

MB86C00/MBG011

Bluetooth™ Baseband LSI

▶ Architectural Overview

MB86C00/MBG011 Bluetooth™ Baseband LSI provides all the digital base band signal processing and protocol hardware to complement the functionality of external Bluetooth™ RF IC.

MB86C00/MBG011 Bluetooth™ Baseband LSI also provides audio codec to provide a low-cost, fully functional Bluetooth™ solution.

An embedded ARM7TDMI™ processor and embedded firmware implement the Bluetooth™ protocol, allowing integration into peripheral or standalone applications. Customer applications are supported by two different host interfaces: USBv1.1 and UART, and an onboard PLL capable of using a range of frequency references. Also included is software-controlled power management circuitry, allowing a tailor-made performance/power profile to the customer application via firmware.

▶ Features

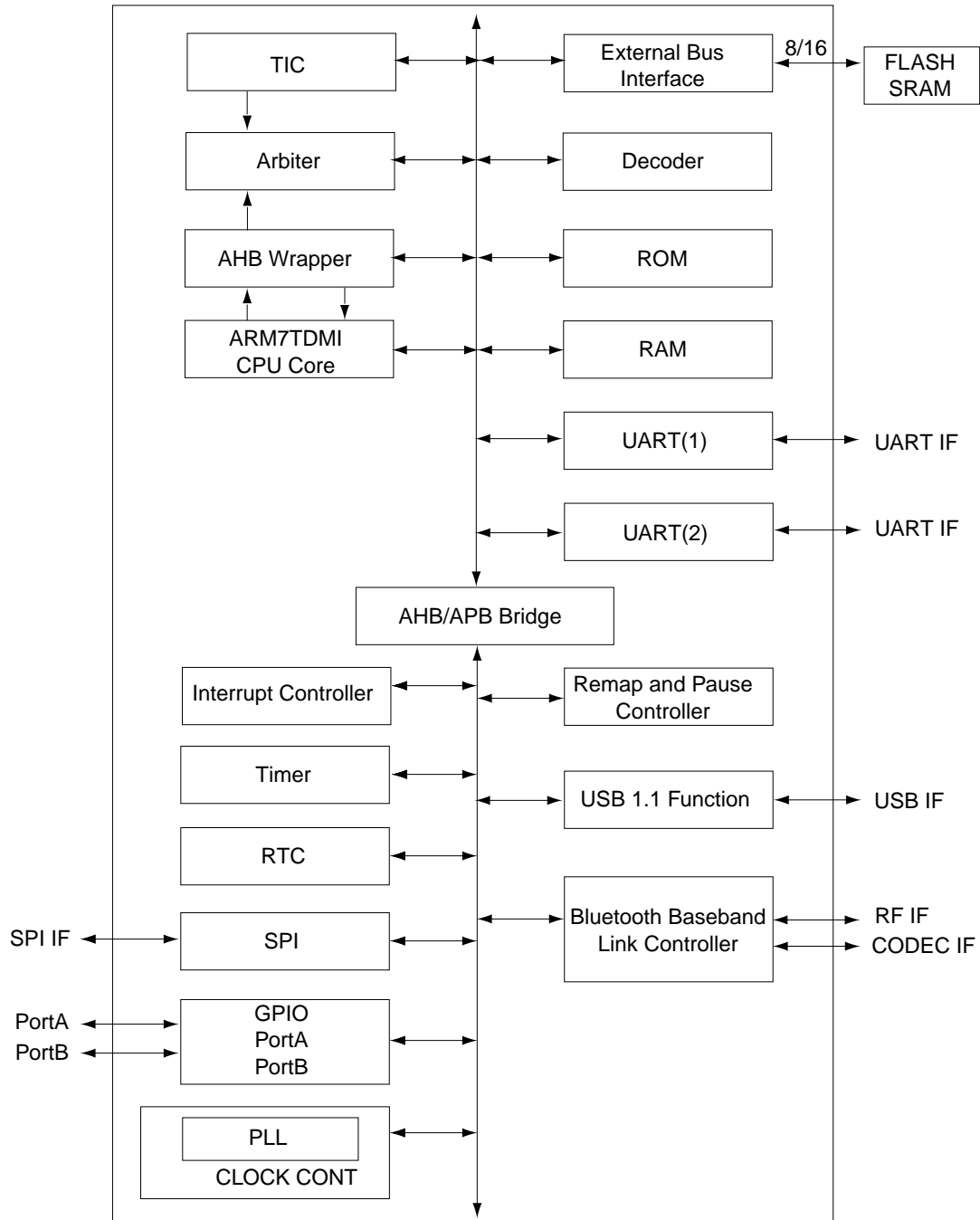
- Bluetooth™ v1.1 compliant baseband Signal Processing IP block, which supports an external Fujitsu RF IC (MB15H101A), Silicon Wave RF IC (SiW1502), Conexant RF IC (CX72303), and Fujitsu Audio Codec IC (MB86437)
- Bluetooth™ v1.1 compliant Link-Controller provides self-timed bit-level Bluetooth™ packet processing in hardware
- Bluetooth™ v1.1 compliant SCO codec supporting u-Law, A-Law and CVSD (12 to 16bit linear) conversion; both of source and sync mode supporting
- SCO channel supporting
- Embedded Bluetooth™ v1.1 software stack with full support for point-to-point, piconet, ACL modes and SCO
- Autonomous transmit and receive sequencing logic
- Extensive, flexible set of interrupts
- HEC/CRC compute/validate engine
- Low latency encrypt/decrypt engine
- Data whitening and de-whitening engine
- Error encode/decode/detect engine
- Programmable timer to assist sniff, hold or park modes
- Embedded ARM7TDMI processor
 - embedded RAM
 - embedded mask ROM
- USB v1.1 compliant interface (12Mbps); wake up, Detach signal support
- Dual-channel 16550 UART with 16-byte RX/TX FIFO and programmable baud rate (1200bps to 921.6Kbps)
- Programmable 8/16 bit wide External Memory Interface (5 chip select, each 1M Byte support)
- General purpose I/O control & monitoring ports (GPIOA: 8 bits, GPIOB: 8 bits); GPIOA is configurable interrupts
- SPI for EEPROM interface
- Embedded analog frequency synthesizer PLL which supports multiple reference clock frequencies (8.0, 10.0, 12.0, 12.8, 13.0, 14.0, 14.4, 14.7456, 16.0, 16.8, 19.2, 19.68, 20.48 and 32.0MHz)
- 32KHz crystal loop (Available external reference clock input)
- 8 to 32MHz crystal loop (Available external reference clock input)
- IEEE 1149.1 JTAG Port
- Fully gated clock operation for low power, with ability to operate at 32kHz in sleep mode
- Power Management Circuitry supporting a range of operating modes
- 2-Mbit FLASH memory is embedded in the MBG011 but is not in the MB86C00
- 176-pin FBGA package
- Supply voltage 3.3V I/O (32KHz Crystal I/O: 2.5V), 2.5V Internal



ARM7TDMI is the unregistered Trademarks of ARM Limited in Japan and Registered trademark of ARM Limited in USA.

MB86C00/MBG011

▶ Block Diagram



Electrical Characteristics

Absolute Maximum Ratings

Symbol	Parameter	Min	Max	Units	Remarks
VDD25	Supply Voltage	-0.5	3.0	V	
VDD33	Supply Voltage	-0.5	4.0	V	
VI	Input Voltage Level	-0.5	VDDxx+0.5	V	
VO	Output Voltage Level	-0.5	VDDxx+0.5	V	
TST	Ambient Storage Temperature	-55	125	degC	

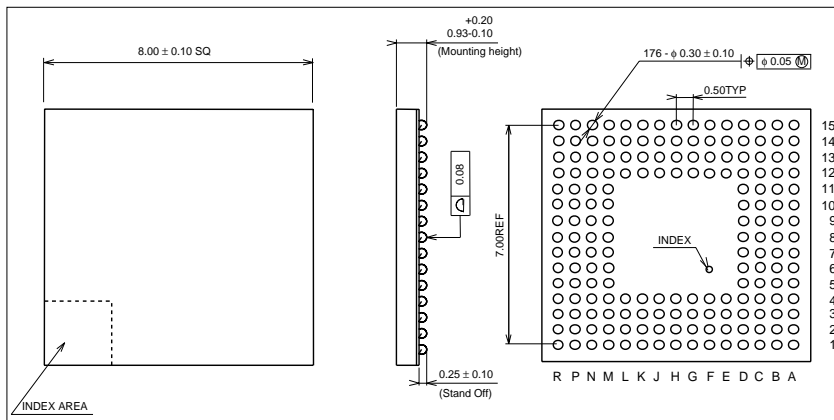
Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units	Remarks
VDD25	Supply Voltage	2.3	2.5	2.7	V	
VDD33	Supply Voltage	3.0	3.3	3.6	V	
VIH25	High Level Input Voltage	1.7	-	VDD25+0.3	V	VDD25
VIH33	High Level Input Voltage	2.0	-	VDD33+0.3	V	VDD33
VIL25	Low Level Input Voltage	-0.3	-	0.7	V	VDD25
VIL33	Low Level Input Voltage	-0.3	-	0.8	V	VDD33
Ta	Ambient Storage Temperature	-40	-	85	degC	

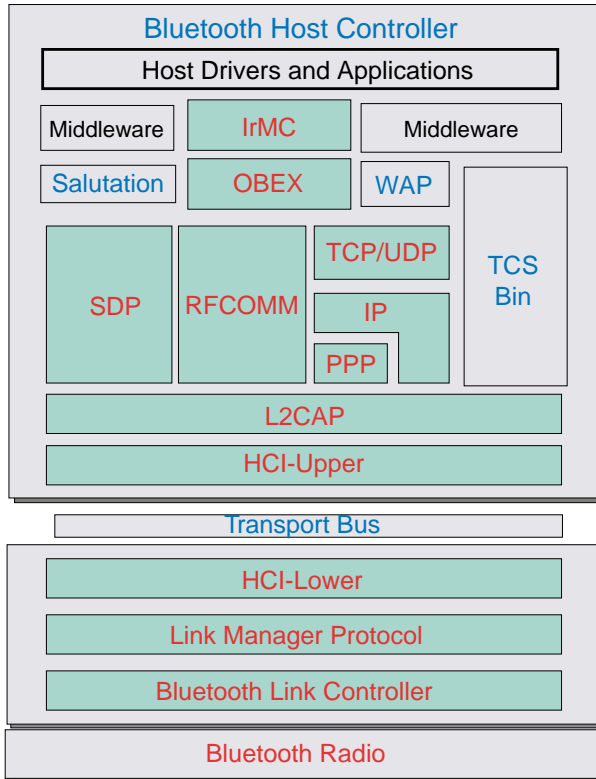
DC Characteristics

Symbol	Parameter	Min	Typ	Max	Units	Remarks
VOH	High Level Output Voltage	VDDxx-0.2	-	VDDxx	V	IOH=-100μA
VOL	Low Level Output Voltage	0	-	0.2	V	IOL=100μA
IOH1	High Level Output Current 1	-2.0	-	-	mA	L Type, VDDxx
IOH2	High Level Output Current 2	-4.0	-	-	mA	M Type, VDDxx
IOH3	High Level Output Current 3	-8.0	-	-	mA	H Type, VDDxx
IOL1	Low Level Output Current 1	2.0	-	-	mA	L Type, VDDxx, VOL=0.4V
IOL2	Low Level Output Current 2	4.0	-	-	mA	M Type, VDDxx, VOL=0.4V
IOL3	Low Level Output Current 3	8.0	-	-	mA	H Type, VDDxx, VOL=0.4V
IL	Input Leak Current	-	-	±5	μA	
Rp	Pull Up Resistance	10	25	70	KΩ	3.3V I/O
IOS1	Output Short Current 1	-	-	±40	mA	L Type
IOS2	Output Short Current 2	-	-	±60	mA	M Type
IOS3	Output Short Current 3	-	-	±120	mA	H Type

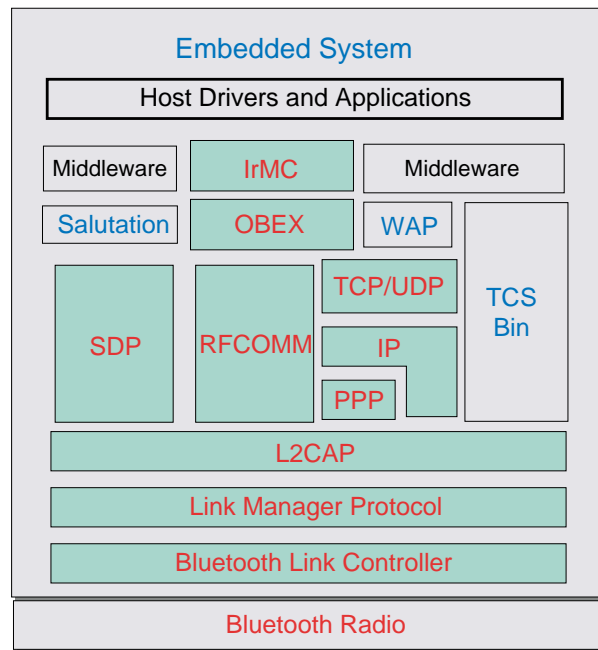
Package



HCI Type



Embedded Type



Software Provided by Fujitsu

Software Provided by Fujitsu
(Under Construction)

Block Diagram of Protocol Stack

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