

INCA-IP

Infineon Single Chip Solution for IP-Phone Applications

PSB 21553 V1.2, PSB 21521 V1.2

This addendum provides additional information on the Product Overview, Dec. 2001. The major changes comprise the availability of two INCA-IP devices building up a product family and changes in the supported features.

Product Family

The INCA-IP product family consists of two versions covering different application requirements:

- PSB 21553 INCA-IPs
standard version for the mainstream IP phone applications
- PSB 21521 INCA-IPc
targeting low end IP phones with reduced feature requirements

Feature List

The following list briefly describes the changes in features. [Table 1](#) and [Table 2](#) give a quick overview on the hardware and DSP firmware features which are supported in INCA-IPs and INCA-IPc.

- The CPU is operating at a clock speed of 150 MHz for the INCA-IPs, and 100 MHz for the INCA-IPc.
- Hardware accelerator for encryption support reduces CPU performance to implement the AES standard.
- IOM-2 interface with one D-channel HDLC controller with 64 byte FIFO per direction (not supported by INCA-IPc).
- 2nd SSC interface with DMA support for data transfer from SDRAM to external devices (e.g. display controller) at 1.5 Mbit/s (not supported by INCA-IPc).

Revision History: Previous Version: DS1

Major Changes: Device number PSB 21553, device names and version numbers updated.
 Feature tables updated.
 Confidentiality status updated

- The LED multiplexer and keypad scanner support up to 24 LEDs and 91 keys (partly multiplexed with other pins) for INCA-IPs, and up to 20 LEDs and 36 keys for INCA-IPc.
- DTMF detector (not supported by INCA-IPc).
- Acoustic echo cancellation for handsfree function (not supported by INCA-IPc).
- Wideband audio support G.722 (not supported by INCA-IPc).
- 3-party conferencing with any mix of the supported 4 kHz voice codecs G.711, G.723.1, G.729A/B (conferencing is not supported by INCA-IPc)
- 3-party conferencing supporting two G.722 channels or G.722 together with G.711 (conferencing and G.722 is not supported by INCA-IPc).
- The DSP firmware supports DTMF detection, caller ID transmission and speech detection DTW that allows e.g. automatic dialing (speech detection not in parallel to an active voice connection; all features not supported by INCA-IPc).

Table 1 Hardware Features¹⁾

Feature	INCA-IPs	INCA-IPc
CPU Frequency Rev. 2	150 MHz	100 MHz
DSP operating at 100 MHz	√	√
AFE with 3 differential inputs/outputs	√	√
3-port Ethernet switch	√	-
Ethernet MAC and PHY	2	1
RMIII interface (optional use instead of LAN port)	√	√
IOM-2 (including one D-ch. HDLC + FIFO)	√	-
LED mulitplexer	up to 24 LEDs	up to 20 LEDs
Keypad scanner	up to 91 keys	up to 36 keys
General purpose I/O signals	up to 34 GPIOs	up to 28 GPIOs
EBU (for connection of flash, EEPROM, ...)	√	√
SDRAM interface	√	√
SSC1 interface (accessed via FPI-bus)	√	√
SSC2 interface (DMA accessed ²⁾)	√	-
ASC	√	√
I ² C	√	√
Pulse width modulators PWM1 and PWM2	√	√
6 External interrupts (3 dedicated, 3 muxed)	√	√
General purpose timer unit	√	√

Table 1 Hardware Features¹⁾ (cont'd)

Feature	INCA-IPs	INCA-IPc
DMA Controller	√	√ ³⁾
Hardware accelerator for encryption support (DES/3DES and AES algorithms)	√	√

1) Not all interfaces are available simultaneously but some of them are multiplexed.

2) Optionally, access via FPI bus without FIFOs is also possible.

3) No DMA support for SSC2.

Table 2 DSP Firmware Features

Feature	INCA-IPs	INCA-IPc
Codecs	G.711 G.723.1 G.729A/B G.722	G.711 G.723.1 G.729A/B
3-party Conferencing	√	-
Handsfree AEC	Full-duplex	Half-duplex
Handset Echo Canceller	√	√
Tone Generator	√	√
DTMF Transmitter	√	√
DTMF Receiver	√	-
Speech Recognition DTW	√	-
Caller ID Transmitter	√	-
Universal Attenuator	√	√
Automatic Gain Control Unit (AGC)	√	√
Equalizer	√	√
Peak Detector	√	√
Universal Summation Point	√	√
Hardware Filters	√	√
Interface to Analog Front End (AFE)	√	√
Interface to IOM-2 Handler	√	-