Understanding LITELINK™ Display Feature Signal Routing and Applications

1. Introduction

This application note further explains the display feature (often called caller-ID or CID) signal routing functions of the LITELINK Phone Line Interface (DAA).

2. $\overline{\text{CID}}$ Input Operation

$\overline{\text{CID}}$ is an active-low input to LITELINK that changes internal signal routing on the chip. The $\overline{\text{CID}}$ input has an internal pull-up resistor that keeps the input deasserted when not in use.

With $\overline{\text{CID}}$ asserted, the $\overline{\text{RING}}$ output of LITELINK is disabled. Signals, including ringing signals, on the snoop path are coupled to the RX+/RX- outputs. These signals are affected by the high-pass effect of the snoop capacitors.

With $\overline{\text{CID}}$ deasserted and $\overline{\text{OH}}$ asserted, signals on the line are coupled to the RX+/RX- outputs through the optical link on the LITELINK. Signals on the snoop path are not coupled to the RX+/RX- outputs when $\overline{\text{CID}}$ is deasserted.

3. Applications of $\overline{\text{CID}}$

3.1 Display Feature Burst Prior to Ringing

For applications where the display feature signal burst precedes the first ringing burst, many designers choose the following operating procedure:

1. Assert $\overline{\text{CID}}$ at all times when the LITELINK is on-hook.
2. Detect ringing via an external optocoupler or through the snoop path.
3. After reception of the display feature signal burst and verification of ringing, deassert $\overline{\text{CID}}$.

3.2 Display Feature Burst Between First and Second Ring

For applications where the display feature signal burst occurs between the first and second ringing bursts, many designers choose to deassert $\overline{\text{CID}}$ until a ring signal can be verified on the $\overline{\text{RING}}$ output using an operating sequence such as:

1. Deassert $\overline{\text{CID}}$ in on-hook quiescent state.
2. On verification of ringing on $\overline{\text{RING}}$, assert $\overline{\text{CID}}$.
3. After the display feature burst time, deassert $\overline{\text{CID}}$.

4. For More Information

Clare Application Note AN-140, **Understanding LITELINK II** includes a truth table for LITELINK signal routing inputs in section 4.1.

5. LITELINK Design Resources

5.1 Clare, Inc. Design Resources

LITELINK datasheets and reference designs

Application note AN-114 **ITC117P**

Application note AN-117 **Customize Caller-ID Gain and Ring Detect Voltage Threshold for CPC5610/11**

Application note AN-140, **Understanding LITELINK II**

Application note AN-146, **Guidelines for Effective LITELINK Designs**

Application note AN-149, **Increased LITELINK II Transmit Power**

Application note AN-150, **Ground-start Supervision Circuit Using IAA110**.

Application Note AN-152, **LITELINK II to LITELINK III Design Conversion**

5.2 Third Party Design Resources

The following also contain information useful for DAA designs. All of the books are available on amazon.com.

Understanding Telephone Electronics, Stephen J. Bigelow, et. al., Butterworth-Heinemann; ISBN: 0750671750

Newton's Telecom Dictionary, Harry Newton, CMP Books; ISBN: 1578200695

Photodiode Amplifiers: Op Amp Solutions, Jerald Graeme, McGraw-Hill Professional Publishing; ISBN: 007024247X

Teccor, Inc. Surge Protection Products

United States Code of Federal Regulations, CFR 47 Part 68.3

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