

TLK2201 PLL Startup Problem

Applies to all TLK2201, TLK1201, and TLK2201JR devices currently in production as of 6/1/03.

The TLK2201 has a very small chance of entering a continuous PLL reset state, which causes bit errors on the receiver and excessive transmit jitter on the high speed output.

Conditions of Occurrence:

- 1) ENABLE pin glitching low or going low for a short period of time (<100 μ s)
-OR- a significant event on the reference clock such as loss of clock pulses or frequency change as in a clock distribution chip reset or FPGA power cycle.
- 2) Low PLLVCC power supply. The device is susceptible to this failure mode when the PLLVCC is lower than normal operation conditions such as during a board power up. After the device is in the failure mode raising the voltage will significantly lessen the effects of the mode but will not make the mode completely disappear.

Solution / Workarounds:

If the device has entered the failure mode the PLL must be power cycled or reset to clear the error. Power cycling the device will reset the PLL and is the most robust method. Lab data also indicates that toggling the enable pin low for >100 μ s and then re-enabling the device when the power supply and REFCLK have reached normal operating conditions will also clear the failure condition. This problem has been fixed in TLK2201A.

Symptoms of Recognition:

If the transceiver has bit errors on the receiver and or an abnormal amount of jitter with the jitter characteristic seen in figure 2. Although both are symptoms of failure the transmitter output often shows the effects more dramatically than the receiver.

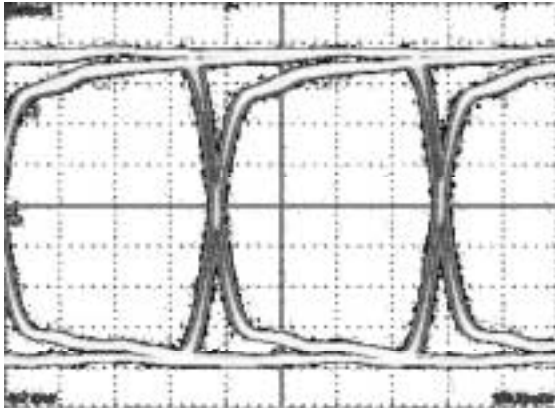


Figure 1: Normal Data Eye

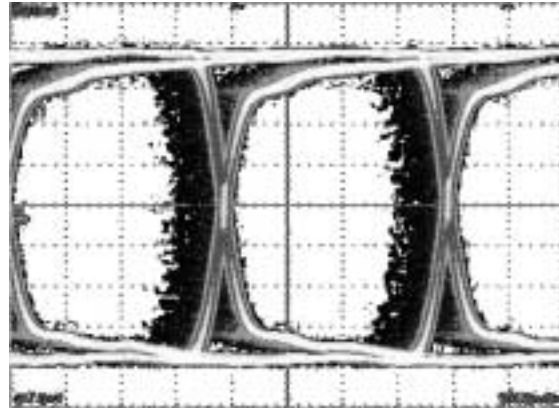


Figure 2: Data Eye in Failure Mode

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments
Post Office Box 655303 Dallas, Texas 75265

Copyright © 2003, Texas Instruments Incorporated