



LVDS Products

SiliconConnect™ in Detail



LVDS Introduction

→ Low Voltage Differential Signaling (LVDS)

- Point-to-Point Communication

→ Offers Superior Performance

- Single Ended (Typical TTL) Technology:



*Limited to ~250MHz
Due to Noise*

- LVDS Technology:

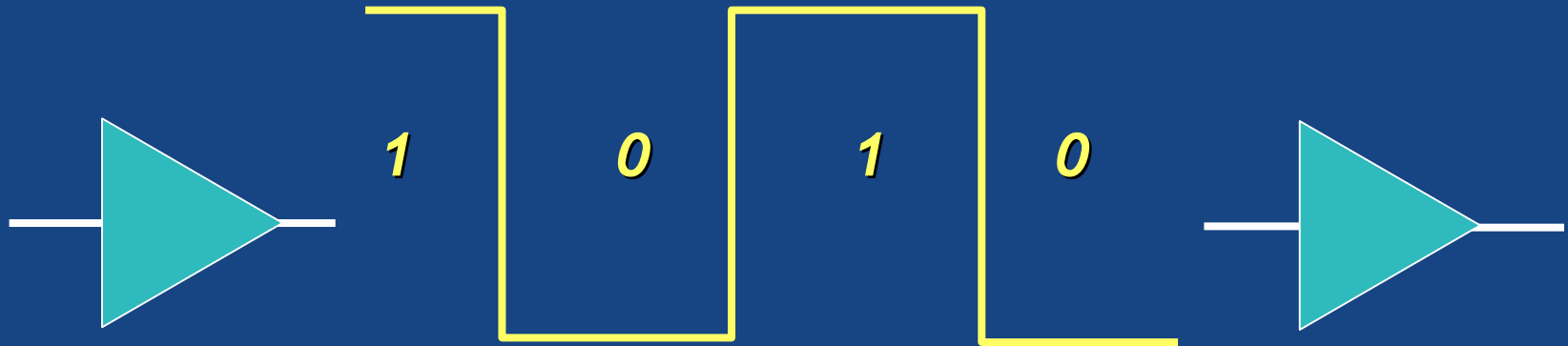


*Supports > 1Gbps
Differential I/O Eliminates
Noise & Power Barriers*

LVDS vs. Single Ended TTL

→ Standard Single Ended Signal

Single Signal
& Larger Voltage Swing



• Low Voltage Differential Signaling (LVDS)

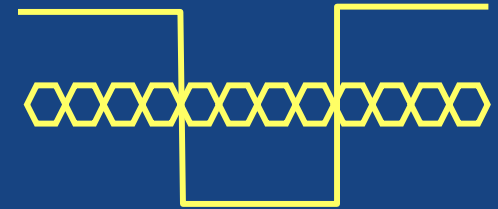


Two Signals & Smaller Voltage Swing

LVDS Technology

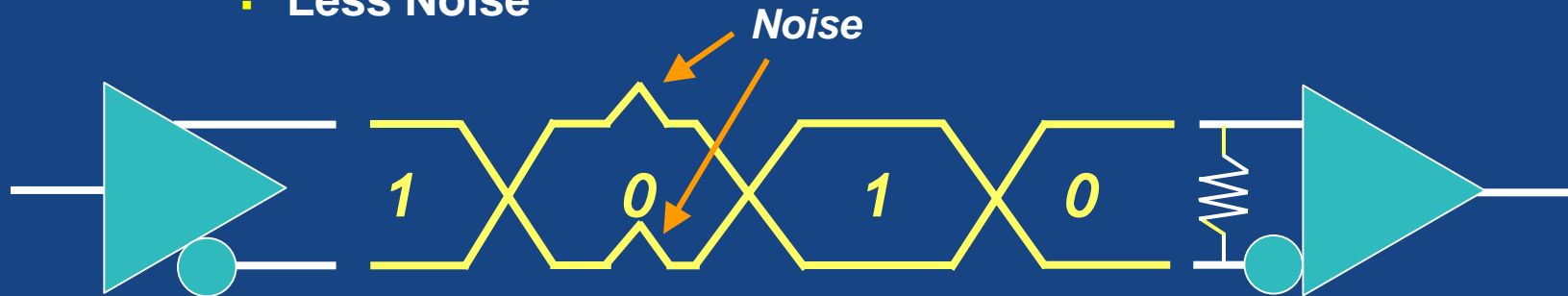
→ Lower Voltage Swing (only 350mV vs. 3V)....

- Allows Quicker Clocking
 - Standard Open Ended: 250Mbps
 - LVDS: >1Gbps



→ Differential Signals (Two Signals)...Low Noise!

- Receiver reads a 1 or 0 based on the delta of the two signals
- Noise impacts both lines and cancels out each other
 - Less Noise



LVDS Characteristics

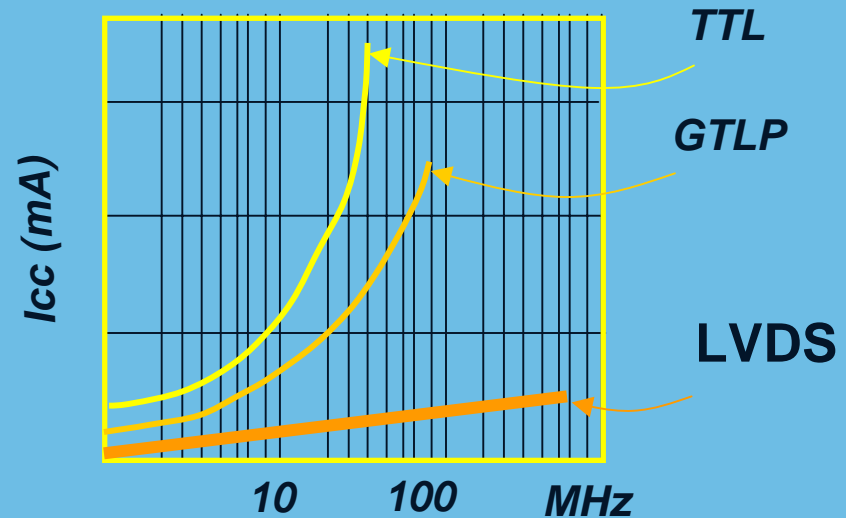
→ Excellent Signal Quality

- Fast Signals over long distances
- Solves EMI and power issues
- Single 100-Ohm termination resistor

→ Low Power

→ Low Overhead

- Protocol Independent – no software....USB, 1394



LVDS Applications

→ Typical applications include:

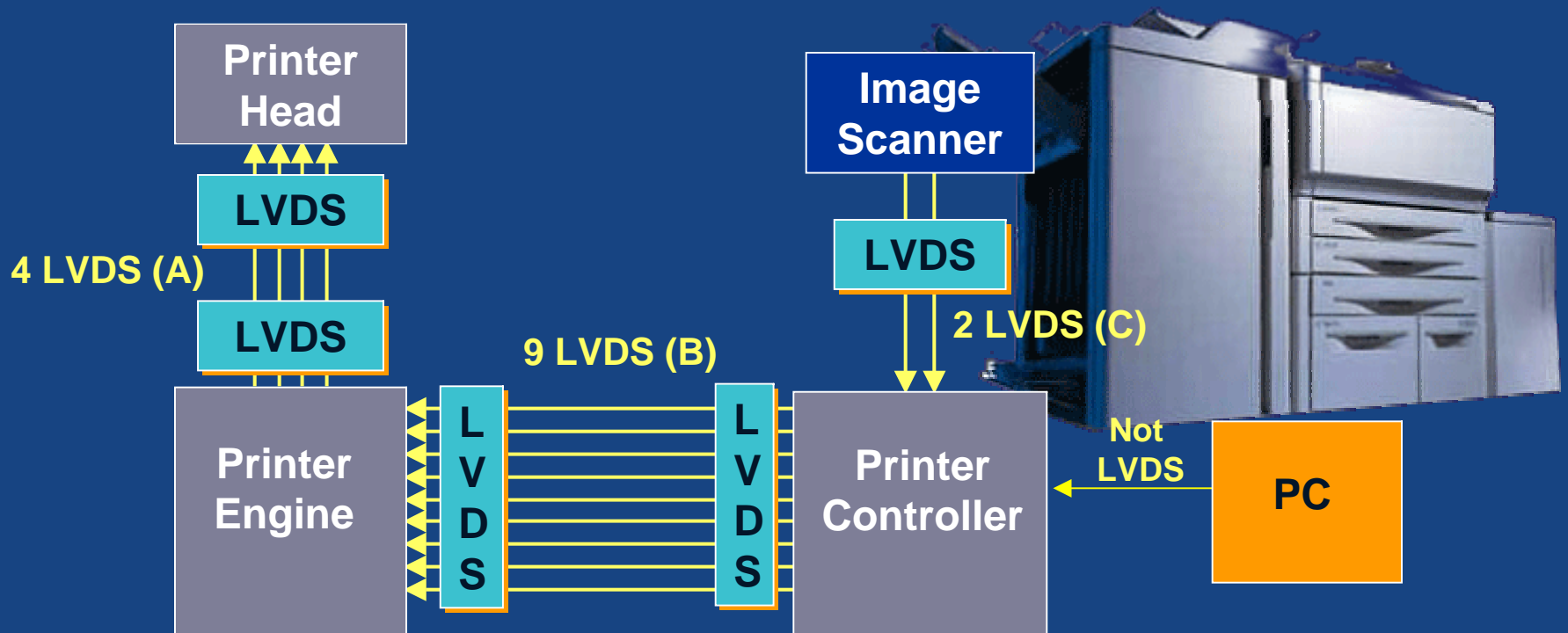
- High-speed printers
 - Laser printers
 - Multi-function printers
 - Large printers
- Telecom line cards
- Optical routers
- Optical switches
- Wireless base station
- Digital oscilloscopes
- Electronic surveillance systems



LVDS in MFP & Laser Printer

→ Multifunction Printers & Laser Printers

- LVDS is used between Printer Controller Board & Engine; Printer Engine & Printer Head; & Image Scanner & Printer Controller



LVDS in Ethernet Switches

→ Overview:

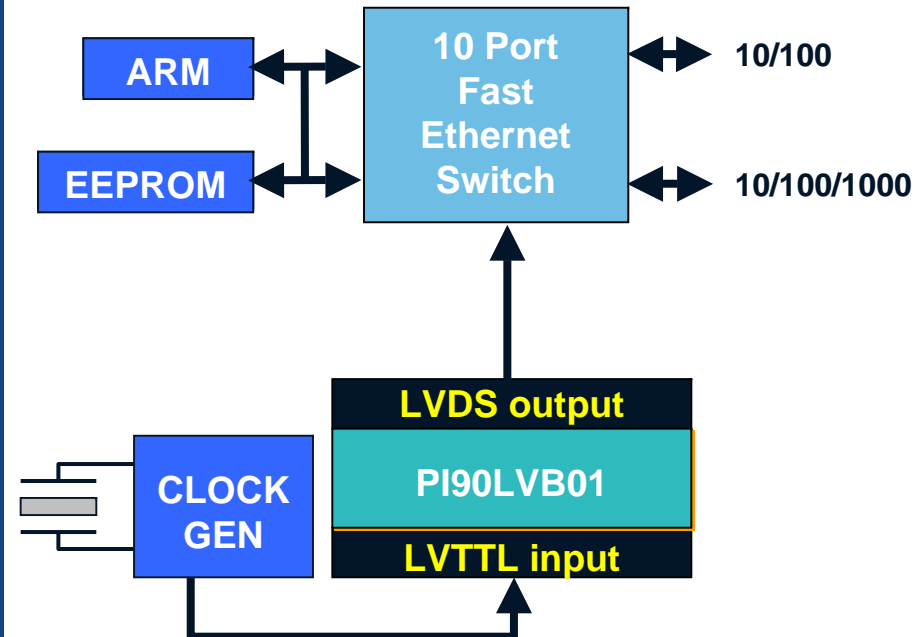
- Ethernet Switches are a fundamental part of most networks, making it possible for users to connect to the vast internet

→ Pericom Solution:

- The PI90LVB01 may be used to translate an LVTTTL/CMOS clock signal from an oscillator, providing a clock source for many Ethernet switch devices

Application of the Week

Week 110 PI90LVB01



LVDS in High-Speed Oscilloscopes

→ Overview:

- Applications today are running faster and faster, requiring faster oscilloscopes to help test and debug

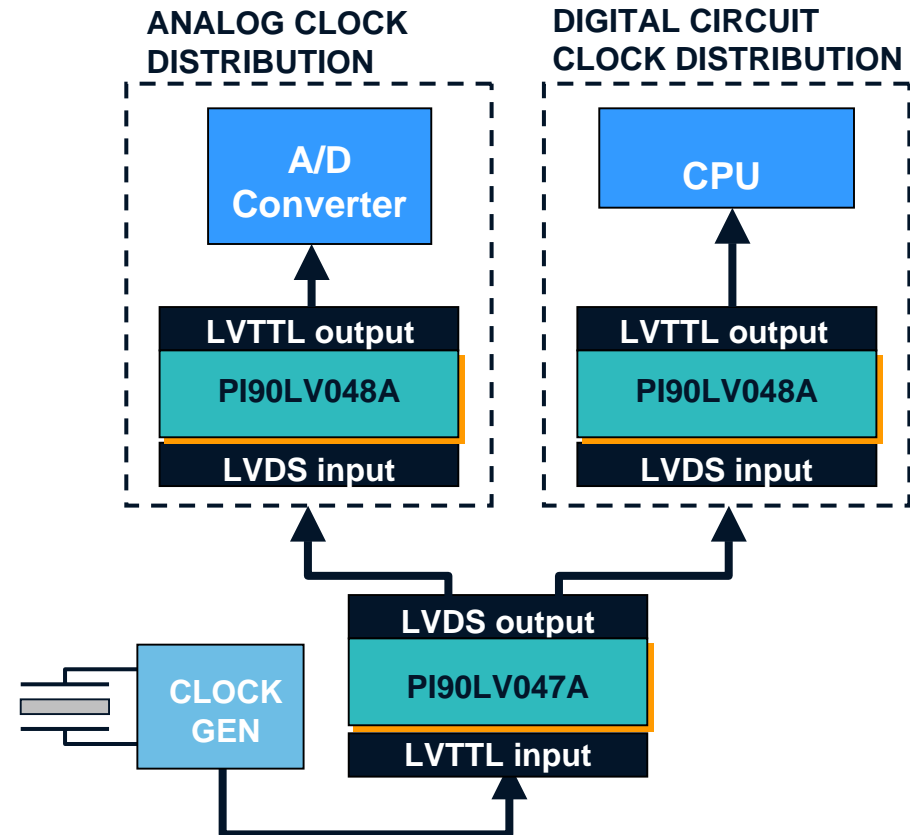
→ Pericom Solution:

- The PI90LV047A & PI90LV048A can help distribute the clock within these oscilloscopes, providing faster speed and better signal integrity



Application of the Week

Week 53 PI90LV047A/048A



LVDS in 3G Base Station

→ Overview:

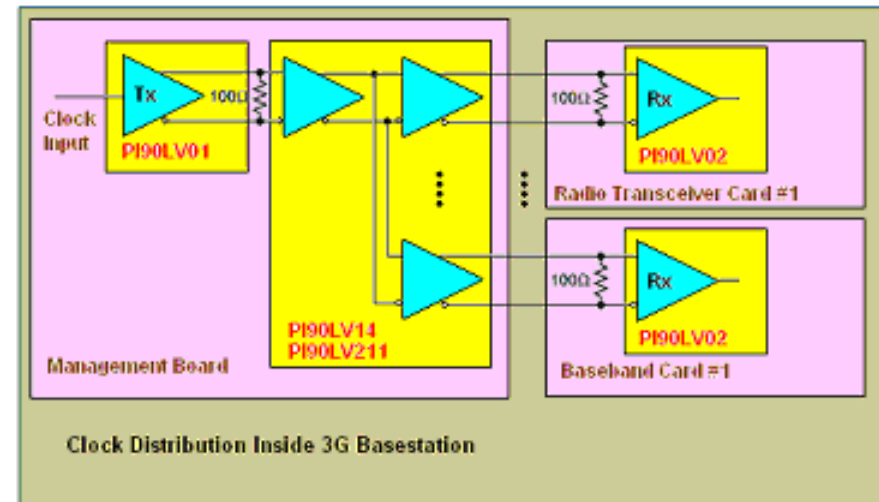
- 3G communications promise media-rich applications and high-speed internet access on cell phones.

→ Pericom Solution:

- The PI90LV211, PI90LV01, & PI90LV02 may be used to distribute the clocking needs in the 3G base station, avoiding interfering with the many PLL's and Analog-to-Digital converters

Application of the Week

Week 65 PI90LV211, 01, & 02



3G BASE STATION CLOCK DISTRIBUTION

LVDS Product Overview

→ Drivers, Receivers, Transceivers, Crosspoints, & Clock/Data Distribution

- **Characteristics:**

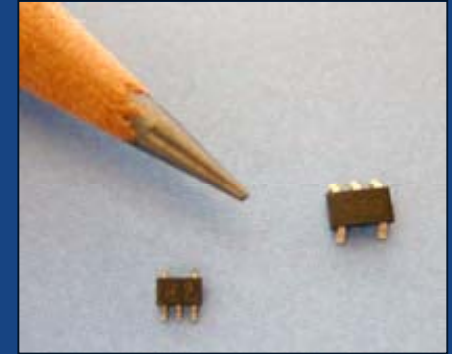
- **High Performance:** 660 Mbps
- **Supply** 3.3 Volts
- **Drive:** 4mA-8mA
- **Packages:** 6 to 64-pins
- **Failsafe Circuit**
- **Standard & Bus Drive**
- **Integrated Termination**
- **ESD 9KV**



SOTiny™ LVDS

→ 1-Bit LVDS line driver

- Standard - PI90LV01
- Bus LVDS - PI90LVB01
- Package: 5-Pin space saving SOT-23 (T)

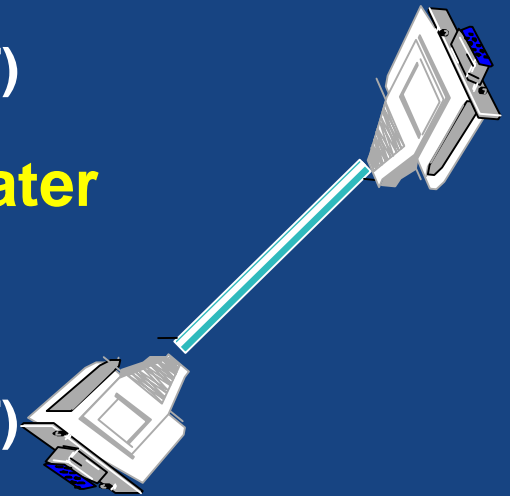


→ 1-Bit LVDS line receiver

- Standard - PI90LV02
- Package: 5-Pin space saving SOT-23 (T)

→ 1-Bit LVDS (or LVPECL) to LVDS repeater

- Standard - PI90LV03
- Bus LVDS - PI90LVB03
- Package: 6-Pin space saving SOT-23 (T)



LVDS Drivers/Receivers

→ Drivers/Receivers

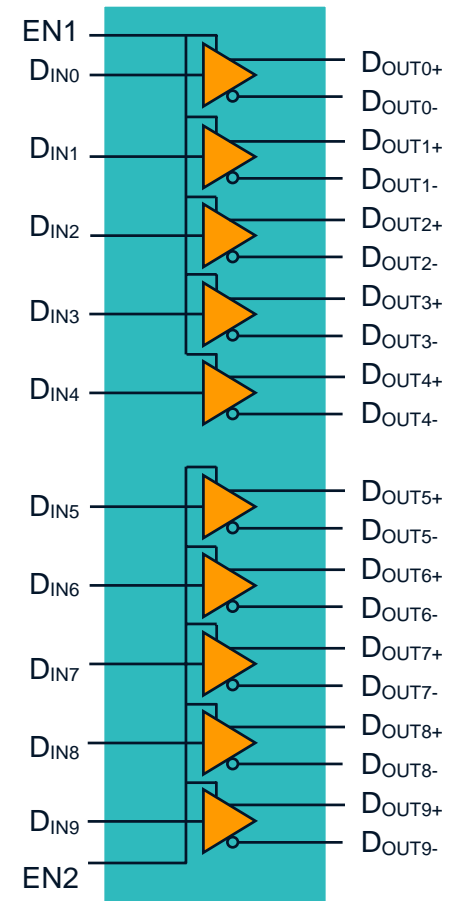
- 1, 2, 4, 10, & 16 Wide Channels
- De-Skew Logic Version
- Designed for signaling rates up to 660 Mbps

→ 10-Bit Wide Drivers

- Flow through package design
- Standard drive PI90LV3811
 - Hi-drive PI90LVB3811
- Bus-pin ESD protection exceeds 10kV
- LVTTTL logic inputs are 5V tolerant
- Package: 48-Pin TSSOP (A)

→ 16-Bit Wide Drivers

- Standard drive PI90LV387, hi-drive PI90LVB387
- Package 64-Pin TSSOP (A)



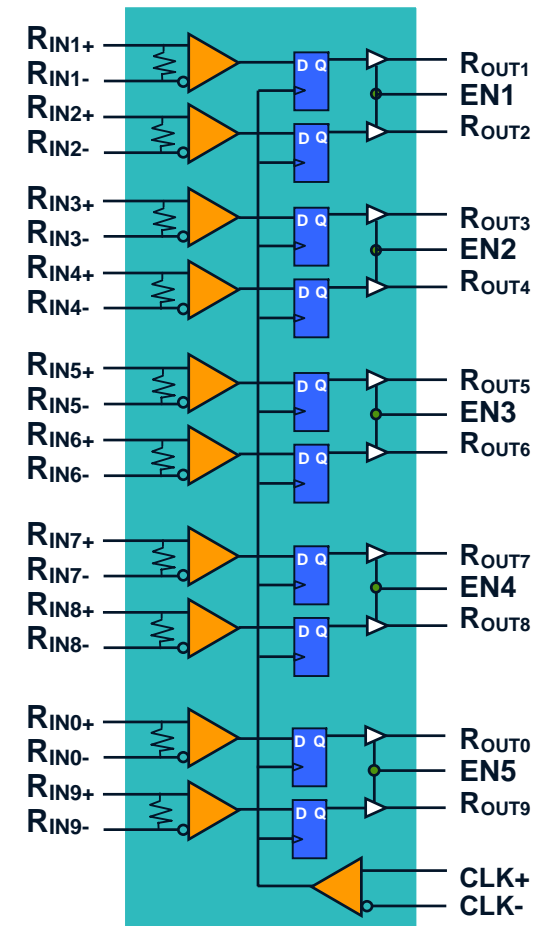
LVDS Wide Receivers

→ 10-Bit LVDS line receivers

- Flow through package design
- Registered - PI90LVR3810
 - Signal de-skewing function
- Standard - PI90LV3810
- Package: 48-Pin TSSOP (A)

→ 16-Bit Wide Receiver

- Standard without termination PI90LV386
 - With 110-Ohm termination PI90LVT386
- Drop-in replacement for TI
- Package 64-Pin TSSOP (A)



LVDS Drivers

PERICOM	National	TI	Description
Drivers			
PI90LV017A	DS90LV017		Single LVDS Driver
PI90LV01	DS90LV011A	SN65LVDS1	Single LVDS Driver (SOT23)
PI90LVB01			Single LVDS Driver w/High Drive (SOT23)
PI90LV027A	DS90LV027A		Dual LVDS Driver
PI90LV031A	DS90LV031A	SN65LVDS31	Quad LVDS Driver (EN)
PI90LV047A	DS90LV047	SN65LVDS47	Quad LVDS Line Driver
PI90LVB047A			Quad LVDS Line Driver w/High Drive
PI90LV387		SN65LVDS387	16-Wide Drivers
PI90LVB387			16-Wide Drivers with High drive
PI90LV3811			10-Wide Drivers
PI90LVB3811			10-Wide Drivers with High drive

LVDS Receivers

PERICOM	National	TI	Description
Receivers			
PI90LV02	DS90LV012A	SN65LVDS2	Single LVDS Receiver (SOT23)
PI90LV018A	DS90LV018A		Single LVDS Receiver
PI90LV028A	DS90LV028A		Dual LVDS Receiver
PI90LV9637		SN65LVDS9637B	Dual LVDS Line Receiver
PI90LV032A	DS90LV032A	SN65LVDS32	Quad LVDS Receiver (EN)
PI90LV048A	DS90LV048A	SN65LVDS48A	Quad LVDS Line Receiver
PI90LV386		SN65LVDS386	16-Wide Receivers
PI90LV3810			10-Wide Receivers
PI90LVR3810			10-Wide Receiver w/de-skew logic

Crosspoint/Repeater

→ PI90LV022

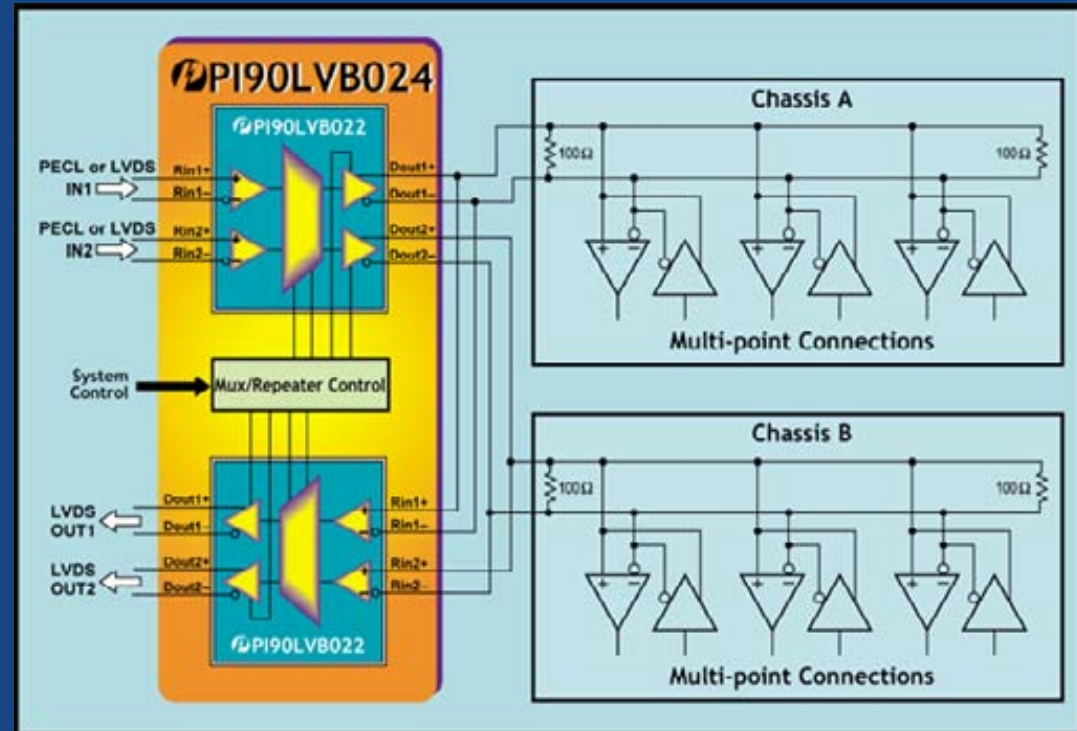
- 2x2 LVDS Crosspoint/Repeater

→ PI90LV044

- Dual 2x2 LVDS Crosspoint/Repeater

→ Typical Application

- Switching between 2 chassis
- Redundant Design



Typical Application showing switching between two Chassis

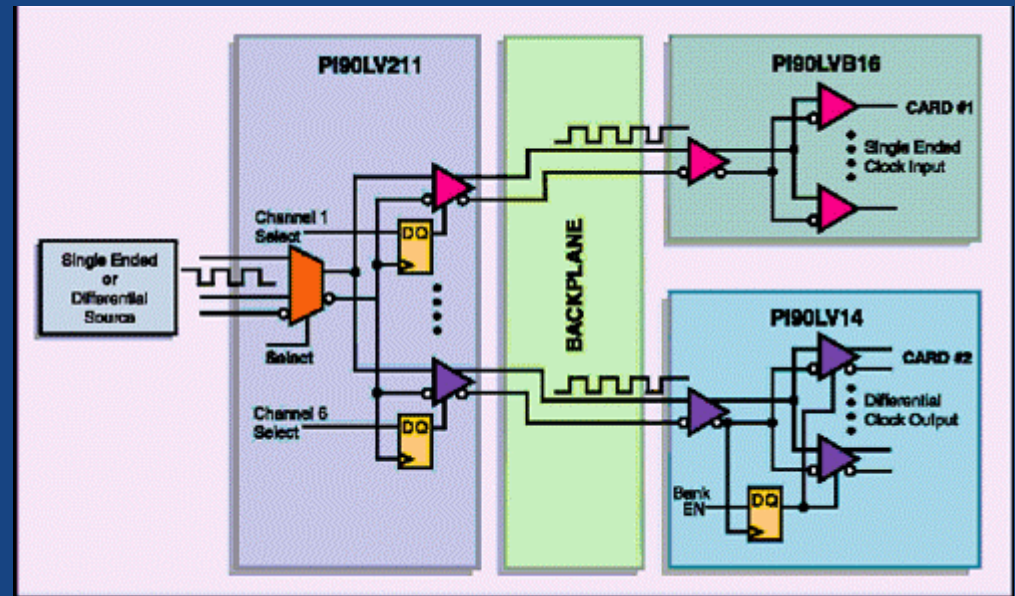
Clock/Data Distribution

→ Clock/Data Distribution

- Single Ended & Differential Input/Output

→ Example:

- Distributing a system clock across a backplane to multiple line cards
- Clock & Data distribution between legacy TTL & advance LVDS boards



Transceivers, Crosspoints, & Clocks

PERICOM	National	TI	Description
Transceivers - Standard Drivers			
PI90LV179		SN65LVDS179	Single Transceiver
PI90LV180		SN65LVDS180	Single Transceiver (EN)
PI90LV050		SN65LVDS050	Dual Transceiver (Dual EN)
PI90LV051		SN65LVDS051	Dual Transceiver
PI90LV019	DS90LV019		Single Transceiver
Transceivers - Bus Drivers			
PI90LVB179		SN65LVDM179	Bus Single Transceiver
PI90LVB180		SN65LVDM180	Bus Single Transceiver (EN)
PI90LVB050		SN65LVDM050	Bus Dual Transceiver (Dual EN)
PI90LVB051		SN65LVDM051	Bus Dual Transceiver (Single EN)
PI90LVB010	DS92LV010	SN65LVDS176*	Bus Single Transceiver
Crosspoint			
PI90LV022**		SN65LVDS22	2x2 Crosspoint
PI90LV024			Dual 2x2 Crosspoint (Bi direction)
PI90LV044			Dual 2x2 Crosspoint (Uni direction)
PI90LVB022		SN65LVDM22	2x2 Crosspoint
PI90LVB024			Dual 2x2 Crosspoint (Bi direction)
PI90LVB044			Dual 2x2 Crosspoint (Uni direction)
PI90LV03	DS90LV001***		Single Repeater
Clock & Data Distribution			
PI90LV211			1:6 Differential Clock/Data Distribution
PI90LV14			1:5 Differential Clock/Data Distribution
PI90LVB16	DS92CK16		1:6 Differential to TTL Clock/Data Distribution

*TI's SN65LVDS176 is a similar function but with a different pinout

**National's DS90CP22 and Maxim's Max9152, similar function but different pinout from Pericom and TI

***National's DS90LV001 is a similar function but different pinout



Thank You
End of Presentation

