HIGHLIGHTS

- 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

APPLICATIONS

- Access routers, edge routers, core routers
- Carrier Ethernet switches
- Multiservice access platforms
- PON OLT
- LTE eNodeB
- ITU-T G.8265.1 & 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)

DESCRIPTION

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 82P33914-1 is a software and hardware system that can operate as a PTP slave or PTP master. As a PTP slave the 82P33914-1 recovers accurate and stable electrical synchronization signals from a packet based reference generated by a PTP master. As a PTP master the 82P33914-1 can lock to a stable electrical clock source and generate packet based PTP references for downstream PTP slaves

The 82P33914-1 is available with several software and hardware options. The software options are outlined in Table 1 by root part number. The hardware options depend on the choice of Synchronization Management Unit (SMU) hardware; the SMU hardware documentation is listed in Table 3 by root part number.

Table 1: Software Options by Root Part Number

Root Part Number	Included Software
82P33914	IDT clock recovery servo software
82P33914-1	IDT clock recovery servo software IEEE 1588 Protocol Stack

System Component Documentation

The detailed characteristics of the 82P33914-1 software and hardware components are described in other documents as shown in Table 2 and Table 3.

Table 2: Software Documentation

Software System Component	Software Documentation
82P33914-1 IEEE 1588 software	Please contact IDT

Table 3: SMU Hardware Documentation

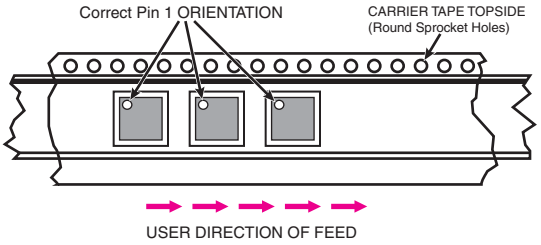
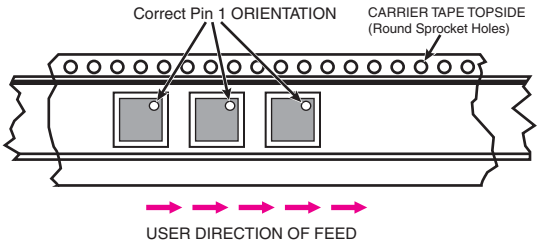
Root Part Number	Documentation
82P33914 82P33914-1	82P33814 datasheet

ORDERING INFORMATION

Table 4: Ordering Information

Part/Order Number	Package	Shipping Packaging	Temperature
82P33914NLG	72-pin QFN green package	Tray	-40^0 to +85^{0}C
82P33914NLG8	72-pin QFN green package	Tape & Reel, Pin 1 Orientation: EIA-481-C	-40^0 to +85^{0}C
82P33914NLG/W	72-pin QFN green package	Tape & Reel, Pin 1 Orientation: EIA-481-D	-40^0 to +85^{0}C
82P33914-1NLG	72-pin QFN green package	Tray	-40^0 to +85^{0}C
82P33914-1NLG8	72-pin QFN green package	Tape & Reel, Pin 1 Orientation: EIA-481-C	-40^0 to +85^{0}C
82P33914-1NLG/W	72-pin QFN green package	Tape & Reel, Pin 1 Orientation: EIA-481-D	-40^0 to +85^{0}C

Table 5: 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

Rev.	Date	Description of Change
1	05/14/2015	Initial Release
2	03/14/2016	Added part number 82P33913/82P33913-1 throughout the datasheet. Ordering Information table - added 82P33913/82P33913-1 part number information.
3	3/16/2016	Table 4, Ordering Information Table - corrected “Shipping & Packaging” for 82P33913/ -1.
4	4/5/2017	Separated parts into individual datasheets.

IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES (“RENESAS”) PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01 Jan 2024)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit www.renesas.com/contact-us/.

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Renesas Electronics:

82P33914-1NLG8 82P33914-1NLG 82P33914-1NLG/W