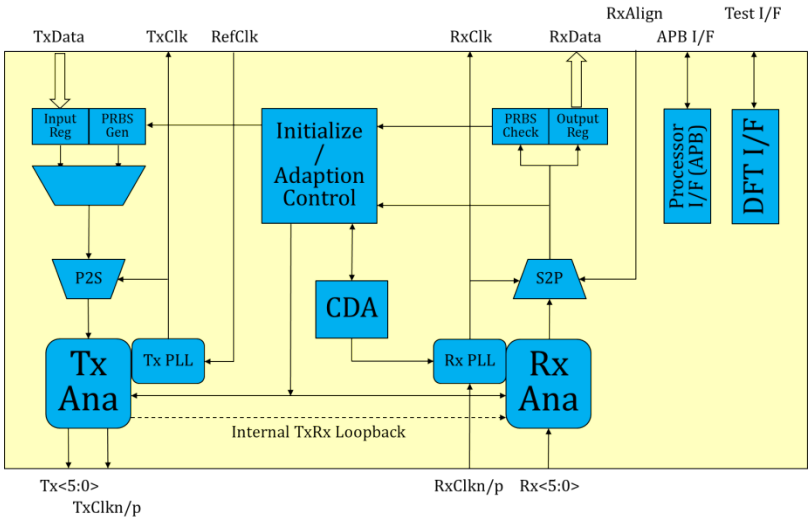
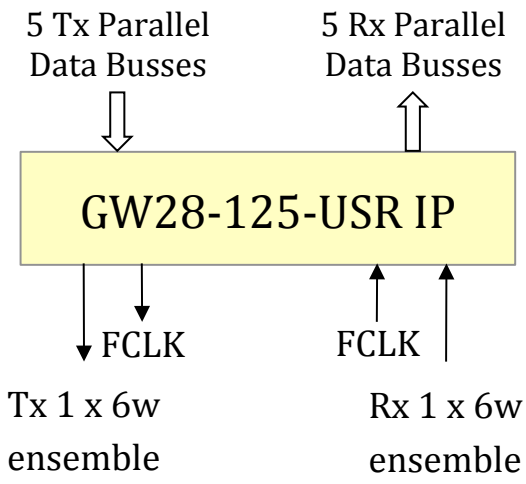
KANDOU BUS

Glasswing IP Family

GW28-125-USR SerDes 125Gbps Throughput





Description:

The Glasswing SerDes family is a programmable IP designed and optimized for in-package applications. Glasswing provides high system bandwidth with low power consumption through the use of 5b6w Chord™ signaling and employs a forwarded clock architecture. The Glasswing IP may be deployed in multiple instances to provide efficient extended interfaces.

The GW28-125-USR SerDes is a hard IP SerDes solution that provides a high throughput for short reach interposer and multi-chip-module applications such as chip-to-chip, processor or switch to memory, and in-package interfaces. Typical supported applications will deliver 25GBaud over channels of 5mm to 25mm with insertion losses in the range 3dB to 6dB at Nyquist.

The GW28-125-USR achieves low power through coding, efficient circuitry, simple clocking and equalization schemes.

Advantages:

- 40% higher throughput over conventional SerDes at the same baud rate over the same number of pins/ wires.
- Enables 2.5D integration through high pin-efficiency and low power.
- FOM 444Gbps/mm bidirectional data as 4TxRx.
- Excellent signal integrity.
- Has differential-like EMI performance.

Features:

- Five 32 bit Rx and Tx parallel busses.
- Operates as a single 6-wire 5b6w SerDes
- 62.5Gb/s to 125Gb/s over 6 wires.
- 6 data and 2 forwarded clock wires in each direction, data is 5b6w encoded.
- Supporting common block hard IP with PLL and references.
- DC coupled link requiring no data coding or scrambling.
- Internal Tx to Rx loopback.
- Programmable Tx swing; maximum 300mV single-ended.
- CTLE Rx equalization.
- Clock data aligner (CDA).
- Programmable Rx CDA coefficients.
- EyeScope (destructive).
- Rate variable through PLL control.
- Pin-order reversal.
- Rx bit-slipping for word alignment.
- PRBS31 pattern Tx generation and Rx verification, plus user defined pattern.
- DFT: at-speed BIST of analog plus stuck-at scan of slow digital circuitry.
- JTAG boundary scan (8 wires each direction, 1149.1).
- Supports JTAG boundary scan (1149.1) and scan test modes.
- Analog test port.
- ATPG support.
- APB (ARM Peripheral Bus) interface for easy programming and integration.
- Compliant to proposed JEDEC JC-16 Multiwire Specification.

Kandou Bus S. A., QI-I, 1015 Lausanne, Switzerland
Tel: +41 21 693 8991
email: sales@kandou.com
web: www.kandou.com

KANDOU BUS

Glasswing IP Family — GW28-125-USR SerDes 125Gbps Throughput

Technology:
- TSMC 28nm HPM process.
- 1.0V analog and digital, and 1.5-1.8V supplies.
- Junction temperature -25 to +105 degrees C.
- Standard flip chip technology.
- Tileable layout to support high IO density.

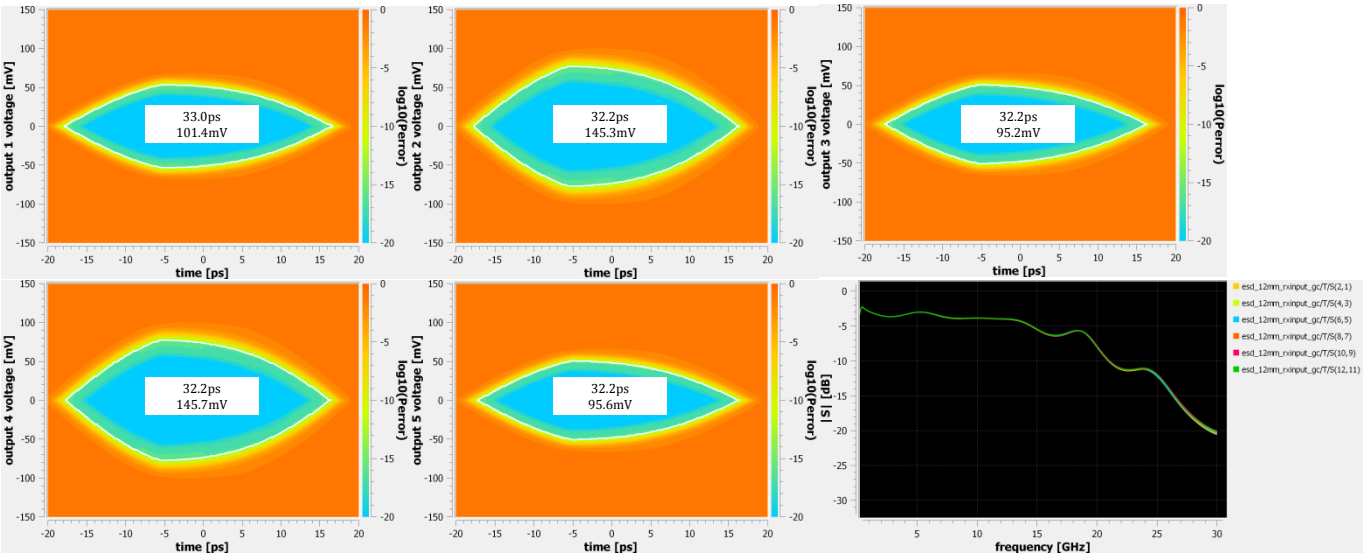
Deliverables:
- Data sheet and application notes.
- Channel compliance specification.
- Standard Integration Views: GDS, LEF, verilog, .lib.
- Outline silicon test program.
- HSpice models
- Evaluation Module available.

Availability:
- For sample availability and pricing, please contact Kandou Bus (*sales@kandou.com*).

Related Material:
- *http://www.kandou.com/documents*

Applications:
- Short reach interposer and multi-chip modules:
  - Packaging of dies with dissimilar semiconductor processes.
  - Packaging of smaller dies to increase yield.
- High throughput data interfaces:
  - Processor or switch to wide, high bandwidth memory.
  - Efficient interface to off-board SerDes.
  - Efficient interface to optics engines.
  - Switch to switch links.
  - Processor busses.

***Glasswing 5b6w Coding*:**
- Transmits 5 bits on 6 wires:
  - Uses quaternary signal levels.
  - Has a zero SSO transmitter.
  - Employs a reference-less receiver that is resilient to common-mode noise.
  - Uses a receiver that has 5 comparators and no decoder.
- Link has excellent signal integrity properties:
  - Has NRZ-like Inter-Symbol Interference properties.
  - Is scalable to much higher speeds.
  - Is scalable to harder channels.
  - Has differential-like EMI performance.



Glasswing KEYE™ simulated sub-channel eyes at 25 GBaud for a MCM channel with 4dB loss at 12.5GHz.

