

Application: 48-Port Stackable Gigabit Switch Pericom Devices: PI6Cxxx LVTTL/LVCMOS/LVPECL Clock Buffers and SEL383 (LVPECL)/ S1613A SaRonix Oscillators

Overview

Enterprise network traffic volumes are accelerating quickly. The data traffic is moving from traditional voice packet to streaming media or interactive conference. As a result, organizations are seeking faster LAN connections to fulfill this bandwidth “hunger” and have subsequently introduced multi gigabit-speed switches.

The idea for “stack-ability” will allow enterprises to expand the connection bandwidth depending on business volume.

System request

The equipment makers are required to quickly build high throughput switches which need to be scalable to meet various-sized and growing businesses.

System designers must be able to setup their switches in configurations that fit their target customer and applications. Some major performance driving capabilities requested for these Ethernet switches are:

1. High throughput backplane
2. Quality of Service (QoS) enabling
3. Scalability for future expansion
4. High reliability and stability
5. Time to market, time to volume

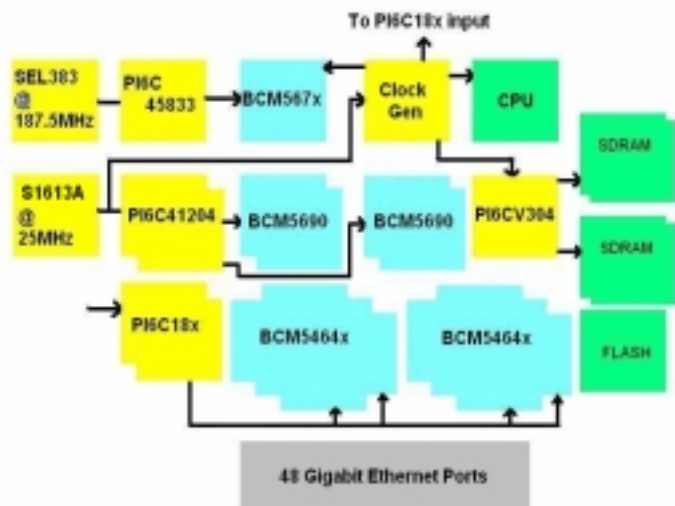


Fig 1. Typical Broadcom solution
48 port Multi-Gigabit Ethernet Switch

Pericom Solution

Pericom’s complete performance proven timing products will enable reliability and performance uniformity for the Multi-gigabit switch system. With many years in IC clock product design technology, as well as our state-of-the-art SaRonix oscillators, customers are able to find all their timing needs under one roof.

The Timing Tree Description

The Clock ICs:

- As a concern for performance improvement, the familiar 156.25MHz is being upgraded to 187.5MHz for the switch fabric or backplane (BCM567x). **PI6C48533** is a high performance Differential to LVPECL distribution clock buffer.
- For 25MHz LVTTL/LVCMOS clock signal distribution, **PI6C41204** is being used for translating the signal to LVPECL and distributing it to the switch IC (BCM5690), mainly due to minimized the EMI emissions.
- Each Gigabit Ethernet Transceiver (BCM5464x) will require a 25MHz clock signal synchronized for higher throughput, **PI6C18x** series with I2C interface will allow easy expansion with very low output skew.
- PC-133 SDRAM is still the main memory type runner for the data communication application; **PI6CV304** can easily buffer the 133MHz memory clock.
- For clocks signal synchronization, Pericom is collecting information for a production clock generator to fulfill the system request. It will provide 25/33/133/189MHz clocks signal.

The Oscillators:

- Low Jitter is a primary request for **SEL383** to be able to get high performance, high stability design for this 187MHz frequency.
- Stable oscillator **S1613A** will allow a stable 25MHz “heart beat” for the switch system.

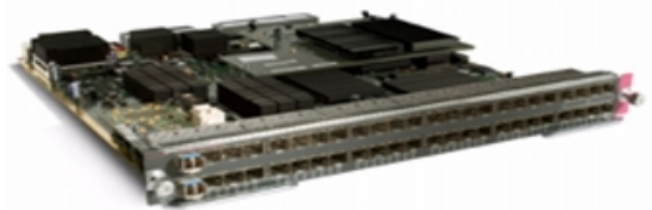


Fig 2. 48-Port RJ-45 10/100/1000 Ethernet Interface Module

Key Features & Specifications

- PI6CV304
 - Maximum Frequency 160MHz
 - Maximum Output Skew 150ps
- PI6C41204
 - Maximum Frequency 266MHz
 - Low Output Skew 30ps
 - Tr/Tf 400ps Max, Output load dependent
 - Jitter proof enhanced version PI6C41204A
- PI6C18x
 - Maximum Frequency 140MHz
 - Scalable up to 18 outputs
 - Maximum Output Skew 250ps
- PI6C48533
 - Maximum Frequency 650MHz
 - Low output skew 50ps
 - Jitter free
- SEL383
 - LVPECL output
 - Phase Jitter 1ps RMS Max.
 - Package size 5x7mm
- S1613A
 - LVCMOS/LVTTL output
 - Phase Jitter 1.5ps RMS Max.

Key Benefits

- Complete clock and timing solution
- High Availability
- High Performance

Pericom Advantage over Competitor

Pericom	Competitor	Key Advantage
PI6CV304	TI CDCV304	160MHz Max
PI6C41204A	ICS ICS8535	Lower Noise
PI6C18x	-	I2C interface
PI6C48533	ICS ICS8533	Lower Noise
SEL383	Pletronix	Lower Jitter
S1613A	Others	Low Phase noise

Additional Information

- Website
 - Datasheets, IBIS models, Package Data
<http://www.pericom.com/timing/>
 - Order Literature Online

Contact Information

Please contact your local Pericom Sales Representative or franchised distributor. Contact list provided on the web:
<http://www.pericom.com/contact/>