IDT
Integrated Device Technology
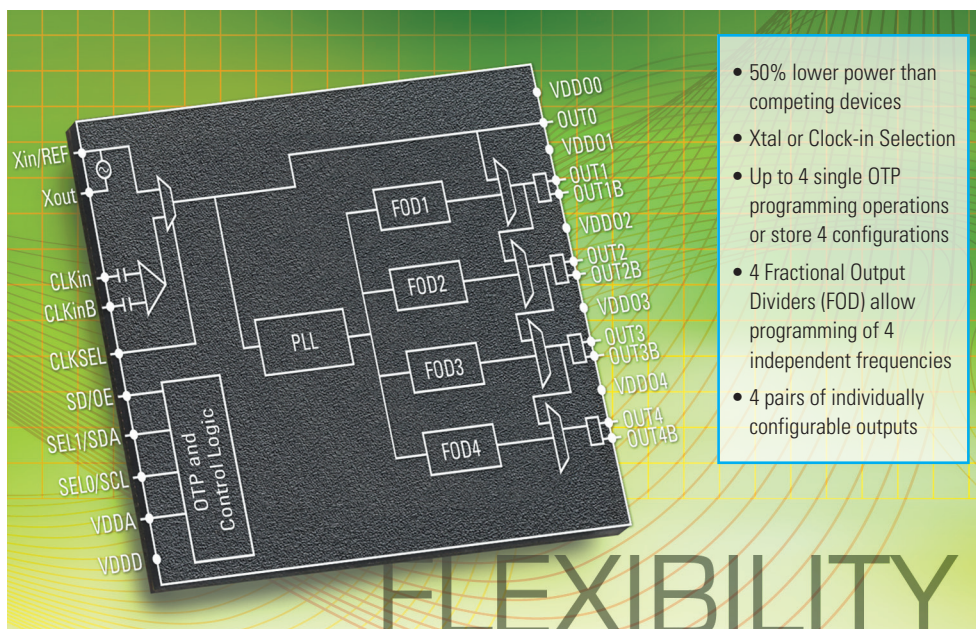
VersaClock® 5 Programmable Clocks

KEY FEATURES

- High performance, low phase noise PLL, <0.7 ps RMS typical phase jitter on outputs:
  - PCIe® Gen1, 2, 3 compliant clock capability
  - USB 3.0 compliant clock capability
  - Gigabit Ethernet clock capability (1GbE, 10GbE)
- Generates up to four independent output frequencies with four fractional output dividers (FODs)
- Four banks of internal non-volatile in-system programmable or factory programmable OTP EPROM
- I²C serial programming interface
- Four universal output pairs:
  - Each configurable as one differential output pair or two LVCMOS outputs
- I/O Standards:
  - Single-ended I/Os: 1.8V to 3.3V LVCMOS
  - Differential I/Os - LVPECL, LVDS and HCSL
- Input frequency ranges:
  - LVCMOS Reference Clock Input (XIN/REF) – 5MHz to 200MHz
  - LVDS, LVPECL, HCSL Differential Clock Input (CLKIN, CLKINB): 5MHz to 350MHz
  - Crystal frequency range: 8MHz to 40MHz
- Output frequency ranges:
  - LVCMOS Clock Outputs: 5MHz to 200MHz
  - LVDS, LVPECL, HCSL Differential Clock Outputs: 5MHz to 350MHz
- One reference LVCMOS output clock
- Independent Spread Spectrum capability on each output pair

APPLICATIONS

- Ethernet switch/router
- PCI Express® 1.0/2.0/3.0
- Broadcast video/audio timing
- Processor and FPGA clocking
- Any-frequency clock conversion
- MSAN/DSLAM/PON
- Fibre Channel, SAN
- Telecom line cards
- 1 GbE and 10 GbE

- 50% lower power than competing devices
- Xtal or Clock-in Selection
- Up to 4 single OTP programming operations or store 4 configurations
- 4 Fractional Output Dividers (FOD) allow programming of 4 independent frequencies
- 4 pairs of individually configurable outputs

IDT VersaClock 5 are programmable clock generators intended for high-performance consumer, networking, industrial, computing, and data-communications applications.

The 5P49V5901 is an in-system programmable clock generator featuring four universal output pairs capable of producing independent frequencies up to 350 MHz configurable as HCSL, LVPECL, LVDS, or dual LVCMOS. The highly-integrated device consolidates four differential or eight single-ended clock generators, and can store up to four different configuration settings, helping to minimize board space and bill-of-materials. Upon request, devices may be factory-programmed to the customer's desired configuration.

With RMS phase jitter less than 0.7 picoseconds over the full 12 kHz to 20 MHz integration range, the new device meets the stringent jitter requirements of PCI Express® Gen 1/2/3, USB 3.0, and 1G/10G Ethernet. The high-performance clock generator operates at less than 100 mW core power (50 percent lower than competing devices), helping to ease system thermal constraints, reduce operating power expenses, and maximize battery life.

DEVELOPMENT TOOLS

IDT TIMING COMMANDER™

Making Complex Configurations Simple
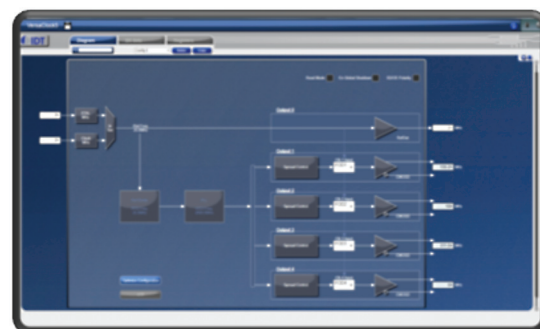
IDT Timing Commander is an easy-to-use Windows®-based software platform enabling system design engineers to configure, program and monitor sophisticated timing devices with an intuitive and flexible GUI.

Part Number	Package	Output Type
5P49V5901	24-pin VFQFPN 4mm x 4mm package	4 Universal Output pairs configurable as LVPECL, LVDS, HCSL, LVCMOS outputs and a LVCMOS Reference Clock Output

VERSACLOCK 5 EVALUATION BOARD
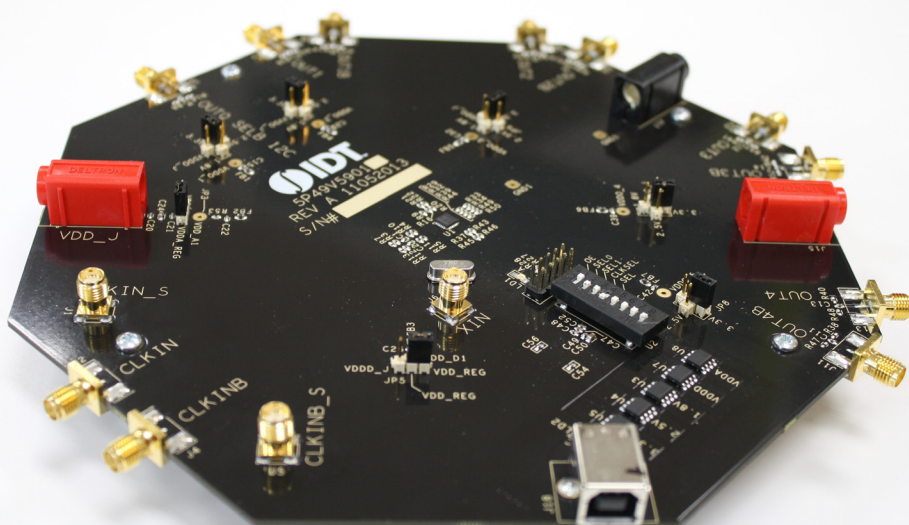
FEATURES

- 4 Differential Outputs capable of generating any output frequency using IDT Timing Commander™ software

- SMA connectors for outputs

- When the board is connected to a PC running IDT Timing Commander Software through USB, the device can be configured and programmed to generate frequencies with best-in-class performances

- The 25MHz crystal installed on the board can source a reference frequency to the device when CLKIN/CLKINB is not used
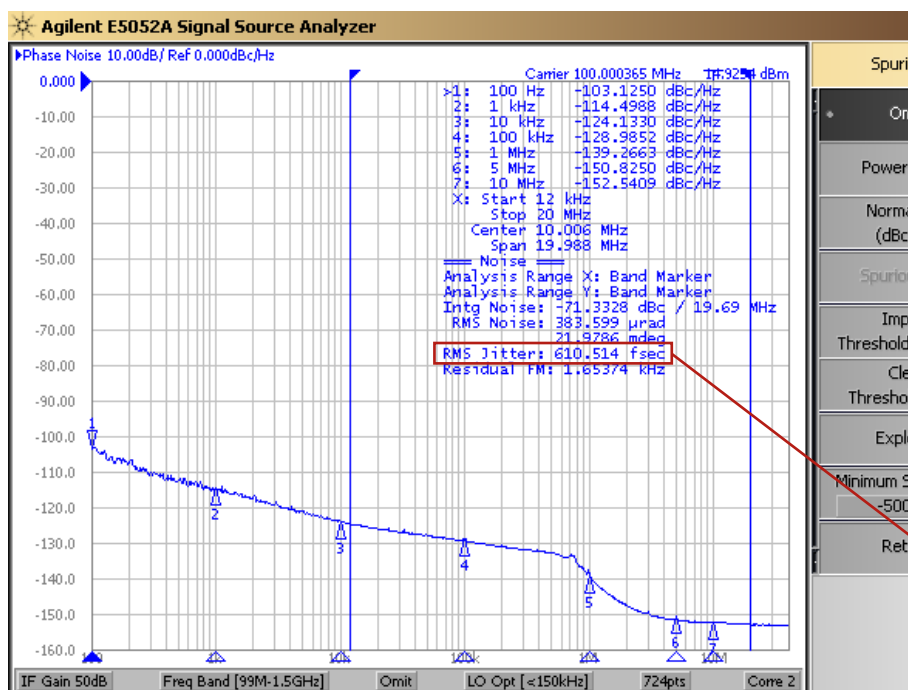
Excellent Phase Noise Over The Entire Frequency Range

Capable of generating up to four independent output frequencies (0 ppm error) with:

- <0.7 ps typ RMS phase jitter (12 KHz to 20 MHz)

- PCIe® Gen 1/2/3 compliant clocks

- USB 3.0, Thunderbolt™ compliant clocks

- 1G/10G Gigabit Ethernet compliant clocks

610 fsec RMS Phase Jitter (12 KHz to 20 MHz)

Request samples and download documentation and tools at www.IDT.com/go/versaclock5

PB_VERSACLOCK5_REVA0214