

Features

- **Two Independent APLL Channels**
- **Four Input Clocks Per Channel**
 - One crystal/CMOS input
 - Two differential/CMOS inputs
 - One single-ended/CMOS input
 - Any input frequency from 9.72MHz to 1250MHz (9.72MHz to 300MHz for CMOS)
 - Clock selection by pin or register control
- **Low-Jitter Fractional-N APLL and 3 Outputs Per Channel**
 - Any output frequency from <1Hz to 1035MHz
 - High-resolution fractional frequency conversion with 0ppm error
 - Easy-to-configure, encapsulated design requires no external VCXO or loop filter components
 - Each output has independent dividers
 - Output jitter as low as 0.16ps RMS (12kHz-20MHz integration band)
 - Outputs are CML or 2xCMOS, can interface to LVDS, LVPECL, HSTL, SSTL and HCSL
 - In 2xCMOS mode, the P and N pins can be different frequencies (e.g. 125MHz and 25MHz)
 - Per-output supply pin with CMOS output voltages from 1.5V to 3.3V

Ordering Information

| | | |
|--------------|------------|---------------|
| ZL30244 LFG7 | 64 Pin LGA | Trays |
| ZL30244 LFF7 | 64 Pin LGA | Tape and Reel |
| ZL30245 LFG7 | 64 Pin LGA | Trays |
| ZL30245 LFF7 | 64 Pin LGA | Tape and Reel |

Ni Au

Package size: 5 x 10 mm

-40°C to +85°C

- Precise output alignment circuitry and per-output phase adjustment
- Per-output enable/disable and glitchless start/stop (stop high or low)
- **General Features**
 - Automatic self-configuration at power-up from external (ZL30244) or internal (ZL30245) EEPROM; up to four configs, pin-selectable
 - SPI or I²C processor Interface
 - Numerically controlled oscillator mode
 - Spread-spectrum modulation mode
 - Space-saving 5x10mm LGA package
 - Easy-to-use evaluation software

Applications

- Frequency conversion and frequency synthesis in a wide variety of equipment types

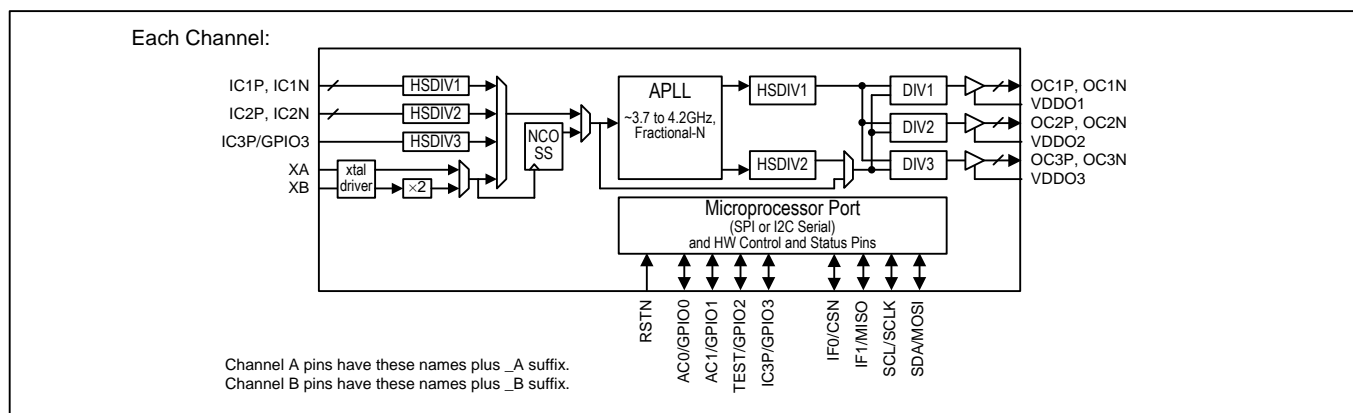


Figure 1 - Functional Block Diagram

1. Application Examples

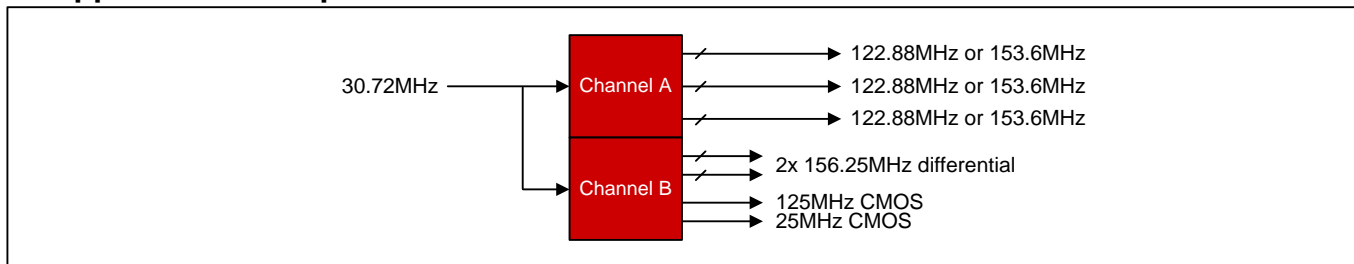


Figure 2 – Base Station Clock Multiplication and Ethernet Frequency Synthesis

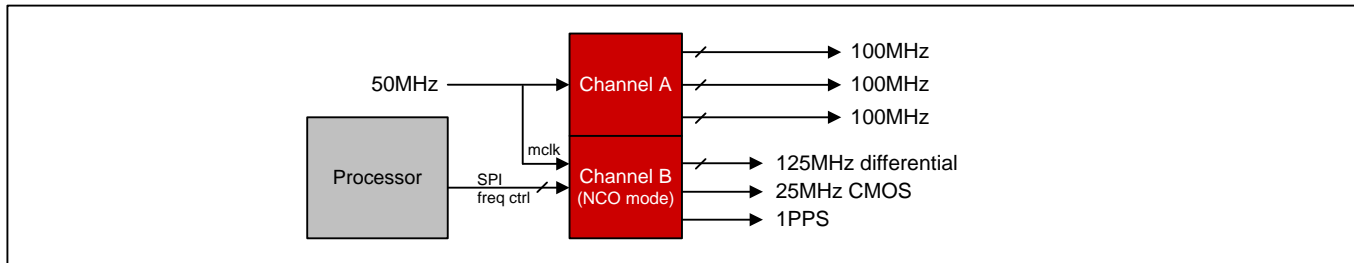


Figure 3 - PCI Express Clock Synthesis and NCO for IEEE1588 Slave Clock

2. Detailed Features

2.1 Input Clock Features

- Four input clocks per channel: one crystal/CMOS, two differential/CMOS, one single-ended/CMOS
- Input clocks can be any frequency from 9.72MHz up to 1250MHz (differential) or 300MHz (CMOS)

2.2 APLL Features

- APLL with very high-resolution fractional (i.e. non-integer) multiplication per channel
- Any-to-any frequency conversion with 0ppm error
- Two high-speed dividers per channel (integers 4 to 15, half divides 4.5 to 7.5)
- Easy-to-configure, completely encapsulated design requires no external VCXO or loop filter components
- Bypass mode supports system testing

2.3 Output Clock Features

- Three low-jitter output clocks per channel
- Each output can be one differential output or two CMOS outputs
- Output clocks can be any frequency from 1Hz to 1035MHz (250MHz max for CMOS and HSTL outputs)
- Output jitter as low as 0.16ps RMS (12kHz to 20MHz integration band)
- In CMOS mode, an additional divider allows the OCxN pin to be an integer divisor of the OCxP pin (example: OC3P 125MHz, OC3N 25MHz)
- Outputs easily interface with CML, LVDS, LVPECL, HSTL, SSTL, HCSL and CMOS components
- Supported telecom frequencies include PDH, SDH, Synchronous Ethernet, OTN
- Can produce clock frequencies for microprocessors, ASICs, FPGAs and other components
- Can produce PCIe clocks (PCIe gen. 1, 2 and 3)
- Sophisticated output-to-output phase alignment (among outputs in the same channel)
- Per-output phase adjustment with high resolution and unlimited range
- Per-output enable/disable
- Per-output glitchless start/stop (stop high or low)

2.4 General Features

- SPI or I²C serial microprocessor interface per channel

- Automatic self-configuration at power-up from external (ZL30244) or internal (ZL30245) EEPROM memory; pin control to specify one of four stored configurations
- Each channel can be configured for numerically controlled oscillator (NCO) mode, which allows system software to steer frequency with resolution better than 0.01ppb
- Each channel can be configured for pread-spectrum modulation mode (meets PCI Express requirements)
- Four general-purpose I/O pins per channel, each with many possible status and control options
- Each channel's reference clock can be fundamental-mode crystal, low-cost XO or clock signal from elsewhere in the system

2.5 Evaluation Software

- Simple, intuitive Windows-based graphical user interface
- Supports all device features and register fields
- Makes lab evaluation of the ZL30244 or ZL30245 quick and easy
- Generates configuration scripts to be stored in external (ZL30244) or internal (ZL30245) EEPROM
- Generates full or partial configuration scripts to be run on a system processor
- Works with or without a ZL30244 or ZL30245 evaluation board

3. Pin Diagram

The device is packaged in a 5x10mm 64-pin LGA package.

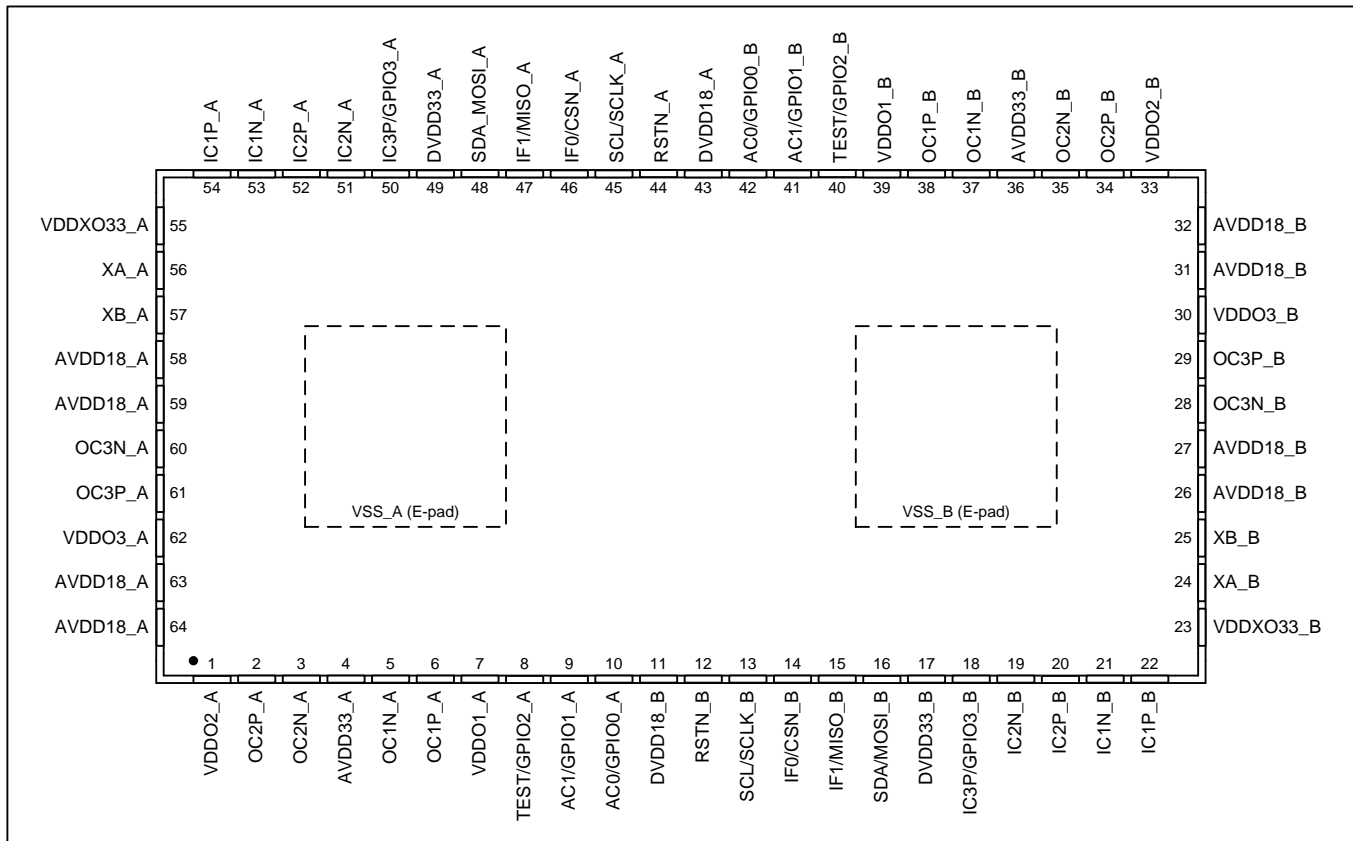
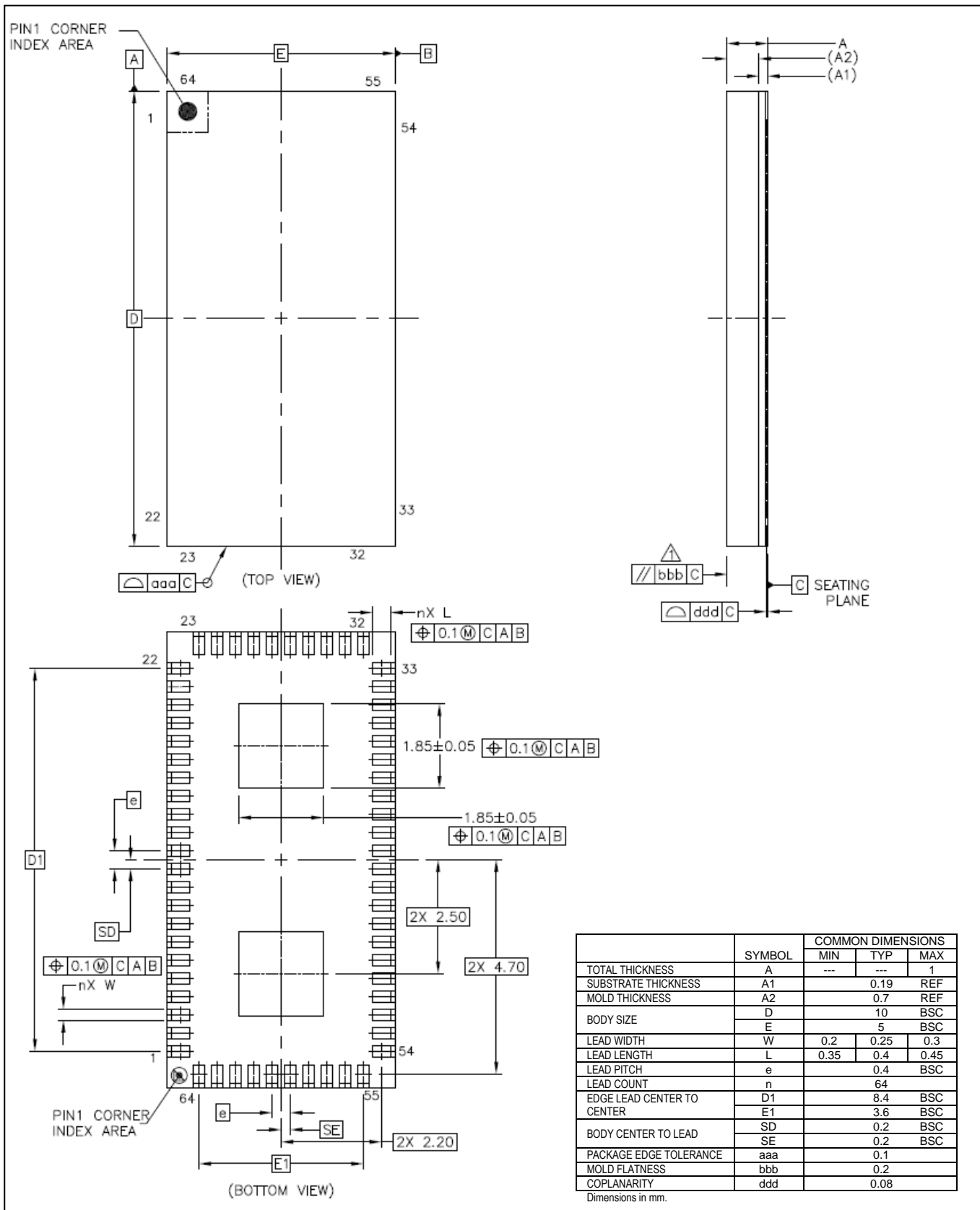


Figure 4 - Pin Diagram

4. Mechanical Drawing





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