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The INCA-S, PSB 21483, integrates in a single chip all the functions required for a full-featured ISDN phone.

The line transceiver of the INCA-S implements the subscriber access functions needed for an ISDN or PBX digital terminal connected to a four-wire S<sub>0</sub> Interface. The chip provides complete Layer-1 and basic Layer-2 functions for digital terminals.

Different interfaces allow connection to a variety of devices including a full-speed USB interface for PC host communications.

The INCA-S is typically used in applications for terminal equipment in which the microphone, loud-speaker, headset, and handset can be directly connected to the Analog Front End (AFE).

The AFE and the integrated fixed point DSP perform signal processing tasks such as encoding, decoding, filtering, and tone generation (ringing, audible feedback tones, and DTMF signal). A full duplex echo cancellation mechanism provides high quality speakerphone functionality.



### Applications

- Full-featured ISDN Phone with full-duplex hands-free operation, including USB Interface

### Features

- Full-duplex 2B+D S/T Interface transceiver in accordance with ITU-T I.430
- C166 based 16-bit CPU
- Bootstrap Loader Function
- On-Chip General Purpose SRAM (4 KBytes)

- On-Chip Debug System OCDS (Level 1)
- Terminal-specific functions including Keypad Scanner, LED Matrix Control, and two Pulse Width Modulation Units
- 12 Mbit/s Full-Speed Mode complies with USB Specification V1.1
- 15 SW-configurable Endpoints, as well as the bi-directional Control Endpoint 0
- Full-duplex echo cancellation with noise reduction
- Two transducer correction filters

- Tone Generator
- DTMF Receiver / Generator
- Three differential inputs for the handset microphone, speakerphone, and the headset
- Three differential outputs for a handset ear piece (200 Ω), a headset (200 Ω) and a loud-speaker (100 mW @ 20 Ω)
- PCM A-Law/μ-Law (ITU-T G.711) and 8/16-bit linear data
- PCM Codec, fully compatible with the ITU-T G.712 and ETSI (NET33) specification

Type	Sales Code	Package
INCA-S	PSB 21483	P-TQFP-144

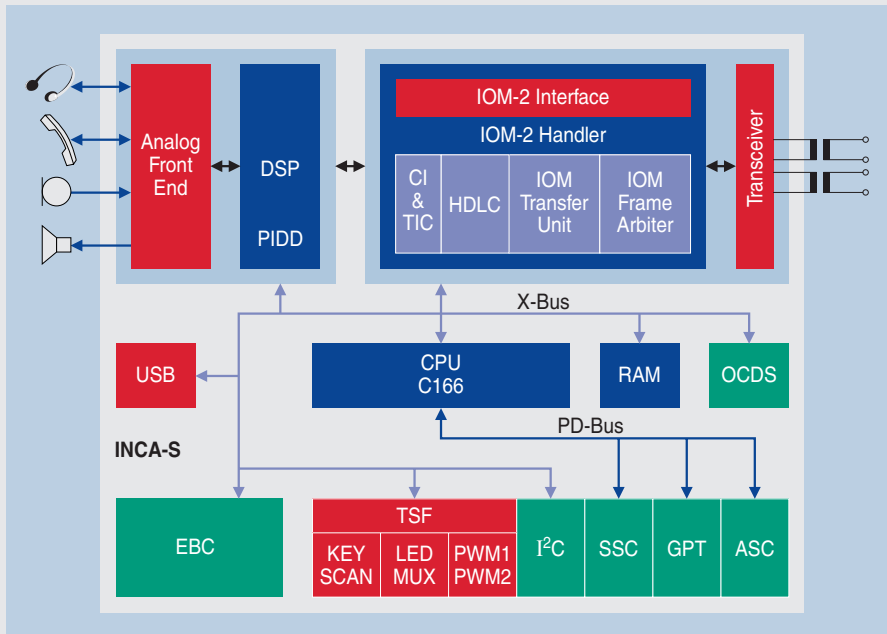
## I N C A - S

Infineon Codec with S/T Transceiver and Embedded Microcontroller featuring Acoustic Echo Cancellation

PSB 21483



## Block Diagram

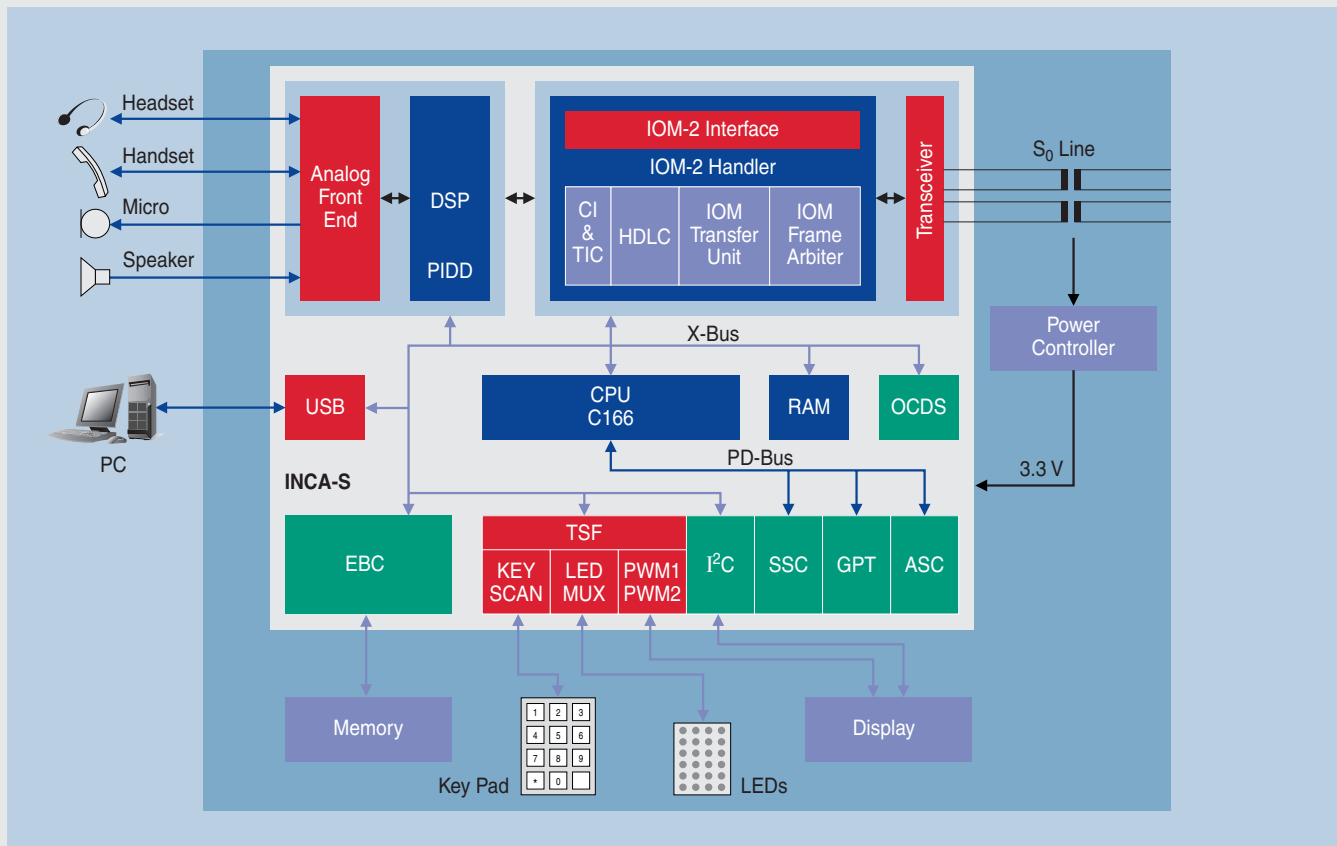


The typical application for the INCA-S is terminal equipment in which microphone, loudspeaker, headset, and handset are directly connected to the Analog Front End.

Connecting the telephone to the PC enables many new features - such as internet telephony, USB to ISDN data port, PC dialing, and unified messaging - to be implemented without additional hardware.

The INCA-S can also be used when the line transceiver is disabled but all other functions are available. This enables operation in devices for which an external interface is also supported.

## Application Example High-End Feature Phone



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