

CYPRESS

CY294X - HIGH-PERFORMANCE PROGRAMMABLE OSCILLATOR



PRODUCT OVERVIEW

APPLICATIONS

CY294X is a family of high-performance, PLL-based programmable crystal oscillators and clock synthesizers. The low-noise programmable PLL technology allows CY294X to produce any frequency between 15 MHz and 2,100 MHz, while achieving a typical phase jitter of 0.11 ps. The device supports popular output types such as LVPECL, LVDS, HCSL, LVCMOS, and CML. Additional Features include Frequency Margining and VCXO functionality. This makes the CY294X a truly flexible solution that can meet high-performance application requirements in the networking and telecommunications market segments.

COMPETING TECHNOLOGIES

CY294X competes with SAW oscillator (SO), overtone XO, and other high-performance clock synthesizer solutions. It has best-in-class performance compared to all programmable oscillators and offers a viable and cheaper solution to SO and overtone XO. CY294X performance compared to programmable oscillators from IDT, SiLabs, and TI.

ADVANTAGES

FREQUENCY

- Range - 15 to 2,100 MHz
- I²C-configurable or pin-selectable
- Adjust in 0.2-ppm increments for robustness tests, upgrades, or failure analysis
- Switch between 4 frequencies for different applications

FLEXIBLE CONFIGURATIONS

- Field and factory-programmable
- I²C-configurable frequency margining, VCXO
- Pin-selectable frequency margining

MULTIPLE FOOTPRINTS





- 8L 5032-LCC (5.0 mm x 3.2 mm)
- 8L 5070-LCC (5.0 mm x 7.0 mm)
- 16L QFN

REPLACES SAW OSCILLATORS AND OVERTONE CRYSTAL OSCILLATORS

- Lower cost
- Custom samples in minutes
- Better frequency stability over temperature
- More features (frequency margining, VCXO)

MINIMIZES INVENTORY

- A single field-programmable BOM device can be stocked and custom-programmed before mounting
- A single I²C BOM device can be mounted on different boards and custom-configured at startup

				
Feature	CY294X	8N3QV01	Si570	LMK6E12
Output Frequency	2100 MHz	1300 MHz	1400 MHz	1000 MHz
RMS Phase Jitter (ps) (Typical)	110 fs	475 fs	360 fs	150 fs
VCFS Modulation Bandwidth ¹	5K, 10K, 20K	10K	10K	
VCFS Input Impedance	>5 MΩ	500 kΩ	500 kΩ	
Total Pull Range ² (ppm)	50 ppm-275 ppm	5 ppm-754 ppm	33 ppm-356 ppm	
IDD LVPECL (Typical)	90 mA	120 mA	120 mA	162 mA
VDD	1.8 V, 2.5 V, 3.3 V	2.5 V, 3.3 V	1.8 V, 2.5 V, 3.3 V	1.8 V, 2.5 V, 3.3 V
Output Type Supported	LVPECL, LVDS, HCSL, CML, LVCMOS	LVPECL	LVPECL, LVDS, CML, LVCMOS	LVPECL, LVDS, HCSL

APPLICATIONS

CY294X is used in a variety of applications such as:

- Routers, switches (Cisco, Juniper, Huawei, HP, Juniper and Brocade)
- Servers (Dell, HP, IBM, and Oracle)
- Wireless base stations (Ericsson, ALU, Motorola, NSN, Huawei and ZTE)
- Clocking FPGAs (Xilinx and Altera)
- Video processor/Set top boxes/Gateway (SA, Motorola, Ericsson, and Polycom)
- Test equipments (Agilent, Tektronix, Anritsu, Rohde & Schwarz, and Advantest)

THE SWEET SPOT

CY294X targets high-performance applications such as routers, switches, and wireless base stations where high frequency (i.e., >100 MHz) and low-phase jitter (i.e., < 0.3 ps typical phase jitter) is a requirement. The high-performance market segment is currently served by SOs and overtone XO's by ETC, Fox, Pericom, and Vectron, as well as clock synthesizers by IDT, On Semiconductor, and Texas Instruments. CY294X goes head-to-head on price and performance with high-performance clock synthesizers that serve this market.

ASK IF YOU DON'T SEE IT HERE

CY294X is highly configurable and has more options than offered on the web and in the published price book. Please contact Cypress at clocks@cypress.com for more information about CY294X.

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