INNOVATIVE SEMICONDUCTORS, INC.

PRODUCT BRIEF

ISI-88

Full Speed USB 1.1 On-The-Go Transceiver Core

Overview

The ISI-88 is a USB 2.0 Full-speed On-The-Go Transceiver Hard core IP designed to help USB designers implement their chip designs by integrating this OTG core together with a USB Controller and their application specific logic and software in an SOC design.

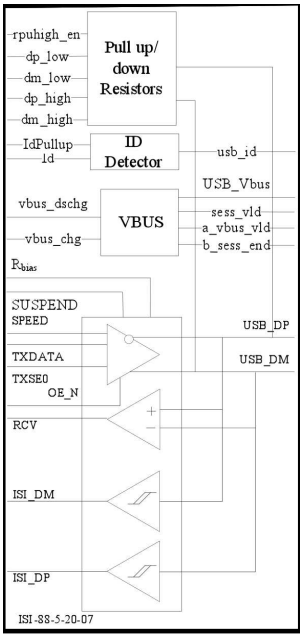
ISI-88 Functional Blocks and Bus States

The ISI-88 is a USB Transceiver design that can be mapped into different process technologies. The design has been verified in many processes. It consists of the Transmit-Receive block which has been in high volume production since 2003. It is capable of transmitting and receiving at full and low speeds. It also contains OTG blocks: VBUS, ID Detector and Pull-up/down resistors.

The signaling states are: J-state, K-state and Single Ended Zero state (SEO). The J-state is the idle state and differentiates full from low speed. The K-state identifies the start of a packet (SOP) and it signals auto resume from power suspend. The SEO state signals the End Of Packet (EOP), rest and a disconnected line. The signaling levels are summarized in table 7.1, section 7.1.4, chapter 7 of the USB Specification version 1.0.

The On-The-Go Supplement to the USB 2.0 Specification summarizes the exact requirements of the VBUS valid, and secession valid, and end signals. The Pull-up/down resistors are implemented inside the ISI-88 including the ECN requirements.

Functional Diagram



USB Product Line

- ISI-75: USB 1.1 Transceiver
- ISI-88: USB 1.1 OTG Transceiver
- ISI-200: Device USB 2.0 Transceiver Macro-cell (UTMI)
- ISI-205: Host USB 2.0 Transceiver Macro-cell
- ISI-210: OTG USB 2.0 Transceiver Macro-cell (UTM+)

Key Features

- *Digital CMOS Process Technology.*
- *It has been in high volume production in several processes ranging from .6u down to .13u*
- *Supports 12Mbits/s "full speed" and 1.5Mbits/s "low speed" operation.*
- *Interfaces directly to the 'Serial Interface Engine' provided by the USB implementer's forum.*
- *Design can be mapped into different process technologies.*
- *It is capable of transmitting and receiving at full and low speeds.*

10914 Corte Mejillones| San Diego, Ca 92130| Tel: 408.245.7390 | www.innovative-semi.com