

# Diamond<sub>x</sub> HSI<sub>1x</sub>

Scalable, Cost-Efficient Solution for High Performance SerDes Test



The HSI<sub>1x</sub> is optimized for testing clock embedded and clock-forwarded serial interface commonly found in modern mobile, consumer, industrial and automotive electronics. These ports connect modern cameras, displays, storage and applications processors to enable high bandwidth, low power consumption, and low EMI.

## Highlights

- Physical layer testing with built in PRBS BERT TX/RX
- BIST/DFT testing using high bandwidth drive/compare memory
- Protocol level mixed-signal testing using deep send pattern memory

## Features

- Test of high speed serial ports with data rates up to 12.8 Gbps, such as HDMI, MIPI, JESD204, PCIe, SATA, EPD, Vby1 and USB3
- 32 differential TX channels
- 24 differential RX channels
- Hardware clock data recovery per lane with flexible BERT sync
- Deep source memory
- Flexible loopback modes including closed loop BERT
- Calibrated jitter injection on all lanes
- Flexible pre-emphasis and equalization



Automotive



Consumer



Flat Panel Display



IoT/loV & Optoelectronics



Industrial & Medical



MCU



Mobility

- SerDes and LVDS/MIPI
- 32 differential TX channels
- 24 RX Differential Channels
- 12.8 Gb Data Rate
- 250M TX Vector Memory Jitter Injection
- Eye Mask, PRBS

# Diamond<sub>x</sub> HSI1<sub>x</sub>

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## Specifications

### Data Rate

- Data rate range 400 Mbps to 12.8 Gpbs
- Frequency resolution 1 KHz

### Transmitter

- Number of differential TX channels 32
- AC output differential impedance 100  $\Omega$
- Differential voltage swing 40 mV to 950 mV
- Pre-emphasis range +/-300 mV (Typical)
- Jitter Frequency range 0.1 KHz to 20 MHz
- Max injected deterministic jitter, peak-peak 1.4 ns
- Maximum RMS random jitter injection 0.1 UI

### Receivers

- Number of differential RX channels 24
- AC input differential impedance 100  $\Omega$
- Input differential voltage range 25 mV to 1.4 V
- Input single ended range 360 mV to 1070 mV
- Programmable comparator threshold voltage +/-0.5 V
- Extracted clock domains 2
- Equalization gain 1 to 2.4

### Pattern Specifications

- Built in patterns K28.5, PRBS 5, 7, 9, 11, 13, 15, 21, 23, 31, and invert, toggle, all ones, all zeros
- Pattern segment size 512 bits – 64 Kbits
- Total memory space for TX 8 Gb
- Total memory space for RX 2 Mb
- Sequence control Loop infinite, Loop on count, Play to end
- Maximum loop count per sequencer slot  $2^{**16} - 1$
- Triggering External or internal

All specifications are subject to change without notification and are for reference only. For detailed performance specifications, please contact Cohu.