



# Intel® LXT16598L and LXT16598H

622MHz/809MHz Generic Phase Locked Loop (PLL) Clock Synthesizers

## Product Description

In today's price-sensitive communications environment, network equipment designers are seeking flexible, high-performance integrated circuitries for cost-effective timing applications in a wide variety of optical-network designs.

The Intel® LXT16598L/H is a generic Phase Locked Loop (PLL) clock synthesizer in two versions to support different frequency ranges:

- The Intel LXT16598L on-board Voltage Controlled Oscillator (VCO) supports the frequency range of 622MHz to 675MHz.
- The Intel LXT16598H on-board VCO supports the frequency range of 675MHz to 809MHz.

The LXT16598L/H is used in SDH STM 16/64 and SONET OC-48/192 telecommunications systems, Optical Transport Network (OTN) systems with Forward Error Correction (FEC), Gigabit Ethernet systems, and fiber-optic test equipment. The device features a Phase Frequency Comparator (PFC), LC-VCO, and has three separate, programmable differential clock outputs in the range between 1/1 and 1/64 of the reference clock.

The system reference clock may range from 9MHz to 809MHz, and can select up to three external VCXO/VCSOs in addition to the on-board VCO. The polarity of VCXO/VCSO driver outputs can be changed to support VCXO/VCSOs, with either positive or negative gain constants.

This two-chip solution can be used to support up to 30 percent overhead for 10Gbps FEC applications. The devices are housed in a



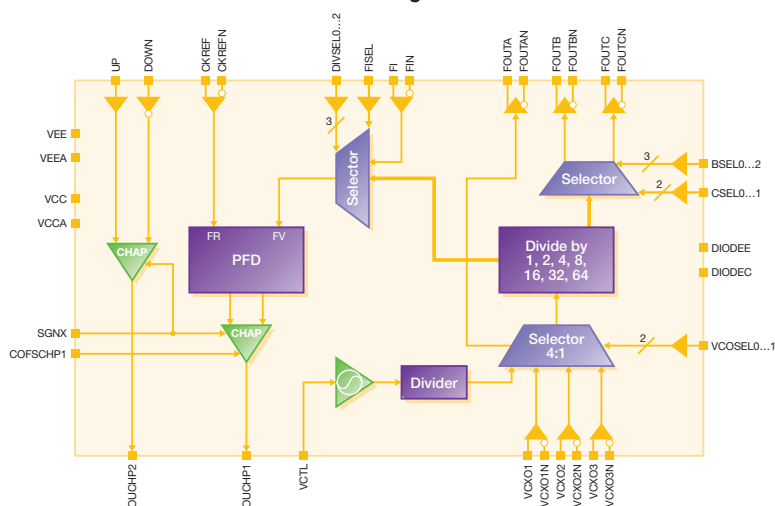
48-pin QFN 7x7mm low form factor package, and are operated from a single +3.3V power supply with a low power dissipation, less than 0.5W.

With the Intel LXT16598L/H, customers can focus resources on features that differentiate their products from the competition instead of having to design their own clock architectures or use more costly modules.

## Key Applications

- SDH STM 16/64, SONET OC-48/192 FEC or OTN applications—can be used as a gearbox for synchronous or asynchronous clocking operation with FEC devices from Intel or third parties
- SDH STM 64, SONET OC-192 Metro/Long-Haul Modules—can be used for clock synthesis in MSA modules
- SDH STM 16/64, SONET OC-48/192, or GbE applications—can be used for jitter cleanup, where the incoming system reference clock is cleaned against an external VCXO

Block Diagram



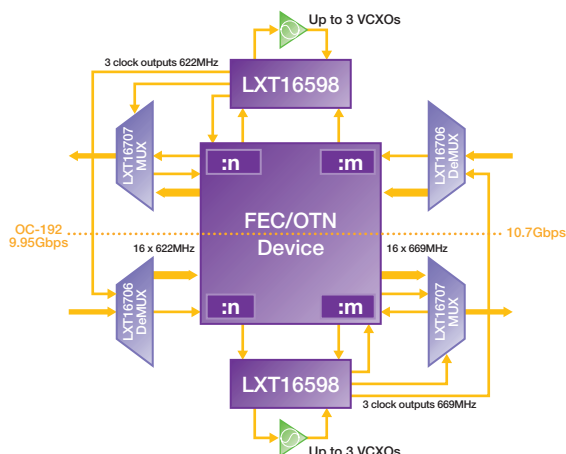
## Features

- On-board VCO with support for up to 809MHz for applications demanding a high Q
- Support for three optional VCXO/VCXOs in a single chip solution
- Programmable output rates and scalable output bit rates with these division ratios of input: /1, /2, /4, /8, /16, /32, and /64
- Supports ITU-T G.709 and G.975 to be used in FEC and Digital Wrapping applications
- 48-pin QFN (7x7mm) package
- Silicon bipolar process technology

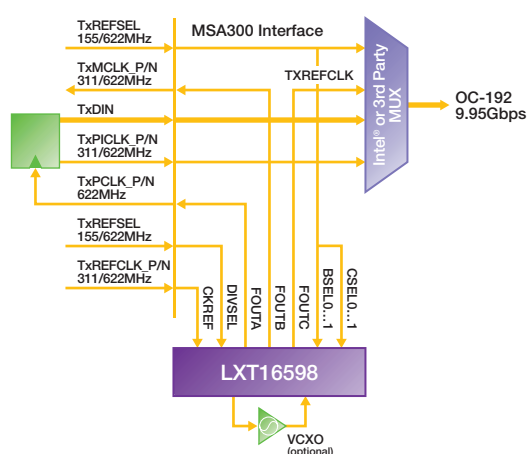
## Benefits

- Single chip solution helps reduce board space
- Provides seamless gear-box implementation with Intel® FEC devices and ensures seamless support for multiple line speeds without using external components
- Delivers flexibility and reusability across multiple designs while reducing design and production costs
- Single chip solution offers a high coding gain for advanced OTN system solutions
- Small physical form factor simplifies design and helps reduce board space
- Delivers well-proven, high-performance technology and reliable, high-volume manufacturing

### Gear-Box Application



### Clock Synthesis



## Support Collateral

Item	Description	Order Number
LXT16598	Datasheet for LXT16598L/H	251064
LXD90598	Evaluation Board Datasheet	251065

## Intel Access

Developer's Site	<a href="http://developer.intel.com">http://developer.intel.com</a>
Networking Components Home Page	<a href="http://developer.intel.com/design/network">http://developer.intel.com/design/network</a>
Other Intel Support: Intel Literature Center	<a href="http://developer.intel.com/design/litcenter">http://developer.intel.com/design/litcenter</a> (800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
General Information Hotline	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

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