# P425G8TS81 TimeSync Card STS3

## 8 Ports 25 Gigabit Ethernet Grand Master, Boundary Clock, Slave Clock, PCIe GEN4 TimeSync card

### Product Description

Silicom's P425G8TS81 TimeSync Card STS3 25/10 Gigabit Ethernet PCI Express Grand Master TimeSync server adapter adds TimeSync/GM ability to server /mobile DU systems.

The Silicom P425G8TS81 TimeSync Card STS3 NIC is based on Intel E810 NIC controllers and Microchip / servo PLL.

Silicom's STS3 Support 8 port of 25G/10G capabilities to synchronize host system with external clock source using 1PPS and 10MHz. The STS3 TimeSync server adapter support both 1588v2/PTP and SyncE for high clock accuracy in Master and Slave mode. STS3 design is meeting O-RAN requirements for LLS-C1, LLS-C2 and LLS-C3, modes of operations with both Boundary and Transparent clocks.

Silicom STS line card for 4G and 5G NIC enable real-time data transmission with high timing accuracy at the lowest cost to power 5G DRAN and CRAN edge deployments:

- Support 1588/PTP over IPv4 / IPV6, IEEE1588v2
- Support SyncE /ITU-T G.8262
- T-BC/T-TSC Boundary Clock and TSC Slave Clock /G.8273.2
- T-GM Grand Master /G.8273.1 per G.8275.1 PTP Profile
- PRTC Primary Reference Time Clock Class B/G.8272
- T-TC Transparent Clock /G.8273.3
- 1588 Software Stack and Servo Software in x86
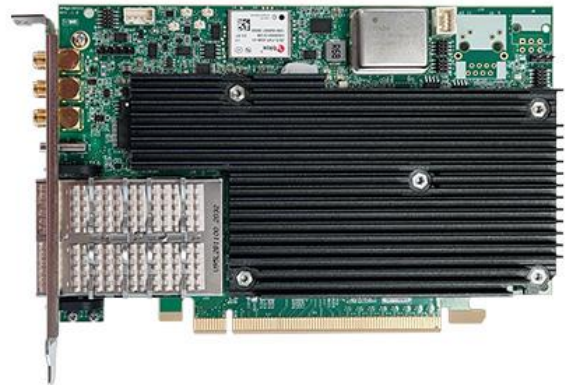
### Key Features

**GM/TimeSync:**

- Supports Grand Master clock per G.8275.1 Class-A PRTC/T-GM

- Supports Boundary Clock (BC) OC (Master / Slave)

- PTP over IPv4 / IPV6 (IEEE-1588v2) / SyncE

- One step and two step clock modes operation for PTP Master

- 10Mhz and 1PPS programmable output

- Full HW and SW GM/TimeSync solution based on industry leading DPLL, Servo stack and PTP1588

- Incorporates accurate OCXO

- Incorporates Global Navigation Satellite System (GNSS) receiver

- Packet and physical-layer frequency, phase and Grand Master GM/TimeSynchronization

- Enable 5G/Class C wireless application

**LAN and Virtualization Features:**

- SR-IOV (Single Root I/O Virtualization): up to 256 Virtual Functions

- Partially Programmable Pipeline and Advanced Traffic Steering

- Intel® Ethernet Flow Director – 8000 On-Die perfect match filters

- 1536 queues/Physical Function (PF), >64 RSS/PF and 256 VMDq/PF

## Technical Information

| General Technical Specifications: 8 Ports: Silicom Grand Master GM/TimeSync | |
|---|---|
| **Profile: IEEE-1588 (2008) ( Annex-J.3 Delay Request-Respond Default Profile:** | Ordinary Clock – Server<br>Ordinary Clock- Client (including slave only OC)<br>Boundary Clock |
| **Profile: IEEE-1588 (2008) ( Annex-J.4 Peer-to-Peer:** | Ordinary Clock – Server<br>Ordinary Clock- Client (including slave only OC)<br>Boundary Clock |
| **Profile: ITU-T G.8265.1 Telecom Profile for Frequency Synchronization:** | Telecom Grandmaster<br>Telecom Slave |
| **Profile: ITU-T G.8275.1 PTP Telecom Profile for Phase with Full timing Support:** | Telecom Grandmaster (T-GM)<br>Telecom Boundary Clock (T-BC)<br>Telecom Time Slave Clock (T-TSC) |
| **Profile: ITU-T G.8275.2 PTP Telecom Profile for Phase with Partial timing Support:** | Telecom Grandmaster (T-GM)<br>Assisted / Partial Telecom Boundary Clock (T-BC)<br>Assisted / Partial Telecom Time Slave Clock (T-TSC) |
| **Device Types:** | Ordinary Clock<br>Boundary Clock |
| **References Selection:** | Default BMCA (Best Master Clock Algorithm)<br>Alternate BMCA based on ITU G.781 – Synchronization layer functions for frequency synchronization based on the physical layer |
| **Transport Mappings:** | PTP/UDP/IPv4 Annex D<br>PTP/UDP/IPv6 Annex E<br>PTP/Ethernet Annex F |
| **NIC TS (Time Stamp) granularity:** | 1ns |
| General Technical Specifications: STS3/ 8 Ports: P425G8TS81-XR | |
| **Interface Standard:** | PCI-Express Base Specification Revision 4.0 (16 GTs) |

| | |
|---|---|
| **Board Size:** | Single slot Standard height add-in card:<br>167.64mm X 111,15 mm(6.6"X 4.376") |
| **PCI Express Card Type:** | x16 Lane, bifurcation |
| **USB Connector:** | uUSB |
| **Voltage:** | +12V +/-8%, +12VAUX |
| **PCI Connector:** | Gold Finger: x16 Lane |
| **Controllers:** | 2xIntel E810-CAM1 |
| **1588/ SyncE PHY:** | BCM81385 (8x25G) |
| **OCXO:** | OX-2281-EAE-5000-20M000, 2 ppb, A1 |
| **DPLL:** | 1588 / SyncE Microchip ZL30793, Si5315A-C-GM |
| **GNSS:** | U-blox, ZED-F9T |
| **Network ports** | 2xQSFP28/ QSFP |
| **Management port** | RJ45 |
| **Holder:** | Metal Bracket |
| **Power Consumption** | Max: calculated: 50[w] |
| **Operating Temperature:** | 0°C – 45°C (32°F – 113°F) |
| **Storage:** | -40°C–65°C (-40°F–149°F) |
| **Regulation:** | CE, FCC Class B, ROHS requirements. |
| **LEDs:** | Ports 0-3: 4 LEDs Green Link/Act.<br>Ports 4-7: 4 LEDs Green Link/Act. |
| **LEDs location:** | Ports 0-3: On Metal Bracket, left to QSFP28<br>Ports 4-7: On Metal Bracket right to QSFP28 |
| **USB HUB** | USB2514 – USB hub for 4 downstream ports |
| **FTDI USB TO RS232** | USB HS to QUAD UART/MPSSE |
| **QSFP28 25Gigabit Ethernet Technical Specifications Adapters:** | |
| **QSFP28 (Small Form Factor Pluggable) supports:** | (x4) SFI interfaces supports 25GBase-R PCS and 25 Gigabit PMA in order to connect with QSFP to 25GBase-SR/ LR (MPO) |
| **25GBase-SR QSFP:**<br>**IEEE Standard / Network topology:** | Fiber 25Gigabit Ethernet, 25GBASE-SR (850nM LAN PHY).<br>25.78125GBd<br>MMF Multi-Mode fiber |
| **25GBase-LR QSFP:**<br>**IEEE Standard / Network topology:** | Fiber 25Gigabit Ethernet, 25GBASE-LR (1310nM LAN PHY)<br>25.78125GBd<br>(SMF) Single-Mode fiber : 10000m at 9um |
| | |

| QSFP+/ SFP+ 10Gigabit Ethernet Technical Specifications Adapter: | |
|---|---|
| QSFP /SFP+ (Small Form Factor Pluggable) supports: | SFI interfaces supports 10GBase-R PCS and 10 Gigabit PMA in order to connect with QSFP to 10GBase-SR/ LR (MPO) |
| 10GBase-SR : IEEE Standard / Network topology: | Fiber 10Gigabit Ethernet, 10GBASE-SR (850nM LAN PHY). 10.3125GBd MMF Multi-Mode fiber |
| 10GBase-LR IEEE Standard / Network topology: | Fiber 10Gigabit Ethernet, 10GBASE-LR (1310nM LAN PHY) 10G.3125GBd (SMF) Single-Mode fiber: 10000m at 9um |

## Order Information

| P/N | Description | Notes |
|---|---|---|
| P425G8TS81-XR | 2×4 Port QSFP 25/10 Gigabit Ethernet GM/ TimeSync PCI Express Server Adapter | STS3 ,x16 Gen4, bifurcation 2×8 G4, FHHL single slot |
| P425G8TS81-SR | 2×4 Port QSFP 25/10 Gigabit (SR) Ethernet GM/ TimeSync PCI Express Server Adapter | x16 Gen4, bifurcation 2×8 G4, FHHL single slot |
| TS-MB-F5-200X5 | TimeSync SMA MB Kit, Full height,5xSMA,5x200mm cables | |
| TS-MB-L5-200X5 | TimeSync SMA MB Kit, LP,5xSMA, 200mm cables | |