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## Low jitter, Audio Fractional-N PLL

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### Overview:

This PLL can generate all the frequencies used by audio systems from any stable clock between 10 and 40Mhz.

Audio clock is  $256 \cdot fs_0$  or  $384 \cdot fs_1$ , where  $fs_0$  is 192kHz or 176.4kHz and  $fs_1$  is 96kHz or 88.2Khz.

An output divider by N generates multiple of 192kHz, 176.4kHz, 96kHz, 88.2kHz, 48kHz, 44.1kHz, 32kHz, 24kHz, 22.050kHz, 16kHz, 12kHz, 11.025kHz, and 8kHz frequencies.

An external reference current is required, and can be provided either by V-Trans Irefgen (resistor-less design +/-5%) or Refgen (with external reference resistor +/-1%) libraries or any other third party IP.

### Features:

- Fractional-N PLL :  $\pm 0.05$  ppm accuracy
- Eliminates VCXO/DCXO requirements
- 10-40 Mhz input
- Audio clock supports  $256 \cdot fs$  &  $384 \cdot fs$
- 3.3V/1.8V  $\pm 10\%$  supply voltage, -40/+125°C
- 1P6M layout structure based on 0.18um 1P6M 3.3V/1.8V generic logic process.
- Small cell area with integrated loop filter: [contact us]
- Low jitter : [contact us]
- 50% duty cycle output.
- Antenna diodes on each digital input.
- Silicon proven.

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### Block Diagram:

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### Application:

- Audio systems
- Clock synthesis for audio DAC

## Deliverables:

V-Trans provides 2 separate kits depending on licensing agreement.  
In most cases, the physical is merged on foundry site.

### Design Kit

Design kit includes :

- LEF view and abstract gdsII
- Verilog HDL behavioral model
- Liberty (.lib) timing constraints for typical, worse and best corner case
- Full Datasheet /Application Note with integration guidelines document
- Silicon characterization report when available

### Tapeout Kit

Tapeout kit includes the design kit plus physical view:

- gdsII
- LVS netlist and report
- DRC/ERC/ESD/ANT report

## Portfolio and Design Services:

V-Trans Microelectronics has been combining all the best practices and methodologies in analog and mixed-signal high speed interfaces design to answer the demanding market of high performance analog IPs using cheaper technologies such as 0.18um.

Our Portfolio covers a wide range of applications and can be customized on demand to answer exactly your specific needs.

Custom layout and back-end services are also available if you have a tight project schedule.

Our experience includes high integration circuit such as network SOC, CPU and FPGA which allow us to provide a full solution for even more complex chip.

Please contact us to tell us how we could help you or for any analog IP information.

- High speed interfaces ( LVDS serdes, Display Interfaces, DDRII, DDR3, PCI-X, HDMI rev1.1)
- Converters ( video ADC 10b 170Mhz, Triple video DAC )
- Timing circuits ( Audio PLL, Video PLL, DDR memory PLL, custom PLL.)
- Low noise Crystal Oscillators
- Power management ( LDO regulators, Power On Reset.. )
- Video and WIMAX Analog Front end

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