

SB-107

SB-107 High Speed, Point to Point, Fiber Data Communication



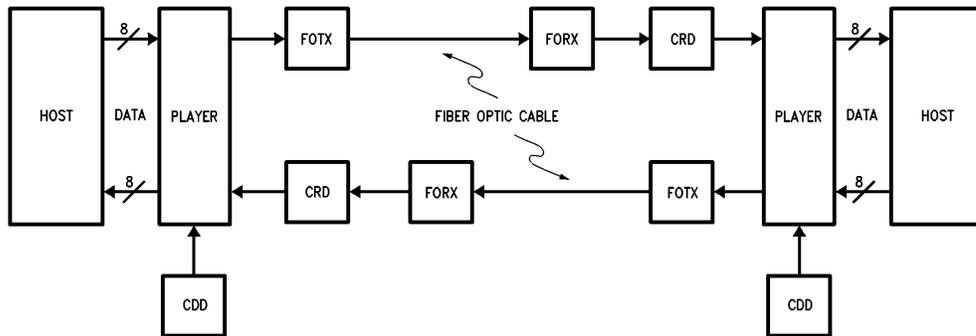
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High Speed, Point to Point, Fiber, Data Communication

National Semiconductor
System Brief 107
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High Speed, Point to Point, Fiber, Data Communication



Serial Point-to-Point Data Communications

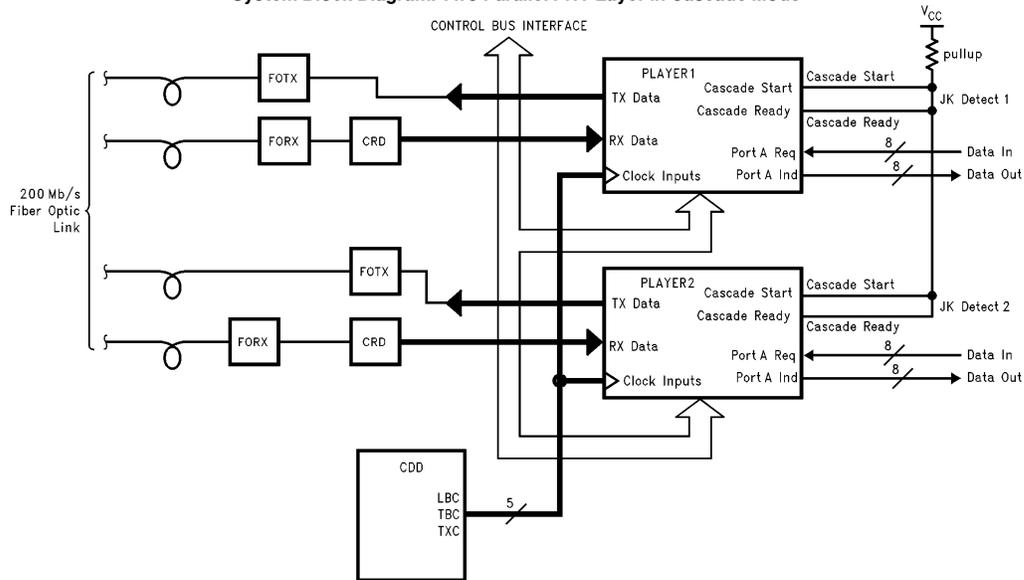
TL/F/10857-1

SYSTEM DESCRIPTION

Point-to-Point links are needed in any application where data throughput is the limiting factor to system performance. They can be installed between a CPU and disk controller to speed up information storage and retrieval times or the display capabilities of a graphics workstation can be combined with a supercomputer to achieve visualization for data intensive simulation. Point-to-Point links can also be used in a high-speed networking backbone where separate FDDI rings are connected with a fiber link to provide bridging with-

out loss of performance. Fiber optics can be used to extend SCSI or IPI transmissions. High bandwidth, greater than 100 Mb/s, point-to-point applications can use parallel FDDI PHY layers. High bandwidth point-to-point solutions prove parallel FDDI PHY layers to be cost effective, simple systems with minimal logic, and requiring only standard FDDI fiber optic transceivers (which operating at 125 MHz, are less expensive than a GHz laser).

System Block Diagram: Two Parallel PHY Layer in Cascade Mode



TL/F/10857-2

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DESIGN CHALLENGES

1. Need for high bandwidth, high throughput, and high reliability.
2. Need to interface with a variety of system applications and maintain security and reliability.

KEY COMPONENTS

1. Clock Distribution Device (CDD™) provides the clocks needed for the PLAYER™ device and the host if needed. It provides 125 MHz differential ECL signals from an inexpensive 12.5 MHz crystal.

2. Physical Layer Controller Device (PLAYER™) performs the encoding and serialization of transmitted data, and deserialization and decoding of received data. It is compatible with 4B/5B and NRZI transmission code, and supports both single and dual attach station configurations.

3. Clock Recovery Device (CRD™) extracts the clock signal from incoming data and passes a resynchronized equivalent and a recovered clock signal to the PLAYER Device.

4. Transceiver provides electrical to light conversions.

BILL OF MATERIAL

Function	Description	NSC	Other Mfg.	Qty
Decoding	PLAYER	DP83251/55		2
Clock Recovery	CRD	DP83231		2
Clock Distribution	CDD	DP83241		1
Transceiver	FOTX			2
	FORX		✓	2
AND Function	GAL	GAL16V8A		1-8

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