

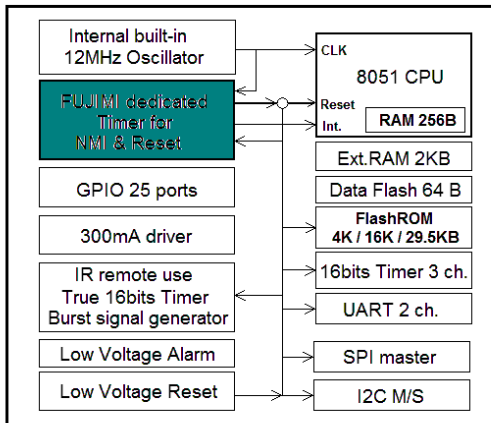
FUJIMI High Resilience MCU

Small 8 bits One-chip fault-tolerant MCU

DC6688FST

Block Diagram of FUJIMI MCU

DC6688FST



- FUJIMI-MCU is a type of fault-tolerant MCU which can continue run to the high level noise disturber, like as ESD.
- When a MCU shall be moved to malfunction, or freezing, FUJIMI can wake the CPU up by giving periodical reset.
- For this, DC6688FST is equipped the FUJIMI dedicated timer and this timer can generate two (2) signals, NMI and Reset. (Refer to the Left drawing)
- Utilizing these CPU core control signal, CPU must not stop.
- Using this technology, FUJIMI, you can avoid the system level problem, even if the MCU shall be felt in malfunction, the system can be recover in a shorter time.
- This DC6688FST, made by the Dragonchip, Hong Kong, is equipped 29.5KB (MAX.) Flash ROM and 64B data Flash. > Furthermore, 12MHz on-chip oscillator can show you quite stable system operation.
- Please refer next page for this MCU details.

The Principle of FUJIMI :

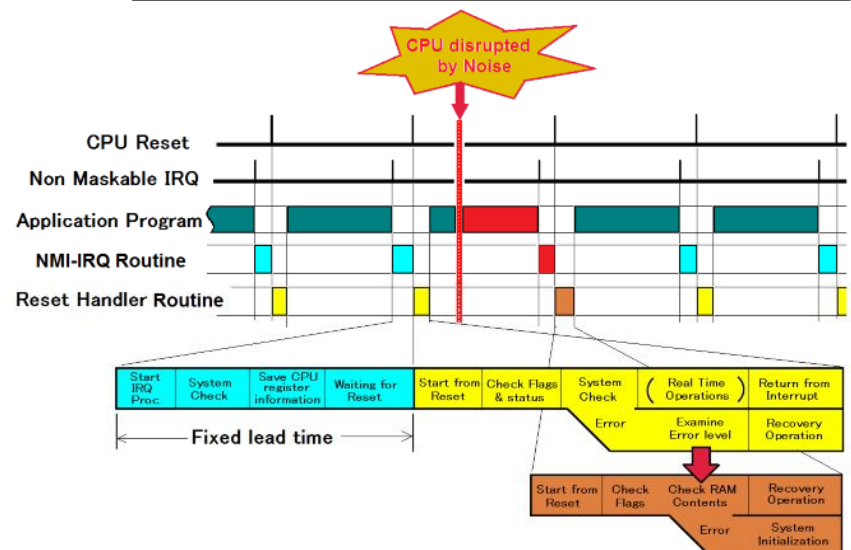
As shown in the drawing to the right, in the FUJIMI system a dedicated timer generates an interrupt (NMI).

The interrupt handling routine saves all CPU register information in RAM, and then waits for a CPU reset.

Once the CPU is reset, it can utilize the saved register information, and can then return to the software execution point where the original NMI interrupt occurred.

This can be used to invisibly recover from many malfunctions in any software.

If a problem occurs, due to this periodic CPU core reset the CPU will not remain in the problem state, and can execute various recovery processes.

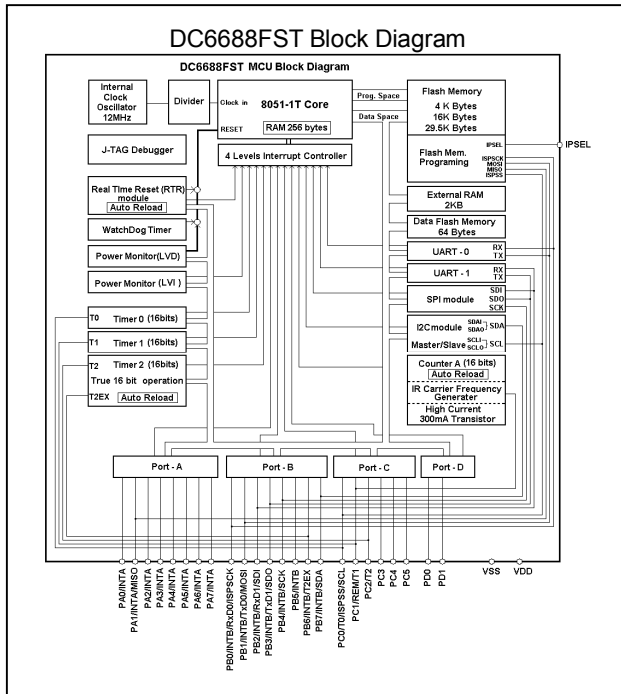


FUJIMI technology was invented and developed by LETech Co.,Ltd, Japan, and aimed at hot-start embedded MCU systems, enabling system operation to be continued after a malfunction without manual initialization. Error recovery can be handled in software with a high degree of flexibility. The technology is referred to as "High Resilience", and "FUJIMI" is a registered trademark.

This technology won the first place award at the 2011 Embedded Technology Conference, held at Yokohama, Japan.

DC6688FST 8 bits FUJIMI Micro Controller

FUJIMI Non-Stop MCU



DC6688FST Features:

- Equipped FUJIMI dedicated timer
- 8051 1T CPU core
- 12MHz Built-in Self Clock Oscillator
- Flash ROM, 4K / 16K / 29.5K
- RAM 256B (base) + 2KB (Ext.)
- Data Flash ROM 64 Bytes
- 4 Levels Interrupt controller
- General purpose Ports, max. 25 ports
- Timer/Counter 3 channels
- Burst Signal generator for IR remote
- 300mA High current FET output
- I2C, SPI serial interfaces
- UART, 2 channels
- J-Tag debug ports at Debug chip.
- On board Programming, ISP
- Low Voltage detect to Interrupt and Reset
- Operating voltage range: 2.3~3.6V
- Operating Temperature range: -25 ~ 85 DegC
- Package: TSSOP 24/28 pins

The Need for Higher Resilience, non-stop feature.

There have been many widely reported instances of serious problems caused by malfunction of a MCU. However, the phenomena of microcontroller freezes, halts, and other malfunctions cannot be prevented by semiconductor manufacturers. Every microcontroller has the potential for such problems, being based on semiconductor technology.

Thus, every microcontroller system must include protection such as noise filters, surge protectors, and ESD protection devices, in an effort to keep the semiconductor device's environment safe.

However, noise sources are unpredictable and uncontrolled. Hence, there is no perfect protection and malfunctions still occur, despite protectors.

In response to this critical problem, we at LETech developed new technology.

The theory is: If a malfunction occurs, then resume microcontroller operation quickly and minimize the application impact. Which part of a microcontroller gets stopped? It is the CPU, the brain of the system. How to reactivate the CPU? Only a reset can do this reliably. If we give the CPU a reset periodically, then the system can run forever. To make this invisible to applications, we hide this reset within an interrupt.

This is FUJIMI.

[DC6688FST]

DC6688FST is the High Resilience MCU, combined LETech's FUJIMI technology and the Dragonchip high skilled MCU design, using 0.22um, TSMC fab and instances. To avoid malfunction of MCUs, this MCU has two unique features, no external reset pin nor external clock pins. These are the weakest signal pins at every MCU.

Addition to these features, FUJIMI system shall give this MCU much strong and faster recovery feature to unlike but not escapable CPU malfunctions. For this, this MCU is equipped FUJIMI dedicated timer and the LETech shall license the usage of IP and its patent.

Try one chip fault-tolerant MCU.

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