Product Brief

UTAH

SAB C165 UTAH

The C165 UTAH is a new low-cost member of the Infineon Communication Controller family. The device combines the successful Infineon C166 16-bit full static core with a full-speed Universal Serial Bus (USB) device core, four independent HDLC controllers, IOM®-2 interface and

3-KByte of on-chip Dual-Port RAM. The C165 UTAH addresses all USB based features in ISDN-TA, Intelligent-NT and low cost SOHO-PBX designs offering up to 18 MIPs along with legacy peripherals such as USART, SSC/SCI and Timers.
The USB device core has a built-in

DMA, that provides maximum flexibility and performance.
Off-loading the CPU in such a manner allows the user to implement value-added software features for enabling product differentiation.

The C165 UTAH provides:
C166 Static Core with
Peripherals Including

- 16-bit fully-static core design running up to 36 MHz (18 MIPs)
- Peripheral Event Controller (PEC) for 8 user-defined independent DMA channels
- Sixteen dynamically programmable priority-level interrupt system
- Eight fast external interrupts
- Up to 72 software-configurable Input/Output (I/O) ports, some with interrupt capabilities
- 8-bit or 16-bit external data bus
- Multiplexed or demultiplexed address/data bus
- Up to 8-MByte linear address space for code and data
- Five programmable chip-select lines with wait-state

- On-chip 3-KByte Dual-Port SRAM for user applications
- On-chip 1-KByte special function register area
- On-chip PLL with output-signal
- Five multimode General Purpose Timers (GPTs)
- USART with AutoBaud detection & IrDA support
- SSC/SCI serial interface
- On-chip programmable watchdog timer
- Glueless interface to EPROM, Flash EPROM, and SRAM
- Power management supporting idle and power-down modes
- Bootstrap loader support via USART interface
- On-Chip Debug Support (OCDS) & JTAG Boundary Scan Test Support (IEEE 1149.1) for low-cost product development & debugging
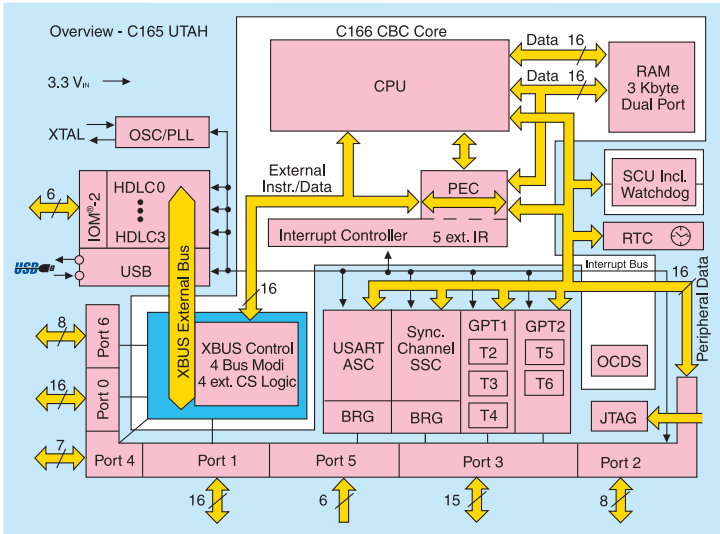
ISDN BRI CORE Including

- 56 kbit/s to 144 kbit/s user data rate
- IOM-2/PCM interface to S/U transceiver
- TE mode support
- Four on-chip independent full duplex HDLC channels
- Independent FIFOs for each transmit and receive channel

USB Interface Including

- USB Specification 1.1 compliant
- Support for audio, data and communication device class
- 12 Mbit/s full-speed mode
- Seven configurable endpoints in addition to control endpoint
- Support for multiple configurations and alternate settings
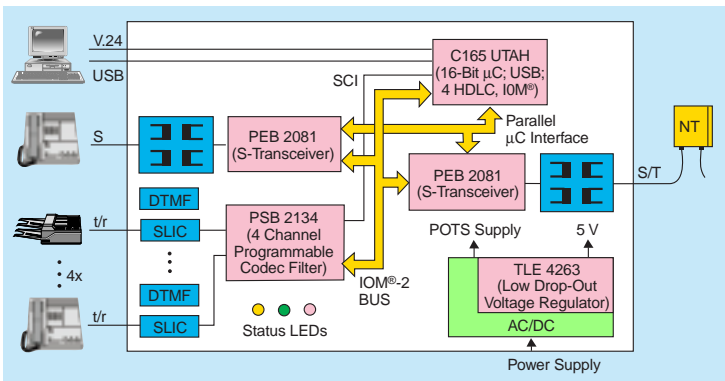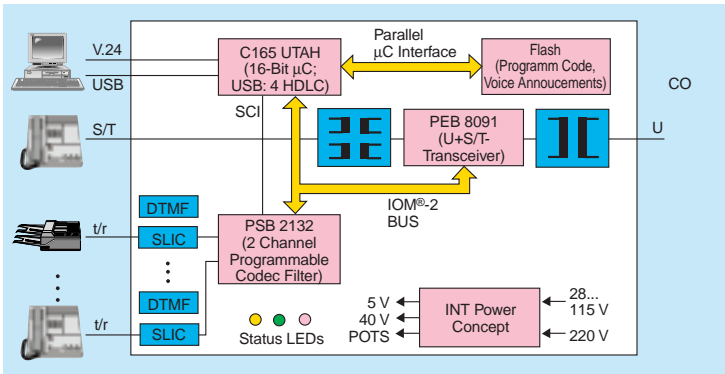- DMA support

C165 UTAH: Block Diagram

Overview - C165 UTAH

3.3 V$_{IN}$

XTAL — OSC/PLL

C166 CBC Core

CPU

Data 16
Data 16

RAM 3 Kbyte Dual Port

IOM®-2 — HDLC0, HDLC3 — 6

USB

USB

External Instr./Data

PEC

Interrupt Controller — 5 ext. IR

SCU Incl. Watchdog

RTC

Interrupt Bus — 16

Peripheral Data

16

XBUS External Bus

XBUS Control 4 Bus Modi 4 ext. CS Logic

USART ASC

Sync. Channel SSC

GPT1: T2, T3, T4
GPT2: T5, T6

OCDS

BRG   BRG

JTAG

Port 6 — 8
Port 0 — 16
Port 4 — 7

Port 1   Port 5   Port 3   Port 2

16   6   15   8

Document and Support Package

- Application Notes
- Application Hints
- System Verification Report
- CD-ROM

C165 UTAH: Application Examples

Infineon Solution for Low Cost SOHO PBX - Data Port(s)

V.24
USB

C165 UTAH (16-Bit µC; USB; 4 HDLC, IOM®)

SCI

Parallel µC Interface

NT

S/T

S — PEB 2081 (S-Transceiver)

PEB 2081 (S-Transceiver)

DTMF / SLIC — t/r

4x

PSB 2134 (4 Channel Programmable Codec Filter)

DTMF / SLIC — t/r

IOM®-2 BUS

POTS Supply   5 V

Status LEDs

TLE 4263 (Low Drop-Out Voltage Regulator)

AC/DC

Power Supply

High End Intelligent NT for 2B1Q Linecode

V.24
USB

C165 UTAH (16-Bit µC; USB: 4 HDLC)

Parallel µC Interface

Flash (Program Code, Voice Announcements)

CO

SCI

S/T — PEB 8091 (U+S/T-Transceiver)

U

DTMF / SLIC — t/r

PSB 2132 (2 Channel Programmable Codec Filter)

DTMF / SLIC — t/r

IOM®-2 BUS

Status LEDs

5 V
40 V
POTS

INT Power Concept

28... 115 V
220 V