

LVDS IO Cell

v1.2

Features / Benefits

- IEEE1596x compliance
- 1GHz+ clocking rate
- Independent dynamic pull up and pull down calibration
- IDDQ, parametric Nand and JTAG test functions
- Metal programmable within Rapid Bridge platform
- 70µm pad pitch
- ESD 2kV HBM, 200V MM, 500V CDM
- True Differential input, output, and bidirectional versions.
- Short-range and generic output strength programmed dynamically.
- Programmable 100Ω input termination
- Less than ±3% duty cycle distortion across PVT
- Wirebond, Flip Chip and CUP versions available
- IEEE 1149.1 Compliant

Applications

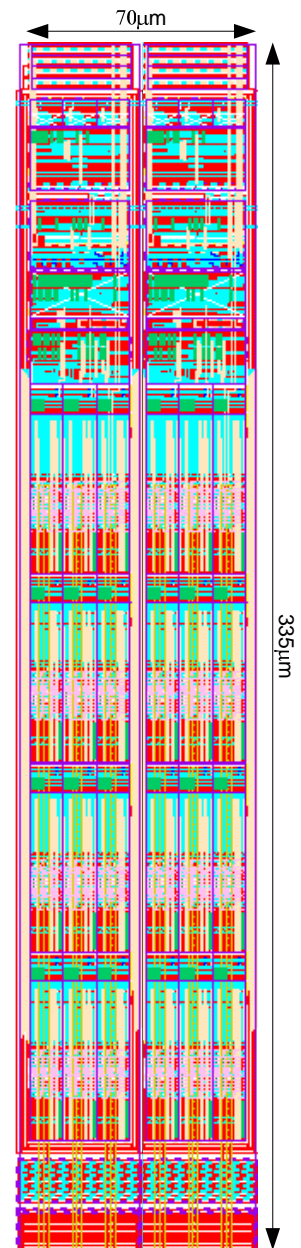
- SGMII interfaces
- General Purpose signaling
- High speed serial clocking

Product Description

LVDS (Low Voltage Differential Swing) is intended for point-to-point applications with a wide range of driving capability and scalable operating frequencies that is in line with the IEEE Std1596x for Scalable Coherent Interface (SCI). LVDS is based on a low voltage swing that results in minimum power dissipation and enables operating frequencies of up to 1GHz. The low voltage output is complemented with the negative (differential) signal, which provides adequate noise margin. Self-termination within the receiver and transmitter blocks reduces the need for external components and allows for proper termination at the die level, as close to the IO as possible. LVDS is dynamically calibrated to minimize reflections at the near and far ends, maintaining proper noise margin for high frequency operation.

An SoC Approach

LiquidIO is integrated along with LiquidMXS and LiquidCell to create highly integrated, efficient and comprehensive LiquidPHY subsystems. Readily integrated subsystems addresses many challenges and concerns associated with high speed interface designs.



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Complete Interface Solution

LVDS interface is part of a complete IO ring solution, that has been specifically designed for high performance, easy chip integration, and flexible system level requirements. This top-level integrated IO design approach eliminates redundant components, such as multiple bias generation and calibration circuits, and prevents power supply fragmentation, leading to smaller area, lower power utilization, and better ESD protection.

Because the IOs are designed to work together, test methodology has been greatly simplified as well. Parametric Nand trees, JTAG scan chains, and IDDQ testing can all be accomplished with minimal circuits and control lines.

Proprietary software available from Rapid Bridge may be used to help create correct-by-construction IO rings with mixed IO types and the proper number of support pads for a successful design.

IOCalculator software is a WEB based tool that allows end users to calculate power pad requirements based on packaging and system specifications for the supported standard within the Rapid Bridge LiquidIO family. RingComposer is used to compose the entire ring and the respective support circuits based on output of the IOCalculator. Test functions are composed and are correct by construction. System level ESD results in better than 2kV HBM, 200V MM and 500V CDM models. Combination of the above tool sets and metal programmability creates a complete liquid infrastructure allowing full flexibility and re-programmability.

For More Information . . .

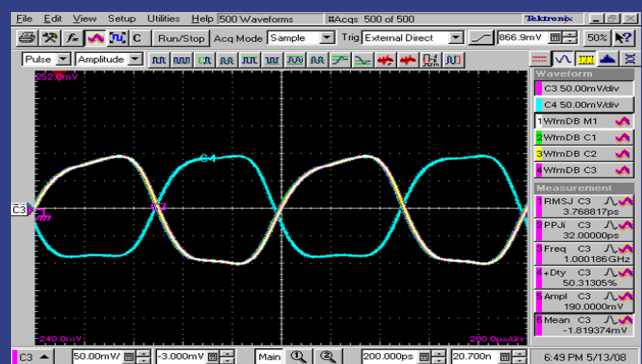
Regarding LiquidIP™, LiquidASIC™, or LiquidSoC™, please contact Rapid Bridge at:

sales-support@rapidbridge.com or visit www.rapidbridge.com

Performance Beyond the Past

LVDS is part of a harmonious system that is calibrated through a Central Calibration Unit across process and temperature. This yields significant improvement in rms and peak currents of up to 60%, reducing top level system requirements. Reduction in power is coupled with well matched and balanced output impedances that enhances signaling and performance throughout the system. The systematic implementation of the LiquidIO subsystem eliminates potential, difficult to address, interface interactions.

Silicon results of LVDS trceivers, 1.0GHz clock



Silicon results of LVDS trceivers, 1.2Gbps, PRBS2⁷

