PHISON

PHISON PS7101
PCIE 5.0 REDRIVER IC
DATASHEET

V1.3.9 Mar. 3, 2026

PHISON

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

REVISION HISTORY

Revision	Description	Draft Date
1.0	● Initial release	Jun. 24, 2021
1.3.9	● Modify Public version	Mar. 20, 2025
1.4.0	● Modify for Gen6 redriver	Mar. 3, 2026

Contact Us

PHISON ELECTRONICS
No. 1, Qunyi Road,
Zhunan Township,
Miaoli County 35059, Taiwan

Phone: +886-37-586-986
Fax: +886-37-586-866
https://www.phison.com/zh-tw/

About Us

Phison Electronics Corporation was established in November 2000 in Hsinchu, Taiwan. Starting with the world's first single-chip USB flash drive IC, Phison is now a market leader in NAND Flash controllers and high speed interface IC including retimer and redrivers. The company has shipped million NAND controllers and high speed interface IC solutions worldwide. As a ASIC solution provider, Phison also offers IP services for customers.

Copyright

PREFACE

About this Document

This document is to describe the PCIE Gen5 Redriver IC and the corresponded control signals. In addition, it discusses how to apply the functions and illustrates the status register reported by these functions.

1. OVERVIEW

1.1 General Description

The PS7101 is a 2-lane/4-channel high performance linear Mux/DeMux Redriver IC designed for Peripheral Component Interconnect Express (PCIe) 5.0 applications that supports up to 32 Gbps data rate. The redriver provides programmable equalization, swing, and flat gain to optimize performance over a variety of physical mediums, such as PCB traces, transmission cables.

The PS7101 integrates redriver IC and Mux/DeMux dual functions in one chip, and the device can be used as a pure redriver IC by disabling Mux/DeMux function. The programmable setting can be applied easily by either pin control or I^2C control. With signal adjustment flexibility of I^2C mode, each channel has a set of independent control pins to make signal optimization possible.

Phison's exclusive technology "PHiTUNE" with our own SSD is able to collect and demonstrate the compulsory data, such as lane margining and eye opening, on the GUI for users and further to help them save tremendous efforts on system tuning by converging redriver parameters.

1.2 Features

- Compliant with PCIe Gen 5.0 Standard up to 32 Gbps interfaces.
- Interleave 1-lane Mux and 1-lane DeMux optimized for PCIe trace design to reduce VIA and avoid far-end crosstalk.
- Disable Mux/DeMux function to work as a pure PCIe Gen5 Redriver IC.
- Adjustable output linear swing, flat gain, and equalization via Pin control and I^2C.
- 4 level I/O for EQ and Gain setting to reduce pin count.
- Support I^2C and Phison PHiTUNE Technology for proper EQ setting
- Automatic receiver detection
- Rate and coding agnostic
- Transparent to link training
- Supply voltage: 3.3V
- Operating temperature: -40°C ~ +85°C
- Package: FCCSP77, 5.0 mm x 8.0 mm

1.3 Application

- Desktop PC/Motherboard
- Rack server
- Workstation

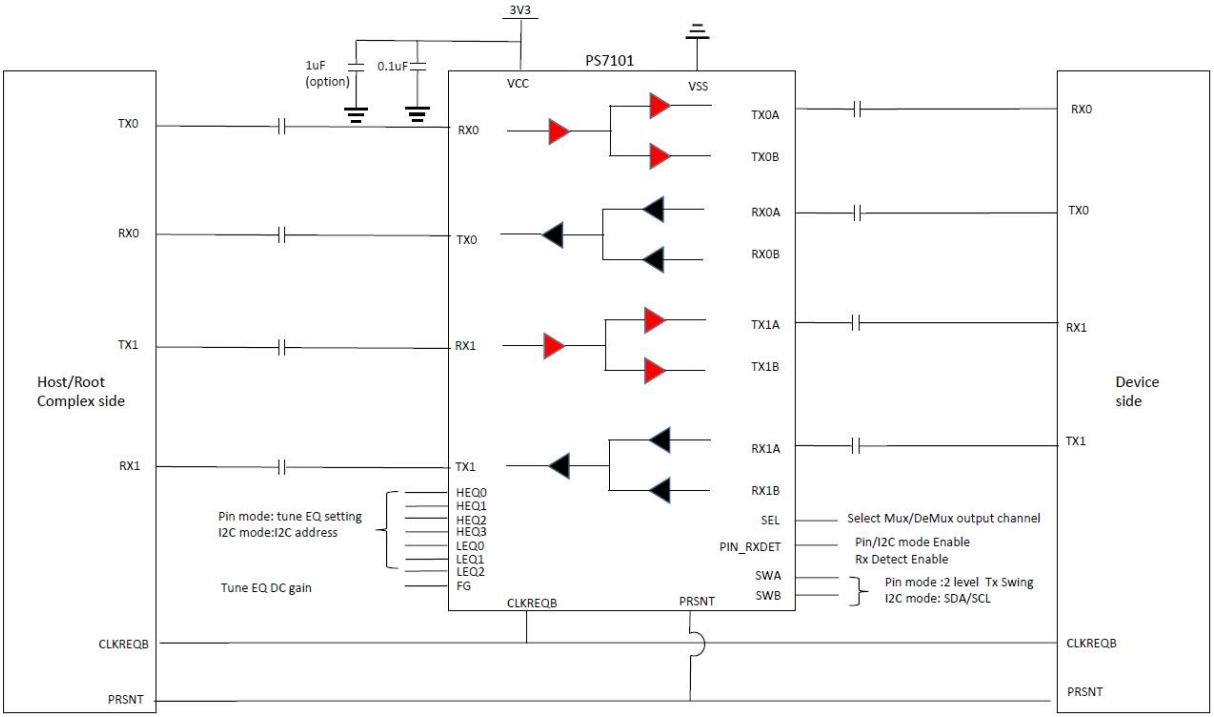


Figure 1: Simplified Schematic for PCIe 2-Lane Configuration

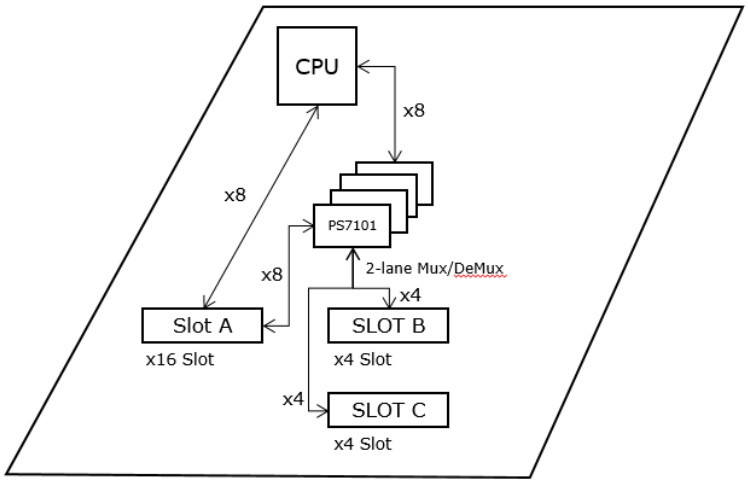


Figure 2: Motherboard PCIe Lane Muxing Application

1.4 Product Family Information

Table 1: Product Family

Part#	Equalization	PCIe	Lanes / Channel	Status
PS7163	Up to 20dB at 16GHz	Designed to support PCIe 6.0 and other interfaces up to 64Gbps	16 Lanes	Production
PS7161	Up to 20dB at 16GHz		4 Channel	Production
PS7151	Up to 20dB at 16GHz	Designed to support PCIe 5.0 and other interfaces up to 32Gbps	4 Channel	Production
PS7103	Up to 28.5dB at 16GHz		16 Lanes	Production
PS7102	Up to 28.5dB at 16GHz		8 Channel	Production
PS7101	Up to 20dB at 16GHz		4 Channel	Production

*Channel: Non-interleave redrivers

2. PHiTUNE Auto EQ Tuning Tool

Phison's PHiTUNE tool is a Phison propriety Redriver tuning software, pairing with Phison SSD as an endpoint it enables the redriver which by comparing with Link speed/Width, Eye Width, RX recovery times, TX recovery times by different EQ setting via the SSD it will automatically optimize redriver EQ settings

Key features

1. Upstream path is monitoring the TX recovery counter
2. Downstream path is monitoring the eye width

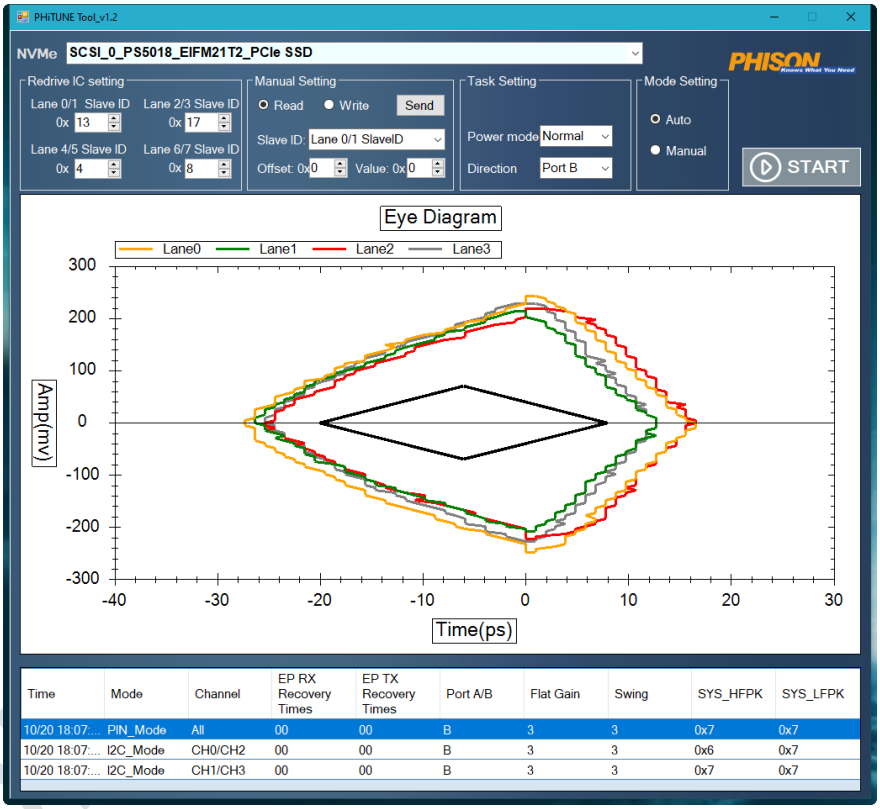
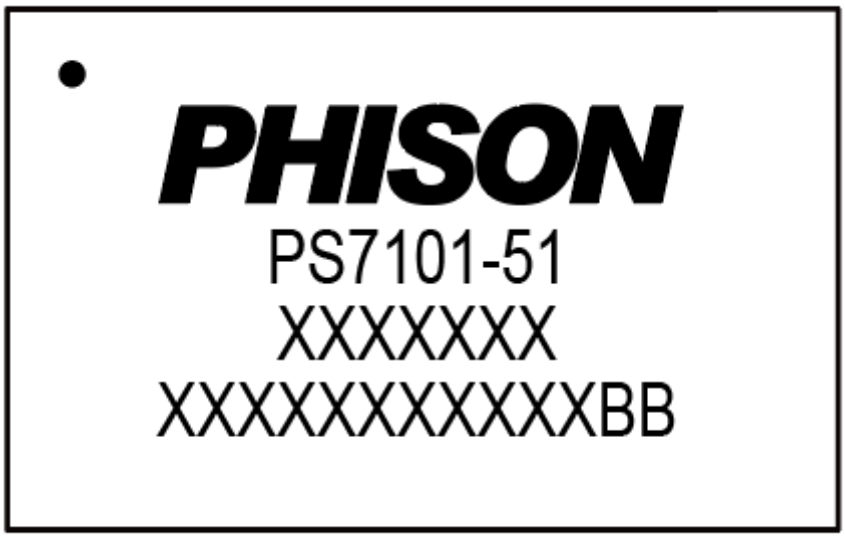


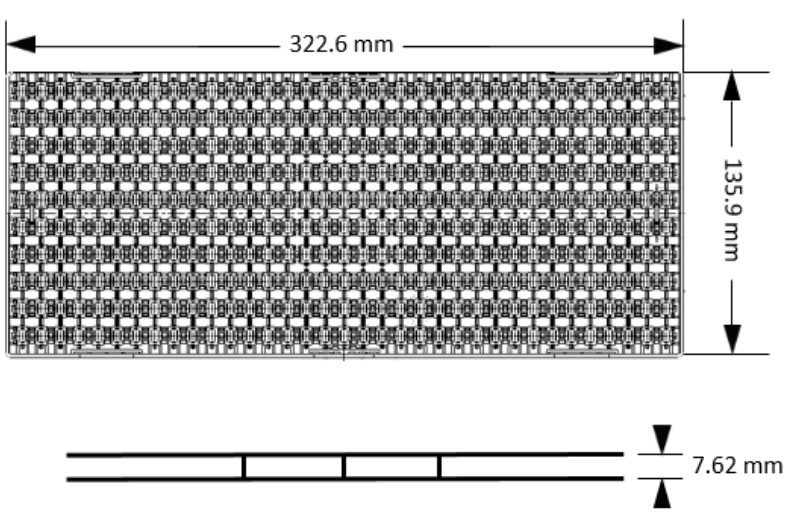
Figure 2: Auto Mode result of PHiTUNE

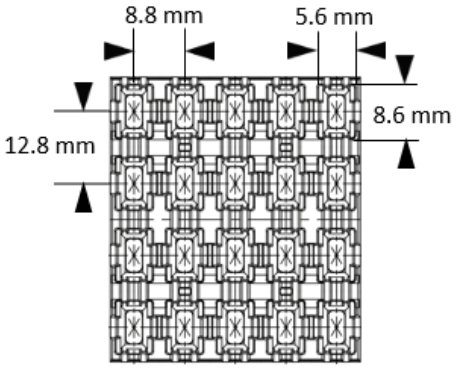
3. ORDERING INFORMATION

Table 2: Ordering Information

Part Number	Marking	Version	Package Type	Package Size	Packing
PS7101-51	PS7101-51	BB	FC-CSP-77	8mm x 5mm	Tray
PS7101-51-TR	PS7101-51	BB	FC-CSP-77	8mm x 5mm	Tape&Reel

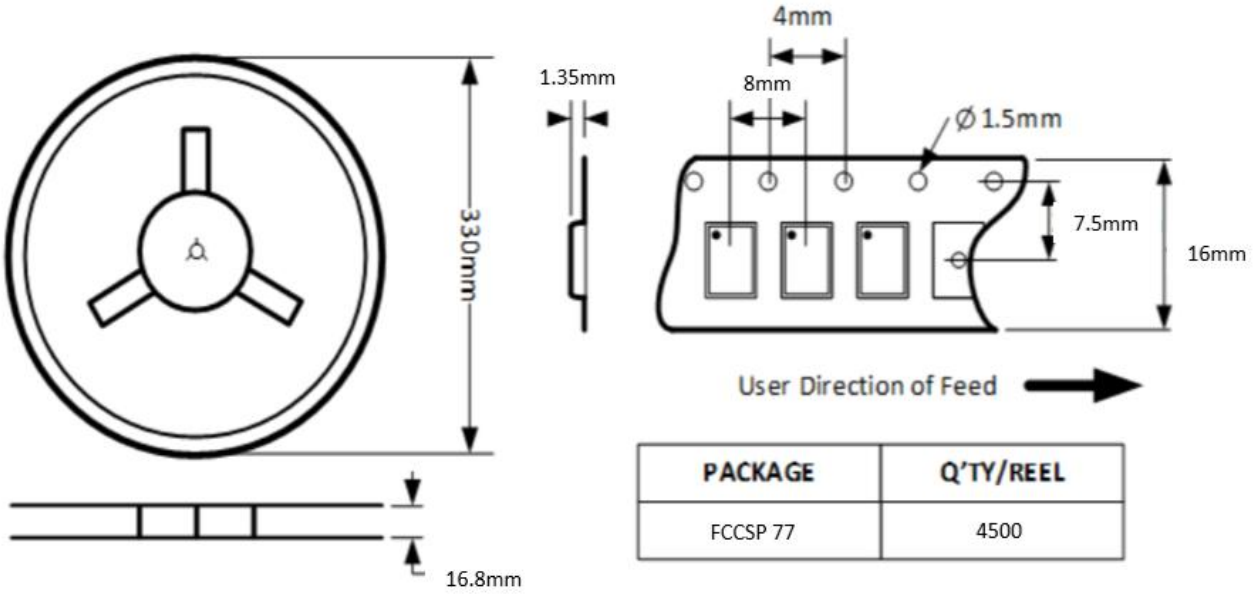






Package	Q'TY/Tray
FC-CSP-77	350

Figure 3: Tray Specification



PACKAGE	Q'TY/REEL
FCCSP 77	4500

Figure 4: Tape and Reel Specification