INNOVATIVE SEMICONDUCTORS, INC.

TECHNOLOGY THAT *moves you*

innovative

ISI-205
USB 2.0 High-Speed Host PHY Macro-cell

Overview

The ISI-205 is a Mixed-signal Core that includes both the Digital and Analog blocks. It Supports Device and Host applications. It is a mature product based on a USB 2.0 Device Transceiver Macro-cell (UTMI) core that was certified in Q1 2002 and the same technology has been used in our On-The-Go (OTG) Transceivers.

Status

The design has been mapped into numerous process technologies including TSMC .25u , .18u, .15u and .13u. It has also been mapped into Freescale, LSI, NSC and other processes. We can provide design services to port the design into other processes. The design has been implemented as an ASIC library Component as well as an SOC block. The design has been verified in silicon, certified for compliance and in volume production (More than 10 million chips). It is capable of transmitting and receiving at high, full and low speeds.

Functional Blocks

The ISI-205 complies with UTMI+ specifications and consists of the following blocks: The Analog Front End (AFE), the Clock and Data Recovery (CDR), the Bit Stuffer, the Bit un-stuffer, the NRZ encoder and the NRZ Decoder. The AFE consists of the High Speed Transceiver, Full Speed Transceiver, Squelch, Oscillator, PLL, On chip resistors, VBUS sense and Short Circuit protection. A US patent was issued for our novel implementation of the termination resistor.

Ports

USB, System, Control, Data Transmit Interface and Data Receive Interface.

Innovative Partners Program

Innovative has established a network of design Service Partners to quickly port our reference design to new process technologies. We also work with companies that offer USB Controllers to verify interoperability with our Transceiver

Deliverables

- GDSII Layout file.
- LEF of pin sizes and locations
- Encrypted Verilog code
- Synthesis Timing Model
- Documentation including Design Manual and Testability.

Testability

- The Design Support all the UTMI test modes.
- Four additional test modes:
  - ✓ No Test
  - ✓ No Frequency Check
  - ✓ Test at lower frequency
  - ✓ Scan Mode
- Receive Snoop test
- Special Analog Test Modes
- Loop Back Test Supported

USB Product Line

- ISI-75: USB full-speed Transceiver
- ISI-88: USB OTG full-speed Transceiver
- ISI-200: Device USB 2.0 high-speed Transceiver Macro-cell (UTMI)
- ISI-205: Host USB 2.0 high-speed Transceiver Macro-cell
- ISI-210: OTG USB 2.0 high-speed Transceiver Macro-cell (UTMI+)

Key Features

- *Digital CMOS Process Technology.*
- *Supports Device and Host Applications*
- *On Chip Oscillator, Termination Resistors and DP/DM Short Circuit Protection.*
- *Low Pin Count*
- *Minimum number of External Components.*
- *Low Power and Small Area*
- *Supports Bus powered devices.*
- *In addition to USB 2.0 Test modes, supports special test modes.*
- *Supports "High Speed" 480 Mb/s, 12Mb/s "full speed" and 1.5Mb/s "low speed" operation.*
- *Design was mapped into different process technologies.*
- *Design was certified for Compliance.*

HI-SPEED CERTIFIED USB