filters
- No LNAs in 3G and 4G paths
- MIPI RFFE to control PAs, switching regulators and antenna switch
- GPO ports available
- Support for future release 10 carrier aggregation configurations (MB86L11A)

Applications

- Mobile phones and Internet devices
- Data cards
- Embedded modules
- Dongles for PCs, tablets

Memory ICs

Ferroelectric Memory (FRAM)

Fujitsu is a pioneer in the production of Ferroelectric Random Access Memory (FRAM), which is non-volatile but operates in other respects as a RAM. The Fujitsu FRAM outperforms existing non-volatile memories like EEPROM and Flash, consumes less power, and offers higher endurance to multiple read-and-write operations. Fujitsu provides standalone FRAMs and RFIDs as well as foundry and custom design services. Visit http://us.fujitsu.com/semi/fram for more information.

Features

- 30 times faster than EEPROM
- 10 million times higher endurance than EEPROM
- 200 times lower power consumption than EEPROM
- Excellent tamper-resistance technology

Applications

- Data logging (meter factory automation)
- RFID (including radiation-hardened RFID)
- Security

Representative Applications and Products

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