

## 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<br>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 |

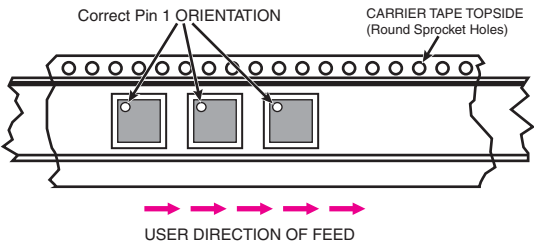
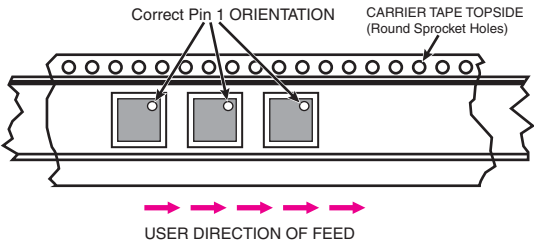
Table 3. SMU Hardware Documentation

| Part Number            | Reference          |
|------------------------|--------------------|
| 82P33913<br>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:<br>EIA-481-C | -40° to +85°C |
| 82P33913NLG/W         | 72-pin QFN Green Package | Tape & Reel, Pin 1 Orientation:<br>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:<br>EIA-481-C | -40° to +85°C |
| 82P33913-1NLG/W       | 72-pin QFN Green Package | Tape & Reel, Pin 1 Orientation:<br>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<br>BAG8       | Quadrant 1 (EIA-481-C) |  <p>Correct Pin 1 ORIENTATION</p> <p>CARRIER TAPE TOPSIDE (Round Sprocket Holes)</p> <p>USER DIRECTION OF FEED</p> |
| NLG/W              | Quadrant 2 (EIA-481-D) |  <p>Correct Pin 1 ORIENTATION</p> <p>CARRIER TAPE TOPSIDE (Round Sprocket Holes)</p> <p>USER DIRECTION OF FEED</p> |

## Revision History

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



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