



Broadcom Reference Clocks

Why Low Jitter ?

Clock jitter is deviation of a clock edge from its ideal location. With the increasing system data rates, and ASICs are integrating more and more functions, timing jitter has become critical in system design, as in some instances the system performance limit is determined by the system timing margin. MtronPTI products offer extremely low jitter performance and we specify MAX Jitter.

(For more information about Jitter, please visit : <http://www.mtronpti.com/sites/default/files/files/oscillator-jitter-basics.pdf>)

MtronPTI Oscillator Products provides , Industry leading performance and complements Ethernet Switch design using Broadcom 10G/40G/100G Ethernet PHY/Gearbox and Switch products.

Key Features:

- ◇ Output Frequency - 100MHz, 125MHz, 156.25MHz
- ◇ LVDS/LVPECL
- ◇ RMS Jitter <100fs
- ◇ 7x5mm or 5x3,2mm Ceramic Package
- ◇ Stability 20ppm, 25ppm or 50ppm
- ◇ Operating temperature -40 to +85 Degree

IEEE1588 / Synchronous Ethernet Solutions:

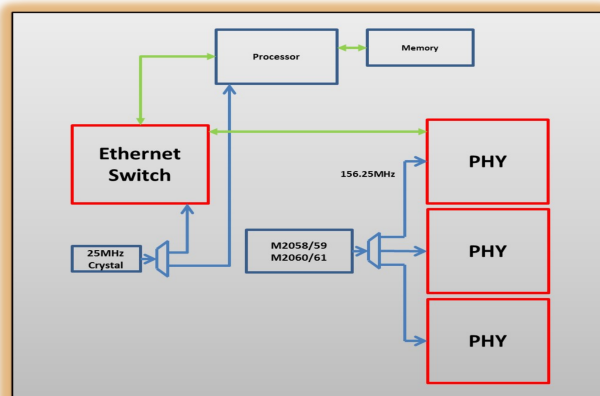
XO5184—Stratum 3E OCXO

- ◇ Fully IEEE1588 qualified
- ◇ Frequency Range : 10-25MHz
- ◇ Frequency Stability : < 10 ppb pk-to-pk.
- ◇ <5 x 10⁻¹² Per Second Allan Deviation
- ◇ < ±1 ppm overall in 20 years
- ◇ 1.5 ppb/g typical G-sensitivity

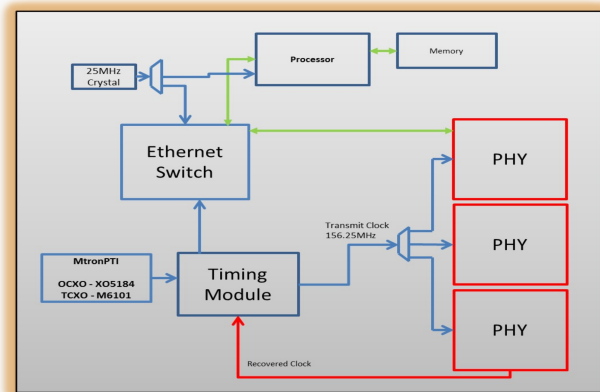
M9200—Quad output Oscillator

- ◇ Single chip with 4 simultaneous outputs
- ◇ No external components require other than power supply – plug & play!
- ◇ 120fs MAX RMS Jitter for each output
- ◇ 9 x 14mm package

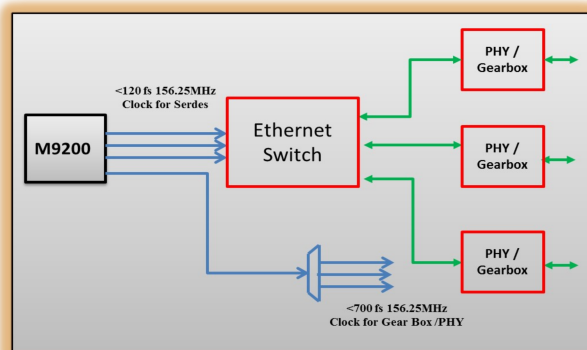
Ethernet Switch Block Diagram



IEEE1588 / SyncE Block Diagram



Top of the Rack Design using M9200



Suggested MtronPTI reference Clocks for Broadcom Devices

Part#	Description	Web Link
M205824BPN156.2500MHz	Highest performance- less than 100fs, 3.3V, +/- 50ppm, -40/+85, 7xmm ceramic package,	M2058/M2059 Series
M206024BPN156.2500MHz	Highest performance- less than 100fs, 3.3V, +/- 50ppm, -40/+85, 5x3.2 mm ceramic package, less than 100fs RMS Jitter	M2060/M2061 Series

BROADCOM Part Numbers

100G PHY/ Transceiver	Description
BCM5221	Single-Port RMII 10/100BASE-TX Transceiver
BCM5248	10/100BASE-TX/FX Transceiver
BCM84756	10-GbE Quad SFI-XFI PHY with IEEE MACsec/1588
BCM84754	Quad-Channel 10-GbE SFI-to-XFI PHY with EDC
BCM84780	Octal-Port 10-GbE SFI-XFI PHY with IEEE 1588
BCM84753	Quad-Channel 10-GbE SFI-to-XFI PHY with EDC
BCM84784	Dual 40-GbE/Octal 10-GbE QSFP+ XLPPI-to-XLAUI PHY
BCM84758	10-GbE Quad SFI-XFI PHY with IEEE 1588
BCM8124	Low-Jitter 10-Gbps 16:1 Multiplexer with Clock Generation and MSA Features
BCM8125	10-Gbps 1:16 Demultiplexer with CDR and Limiting Amplifier
BCM8128	Multirate 10-Gbps SONET/SDH/10GbE/FEC Transmitter
BCM8129	Multirate 10-Gbps SONET/SDH/10GbE/FEC Demultiplexer Receiver
BCM93138	Advanced PHY Transmitter/Receiver Evaluation System
BCM5388	8-GbE Port Switch with Integrated GbE Copper PHY
BCM84748	Quad-Channel 10-GbE SFI-to-XAUI LAN/WAN PHY with 1588
BCM84540	4x10G/1x40G LAN/WAN/OTN Framer/Mapper/PHY With EDC
BCM84512	12x10G/3x40G LAN/WAN/OTN Framer/Mapper/PHY With EDC
BCM84520	Dual 10G LAN/WAN/OTN Framer/Mapper/PHY with EDC
BCM8752	Dual-Channel 10-Gigabit Ethernet SFI-to-XFI PHY with EDC

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M206024BPN156.2500MHz	Highest performance- less than 100fs, 3.3V, +/- 50ppm, -40/+85, 5x3.2 mm ceramic package, less than 100fs RMS Jitter	M2060/M2061 Series

BROADCOM Part Numbers

BCM84790	100-GbE/OTN VSR28 to CAUI Gearbox
BCM84793	100-GbE/OTN VSR28 to CAUI Gearbox
BCM8155	Multirate Low-Power 10-GbE RZ/NRZ/Duo-Binary Transceiver with 10G Clock.
BCM8157	Multirate Low-Power 10-GbE XFI to SFI-4.1 Transceiver (8.5-Gbps to 11.35-Gbps)
BCM8727	Dual-Channel 10-GbE SFI-to-XAUI™ Transceiver with EDC
BCM8724	Dual 10-Gigabit Ethernet XFI to XAUI™ Transceiver
BCM8725	Dual 10-Gigabit Ethernet XFI to XAUI™ LAN/WAN Transceiver
BCM84834	Quad-Port 10GBASE-T Transceiver with XAUI, 27mm BGA
BCM84833	Dual-Port 10GBASE-T Transceiver with XAUI & XFI, 25mm BGA
BCM8754	Quad-Channel 10-Gigabit Ethernet SFI-to-XFI PHY with EDC
BCM56860	High Capacity StrataXGS® Trident-II+ Ethernet Switch Series
BCM84784	Dual 40-GbE/Octal 10-GbE QSFP+ XLPPI-to-XLAUI PHY
BCM84328	Dual 40-GbE/Octal 10-GbE QSFP+ XLPPI-to-XLAUI PHY
BCM82251	Single 100GbE/Dual 40GbE PHY drives 40G/50G Serial PAM4
BCM82328	Dual 40GbE/Octal 10GbE QSFP+ XLPPI-to-XLAUI PHY
BCM82381	Dual 100GbE CAUI4-to-CAUI4 PHY/Octal 25G Retimer

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BROADCOM Part Numbers

Part#	Description	Web Link
M9200	Quad output ultra-low jitter Oscillator, 11X9mm package	M9200 Series
100G Switches		
BCM56850 Series	High-Capacity StrataXGS® Trident II Ethernet Switch Series	
BCM56840 Series	High-Capacity StrataXGS® Trident Ethernet Switch Series with Integrated 10G Serial PHY	
BCM56960 Series	High-Density 25/100 Gigabit Ethernet StrataXGS® Tomahawk Ethernet Switch Series	
BCM56860	High Capacity StrataXGS® Trident-II+ Ethernet Switch Series	