LT84101D --- Product Brief

Dual-Port Bi-directional USB3.1 Gen-1 Re-driver

1. Features

▪ Compatible with USB3.1 Gen-1 and USB2.0 Standard
▪ Support 2-Port USB3.1 Gen-1 Operating
▪ Support Simultaneous Operating of Two Stand-alone Data Transfer with 5Gb/s Data Rate for each Port
▪ Supports LFPS Detect and Rx Detect
▪ Support One USB2.0 Port with 480 Mb/s Data Rate
▪ Support Hot-Plug Detect for USB2.0
▪ Maximum USB2.0 Cable Extension Length up to 10m
▪ Programmable Input Equalization
▪ Programmable Output Swing and De-emphasis
▪ Internal MCU and Flash for Firmware Upgrade
▪ Support External I2C Debug
▪ 1.8V/3.3V Dual Power Supply
▪ Packaged in 5mmx5mm QFN40

2. General Description

LT84101D is a deeply-optimized USB re-driver IC that enhances signal quality by performing cable or board trace loss compensation under USB3.1 Gen-1 and USB2.0 specification respectively.

For USB3.1 Gen-1operation, LT84101D is a dual-port bi-directional 5 Gb/s SuperSpeed (SS) re-driver device with advanced power management. It is composed of a dual-channel SSRX-SSTX pair. The SSRX implements a multi-level programmable linear equalizer, supporting maximum 25dB loss compensation due to Inter-Symbol Interference (ISI). The SSTX re-drives the received signal with multi-level programmable output swing and up to 6dB de-emphasis. A Low-Frequency Periodic Signal (LFPS) detection, automatic plug and unplug by remote receiver termination sensing and state machine control is also integrated on each port.

For USB2.0 operating, it provides signal transferring extension over USB cable, which supports high speed, full speed and low speed. The maximum extension length can be up to 10m from the chip to host or device. It eliminates the 5m distance limitation of USB2.0 specification. Internal equalization and pre-emphasis used for extension function can be programmed.

LT84101D internally integrates an 8-bit OCM and flash memory (stacked die) to run program. Online software upgrade is also supported for LT84101D.

The LT84101D is fabricated in advanced CMOS process and implemented in a small outline 5mmx5mm QFN40 package. This package is RoHS compliant and specified to operate from -40°C to +85°C.

3. Applications

▪ Smartphone, Tablet and Other Mobile Devices
▪ Digital TV and Data Storage Equipment
▪ PC, Notebook, All-in-Ones Computer and Docking
▪ VR/AR HMD and USB3.1 Cable Extender

4. Ordering Information

Table 4.1.1   Ordering Information

Part No.	Operating Temp. Range	Package	Packing
LT84101D	-40℃ to +85℃	QFN40（5*5）	Tray
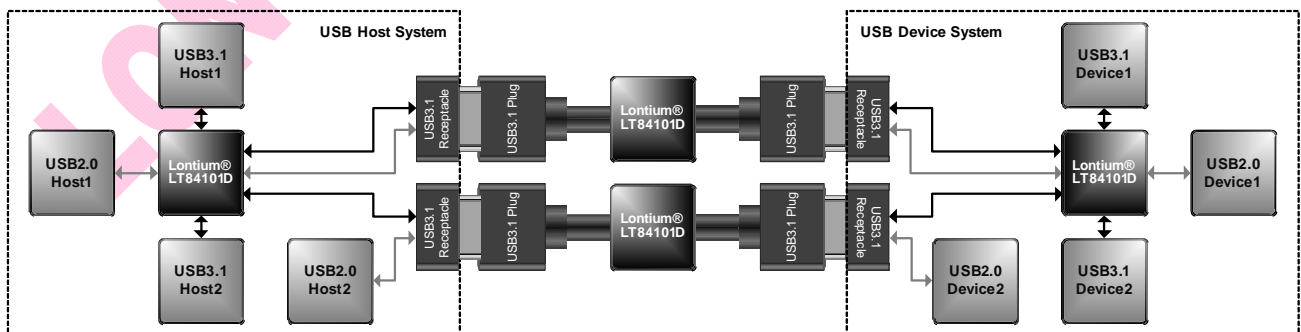
Figure 1. LT84101(D) Typical Application Diagram

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