PHISON

# PHISON PS7103
# PCIE 5.0 REDRIVER IC
## DATASHEET

V2.6 Mar. 3, 2026

PHISON

# TABLE OF CONTENTS

## LIST OF TABLES



## LIST OF FIGURES



## REVISION HISTORY

| Revision | Description | Draft Date |
|---|---|---|
| 1.0 | ● Initial release | Dec. 16, 2022 |
| 2.5 | ● Modify Public version | Feb. 27, 2025 |
| 2.6 | ● Modify for Gen6 redriver product | 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 Phison PS7103 is a 16-lane high performance linear 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, output swing, and flat gain to optimize performance over a variety of physical mediums, such as PCB traces, and transmission cables.

The PS7103 featuring high frequency boosting, low channel-channel cross-talk, low additive jitter and low return loss makes the device almost a passive element in the link. The programmable setting of the device 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 pin 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 to 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
- 16-lane linear pure PCIe Gen5 Redriver IC
- EQ boosting up to 24 dB at 16 GHz
- Low-latency of 70 ps
- 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
- Junction temperature: -40°C ~ +125°C
- Package: FCCSP354, 22.8 mm x 8.9 mm

## 1.3 Application

- Rack Server / Blade Server / Tower Server
- Server Motherboard
- Data Center
- Workstation
- Desktop PC / Motherboard

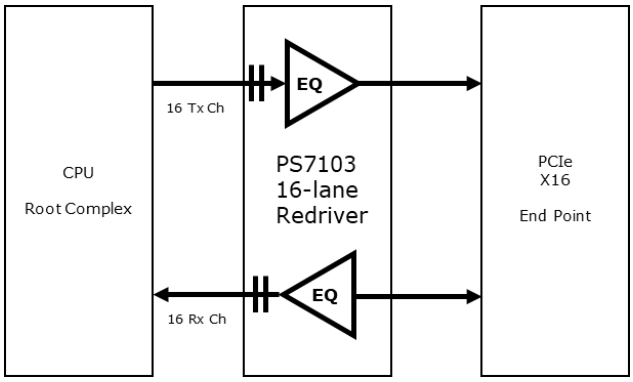



Figure 1: Application use Case

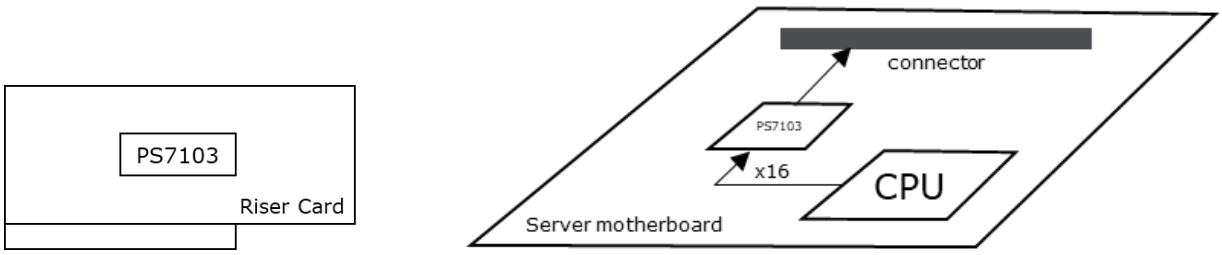



Figure 2: Riser & Motherboard Application

## 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

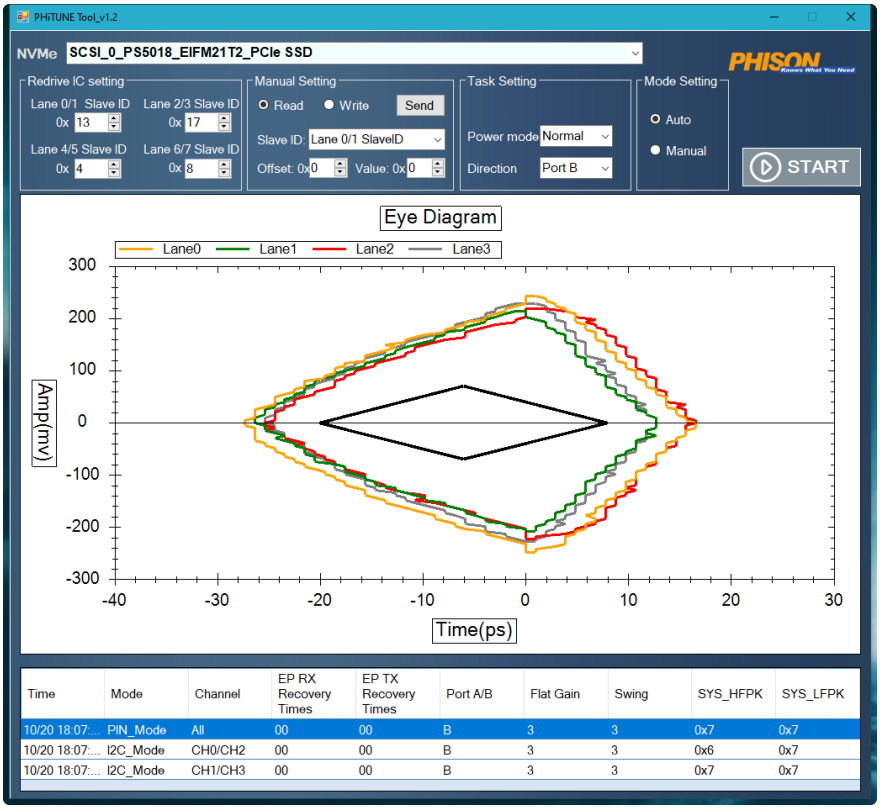
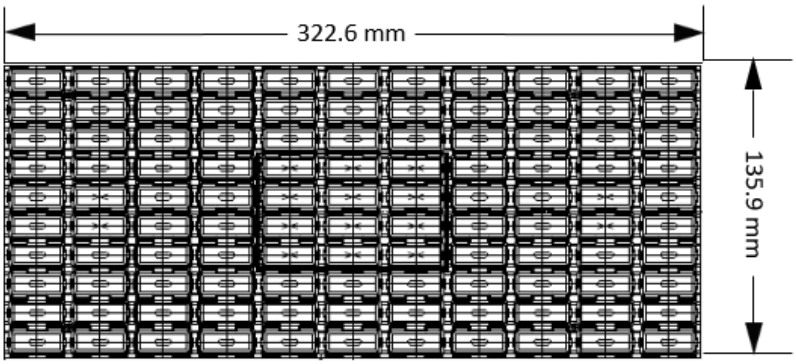


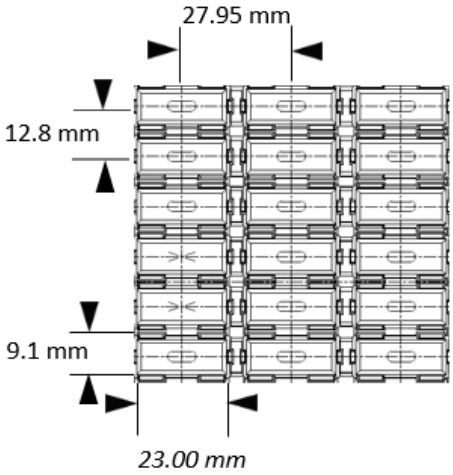

Figure 3: Auto Mode result of PHiTUNE

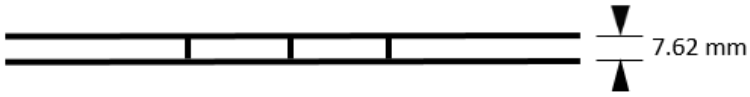
# 3. ORDERING INFORMATION

Table 2: Ordering Information

| Part Number | Marking | Version | Package Type | Package Size | Packing |
|---|---|---|---|---|---|
| PS7103-65 | PS7103-65 | BB | FC-CSP-354 | 22.8mm x 8.9mm | Tray |
| PS7103-65-TR | PS7103-65 | BB | FC-CSP-354 | 22.8mm x 8.9mm | Tape&Reel |


| Package | Q'TY/Tray |
|---|---|
| FC-CSP-354 | 110 |

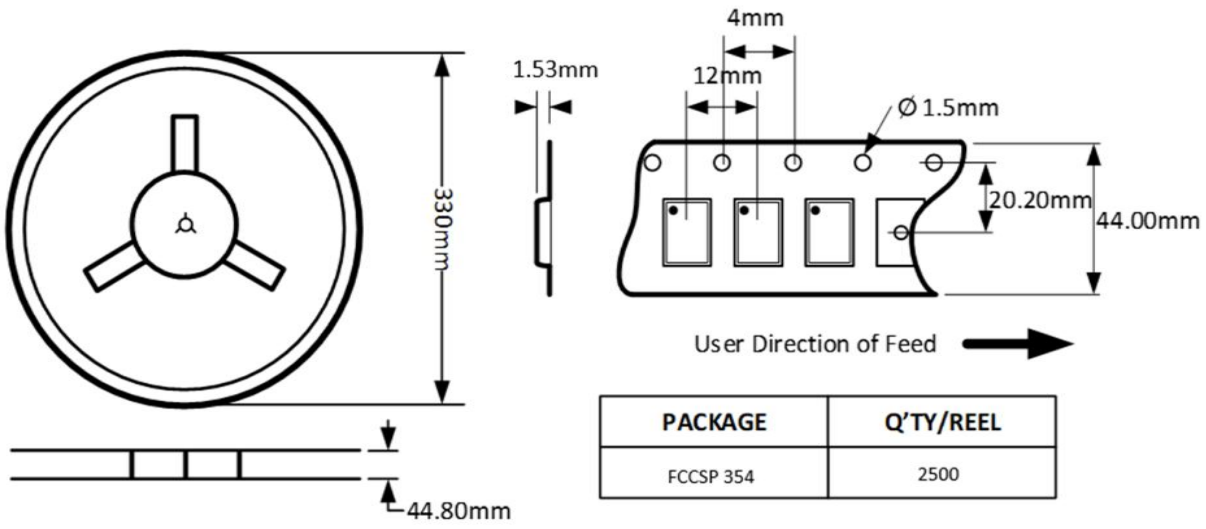



Figure 4: Package Outline of PS7103