# ZL30252 and ZL30253
Any-to-Any Frequency, High-Performance Clock Multipliers and Jitter Attenuators

The ZL30252 and ZL30253 Any-to-Any Clock Multiplier and Jitter Attenuator devices simplify board design by rate-converting frequencies from a reference input clock and performing optional jitter attenuation, eliminating expensive external jitter attenuator devices. These devices provide up to six low-jitter output clocks from <1 Hz to 1035 MHz. With a small package and best-in-class jitter performance, these devices target clock multiplication applications with tough jitter budgets and tight board real estate restrictions.

The ZL30252 and ZL30253 devices reduce BOM cost and simplify design by combining high-performance clock multipliers with on-chip jitter attenuation. When used together with Microsemi Fanout Buffers, the complete timing solution improves board performance and reliability.
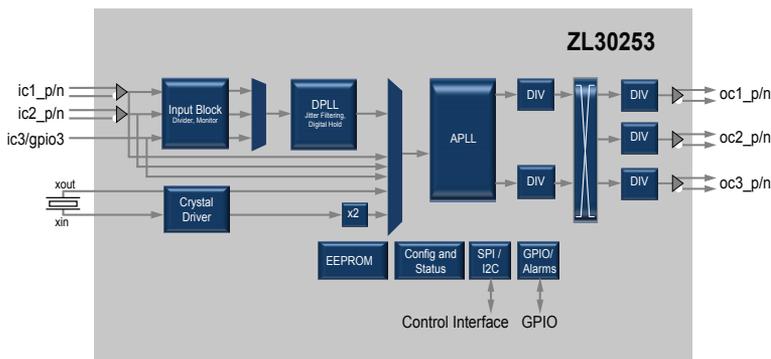
Applications

- Clock generation for wireless base stations, wireless backhaul, wired infrastructure, SONET/SDH, GE, 10G/40G/100G Ethernet, optical, storage, and broadcast video applications.
- Clocks for NPUs, FPGAs, CDRs, high-speed ADC and DACs, Ethernet switches and PHYs.

Availability and Support

- Microsemi Clock Management products are in volume production. To learn more about Microsemi's clock products, visit www.microsemi.com/products/timing-and-synchronization/timing-and-synchronization. Full information, including complete data sheets and design manuals, is available to registered MyMicrosemi customers. To register for a MyMicrosemi customers. To register for a MyMicrosemi account, visit www.microsemi.com/create-an-account.

Key Features

Industry-Leading Output Jitter: 250fs

- Ideal for 10G/40G/100G line card applications

Low-Bandwidth DPLL Attenuates Input Clock Jitter

- Bandwidth: 14 Hz to 500 Hz
- Glitchless reference clock switching
- Digital hold on loss of all input clocks

Any-to-Any Frequency Conversion

- Any input frequency from 1 kHz to 1.25 GHz
- Any output frequency from <1 Hz to 1 GHz

High-Precision Numerically Controlled Oscillator

- Frequency resolution better than 0.01 ppb

Pin- Selectable Self Configuration at Power-up

- User or factory programmable

Easy-to-Use Evaluation Software

- Simple, intuitive Windows-based graphical user interface

Key Benefits

Reduces BOM Cost and Board Space

- Single-chip solution simplifies design and reduces BOM costs
- Small package: 5x5 mm

Increases Design Efficiency

- Highly configurable outputs and multiple pin-compatible variants
- 4 custom configurations easily selected with external hardware pins

System clock trees are becoming more complex, often requiring rate conversion with jitter attenuation followed by distribution of several clock frequencies to multiple loads. ZL30252 and ZL30253 rate conversion / jitter attenuation devices can lock to input clock frequencies as low as 1 kHz and filter jitter with bandwidths as low as 14 Hz.

For wireless base stations, the ZL30252/3 jitter attenuator resides on the baseband board and receives a clock from another card. This clock requires jitter cleaning before it is multiplied and distributed to the DSPs on the baseband board. The ZL30253 provides clocks to one or more Microsemi fanout buffers to supply additional copies. Microsemi has designed its fanout buffers to work synergistically with the ZL30252 and ZL30253, minimizing the impact to the jitter budget to serve high-performance designs.

ZL30252 and ZL30253 NCO feature can be used for general-purpose frequency margining. With a few register writes, the system instructs ZL30252/3 during test to increase the frequency of output clocks by a fixed amount to verify that the system works reliably even when the clock runs faster. This allows designers to be confident that the system has sufficient timing margin.

The ZL30252 and ZL30253 can also be used as a master clock jitter attenuator and multiplier for other Microsemi timing ICs. This allows customers to reuse previously-qualified TCXOs or OCXOs regardless of output frequency or jitter performance. The ZL30252 and ZL30253 can ease the design task by attenuating the jitter and multiplying the frequency of the TCXO/OCXO.
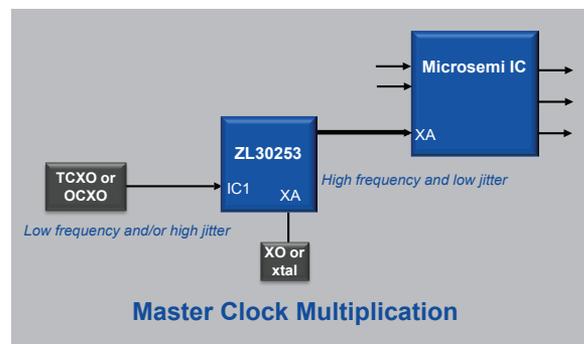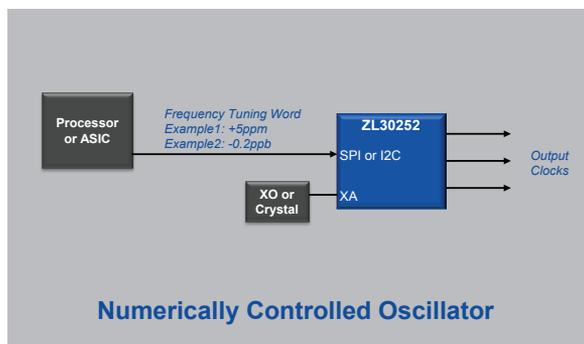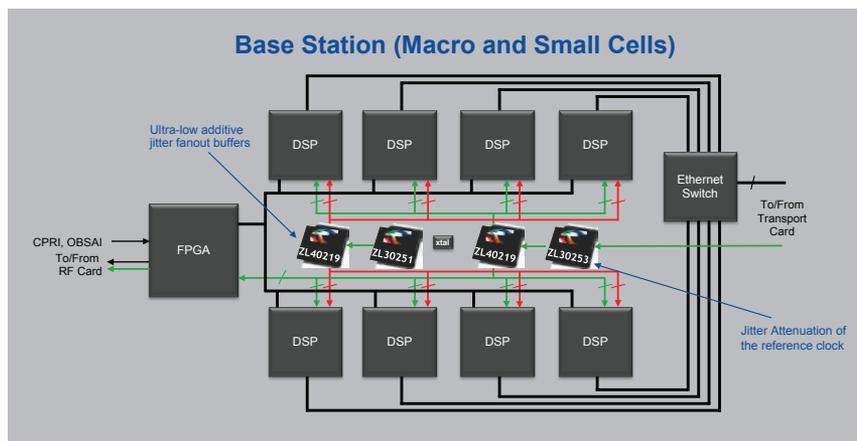
Base Station (Macro and Small Cells)

Numerically Controlled Oscillator

Master Clock Multiplication

Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for communications, defense & security, aerospace and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; security technologies and scalable anti-tamper products; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, Calif., and has approximately 3,400 employees globally. Learn more at www.microsemi.com.

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