

## Description

The IEEE 1588-2008 Precision Time Protocol (PTP) is a packet-based synchronization mechanism used in packet-switched networks. PTP synchronizes the clocks of different devices with the most accurate clock on the network – usually a precise, grandmaster clock such as one using a Primary Reference Time Clock (PRTC) time signal.

The 82P33913-x is a software and hardware system that can operate as a PTP slave or PTP master. As a PTP slave, the 82P33913-x recovers accurate and stable electrical synchronization signals from a packet-based reference generated by a PTP master. As a PTP master, the 82P33913-x can lock to a stable electrical clock source and generate packet based PTP references for downstream PTP slaves.

The 82P33913-x is available with the two software options listed in [Table 1](#).

Table 1. Software Options by Part Number

Part Number	Included Software
82P33913	IDT Clock Recovery Servo Software
82P33913-1	IDT Clock Recovery Servo Software IEEE 1588 Protocol Stack

## Typical Applications

- Access routers, edge routers, core routers
- Carrier Ethernet switches
- Multiservice access platforms
- PON OLT
- LTE eNodeB
- ITU-T G.8265.1 and G.8275.1 Telecom Profile clock synthesizer
- ITU-T G.8273.2 Telecom Boundary Clock (T-BC) and Telecom Time Slave Clock (T-TSC)
- ITU-T G.8264 Synchronous Equipment Timing Source (SETS)
- ITU-T G.8263 Packet-based Equipment Clock (PEC)
- ITU-T G.8262 Synchronous Ethernet Equipment Clock (EEC)
- ITU-T G.813 Synchronous Equipment Clock (SEC)
- Telcordia GR-253-CORE Stratum 3 Clock (S3) and SONET Minimum Clock (SMC)

## Features

- System implements ITU-T telecom profiles
- Composed of IDT's IEEE 1588 software and IDT's Synchronization Management Unit (SMU) hardware
- Operates as IEEE 1588 / PTP slave
- Recovers accurate and stable synchronization signals from packet based IEEE 1588 / PTP master
- Provides integrated physical layer frequency support
- Operates as an IEEE 1588 / PTP master

### Software

- C99 source code distribution, supporting POSIX-based Operating Systems (OSs) such as Linux
- IEEE 1588 compliant Precision Time Protocol (PTP) stack
- Abstraction interface supports user-supplied IEEE 1588 compliant Precision Time Protocol (PTP) stack
- Reference trackers filter packet synchronization noise from IEEE 1588 unaware networks

### Hardware

- Synchronization Management Unit (SMU) provides tools to manage physical layer and packet based synchronous clocks for IEEE 1588 Telecom Profile applications
- Supports independent IEEE 1588 and Synchronous Ethernet (SyncE) timing paths
- Combo mode provides SyncE physical layer frequency support for IEEE 1588 Telecom Boundary Clocks (T-BC) and Telecom Time Slave Clocks (T-TSC) per G.8273.2
- Digital PLLs can be configured as Digitally Controlled Oscillators (DCOs) for IEEE 1588 clock synthesis
- Generates G.8262 compliant SyncE clocks
- Fractional-N input dividers support a wide range of reference frequencies
- Locks to 1 pulse per second (PPS) references from GPS based sources
- Loads configuration from an external EPROM after reset

## System Component Documentation

The detailed characteristics of the 82P33913-x software and hardware components are described in other documents as shown in [Table 2](#) and [Table 3](#).

Table 2. Software Documentation

Software System Component	Reference
82P33913-x IEEE 1588 Software	Please contact IDT

Table 3. SMU Hardware Documentation

Part Number	Reference
82P33913 82P33913-1	82P33813 Datasheet

## Ordering Information

Orderable Part Number	Package	Shipping Packaging	Temperature
82P33913NLG	72-pin QFN Green Package	Tray	-40° to +85°C
82P33913NLG8	72-pin QFN Green Package	Tape & Reel, Pin 1 Orientation: EIA-481-C	-40° to +85°C
82P33913NLG/W	72-pin QFN Green Package	Tape & Reel, Pin 1 Orientation: EIA-481-D	-40° to +85°C
82P33913-1NLG	72-pin QFN Green Package	Tray	-40° to +85°C
82P33913-1NLG8	72-pin QFN Green Package	Tape & Reel, Pin 1 Orientation: EIA-481-C	-40° to +85°C
82P33913-1NLG/W	72-pin QFN Green Package	Tape & Reel, Pin 1 Orientation: EIA-481-D	-40° to +85°C

Table 4. Pin 1 Orientation in Tape and Reel Packaging

Part Number Suffix	Pin 1 Orientation	Illustration
NLG8 BAG8	Quadrant 1 (EIA-481-C)	
NLG/W	Quadrant 2 (EIA-481-D)	

## Revision History

Revision Date	Description of Change
December 5, 2017	Initial release of stand-alone <i>82P33913 / 82P33913-1 Datasheet</i> .

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## Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

## Contact Information

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