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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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# CYPRESS PRODUCT SELECTOR GUIDE CLOCKS AND BUFFERS

JULY 2009

AUTOMOTIVE • CAPSense™ CAPACITIVE TOUCH SENSING • CLOCKS AND  
BUFFERS • LIGHTING AND POWER CONTROL • MEMORIES • OPTICAL AND  
IMAGE SENSING • PHYSICAL LAYER DEVICE • PSoC® PROGRAMMABLE  
SYSTEM-ON-CHIP • TRUETOUCH™ TOUCH SCREEN SOLUTIONS • USB  
SOLUTIONS • WEST BRIDGE® PERIPHERAL CONTROLLERS • WIRELESS/RF



# CLOCKS AND BUFFERS

Cypress’s broad portfolio of silicon-based clock generators and buffers offers the best in class performance in jitter, power, speed, integration, and package. The portfolio includes single- and multi-PLL programmable clock synthesizers, programmable skew, programmable XO, VCXO, EMI reduction clocks, zero delay, and fanout buffers.

## FLEXO HIGH PERFORMANCE PROGRAMMABLE CLOCKS

FleXO is the industry’s most flexible family of ultra low-jitter clock generators, ideal for networking equipment and other high-performance applications. The FleXO family exceeds the clock requirements for demanding high-speed serial interface standards such as 10 Gigabit Ethernet, 10 Gigabit Fibre Channel, SAS/SATA, and PCI Express.

FleXO clock generators can be instantly programmed in the factory or field to frequencies up to 690 MHz, enabling designers to optimize system performance and use a single device across a family of platforms. A key FleXO feature, frequency margining, enables designers to vary clock frequency with 0.2 ppm precision to test system robustness across potential frequency fluctuations during both design and production stages.

### FleXo High Performance Programmable Clocks

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Spread Spectrum	Operating Temperature	Package
CY2XL11	100MHz LVDS clock generator	2.5/3.3	25	Xtal	1	100	LVDS	NA	Commercial/ Industrial	8-TSSOP
CY2XP24	156.25MHz LVPECL low noise clock generator	2.5/3.3	25	Xtal	1	156.2	LVPECL	NA	Commercial	8-TSSOP
CY2XP31	312.5MHz LVPECL low noise clock	2.5/3.3	25	Xtal	1	312.5	LVPECL	NA	Commercial/ Industrial	8-TSSOP
CY2XP41	Low Noise GbE/SATA LVPECL clock generator	3.3	25	Xtal	1	62.5 to 75	LVPECL	NA	Commercial	8-TSSOP
CY2X014	Low Noise Field Programmable LVPECL Crystal Oscillator	2.5/3.3	NA	NA	1	50 to 690	LVPECL	NA	Commercial	6-LCC SMD
CY2VC521-2	216MHz LVDS VCXO Clock Generator with 2X drive strength	3.3	27	Xtal	1	216	LVDS	NA	Commercial	16-TSSOP

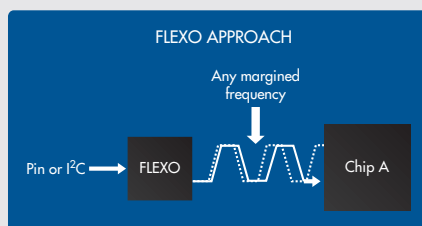
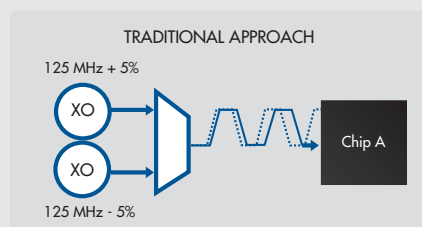
## FLEXO—INDUSTRY’S MOST FLEXIBLE FAMILY OF ULTRA LOW JITTER CLOCK GENERATOR

### Features

- Ultra low jitter maximizes system performance and reliability
  - RMS Phase Jitter (12 kHz to 20 MHz): as low as 0.6 ps typical
  - Differential output: LVPECL or LVDS
- Unparalleled flexibility
  - Programmable frequency from 50 MHz to 690 MHz
  - Integrated frequency margining with 0.2 ppm precision
- Cost-effective architecture provides strong alternative to SAW oscillators and overtone crystal oscillators
- Available as synthesizer, VCO, crystal-inside XO, and VCXO options

**Key Applications:** Switches, routers, storage servers, blade serves, wireless base stations, test equipment, and enterprise hard-disk drives

For more information on FleXO visit [www.cypress.com/go/flexo](http://www.cypress.com/go/flexo)



### Integrated Frequency Margining

FleXO clock generators enable designers to vary clock frequency with 0.2 ppm precision to test system robustness across potential frequency fluctuations.

## PROGRAMMABLE CLOCKS

Programmable timing solutions combine the convenience of field programming with the customary high performance of Cypress's timing products. Use CyberClocks™ Online Software to optimize device parameters.

View software and drivers online at [www.cypress.com/go/clocksoftware](http://www.cypress.com/go/clocksoftware). Each programmed device can be optimized for a specific board layout.

In-System Programmable (ISP) Clocks, also known as In-System Reprogrammable (ISR) Clocks, are customizable at any point in the lifetime of the product. A customized clock configuration can be programmed through the I<sup>2</sup>C interface to enable one part number to be ordered, stocked, and placed on different boards, then customized with the specific frequencies as required.

### Programmable Clocks

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Spread Spectrum	Operating Temperature	Package
<b>MoBL Clock</b>										
M602	MoBL Clock	1.5/1.8/2.5/3.0/3.3	1 to 48	Ref-in CMOS	3	3 to 50	CMOS	Yes	Industrial	16-QFN
<b>Programmable Clocks</b>										
CY2077	Field or Factory Programmable 1-PLL Clock Synthesizer	3.3/5.0	1 to 75	Xtal/Ref-in CMOS	1	0.39 to 133	CMOS	No	Commercial	8-SOIC/ 8-TSSOP
CY22050	Field or Factory Programmable 1-PLL Clock Synthesizer	2.5/3.3	1 to 133	Xtal/Ref-in CMOS	6	0.08 to 200	CMOS	No	Industrial	16-TSSOP
CY22150	Field and Factory Programmable 1-PLL Clock Synthesizer	2.5/3.3	1 to 133	Xtal/Ref-in CMOS	6	0.08 to 200	CMOS	No	Commercial	16-TSSOP
CY22180	Field or Factory Programmable 1-PLL Clock Synthesizer	3.3	10 to 133	Xtal/Ref-in CMOS	2	20 to 200	CMOS	No	Commercial	8-SOIC
CY22250	Multi-function printer 1-PLL Clock Synthesizer	3.3	16	Xtal	5	16 to 67	CMOS	No	Commercial	20-TSSOP
CY22381	Field or Factory Programmable 3-PLL Clock Synthesizer	3.3	1 to 166	Xtal/Ref-in CMOS	3	0 to 200	CMOS	No	Industrial	8-SOIC
CY22392	Field or Factory Programmable 3-PLL Clock Synthesizer	3.3	1 to 166	Xtal/Ref-in CMOS	6	1 to 200	CMOS	No	Industrial	16-TSSOP
CY22393	Field or Factory Programmable 3-PLL Clock Synthesizer	3.3	1 to 166	Xtal/Ref-in CMOS	6	1 to 200	CMOS	No	Commercial	16-TSSOP
CY22394	Field or Factory Programmable 3-PLL Clock Synthesizer	3.3	1 to 166	Xtal/Ref-in CMOS	5	1 to 400	CMOS/LVPECL	No	Commercial	16-TSSOP
CY22395	Field or Factory Programmable 3-PLL Clock Synthesizer	2.5/3.3	1 to 166	Xtal/Ref-in CMOS	5	1 to 200	CMOS	No	Commercial	16-TSSOP
CY22801	Field or Factory Programmable 1-PLL Clock Synthesizer	3.3	1 to 133	Xtal/Ref-in CMOS	3	1 to 200	CMOS	No	Commercial	8-SOIC
CY2291	Field or Factory Programmable 3-PLL Clock Synthesizer	3.3/5.0	1 to 30	Xtal/Ref-in CMOS	8	0.0769 to 100	CMOS	No	Industrial	20-SOIC
CY2292	Field or Factory Programmable 3-PLL Clock Synthesizer	3.3/5.0	1 to 30	Xtal/Ref-in CMOS	6	0.077 to 100	CMOS	No	Commercial	16-SOIC/ 16-TSSOP
CY25023	1-PLL Clock Synthesizer with Spread Spectrum	3.3	16.384 to 16.382	Xtal/Ref-in CMOS	1	52	CMOS	Yes	Commercial	8-SOIC
CY26114	Programmable 1-PLL Clock Synthesizer	2.5/3.3	25 to 25	Xtal	4	25 to 100	CMOS	No	Commercial	16-TSSOP
CY2907	Field or Factory Programmable 1-PLL Clock Synthesizer	3.3/5.0	1 to 30	Xtal/Ref-in CMOS	2	0.5 to 130	CMOS	No	Commercial	8-SOIC/ 14-SOIC
CY25702	Programmable 1-PLL Crystal Oscillator	3.3	N/A	N/A	1	1 to 166	CMOS	No	Commercial	4-LCC SMD
CY24713	3-output VCXO for Set-top box applications	3.3	27	Xtal	3	4.9152 to 27	CMOS	No	Commercial	8-SOIC
CY2XL11	100MHz LVDS clock generator	2.5/3.3	25	Xtal	1	100	LVDS	NA	Commercial/ Industrial	8-TSSOP

## Programmable Clocks (Continued)

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Spread Spectrum	Operating Temperature	Package
<b>VCXO</b>										
CY22388	Factory Programmable 4-PLL Clock Synthesizer with VCXO	2.5/3.3	1 to 100	Xtal/Ref-in CMOS	5	4.2 to 166	CMOS	No	Commercial	16-TSSOP
CY22389	Factory Programmable 4-PLL Clock Synthesizer with VCXO	2.5/3.3	1 to 100	Xtal/Ref-in CMOS	8	4.2 to 166	CMOS	No	Commercial	20-TSSOP
CY22391	Field or Factory Programmable 4-PLL Clock Synthesizer with VCXO	2.5/3.3	1 to 100	Xtal/Ref-in CMOS	8	4.2 to 166	CMOS	No	Commercial	32-QFN
CY22800	Field or Factory Programmable 1-PLL Clock Synthesizer with VCXO and spread spectrum technology	3.3	0.5 to 100	Xtal/Ref-in CMOS	3	1 to 200	CMOS	Yes	Commercial	8-SOIC
CY2410	MPEG Clock Generator with VCXO	3.3	13.5	Xtal	1	27	CMOS	No	Commercial	8-SOIC
CY2412	MPEG Clock Generator with VCXO	3.3	13.5	Xtal	3	27 to 54	CMOS	No	Commercial	8-SOIC
CY241V08	MPEG Clock Generator with VCXO	3.3	27	Xtal	1	27	CMOS	No	Commercial	8-SOIC
CY241V8A	MPEG Clock Generator with VCXO	3.3	27	Xtal	1	27	CMOS	No	Commercial	8-SOIC
CY24212	MPEG Clock Generator with VCXO	3.3	27	Xtal	2	27	CMOS	No	Commercial	8-SOIC
CY24488	Factory Programmable 4-PLL Clock Synthesizer with VCXO	2.5/3.3	27	Xtal/Ref-in CMOS	5	4.2 to 166	CMOS	No	Commercial	16-TSSOP
CY24713	3-output VCXO for Set-top box applications	3.3	27	Xtal	3	4.9152 to 27	CMOS	No	Commercial	8-SOIC

## APPLICATION SPECIFIC CLOCKS

Application Specific clock generators include:

- MediaClock™ for audio and video systems
- PacketClock™ for communications systems
- PCI Express for consumer applications, communication systems, and peripherals
- Direct Rambus® for high-bandwidth applications

These clocks feature in-system programming through an industry standard I<sup>2</sup>C serial interface.

## Application Specific Clocks

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Spread Spectrum	Operating Temperature	Package
<b>MediaClock™</b>										
CY24115	Mini Disk Clock Generator	3.3	2.8224 to 22.5792	Xtal	1	90.3168 to 180.6336	CMOS	No	Commercial	8-SOIC
CY24130	HOTLink II SMPTE Receiver Training Clock -1 copy of 27MHz, 1 copy of 27-/36-/54-/148.5-/74.25- Mhz	3.3	27	Xtal	2	27 to 74.25	CMOS	No	Commercial	16-TSSOP
CY24141	MediaClock™ Graphics Clock Generator	1.68/2.5/3.3	18.432 to 18.432	Xtal	2	18.432 to 54	CMOS	No	Commercial	16-TSSOP
CY27022	Clock Generator for Met-MD System- 12MHz, 10.0352MHz, 90.3168/180.6336 MHz	3.3	16.9344 to 16.9344	Xtal/Ref-in CMOS	3	12 to 180.6336	CMOS	No	Commercial	8-SOIC
<b>PacketClock™</b>										
CY26049	FailSafe™ PacketClock™ Global Communications Clock Generator	3.3	0.008 to 60	Xtal/Ref-in CMOS	3	0.008 to 155.52	CMOS	No	Commercial/Industrial	16-TSSOP
CY26121	PacketClock™ Spread Spectrum Clock Generator	3.3	25	Xtal	5	25 to 66.66	CMOS	Yes	Commercial/Industrial	16-TSSOP
CY26580	Low-jitter, high-accuracy 100MHz, 133.33MHz Clock	3.3	25 to 125	Ref-in CMOS	2	100 to 133.33	CMOS	No	Industrial	20-TSSOP
<b>PCI Express Clock</b>										
CY24292	4-pair PCI-E Clock (PCIe 1.0) and 25MHz	3.3	25	Xtal/Ref-in CMOS	5	25 to 100	HCSSL, LVDS, CMOS	Yes	Commercial/Industrial	32-QFN
CY24293	2-pair PCI-E Clock, Meets PCIe 1.0 requirements	3.3	25	Xtal/Ref-in CMOS	2	25 to 200	HCSSL, LVDS	Yes	Commercial/Industrial	16-TSSOP
CY28517	4 Pair PCI Express Clock Generator with additional two 25MHz, one 48MHz and one 27MHz Clocks	3.3	27	Xtal	8	27 to 100	CMOS and Differential	No	Commercial	28-TSSOP

## Application Specific Clocks (Continued)

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Spread Spectrum	Operating Temperature	Package
<b>Rambus Clock</b>										
CY2212	Direct Rambus Clock Generator (DRCG) Lite	3.3	14.0625 to 18.75	Xtal	3	9.375 to 400	CMOS and Differential	No	Commercial	16-TSSOP
CY22313	Two-PLL Clock Generator with Direct Rambus™ (Lite) Support	3.45V, 2.5V, 1.8V, and 1.675V	25 to 25	Xtal	4	9.216 to 294.912	CMOS and Differential	No	Commercial	24-TSSOP
CY24270	Rambus XDR Clock Generator (Sony Computer Entertainment Specific MPN)	2.5	100 to 133	Ref-in differential	4	300 to 800	Differential	No	Commercial	28-TSSOP
CY24271	Rambus XDR Clock Generator	2.5	100 to 133	Ref-in differential	4	300 to 800	Differential	No	Commercial	28-TSSOP
CY24272	Rambus XDR Clock Generator	2.5	100 to 133	Differential clock input	4	300 to 800	Differential	No	Commercial	28-TSSOP

## BACKPLANE INTERFACE AND CLOCK MANAGEMENT

### COMLINK™

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Operating Temperature	Package
CY2CC1810	2.5V or 3.3V, 200MHz 1:10 LVCMOS Buffer w/tri-state outputs	2.5/3.3	0 to 200	LVTTTL/LVCMOS	10	0 to 200	LVCMOS	Industrial	24-SSOP
CY2CC810	2.5V or 3.3V, 650MHz 1:10 LVCMOS Fan-Out Buffer	2.5/3.3	0 to 650	LVCMOS	10	0 to 650	LVCMOS	Commercial/Industrial	20-SSOP
CY2CC910	Very low Voltage 1:10 LVCMOS Clk Fanout Buffer	1.8/2.5/3.3	0 to 650	LVCMOS	10	0 to 650	LVCMOS	Commercial/Industrial	20-SSOP
CY2DP814	3.3V, 450MHz 1:4 Differential to LVPECL Buffer	3.3	0 to 450	LVDS/LVPECL/LVTTTL	4	0 to 450	LVPECL	Commercial/Industrial	16-TSSOP
CY2DP818	1:8 Differential to LVPECL Clk Fanout Buffer	3.3	0 to 350	LVDS/LVPECL/LVTTTL	8	0 to 350	LVPECL	Commercial/Industrial	38-TSSOP
CY2DL814	3.3V, 400MHz 1:4 Differential to LVDS Buffer	3.3	0 to 400	LVDS/LVPECL/LVTTTL	4	0 to 400	LVDS	Commercial/Industrial	16-TSSOP

### CLOCK DISTRIBUTION

FailSafe™ devices provide an optimum solution for applications where continuous operation is required in the event of a primary clock failure. Continuous operation is achieved using a DCXO that serves as a redundant clock source, maintaining the last frequency and phase information of the reference clock.

The Field Programmable Zero Delay Buffer is a high-performance clock distribution device that can be customized for a wide range of applications. The device is implemented on Cypress's proprietary non-volatile technology. It is fully programmable via volume or prototype programmers. The device enables the user to define an Application Specific clock distribution device with customized input and output dividers, feedback topology (internal/external), output inversions and output drive strengths.

For more programming information, please refer to the CyberClocks timing and development tool suite at [www.cypress.com/go/cyberclocks](http://www.cypress.com/go/cyberclocks)

## Clock Distribution

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Operating Temperature	Package
<b>Non Zero Delay Buffers</b>									
CY2304NZ	3.3V 1:4 Non-Zero Delay Buffer	3.3	0 to 133	LVC MOS/LVTTL	4	0 to 133	LVC MOS/LVTTL	Commercial/Industrial	8-TSSOP
CY2309NZ	3.3V 1:9 Non-Zero Delay Buffer	3.3	0 to 133	LVC MOS/LVTTL	9	0 to 133	LVC MOS/LVTTL	Commercial/Industrial	16-SOIC
CY2310ANZ	3.3V 1:10 Non-Zero Delay Buffer with serial control interface	3.3	0 to 100	LVC MOS/LVTTL	10	0 to 100	LVC MOS/LVTTL	Commercial	28-SSOP
CY2313ANZ	3.3V 1:13 Non-Zero Delay Buffer with serial control interface	3.3	0 to 100	LVC MOS/LVTTL	13	0 to 100	LVC MOS/LVTTL	Commercial	28-SOIC
CY2314ANZ	3.3V 1:14 Non-Zero Delay Buffer with serial control interface	3.3	0 to 100	LVC MOS/LVTTL	14	0 to 100	LVC MOS/LVTTL	Commercial	28-SOIC
CY2318ANZ	3.3V 1:18 Non-Zero Delay Buffer with serial control interface	3.3	0 to 100	LVC MOS/LVTTL	18	0 to 100	LVC MOS/LVTTL	Commercial	48-SSOP
CY29940	2.5/3.3,200MHz,2:18LVPECL/LVC MOS In, LVC MOS Out Buf	2.5/3.3	0 to 200	LVC MOS, LVPECL	18	0 to 133	LVC MOS/LVTTL	Commercial/Industrial	32-LQFP
CY29942	2.5/3.3,200MHz,1:18LVC MOS In, LVC MOS Out Buf	2.5/3.3	0 to 200	LVC MOS	18	10 to 133	LVC MOS/LVTTL	Commercial/Industrial	32-LQFP
CY29946	2.5/3.3,200MHz,2:10LVC MOS In, LVC MOS Out Buf	2.5/3.3	0 to 200	LVC MOS	10	0 to 200	LVC MOS/LVTTL	Commercial/Industrial	32-TQFP
CY29947	2.5/3.3V,200MHz, 2:9 LVC MOS in LVC MOS Out Buffer	2.5/3.3	0 to 200	LVC MOS	9	0 to 200	LVC MOS/LVTTL	Commercial	32-TQFP
CY29948	2.5/3.3,200MHz,2:12LVPECL/LVC MOS In LVC MOS Out Buf	2.5/3.3	0 to 200	LVC MOS, LVPECL	12	0 to 200	LVC MOS/LVTTL	Commercial/Industrial	32-TQFP
CY29949	2.5/3.3,200MHz,3:15LVPECL/LVC MOS In LVC MOS Out Buf	2.5/3.3	0 to 200	LVC MOS, LVPECL	15	0 to 200	LVC MOS/LVTTL	Commercial/Industrial	52-TQFP
<b>Zero Delay Buffers</b>									
CY2300	3.3V 1:4 Zero Delay Buffer with /2 and X2 function	3.3	20 to 83.3	LVC MOS/LVTTL	4	10 to 166.67	LVC MOS/LVTTL	Commercial	8-SOIC
CY2302	3.3V 1:2 Zero Delay Buffer	3.3/5.0	5 to 133	CMOS/LVC MOS	2	10 to 133	CMOS/LVC MOS	Commercial/Industrial	8-SOIC
CY2303	3.3V 1:3 Zero Delay Buffer	3.3	10 to 166.67	LVC MOS/LVTTL	3	10 to 133	LVC MOS/LVTTL	Commercial	8-SOIC
CY2304	3.3V, 1:4 Zero Delay Buffer	3.3	10 to 133	LVC MOS/LVTTL	4	10 to 133	LVC MOS/LVTTL	Commercial/Industrial	8-SOIC
CY2305	3.3V, 1:5 Zero Delay Buffer	3.3	10 to 133	LVC MOS/LVTTL	5	10 to 133	LVC MOS/LVTTL	Commercial	8-SOIC
CY2305C	3.3V, 1:5 Zero Delay Buffer	3.3	10 to 133	LVC MOS/LVTTL	5	10 to 133	LVC MOS/LVTTL	Commercial/Industrial	8-SOIC
CY2308	3.3V 1:8 LVTTTL/LVC MOS Zero Delay Buffer	3.3	10 to 133	LVC MOS/LVTTL	8	10 to 133	LVC MOS/LVTTL	Commercial/Industrial	16-SOIC/ 16-TSSOP
CY2309	3.3V 1:9 Zero Delay Buffer	3.3	10 to 133	LVTTTL/LVC MOS	9	10 to 133	LVTTTL/LVC MOS	Commercial/Industrial	16-SOIC/ 16-TSSOP
CY2309C	3.3V 1:9 Zero Delay Buffer	3.3	10 to 133	LVTTTL/LVC MOS	9	10 to 133	LVTTTL/LVC MOS	Commercial/Industrial	16-SOIC/ 16-TSSOP
CY23EP05	1:5 Enhanced Performance Zero Delay Buffer	2.5/3.3	10 to 220	LVC MOS/LVTTL	5	10 to 220	LVC MOS/LVTTL	Commercial/Industrial	8-SOIC
CY23EP09	1:9 Enhanced Performance Zero Delay Buffer	2.5/3.3	10 to 220	LVC MOS/LVTTL	9	10 to 220	LVC MOS/LVTTL	Commercial/Industrial	16-SOIC/ 16-TSSOP
CY23S02	3.3/5.0V, 1:2 Spread Aware Zero Delay Buffer	3.3/5.0	10 to 133	LVC MOS/TTL	2	20 to 133	LVC MOS/TTL	Industrial	8-SOIC
CY23S05	3.3V, 1:5 Spread Aware Zero Delay Buffer	3.3	10 to 133	LVC MOS/LVTTL	5	10 to 133	LVC MOS/LVTTL	Commercial/Industrial	8-SOIC
CY23S08	3.3V, 1:8 Spread Aware Zero Delay Buffer	3.3	10 to 140	LVC MOS/LVTTL	8	10 to 140	LVC MOS/LVTTL	Commercial/Industrial	16-SOIC
CY23S09	3.3V, 1:9 Spread Aware Zero Delay Buffer	3.3	10 to 133	LVC MOS/LVTTL	9	10 to 133	LVC MOS/LVTTL	Commercial/Industrial	16-SOIC/ 16-TSSOP
CY2509	3.3V 1:10 Spread Aware Zero Delay Buffer	3.3	40 to 140	LVC MOS/LVTTL	10	40 to 140	LVC MOS/LVTTL	Commercial	24-TSSOP
CY2510	3.3V 1:11 Spread Aware Zero Delay Buffer	3.3	40 to 140	LVC MOS/LVTTL	11	40 to 140	LVC MOS/LVTTL	Commercial	24-TSSOP
CY29350	2.5/3.3V, 200MHz 2 Inputs (Xtal or LVC MOS/LVTTL): 9 Zero Delay Buffer	2.5/3.3	6.25 to 32.25	Xtal/LVC MOS/LVTTL	9	6.25 to 200	LVC MOS/LVTTL	Industrial	32-TQFP
CY29351	2.5/3.3V,200MHz,LVPECL/LVC MOS 1:9 Zero Delay Buffer	2.5/3.3	25 to 200	LVPECL/LVC MOS	9	25 to 200	LVC MOS/LVTTL	Industrial	32-TQFP
CY29352	2.5/3.3V,200MHz, 1:11 Zero Delay Buffer	2.5/3.3	16.67 to 200	LVC MOS/LVTTL	11	16.67 to 200	LVC MOS/LVTTL	Industrial	32-TQFP
CY29774	2.5/3.3V,125MHz, 2:14 Spread Aware Zero Delay Buffer	2.5/3.3	4.2 to 62.5	LVC MOS/LVTTL	14	8.3 to 125	LVC MOS/LVTTL	Industrial	52-TQFP
CY29775	2.5/3.3V,200MHz, 2:14 Spread Aware Zero Delay Buffer	2.5/3.3	4.2 to 125	LVC MOS/LVTTL	14	8.3 to 200	LVC MOS/LVTTL	Industrial	52-TQFP
CY29972	3.3V,125MHz,Xtal/LVC MOS 1:12 Spread Aware Zero Delay Buffer	3.3	10 to 25	Xtal/LVC MOS/LVTTL	12	25 to 125	LVC MOS/LVTTL	Industrial	52-TQFP
CY29973	3.3V,125MHz,LVPECL/LVC MOS 3:12 Spread Aware Zero Delay Buffer	3.3	8.3 to 125	LVPECL/LVC MOS	12	8.3 to 125	LVC MOS/LVTTL	Industrial	52-TQFP
CY29976	3.3V,125MHz,LVPECL/LVC MOS 3:12 Spread Aware Zero Delay Buffer	3.3	10 to 125	LVPECL/LVC MOS	12	25 to 125	LVC MOS/LVTTL	Industrial	52-TQFP
CYW170	3.3/5.0V 1:2 Spread Aware Zero Delay Buffer	3.3/5.0	5 to 133	CMOS/LVC MOS	2	10 to 133	CMOS/LVC MOS	Commercial	8-SOIC
CYW194	3.3V 1:2 Zero Delay Buffer	3.3/5.0	5 to 133	CMOS/LVC MOS	2	10 to 133	CMOS/LVC MOS	Commercial	8-SOIC
W163	3.3V 1:5 Spread Aware Zero Delay Buffer	3.3	10 to 133	LVC MOS/LVTTL	5	10 to 133	LVC MOS/LVTTL	Commercial	8-SOIC
W194	3.3V 1:2 Zero Delay Buffer	3.3/5.0	5 to 133	CMOS/LVC MOS	2	10 to 133	CMOS/LVC MOS	Commercial	8-SOIC
W232	3.3V 1:10 Spread Aware Zero Delay Buffer	3.3	25 to 140	LVC MOS/LVTTL	11	25 to 140	LVC MOS/LVTTL	Commercial	24-TSSOP
CY23FS04	3.3V,170MHz,1:4 FailSafe Zero Delay Buffer	2.5/3.3	4.17 to 170	LVC MOS/LVTTL	4	4.17 to 170	LVC MOS/LVTTL	Commercial/Industrial	16-TSSOP
CY23FS08	3.3/1.8V,200MHz,1:8 FailSafe Zero Delay Buffer	3.3/1.8	1.04 to 200	LVC MOS/LVTTL	8	1.04 to 200	LVC MOS/LVTTL	Commercial/Industrial	28-TSSOP
CY23FP12	3.3V,200MHz,1:12 Field Programmable Zero Delay Buffer	2.5/3.3	10 to 200	LVC MOS/LVTTL	12	10 to 200	LVC MOS/LVTTL	Commercial/Industrial	28-SSOP

## PREMIS™: SSCG EMI REDUCTION

Cypress offers a selection of spread spectrum frequency timing generators for general-purpose applications.

Cypress PREMIS Spread Spectrum Clock Generator (SSCG) devices inject spread spectrum features into a clocking signal. The resulting time variable frequency output is nominally equal in frequency to the reference signal.

Other available devices provide some frequency multiplication capability in addition to providing the benefits of spread spectrum timing. All Cypress spread spectrum timing solutions provide the maximum EMI reduction on the market.

### Premis: SSCG EMI Reduction

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Spread Spectrum	Operating Temperature	Package
<b>PLL Programmable EMI Reduction Clock</b>										
CY24904	Programmable 1-PLL Clock Synthesizer with Spread Spectrum	3	27 to 27	Ref - CMOS	2	35 to 80	CMOS	Yes	Commercial	8-TSSOP
CY25100	Field Programmable Spread Spectrum Clock Generator	3.3	8 to 166	Xtal/Ref-in CMOS	2	3 to 200	CMOS	Yes	Commercial/Industrial	8-SOIC/8-TSSOP
CY25200	Field Programmable Spread Spectrum Clock Generator	2.5/3.3	8 to 166	Xtal/Ref-in CMOS	6	3 to 200	CMOS	Yes	Commercial/Industrial	16-TSSOP
CY25560	Programmable Spread Spectrum Clock Generator	3.3	25 to 100	Xtal/Ref-in CMOS	1	25 to 100	CMOS	Yes	Commercial/Industrial	8-SOIC
CY25561	Programmable Spread Spectrum Clock Generator	3.3	50 to 166	Xtal/Ref-in CMOS	1	50 to 166	CMOS	Yes	Commercial	8-SOIC
CY25562	Programmable Spread Spectrum Clock Generator	3.3	50 to 200	Xtal/Ref-in CMOS	1	50 to 200	CMOS	Yes	Commercial	8-SOIC
CY25568	Programmable Spread Spectrum Clock Generator	3.3	4 to 32	Xtal/Ref-in CMOS	4	4 to 128	CMOS	Yes	Commercial	16-SOIC
CY25701	Programmable Spread Spectrum Crystal Oscillator (Xtal Inside)	3.3	NA	Xtal Inside	1	10 to 166	CMOS	Yes	Commercial/Industrial	Xtal Inside
CY25811	Spread Spectrum Clock Generator	3.3	4 to 32	Xtal/Ref-in CMOS	1	4 to 32	CMOS	Yes	Commercial/Industrial	8-SOIC/8-TSSOP
CY25812	Spread Spectrum Clock Generator	3.3	4 to 32	Xtal/Ref-in CMOS	1	8 to 64	CMOS	Yes	Commercial	8-SOIC/8-TSSOP
CY25814	Spread Spectrum Clock Generator	3.3	4 to 32	Xtal/Ref-in CMOS	1	16 to 128	CMOS	Yes	Commercial/Industrial	8-SOIC
CY25823	Spread Spectrum Clock Generator	3.3	14.13	Ref-in CMOS	2	96 to 100	Differential	Yes	Commercial	16-TSSOP
CY26121	4-Output Spread Spectrum Clock Generator	3.3	25	Xtal/Ref-in CMOS	5	25 to 66.66	CMOS	Yes	Commercial/Industrial	16-TSSOP
CY25402	3-Output Programmable Spread Spectrum Clock Generator	2.5/3.0/3.3	8 to 166	Xtal/Ref-in CMOS	3	3 to 166	CMOS	Yes	Commercial	8-SOIC
CY25482	Spread Spectrum Clock Generator	2.5/3.0/3.3	8 to 166	Ref-in CMOS	3	3 to 166	CMOS	Yes	Industrial	8-SOIC
CY25403	3-PLL Spread Spectrum Clock Generator	1.8/2.5/3.0/3.3	8 to 166	Xtal/Ref-in CMOS	3	3 to 166	CMOS	Yes	Commercial	8-SOIC
CY25404	4-PLL Spread Spectrum Clock Generator	2.5/3.0/3.3	8 to 166	Xtal/Ref-in CMOS	9	3 to 166	CMOS	Yes	Industrial	20-TSSOP
CY2544	4-PLL 9-Output Programmable Spread Spectrum Clock Generator	1.8/2.5/3.0/3.3	8 to 166	Xtal/Ref-in CMOS	9	3 to 166	CMOS	Yes	Commercial	24-QFN
CY2545	4-PLL 8-Output Programmable Spread Spectrum Clock Generator	2.5/3.0/3.3	8 to 166	Xtal/Ref-in CMOS	9	3 to 166	CMOS	Yes	Commercial/Industrial	24-QFN
CY2546	4-PLL 9-Output Programmable Spread Spectrum Clock Generator	1.8	8 to 166	Xtal/Ref-in CMOS	9	3 to 166	CMOS	Yes	Commercial	24-QFN
CY2547	Field Programmable Spread Spectrum Clock Generator	1.8	8 to 166	Xtal/Ref-in CMOS	9	3 to 166	CMOS	Yes	Commercial	24-QFN
CY2548	Spread Spectrum Clock Generator	2.5/3.0/3.3	8 to 166	Ref-in CMOS	9	3 to 166	CMOS	Yes	Commercial	24-QFN
<b>EMI Reduction Clocks</b>										
CY24242	Laser Printer System Clock Generator with EMI Reduction	2.5/3.3	14.31818	Xtal/Ref-in CMOS	10	14.31818 to 133.3	CMOS	Yes	Commercial	28-SSOP
CY24900	DTV video clock generator	3	27	Ref-in CMOS	1	54.054	CMOS	Yes	Commercial	8-TSSOP
CY24901	Spread Spectrum Clock Generator with 2-wire Serial Interface	3	27	Ref-in CMOS	1	35 to 80	CMOS	Yes	Commercial	8-TSSOP
CY24902	Spread Spectrum Clock Generator with 2-wire Serial Interface	3	27	Ref-in CMOS	2	27 to 33.33	CMOS	Yes	Commercial	8-TSSOP
CY24905	Spread Spectrum Clock Generator	3.3	27	Xtal	2	24.576 to 27	CMOS	Yes	Commercial	8-TSSOP
CY25103	Spread Spectrum Clock Generator	3.3	12	Xtal	1	48	CMOS	Yes	Commercial	8-SOIC
CY25819	Spread Spectrum Clock Generator	3.3	16 to 32	Xtal/Ref-in CMOS	2	16 to 32	CMOS	Yes	Commercial	8-SOIC
CY25901	Spread Spectrum Clock Generator	3.3	36 to 44	Xtal	2	36 to 44	CMOS	Yes	Commercial	8-SOIC
CY27020	48MHz Spread Spectrum Clock for EMI Reduction	2.5/3.3	48 to 48	Xtal	2	48	CMOS	Yes	Commercial	8-SOIC



## ROBOCLOCK® SKEW MANAGEMENT

With RoboClock high-speed multiphase phase-locked loop (PLL) clock buffers, designers can control output skew and multiply and divide factors to help accommodate last-minute changes. Maximum flexibility and extensive AC testing on each device ensures a safe design. RoboClock offers a high performance timing solution for designers of communications, computation, and storage networking applications.

### RoboClock

Item	Feature Description	I/O Voltage	Input Frequency Range	Input Signal Type	Number of Outputs	Output Frequency Range	Output Signal Type	Operating Temperature	Package
CY7B991	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: Yes	5	3.75 to 80	TTL	8	3.75 to 80	TTL	Commercial/Industrial	32-PLCC
CY7B9910	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: No	5	3.75 to 80	TTL	8	3.75 to 80	TTL	Commercial/Industrial	24-SOIC
CY7B9911	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: Yes	5	3.75 to 100	TTL	8	3.75 to 100	TTL	Commercial	32-PLCC
CY7B9911V	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: Yes	3.3	3.75 to 110	LVTTTL	8	3.75 to 110	LVTTTL	Commercial	32-PLCC
CY7B991V	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: Yes	5	3.75 to 80	LVTTTL	8	3.75 to 80	LVTTTL	Commercial/Industrial	32-PLCC
CY7B992	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: Yes	5	3.75 to 80	CMOS	8	3.75 to 80	CMOS	Commercial/Industrial	32-PLCC
CY7B9920	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: No	5	3.75 to 80	CMOS	8	3.75 to 80	CMOS	Commercial/Industrial	24-SOIC
CY7B9930V	Multiplication: 1x, 2x, 3x, 4x, 5x, 6x, 8x, 10x, Division: 1, 2, 3, 4, 5, 6, 8, 10, 12, INV, Programmable Skew: No	3.3	12 to 100	LVTTTL, LVPECL	10	12 to 100	LVTTTL	Commercial	44-TQFP
CY7B993V	Multiplication: 1x, 2x, 3x, 4x, 5x, 6x, 8x, 10x, Division: 1, 2, 3, 4, 5, 6, 8, 10, 12, INV, Programmable Skew: Yes	3.3	12 to 100	LVTTTL, LVPECL	18	12 to 100	LVTTTL	Commercial/Industrial	100-TQFP, 100-BGA
CY7B9940V	Multiplication: 1x, 2x, 3x, 4x, 5x, 6x, 8x, 10x, Division: 1, 2, 3, 4, 5, 6, 8, 10, 12, INV, Programmable Skew: No	3.3	24 to 200	LVTTTL, LVPECL	10	24 to 200	LVTTTL	Commercial/Industrial	44-TQFP
CY7B9945V	Multiplication: 1x, 2x, 3x, 4x, 5x, 6x, 8x, 10x, Division: 1, 2, 3, 4, 5, 6, 8, 10, 12, INV, Programmable Skew: Yes	3.3	24 to 200	LVTTTL, LVPECL	11	24 to 200	LVTTTL	Commercial/Industrial	52-TQFP
CY7B994V	Multiplication: 1x, 2x, 3x, 4x, 5x, 6x, 8x, 10x, Division: 1, 2, 3, 4, 5, 6, 8, 10, 12, INV, Programmable Skew: Yes	3.3	24 to 200	LVTTTL, LVPECL	18	24 to 200	LVTTTL	Commercial/Industrial	100-TQFP, 100-BGA
CY7B995	Multiplication: 1x, 2x, 3x, 4x, 5x, 6x, 8x, 10x, 12x, Division: 2, 4, Programmable Skew: Yes, Precision of Output Skew: Selectable	2.5/3.3	6 to 200	LVTTTL, LVCMOS	8	6 to 200	LVTTTL	Commercial/Industrial	44-TQFP
CY7B9950	Multiplication: 1x, 2x, 4x, Division: 2, 4, INV, Programmable Skew: Yes	2.5/3.3	6 to 200	LVTTTL, LVCMOS	8	6 to 200	LVTTTL	Commercial/Industrial	32-TQFP
CY7B9973V	Multiplication: 4x, 6x, 8x, 10x, 12x, 16x, 20x, Division: 2, 4, 6, 8, 10, 12, 16, 20 Programmable Skew: No	3.3	2.5 to 200	LVTTTL, LVPECL	13	10 to 200	LVTTTL	Commercial	52-TQFP

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## ABOUT CYPRESS

Cypress delivers high-performance, mixed-signal, programmable solutions that provide customers with rapid time-to-market and exceptional system value. Cypress offerings include the PSoC Programmable System-on-Chip, USB controllers, general-purpose programmable clocks, and memories. Cypress also offers wired and wireless connectivity solutions ranging from its CyFi Low-Power RF solution, to West Bridge and EZ-USB FX2LP controllers that enhance connectivity and performance in multimedia handsets. Cypress serves numerous markets, including consumer, computation, data communications, automotive and industrial. Cypress trades on the NYSE under the ticker symbol CY. Visit Cypress online at [www.cypress.com](http://www.cypress.com).