FACTSHEET
FlexRay™ CONTROLLER

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THE POSSIBILITIES ARE INFINITE

MB88121
FlexRay communication controller

MB88121 adds FlexRay connectivity to 16-bit and 32-bit microcontrollers that lack embedded FlexRay protocol engines.

Description

The MB88121C is an application-specific standard product (ASSP) that provides the protocol engine to service the FlexRay bus system. MB88121C adds FlexRay connectivity to 16-bit and 32-bit microcontrollers that lack embedded FlexRay protocol engines. The 64-pin device acts as a companion chip to a vast number of embedded microcontrollers used in automotive applications.

With the MB88121C Fujitsu offers a device that meets the latest protocol specification 2.1 as defined by the FlexRay consortium. Based on the ERAY core licensed from Robert Bosch GmbH, the device supports 2-channel operations, and with more than 8kByte of message buffer memory, up to 128 different identifiers can be supported. The device can easily be accessed via a configurable, parallel bus interface supporting multiplex and non-multiplex modes. The user can select among several parallel and serial interface options (SPI). The communication on the SPI is CRC-protected and offers simultaneous execution of Read- and Write-commands to The FlexRay Communication Control. All types of host interfaces are selectable by mode pins that supersede any programming by the user. The configurable parallel host interface connects to most 16-bit and 32-bit microcontrollers.

A DMA support unit avoids the application on the host processor having to wait until the message buffer becomes available for access by the MCU.

The MB88121C is operated from a single supply ranging from 3.0 to 5.5 volts. This version, manufactured in 0.18µm process technology, includes an on-board voltage regulator that provides 1.8V to the internal core. The on-chip PLL circuit provides an internal clock of 80MHz. The designer has the choice between 4MHz, 5MHz, 8MHz, 10MHz or 16MHz for external quartz. Alternatively, the user may choose to drive the clock input with a square wave signal from the host processor with up to 20MHz. Beyond the MB88121C updates, Fujitsu provides 32-bit and 16-bit based embedded FlexRay microcontrollers. The first 32-bit MCU with embedded FlexRay interface is MB91F465X for which samples are available. For 16-bit controllers Fujitsu provides FlexRay extension boards for existing starter kits, such as the Flash-CAN-100P-340.

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Features of MB88121C

- FlexRay communication controller supporting protocol version 2.1
- Configurable parallel host interface compatible with most 16-bit and 32-bit microcontrollers.
  - 16-bit multiplex and non-multiplexed access
- DMA support accessing receive message buffer data
- On-chip PLL
- Input clock
  - 4/5/8/10/16MHz with quartz or
  - 4/5/8/10/16/20MHz for square wave input
  - 80MHz square wave input in test mode
- SPI interface (Max. 8Mbit/s)
- Low voltage monitoring support
- Stopwatch function
  - External event capture
- 3.0 - 5.5V single voltage supply
- T_A = -40 to +125°C
- Package:
  - 64-pin plastic LQFP
  - 0.5mm pin pitch

Software

- Fujitsu FlexRay Driver (FFRD)
  - Free licence for evaluation purposes
  - Source code delivery
- DECOMSYS::COMMSTACK as driver to the FlexRay interface
  - Free object code licence for use on Fujitsu development platform
  - Identical to version used for mass production
- Software Examples
  - FlexRay-CAN bridge
  - Keyboard demo

Development tools

- SK-91F467-FLEXRAY
  - Starter kit featuring MB91F467D 32-bit microcontroller and MB88121B
- ADA-96340-88121-FLEXRAY
  - Adapter board for 16FX MCU starterkits featuring MB88121B
- ADA-91460-88121-FLEXRAY
  - Adapter board for MB91F460 MCU starterkits featuring MB88121B
- All development tools contain 'light' or trial versions of FlexRay configuration tools from
  - Elektrobit Austria GmbH
  - J. Eberspächer GmbH & Co. KG

Ordering Information

- P/N: MB88121CPMC1-GSE2
  - ES available
  - CS Q2 2009

Documentation and Support

For latest documentation on the MB88121 please check links below:

http://www.fujitsu.com/emea/services/microelectronics/micros/flexray/

http://www.fujitsu.com/global/services/microelectronics/technical/flexray/index.html

http://mcu.emea.fujitsu.com/fme_content/static_pages/MB88121.htm

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