

# Product Selector Guide

Clocks  
Framers  
Memories  
Network Processing  
Neuron® Chips  
Physical Layer Devices  
Programmable Logic  
PSoC™ Mixed-Signal Arrays  
USB/Hosts/Hubs/Peripherals  
WirelessUSB™



● Summer/Fall 2004

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Neuron<sup>®</sup> Chips

Physical Layer Devices

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PSoC<sup>™</sup> Mixed-Signal Arrays

USB/Hosts/Hubs/Peripherals

WirelessUSB<sup>™</sup>

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## Table of Contents

### **Clocks & Buffers**

Non-PLL Clock Buffers . . . . .	3
PLL Zero-Delay Clock Buffers & Generators . . . . .	5
Motherboard-Based Clock Generators . . . . .	8
Motherboard-Based Clock Buffers . . . . .	11
PREMIST™ EMI-Reduction SSCG . . . . .	12
Clock Synthesizers . . . . .	13

### **Framers & Mappers**

Link-Layer Devices . . . . .	15
SONET & SDH Framers . . . . .	16

### **Memories**

Asynchronous SRAMs . . . . .	17
Dual-Port RAMs. . . . .	19
FIFOs . . . . .	23
MicroPower™ SRAMs . . . . .	26
Specialty DRAMs . . . . .	27
PROMs . . . . .	28
QuadPort™ DSEs . . . . .	29
SRAM Modules . . . . .	30
Synchronous SRAMs . . . . .	31
Wafers & Die . . . . .	35

### **Network Processing**

Network Search Engines . . . . .	39
Coprocessors . . . . .	40

### **Neuron® Chips**

Embedded Processors and Controllers. . . . .	41
--	----

### **Physical Layer Devices (PHYs)**

Video (SMPTE) PHYs . . . . .	42
Backplane PHYs . . . . .	43
SONET & SDH PHYs . . . . .	44

### **Programmable Logic Devices (PLDs)**

PLD Development Tools & Software . . . . .	45
Programmable Logic Devices . . . . .	46

### **PSoC™ Mixed-Signal Arrays**

PSoC™ Mixed-Signal Array . . . . .	47
------------------------------------	----

## USB Controllers

USB Embedded Hosts . . . . .	49
USB Low-Speed Peripherals . . . . .	50
USB Full-Speed Peripherals . . . . .	51
USB High-Speed Peripherals . . . . .	52
USB Hubs . . . . .	53

## WirelessUSB™

WirelessUSB Solutions . . . . .	54
---------------------------------	----

## Ordering Information

Physical Layer Devices . . . . .	55
Network Search Engines . . . . .	55
Network Coprocessors . . . . .	56
POSIC . . . . .	56
RAM, PROM, Dual-Port Static RAM, FIFO, Data Communications . . . . .	57
Modules . . . . .	58
PALs & PLDs . . . . .	59
Timing Technology . . . . .	60
USB . . . . .	61
Neuron® Chips . . . . .	61
PSoC™ Mixed-Signal Array . . . . .	62

## Clocks & Buffers

### Non-PLL Clock Buffers

Cypress's non-PLL buffers are high-performance clock and data drivers for a variety of applications, including timing distribution and level translation. Since they do not include PLLs, these fanout buffers are low power and introduce very low added jitter. Available as single-ended or differential, non-PLL buffers include all general-purpose clock/data buffers, crosspoint switches and MUXes, and Double Data Rate (DDR) registers.

#### Single-Ended Buffers

Part No.	Description	Input Type	Output Type	Outputs	Freq. (Max.)	V <sub>DD</sub>	Jitter	Output Skew (Max.)	Operating Temperature	Pins	Package
CY2304NZ	PCI-X & General Purpose	LVTTTL/ LVCMOS	LVTTTL	4	140 MHz	3.3V		100 ps	Commercial Industrial	8	TSSOP
CY2309NZ	Nine Output 3.3V	TTL/LVTTTL/ LVCMOS	LVTTTL	9	133 MHz	3.3V		250 ps	Commercial Industrial	16	SOIC
CY2310ANZ	SDRAM Buffer for Mobile PCs with 4 SO-Dimms	TTL/LVTTTL/ LVCMOS	LVTTTL	10	100 MHz	3.3V		250 ps	Commercial	28	SSOP
CY2313ANZ	SDRAM Buffer for Desktop PCs with 3 DIMMs	TTL/LVTTTL/ LVCMOS	LVTTTL/ LVCMOS	13	100 MHz	3.3V		250 ps	Commercial	28	SOIC
CY2314ANZ	SDRAM Buffer for Desktop PCs with 3 DIMMs	TTL/LVTTTL/ LVCMOS	LVTTTL/ LVCMOS	14	100 MHz	3.3V		250 ps	Commercial	28	SOIC
CY2318ANZ	1:18 SDRAM Buffer for Desktop PCs with 4 DIMMs	TTL/LVTTTL/ LVCMOS	LVTTTL/ LVCMOS	18	100 MHz	3.3V		250 ps	Commercial	48	SSOP
CY2318BNZ	1:18 SDRAM Buffer for Desktop PCs with 4 DIMMs	TTL/LVTTTL/ LVCMOS	LVTTTL/ LVCMOS	18	133 MHz	3.3V		200 ps	Commercial Industrial	48	SSOP
CY29940	1:18 Clock Distribution Buffer	LVPECL or LVCMOS/ LVTTTL	LVTTTL	18	200 MHz	2.5V/3.3V		2.5V=200 ps 3.3V=150 ps	Commercial Industrial	32	LQFP
CY29940-1	1:18 Clock Distribution Buffer, low output skew	LVPECL or LVCMOS/ LVTTTL	LVTTTL	18	200 MHz	2.5V/3.3V		150 ps	Commercial Industrial	32	TQFP
CY29942	1:18 Clock Distribution Buffer, low output skew	LVTTTL/ LVCMOS	LVTTTL	18	200 MHz	2.5V/3.3V		200 ps	Commercial Industrial	32	LQFP
CY29943	1:18 Clock Distribution Buffer, low output skew	LVPECL or LVCMOS/ LVTTTL	LVTTTL	18	200 MHz	2.5V/3.3V		200 ps	Commercial Industrial	32	LQFP
CY29946	1:10 Clock Distribution Buffer, low-voltage	LVTTTL/ LVCMOS	LVTTTL	10	200 MHz	2.5V/3.3V		250 ps	Commercial Industrial	32	TQFP
CY29947	1:9 Clock Distribution Buffer, low-voltage	LVTTTL/ LVCMOS	LVTTTL	9	200 MHz	2.5V/3.3V		250 ps	Commercial Industrial	32	TQFP
CY29948	1:12 Clock Distribution Buffer, low-voltage	LVTTTL/ LVCMOS/ LVPECL	LVTTTL	12	200 MHz	2.5V/3.3V		250 ps	Commercial Industrial	32	TQFP
CY29949	1:15 Clock Distribution Buffer, low-voltage	LVPECL or LVCMOS/ LVTTTL	LVTTTL	15	200 MHz	2.5V/3.3V		350 ps	Commercial Industrial	52	TQFP
CY2CC1810	1:10 AVCMOS Clk Fanout Buffer w/tri-state outputs	LVTTTL/ LVCMOS	LVTTTL	10	200 MHz	2.5V/3.3V		200 ps	Commercial Industrial	24	SSOP/SOIC
CY2CC1910	1:10 AVCMOS Clk Fanout Buffer w/tri-state outputs	LVTTTL/ LVCMOS	LVTTTL	10	200 MHz	1.8V/ 2.5V/3.3V		200 ps	Commercial Industrial	24	SSOP/SOIC
CY2CC810	1:10 AVCMOS Clk Fanout Buffer	LVTTTL/ LVCMOS	LVTTTL	10	650 MHz	2.5V/3.3V		200 ps	Commercial Industrial	20	SSOP/SOIC
CY2CC910	1:10 Fanout Buffer	LVTTTL/ LVCMOS	LVTTTL	10	650 MHz	1.8V/ 2.5V/3.3V		200 ps	Commercial Industrial	20	SSOP/SOIC

## Single-Ended Buffers (Cont'd)

Part No.	Description	Input Type	Output Type	Outputs	Freq. (Max.)	V <sub>DD</sub>	Jitter	Output Skew (Max.)	Operating Temperature	Pins	Package
CY2HH8110	1 HSTL Input, 10 HSTL Outputs, DDR Applications	HSTL	HSTL	10	150 MHz	1.5V	50 ps Jc2c	200 ps	Commercial	32	TQFP
CY2PD817	1:7 PECL to PECL/CMOS Buffer	LVPECL	1 LVPECL/ 6 LVTTL	7	320 MHz	2.5V		250 ps	Commercial	24	TSSOP

## Differential Buffers

Part No.	Description	Input Type	Output Type	Outputs	Freq. (Max.)	V <sub>DD</sub>	Jitter	Output Skew (Max)	Operating Temperature	Pins	Package
CY2DL814	1:4 Differential Fanout Buffer	LVDS, LVPECL, or LVTTL	LVDS	4 pairs	400 MHz	3.3V		200 ps	Commercial Industrial	16	SOIC/TSSOP
CY2DL818	1:8 Differential Fanout Buffer	LVDS, LVPECL, or LVTTL	LVDS	8 pairs	400 MHz	3.3V		200 ps	Commercial Industrial	38	TSSOP
CY2DP3110	2:10 PECL/ECL/HSTL Fanout Buffer	ECL/PECL and HSTL	ECL/PECL	10 pairs	1500 MHz	2.V5/3.3V	1.2 ps RMS Jper	50 ps	Industrial	32	TQFP
CY2DP3120	2:10 PECL/ECL/HSTL Fanout Buffer	ECL/PECL and HSTL	ECL/PECL	20 pairs	1500 MHz	2.5V/3.3V	1.4 ps RMS Jper	50 ps	Industrial	52	TQFP
CY2DP314	1 of 2:4 Differential Fanout Buffer	ECL/PECL and HSTL	ECL/PECL	4 pairs	1500 MHz	2.5V/3.3V		50 ps	Industrial	20	SSOP
CY2DP814	1:4 Differential to LVPECL Clock Fanout Buffer	LVDS, LVPECL, or LVTTL	LVPECL	4 pairs	450 MHz	3.3V		200 ps	Commercial Industrial	16	SOIC / TSSOP
CY2DP818	1:8 Differential to LVPECL Clk Fanout Buffer	LVDS, LVPECL, or LVTTL	LVPECL	8 pairs	350 MHz	3.3V		200 ps	Commercial Industrial	38	TSSOP
CY2DP818-2	1:8 Differential to LVPECL Clk Fanout Buffer	LVDS, LVPECL, or LVTTL	LVPECL	8 pairs	350 MHz	3.3V		200 ps	Commercial Industrial	38	TSSOP
CY2PP3115	1:15 Differential Fanout Buffer	ECL/PECL	ECL/PECL	15 pairs	1500 MHz	2.5V/3.3V		50 ps	Industrial	52	TQFP
CY2PP318	2:8 ECL/PECL Differential Fanout Buffer	ECL/PECL	ECL/PECL	8 pairs	1500 MHz	2.5V/3.3V	1.2 ps RMS Jper	50 ps	Industrial	28	PLCC
CY2PP3210	Dual 1:5 PECL/ECL Fanout Buffer	ECL/PECL	ECL/PECL	5 pairs	1500 MHz	2.5V/3.3V	0.8 ps RMS Jper	50 ps	Industrial	32	TQFP
CY2PP3220	Dual 1:10 PECL/ECL Fanout Buffer	ECL/PECL	ECL/PECL	10 pairs	1500 MHz	2.5V/3.3V	1.2 ps RMS Jper	50 ps	Industrial	52	TQFP

## Crosspoint Switches & Multiplexers

Part No.	Description	Input Type	Output Type	Outputs	Freq. (Max.)	V <sub>DD</sub>	Output Skew (Max.)	Operating Temperature	Pins	Package
CY2PP326	2x2 differential clock, data switch, and fanout buffer	LVPECL	LVPECL	6	1200 MHz	2.5V/3.3V	50 ps	Industrial	32	TQFP

## DDR Registers

Part No.	Description	Input Type	Output Type	Outputs	Freq. (Max.)	V <sub>DD</sub>	Operating Temperature	Pins	Package
CY2SSTU32864	25-bit (1:1) or 14-bit (1:2) JEDEC-Compliant	SSTL_18	LVC MOS	8	333	1.8V	Commercial Industrial	96	LFBGA
CY2SSTV16857	14-Bit, PC2700-/PC3200 Compliant	SSTL_2	SSTL-2	14	280	2.5V	Commercial	48	TSSOP
CY2SSTV16859	13-Bit to 26-Bit, PC2700-/PC3200 Compliant	SSTL_2	SSTL-2	13	280	2.5V	Commercial	64/56	TSSOP/QFN

## PLL Zero-Delay Clock Buffers & Generators

Cypress offers a wide selection of PLL-based clock buffers and generators that comply with industry standards for various applications. PLL-based buffers, or Zero-Delay Buffers (ZDBs), provide multiple outputs of a reference signal input. They are mainly used in applications requiring minimum input-to-output propagation delay, frequency translation, jitter cleanup, and output skew control. Dedicated buffers are also available for DIMM and memory interfacing, as well as clock redundancy applications that require continuous operation in the event of a primary clock failure.

### Zero-Delay Buffers

Part No.	V <sub>DD</sub>	Input Signal	Output Signal	Input Frequency Range	Output Frequency Range	C2C Jitter (ps, Max.)	Operating Temperature	Pins	Package
CY2300	3.3V	LVTTTL/LVCMOS	LVTTTL	20-83.33 MHz	10-166.67 MHz		Commercial Industrial	8	SOIC
CY23020-1	2.5V/ 3.3V	LVC MOS	LVTTTL	50-200 MHz	50-200 MHz	95, x1 mult (peak)/15, x1 mult (rms)/ 145, x2 mult (peak)/25, x2 mult (rms)	Commercial Industrial	48	TSSOP/QFN
CY23020-3	3.3V	LVPECL	LVPECL	100-400 MHz	100-400 MHz	100, x1 mult (p-p)/15, x1 mult (rms)/ 125, x2 mult (p-p)/30, x2 mult (rms)	Industrial	48	QFN
CY2302	3.3V/5V	LVTTTL/LVCMOS	LVTTTL	5-133 MHz	10-133 MHz	300, 3.3V, >30 MHz /200, 5V, >30 MHz	Commercial Industrial	8	SOIC
CY2303	3.3V	LVTTTL/LVCMOS	LVTTTL	10-41.67 MHz	10-166 MHz		Commercial Industrial	8	SOIC
CY2304	3.3V	TTL/LVTTTL/ LVCMOS	LVTTTL	10-133 MHz	10-133 MHz	175/200, 66 MHz 15/30 pF (-1)/100, 133 MHz 15 pF (-1)/375/400, 66 MHz 15/30 pF (-2)	Commercial Industrial	8	SOIC
CY2305/ CY2309	3.3V	LVTTTL/LVCMOS	LVTTTL	10-133 MHz	10-133 MHz	200, 66MHz	Commercial Industrial	8 or 16	SOIC/ TSSOP
CY2308	3.3V	LVTTTL/LVCMOS	LVTTTL	10-133 MHz	10-133 MHz	400, 66 MHz (-2, -3)/200, 66 MHz (all else)/100, 133 MHz (all else)	Commercial Industrial	8 or 16	SOIC/ TSSOP
CY23S02	3.3V/5V	LVTTTL/LVCMO	LVTTTL	10-133 MHz	20-133 MHz	250, 3.3V, 133 MHz/200, 5V, 133 MHz	Commercial Industrial	8	SOIC
CY23S05/ CY23S09	3.3V	LVTTTL/LVCMOS	LVTTTL	10-133 MHz	10-133 MHz	200 ps, 66 MHz	Commercial Industrial	8 or 16	SOIC/ TSSOP
CY23S08	3.3V	LVTTTL/LVCMOS	LVTTTL	10-140 MHz	10-140 MHz	200, 66 MHz (-3,-4)/125, 66.67 MHz (-1,-1H)/300, 66.67 MHz (-2)	Commercial	16	SOIC
CY2509/ CY2510	3.3V	LVTTTL/LVCMOS	LVTTTL	40-140 MHz	40-140 MHz	100 ps	Commercial	24	TSSOP
CY292510	3.3V	LVTTTL/LVCMOS	LVTTTL/ LVCMOS	25-200 MHz	25-200 MHz	75 ps typical	Commercial	24	TSSOP
CY29350	2.5V/ 3.3V	Xtal or LVCMOS/ LVTTTL	LVTTTL	6.3-31.25 MHz	25-200 MHz	150 ps, same frequency/ 250 ps, mult. frequency	Industrial	32	TQFP
CY29351	2.5 / 3.3V	LVPECL/LVCMOS/ LVTTTL	LVTTTL	25-200 MHz	25-200 MHz	150, same frequency/ 250, diff. frequency	Industrial	32	TQFP
CY29352	2.5V/ 3.3V	LVC MOS/LVTTTL	LVTTTL	16.6-200 MHz	16.6-200 MHz	100, same frequency/ 300, 2.5V diff. frequency/ 275, 3.3V diff. frequency	Industrial	32	TQFP
CY29653	3.3V	LVPECL	LVTTTL	25-125 MHz	25 -125 MHz	100 ps	Commercial Industrial	32	TQFP
CY29658	2.5/3.3V	LVPECL	LVTTTL	50-200 MHz	50-200 MHz	100 ps	Industrial	32	TQFP



## Zero-Delay Buffers (Cont'd)

Part No.	V <sub>DD</sub>	Input Signal	Output Signal	Input Frequency Range	Output Frequency Range	C2C Jitter (ps, Max.)	Operating Temperature	Pins	Package
CY29772	2.5V/ 3.3V	Xtal or LVTTTL/ LVCMOS	LVTTTL	6.25-125 MHz	8.33-200 MHz	30, 2.5V same frequency 125 MHz/ 150, 2.5V same frequency/ 435, 2.5V diff. frequency/ 30, 3.3V same frequency 125 MHz/ 100, 3.3V same frequency/ 375, 3.3V diff. frequency	Industrial	52	TQFP
CY29773	2.5V/ 3.3V	LVPECL/LVCMOS/ LVTTTL	LVTTTL	6.25-125 MHz	8.33-200 MHz	30, 2.5V same frequency 125 MHz / 150, 2.5V same frequency/ 435, 2.5V diff. frequency/ 30, 3.3V same frequency 125 MHz/ 100, 3.3V same frequency/ 375, 3.3V diff. frequency	Industrial	52	TQFP
CY29774	2.5V/ 3.3V	LVTTTL/LVCMOS	LVTTTL	4.2-62.5 MHz	8.3-125 MHz	150, same frequency/ 300, mult. frequency	Industrial	52	TQFP
CY29775	2.5V/ 3.3V	LVTTTL/LVCMOS	LVTTTL	4.2-125 MHz	8.3-200 MHz	150, same frequency/ 300, mult. frequency	Industrial	52	TQFP
CY29962	2.5V/ 3.3V	LVPECL or LVCMOS/LVTTTL	LVTTTL	16-50 MHz	150 MHz	100 ps typical	Industrial	48	TQFP
CY29972	3.3V	Osc/Crystal/ LVCMOS/LVTTTL	LVTTTL	see datasheet	125 MHz	100 ps typical	Industrial	52	TQFP
CY29973	3.3V	LVPECL/LVCMOS/ LVTTTL	LVTTTL	see datasheet	125 MHz	100 ps typical	Industrial	52	TQFP
CY29976	3.3V	LVPECL/LVCMOS/ LVTTTL	LVTTTL	see datasheet	125 MHz	100 ps typical	Industrial	52	TQFP
CY29977	3.3V	Osc/Crystal/ LVCMOS / LVTTTL	LVTTTL	see datasheet	125 MHz	100 ps typical	Industrial	52	TQFP
CY2V995	2.5V/ 3.3V	LVTTTL/LVCMOS	LVTTTL	2-200 MHz	6-200 MHz	100 ps (FS=L), 150 ps (FS=M/H)	Commercial Industrial	44	TQFP
CY2V9950	2.5V/ 3.3V	LVTTTL/LVCMOS	LVTTTL	6-200 MHz	6-200 MHz	100 ps (FS=L), 150 ps (FS=M/H)	Commercial Industrial	32	TQFP
CY23FP12	2.5V/ 3.3V	LVCMOS	LVTTTL	10-200 MHz	10 -200 MHz (Programmable)	200 ps, same frequency/ 400, mult frequency	Commercial Industrial	28	SSOP
CY23FP12- 002	2.5V/ 3.3V	LVCMOS	LVTTTL	10-200 MHz	10 -200 MHz (Programmable)	200 ps, same frequency/ 400, mult frequency	Commercial Industrial	28	SSOP

## Programmable Skew

Part No.	V <sub>DD</sub>	Input Signal	Output Signal	Input Frequency Range	Output Frequency Range	C2C Jitter (ps, Max.)	Output-Output Skew (ps, Max.)	Operating Temperature	Pins	Package
CY7B991/ 992	5V	TTL / CMOS	TTL	3.75-80 MHz	3.75-80 MHz	25 rms, 200 p-p	250	Commercial Industrial	32	PLCC
CY7B9910/ 9920	5V	TTL / CMOS	TTL	15-80 MHz	15-80 MHz	25 rms, 200 p-p	250	Commercial Industrial	24	SOIC
CY7B9911	5V	TTL / CMOS	TTL	3.75-100 MHz	3.75-100 MHz	25 rms, 200 p-p	250	Commercial	32	PLCC
CY7B9911V	3.3V	LVTTTL / LVCMOS	LVTTTL	3.75-110 MHz	3.75-110 MHz	25 rms, 200 p-p	250	Commercial	32	PLCC
CY7B991V	3.3V	LVTTTL / LVCMOS	LVTTTL	3.75-80 MHz	3.75 -80 MHz	25 rms, 200 p-p	250	Commercial Industrial	32	PLCC
CY7B9930V	3.3V	LVTTTL / LVCMOS / LVPECL	LVTTTL	12-100 MHz	12-100 MHz	150 p-p, FB /1-/3 / 100 p-p, FB /4-/12	200	Commercial Industrial	44	TQFP
CY7B9940V	3.3V	LVTTTL / LVCMOS / LVPECL	LVTTTL	24-200 MHz	24-200 MHz	150 p-p, FB /1-/3 / 100 p-p, FB /4-/12	200	Commercial Industrial	44	TQFP

## Programmable Skew (Cont'd)

Part No.	V <sub>DD</sub>	Input Signal	Output Signal	Input Frequency Range	Output Frequency Range	C2C Jitter (ps, Max.)	Output-Output Skew (ps, Max.)	Operating Temperature	Pins	Package
CY7B993V	3.3V	LVTTTL / LVCMOS / LVPECL	LVTTTL	12-100 MHz	12-100 MHz	150 p-p, FB /1-/3 / 100 p-p, FB /4-/12	200	Commercial Industrial	100	TQFP/BGA
CY7B994V	3.3V	LVTTTL / LVCMOS / LVPECL	LVTTTL	24-200 MHz	24-200 MHz	150 p-p, FB /1-/3 / 100 p-p, FB /4-/12	200	Commercial Industrial	100	TQFP/BGA
CY7B9945V	3.3V	LVTTTL / LVCMOS / LVPECL	LVTTTL	24-200 MHz	24-200 MHz	150 p-p, FB /1-/3 / 100 p-p, FB /4-/12	200	Commercial Industrial	52	TQFP
CY7B995	2.5V/ 3.3V	LVTTTL / LVCMOS	LVTTTL	2-200 MHz	6-200 MHz	100 (FS=L), 150 (FS=M/H)	100	Commercial Industrial	44	TQFP
CY7B9950	2.5V/ 3.3V	LVTTTL / LVCMOS	LVTTTL	6-200 MHz	6-200 MHz	100 (FS=L), 150 (FS=M/H)	100	Commercial Industrial	32	TQFP

## DDR PLLs

Part No.	V <sub>DD</sub>	Input Signal	Output Signal	Input Frequency Range	Output Frequency Range	C2C Jitter (ps, Max.)	Output-Output Skew (ps, Max.)	Operating Temperature	Pins	Package
CY2SSTU877	1.8V	LV Diff	SSTL-2	125-500 MHz	125-500 MHz	40	40	Commercial Industrial	52/40	BGA/MLF
CY2SSTV857-27	2.5V	LV Diff	SSTL-2	60-200 MHz	60-200 MHz	(+/-) 75, >66MHz	100	Industrial	48	TSSOP
CY2SSTV857-32	2.5V	LV Diff	SSTL-2	60-230 MHz	60-230 MHz	(+/-) 75, >66MHz	100	Commercial	40/48	TSSOP/QFN

## Redundant Clocks (Internal DCXO)

Part No.	V <sub>DD</sub>	Input Signal	Output Signal	Input Frequency Range	Output Frequency Range	C2C Jitter (ps, Max.)	Output-Output Skew (ps, Max.)	Operating Temperature	Pins	Package
CY23FS04	2.5V/ 3.3V	LVTTTL / LVCMOS	LVTTTL	4.17-170 MHz (Ref.)/ 8-30 MHz (Xtal)	4.17-170 (Ref.)/ 8-30 (Xtal)	200	200	Commercial Industrial	16	TSSOP
CY23FS08	2.5V/ 3.3V	LVTTTL / LVCMOS	LVTTTL	1.04-200 MHz (Ref.)/ 8-30 MHz (Xtal)	1.70-200 (Ref.)/ 8-30 (Xtal)	200	200	Commercial Industrial	28	SSOP
CY26990	3.3V	LVTTTL / LVCMOS	LVPECL	15.625 MHz (Xtal)	31-90 MHz			Commercial	24	QSOP
CY26049-1	3.3V	LVTTTL / LVCMOS	LVTTTL	8 KHz MHz (Xtal)	6.312 MHz			Commercial	16	TSSOP
CY26049-3	3.3V	LVTTTL / LVCMOS	LVTTTL	19.44 MHz (Xtal)	4.096 MHz			Commercial	16	TSSOP
CY26049-36	3.3V	LVTTTL / LVCMOS	LVTTTL	18.4 MHz (Xtal)	1.5-33 MHz			Commercial	16	TSSOP
CY26049-4	3.3V	LVTTTL / LVCMOS	LVTTTL	19.44 MHz (Xtal)	35.328 MHz			Commercial	16	TSSOP
CY26049-5	3.3V	LVTTTL / LVCMOS	LVTTTL	19.2 MHz (Xtal)	35.328 MHz			Commercial	16	TSSOP

## Motherboard-Based Clock Generators

Cypress offers an extensive family of frequency timing generators (FTGs) supporting major chipset manufacturer's desktop, notebook and server applications. Product features include one to four phase-locked loops (PLLs) and up to 32 output signals providing all clocking requirements for industry processors, chipsets, PCI Express interface, USB and peripheral interface, as well as legacy PCI. Motherboard-based generators are designed for high-stability, accurate frequency generation with low electromagnetic interference (EMI).

### Clock Generators for Intel Chipset Support

Part No.	Description	CPU	Application	Chipset	Intel Part No.	Operating Voltage	Pins	Package
CY2210-2	133-MHz Spread Spectrum Driver with AGP, USB and DRCG	Intel/PIII/Celeron	Desktop	Intel/820/840	CK-133W	Mixed 2.5V/ 3.3V	56	SSOP
CY28322-2	133-MHz Spread Spectrum Clock Syn. with Differential CPU Outputs	Intel PIII/Celeron	Notebook	Intel 830M	CK-408	Mixed 2.5V/ 3.3V	48	TSSOP
CY28329	133-MHz Spread Spectrum Clock Syn. with Differential CPU Outputs	Intel P4	Server/ Workstation	Intel E7501/7505	CK-408B	3.3V	56	SSOP/TSSOP
CY28339	Intel CK408 Mobile Clock Synthesizer/ Differential	Tualatin/P4	Notebook	Intel 845M	CK-408	3.3V	48	TSSOP
CY28344	FTG for Intel P4 CPU and Chipsets	Intel P4	Desktop	Intel 845	CK-408	3.3V	48	SSOP
CY28346	Clock Synthesizer with Differential CPU Outputs	Tualatin/P4	Notebook	Intel 845M	CK-408	3.3V	56	SSOP/TSSOP
CY28349B	FTG for Intel P4 CPU and Chipsets	Intel P4	Desktop	Intel 845	CK-408	3.3V	48	SSOP
CY28378	FTG for Intel P4 CPU and Intel 845 Series Chipset	Intel P4	Desktop	Intel 845	CK-408	3.3V	48	SSOP
CY28404	CK409 Compliant Clock Synthesizer	Intel P4/Prescott	Desktop	Intel 865G/ 865PE/865P	CK-409	3.3V	48	SSOP
CY28405	CK409 Compliant Clock Synthesizer	Intel P4/Prescott	Desktop	Intel 865G/ 865PE/865P	CK-409	3.3V	48	SSOP
CY28405-2	Clock Synthesizer with Differential SRC and CPU Outputs	Intel P4/Prescott	Desktop	Intel 865G/ 865PE/865P	CK-409	3.3V	48	SSOP
CY28408	Clock Synthesizer with Differential CPU Outputs	Intel P4	Desktop/ Notebook	Intel 845	CK-408	3.3V	56	TSSOP
CY28409	Clock Synthesizer with Differential SRC and CPU Outputs	Intel P4/Prescott	Desktop	Intel 865G/ 865PE/865P	CK-409	3.3V	56	SSOP/TSSOP
CY28410	Clock Generator for Intel Grantsdale Chipset	Intel P4/Tejas	Desktop	Intel 915/925	CK-410	3.3V	56	SSOP/TSSOP
CY28411	Clock Generator for Intel Alviso Chipset	Intel P4M	Notebook	Alviso	CK-410M	3.3V	56	SSOP/TSSOP
CY28411-1	Clock Generator for Intel Alviso Chipset	Intel P4M	Notebook	Alviso	CK-410M	3.3V	56	SSOP/TSSOP
CY28412	Clock Generator for Intel Grantsdale Chipset	Intel P4/Prescott	Desktop	Intel 915/925	CK-410	3.3V	56	SSOP
CY28416	Next Generation FTG for Intel Architecture	Intel P4/Tejas	Desktop	Intel 915/925	CK-410	3.3V	48	SSOP
CY28419	Clock Synthesizer with Differential SRC and CPU Outputs	Intel P4 Prescott	Server/ Workstation	Intel E7710/ 7510/7515/7210	CK-409B	3.3V	56	SSOP/TSSOP
CY28430-2	Clock Generator for Intel Alviso Chipset	Intel P4M	Notebook	Alviso	CK-410M	3.3V	56	SSOP/TSSOP
CY28441	Clock Generator for Intel Alviso Chipset	Intel P4M	Notebook	Alviso	CK-410M	3.3V	56	TSSOP
CY28442	Clock Generator for Intel Alviso Chipset	Intel P4M	Notebook	Alviso	CK-410M	3.3V	56	TSSOP

## Clock Generators for Intel Chipset Support (Cont'd)

Part No.	Description	CPU	Application	Chipset	Intel Part No.	Operating Voltage	Pins	Package
CY28442-2	Clock Generator for Intel Alviso Chipset	Intel P4M	Notebook	Alviso	CK-410M	3.3V	56	TSSOP
IMIC9827H	High Performance P4 Clock Synthesizer	Intel/830M/845	Desktop/Notebook	Intel/P4	CK-408	3.3V	56	SSOP/TSSOP
W137	FTG for Mobile 440BX & Transmeta's Crusoe CPU	Intel/PIII/Celeron	Desktop/Notebook	Intel/440BX/440MX	CK-100SM	Mixed 2.5V/3.3V	28	SSOP/TSSOP
W149	440BX AGPset Spread Spectrum Frequency Synthesizer	Intel/PIII/Celeron	Desktop	Intel/440BX/VIA Pro133/PM133	CK-100	Mixed 2.5V/3.3V	48	SSOP
W150	440BX AGPset Spread Spectrum Frequency Synthesizer	Intel/PIII/Celeron	Desktop	Intel/440BX	CK-100	Mixed 2.5V/3.3V	56	SSOP
W158	Spread Spectrum Frequency Synthesizer	Intel/PIII/Celeron	Desktop	Intel/820/840	CK-133W	Mixed 2.5V/3.3V	56	SSOP
W159	Spread Spectrum System FTG for SMP Systems	Intel/PIII/Celeron	Desktop	Intel/820/840	CK-133WS	Mixed 2.5V/3.3V	56	SSOP
W209C	Frequency Generator for Integrated Core Logic with 133 MHz FSB	Intel/PIII/Celeron	Desktop	Intel/810E	CK-810E	Mixed 2.5V/3.3V	48	SSOP
W219B	Frequency Generator for Integrated Core Logic with 133 MHz FSB	Intel/PIII/Celeron	Desktop	Intel/815	CK-Solano	Mixed 2.5V/3.3V	48	SSOP
W305B	Frequency Controller with System Recovery for Intel Integrated Core Logic	Intel/PIII/Celeron	Desktop	Intel/815	CK-Solano	Mixed 2.5V/3.3V	56	SSOP
W320-03	200 MHz Spread Spectrum Clock Syn./Driver w/Differential CPU Outputs	Intel P4	Desktop/Notebook	Intel/830M/845	CK-408	3.3V	56	SSOP/TSSOP
W320-04	200 MHz Spread Spectrum Clock Syn./Driver w/Differential CPU Outputs	Intel P4	Desktop/Notebook	Intel/830M/845	CK-408	3.3V	56	SSOP/TSSOP
W48C101-01	Spread Spectrum BX System Frequency Generator	Intel/PIII/Celeron	Desktop	Intel/440BX	CK-100	Mixed 2.5V/3.3V	48	SSOP

## Clock Generators for VIA Chipset Support

Part No.	Description	CPU	Application	Chipset	Operating Voltage	Pins	Package
CY28312B-2	FTG for VIA K7 Series Chipset with Programmable Output Frequency	AMD K7/Athlon	Desktop	VIA KT266/KT333/KT400	3.3V	48	SSOP
CY28316	FTG for VIA PL133T and PLE133T	Intel PIII/Celeron	Desktop	VIA PLE133T/PL133T	3.3V	48	SSOP
CY28317-2	FTG for Mobile VIA PL133T and PLE133T Chipsets	Intel PIII/Celeron	Notebook	VIA PLE133T/PL133T	Mixed 2.5V/3.3V	48	SSOP/TSSOP
CY28325-3	FTG for VIA P4 Chipsets	Intel P3	Desktop	VIA PT/M 266-800	Mixed 2.5V/3.3V	48	SSOP
CY28326	FTG for VIA PT880 Serial Chipset	Intel P4	Desktop	VIA PT880	3.3V	48	SSOP
CY28330	Clock Generator for AMD Hammer	AMD K8	Desktop	VIA K8T400/K8T 400M/K8M 400	3.3V	48	SSOP
CY28331	Clock Generator for AMD Hammer	AMD K8	Desktop	VIA K8T400/K8M400	3.3V	48	SSOP
CY28331-2	Clock Generator for AMD Hammer	AMD K8	Desktop	VIA K8T400/K8M400	3.3V	48	SSOP
CY28341	Universal Clock Chip for VIA P4M/KT/KM400 DDR Systems	Intel P4	Desktop	VIA P4X266/P4M266	Mixed 2.5V/3.3V	56	SSOP/TSSOP
CY28341-2	Universal Clock Chip for VIA P4M/KT/KM400 DDR Systems	Intel P4M	Desktop/Notebook	VIA P4M/KM/KT/ 266/333/400	Mixed 2.5V/3.3V	56	SSOP/TSSOP
CY28341-3	Universal Clock Chip for VIA P4M/KT/KM400A DDR Systems	Intel P4M	Desktop/Notebook	VIA P4M/KM/KT/266/333/400	Mixed 2.5V/3.3V	56	SSOP/TSSOP
CY28347	Universal Single-chip Clock Solution for VIA P4266/KM266 DDR Systems	Intel P4/AMD K7	Notebook	VIA P4X266/ P4M266/ KT266/KM266	3.3V	56	SSOP/TSSOP

### Clock Generators for VIA Chipset Support (Cont'd)

Part No.	Description	CPU	Application	Chipset	Operating Voltage	Pins	Package
W156	Spread Spectrum FTG for VIA MVP4	Intel PII/AMD K6	Desktop	VIA MVP4	3.3V	48	SSOP
W230-03	Spread Spectrum FTG for VIA K7 Chipset	AMD K7/Athlon	Desktop	VIA KT133/KM133	Mixed 2.5V/3.3V	48	SSOP
W311	FTG for VIA Pro-266 DDR Chipset	Intel PIII/Celeron	Desktop	VIA Pro266	Mixed 2.5V/3.3V	48	SSOP
W312-02	FTG for VIA K7 Series Chipset with Programmable Output Frequency	AMD K7/Athlon	Desktop	VIA KT266/KT333/KT400	Mixed 2.5V/3.3V	48	SSOP

### Clock Generators for ServerWorks Chipset Support

Part No.	Description	CPU	Application	Chipset	Operating Voltage	Pins	Package
CY28158	Spread Spectrum Timing Solution for Serverworks Chipsets	Intel P4	Desktop	SeverWorks/GC	Mixed 2.5V/3.3V	56	SSOP
CY28159	Clock Generator for Serverworks Grand Champion Chipsets	Intel PIII/Celeron	Desktop	SeverWorks/HE/LE	Mixed 2.5V/3.3V	48	SSOP/TSSOP

### Clock Generators for SiS Chipset Support

Part No.	Description	CPU	Application	Chipset	Operating Voltage	Pins	Package
CY28342	High Performance SiS 645/650 P4 Clock Synthesizer	Intel P4	Desktop	SiS 645/650	3.3V	48	SSOP/TSSOP
CY28372	SiS 746 AMD Athlon/AMD Duron Clock Synthesizer	AMD K7/Athlon	Desktop	SiS 746	Mixed 2.5V/3.3V	48	SSOP

### Clock Generators for ATI Chipset Support

Part No.	Description	CPU	Application	Chipset	Operating Voltage	Pins	Package
CY28RS400	Clock Generator fro ATI RS400 Chipset	Intel P4	Notebook	ATI RS400	3.3V	56	SSOP/TSSOP
CY28RS480	Clock Generator fro ATI RS480 Chipset	AMD K8	Notebook	ATI RS480	3.3V	56	SSOP/TSSOP

### Clock Generators (PCIX) for Infiniband Chipset Support

Part No.	Description	CPU	Application	Chipset	Operating Voltage	Pins	Package
IMIC9530	PCIX I/O System Clock Generators with EMI Control Features	N/A	Desktop/Server	Infiniband	3.3V	48	SSOP/TSSOP
IMIC9531	PCIX I/O System Clock Generators with EMI Control Features	N/A	Desktop /Server	Infiniband	3.3V	28	SSOP/TSSOP

## Motherboard-Based Clock Buffers

As a complement to its world-class frequency generators, Cypress offers a broad range of high-performance clock buffers designed to distribute high-speed signals in desktop, notebook and server applications. The combination of frequency generators and clock buffers provide customers with an optimum and complete solution to all their timing needs.

### PCI Express Buffers for Intel Chipset Support

Part No.	Description	CPU	Application	Chipset	Features	Config.	Outputs	Freq.	Skew	V <sub>DD</sub>	Pins	Package
CY28400	100 MHz Differential Buffer for PCI Express and SATA	Intel P4	Desktop/Server	Intel 865G/865PE/865P/875P	CK409/CK410 companion	2:4 Diff	4 pairs	100 MHz	150 ps	3.3V	28	SSOP
CY28401	100 MHz Differential Buffer for PCI Express and SATA	Intel P4	Desktop/Server	Intel 865G/865PE/865P/875P	CK409/CK410 companion	2:8 Diff	8 pairs	100 MHz	200 ps	3.3V	48	SSOP

### Buffers for Intel Chipset Support

Part No.	Description	CPU	Application	Chipset	Features	Config.	Outputs	Freq.	Skew	Delay	V <sub>DD</sub>	Pins	Package
IMISC660E	SMBus System Clock Buffer for Mobile Applications	Intel/PIII/Celeron	Desktop	Intel/440BX/440MX	SDRAM Fanout	1:10	10	66 and 100 MHz	<250 ps	0	3.3V	28	SSOP
W40S01-04	SDRAM Buffer - 4 DIMM	Intel/PIII/Celeron	Desktop	Intel/440BX/440MX	SDRAM DIMMs	1:18	18	133 MHz	<250 ps	1-5 ns	3.3V	28	SSOP
W40S11-02	SDRAM Buffer - 2 DIMM	Intel/PIII/Celeron	Notebook	Intel/440BX/440MX	SDRAM DIMMs	1:10	10	133 MHz	<250 ps	1-5 ns	3.3V	28	SSOP

### Clock Buffer for VIA Chipset Support

Part No.	Description	CPU	Application	Chipset	Features	Config.	Outputs	Freq.	Skew	Delay	V <sub>DD</sub>	Pins	Package
CY28354-400	273-MHz Output Buffer for 4 DDR DIMMs	N/A	DDR	VIA PT880	4 DDR DIMMs or 3 SDRAM DIMMs	Dual 1:12	24	60-273 MHz	<75 ps	6 ns	2.5V	48	SSOP
CY28359	273-MHz, 6 Output Buffer for DDR400 DIMMs	N/A	DDR 400	VIA P4X600	DDR DIMMs/DDR SDRAM	Dual 1 to 3 Diff	6	273 MHz	<100 ps		2.5V	28	SSOP
W255	200-MHz, 24 Output Buffer for 4 DDR or 3 SDRAM DIMMs	Intel PIII/Celeron	Desktop	VIA Pro266/KT266	4 DDR or 3 SDRAM DIMMs	1:24	24	200 MHz	<100 ps	5 ns	2.5V/3.3V	48	SSOP
W256	12 Output Buffer for 2 DDR and 3 SDRAM DIMMs	Intel PIII/Celeron	Desktop	VIA Pro266/KT266	2 DDR and 3 SDRAM DIMMs	1:12	12	180 MHz	<100 ps	5 ns	2.5V/3.3V	28	SSOP

### Clock Buffers for SiS Chipset Support

Part No.	Description	CPU	Application	Chipset	Features	Config.	Outputs	Freq.	Skew	Delay	V <sub>DD</sub>	Pins	Package
CY28343	Zero Delay SDR/DDR Clock Buffer	Intel P4/AMD K7	DDR/SDR SDRAM	SiS 64x/65x/74x	SDR/DDR ZDB	1:6 pairs DDR or 1:13 SDR	6 or 13 pairs	133 MHz	200 ps	0	2.5V DDR/3.3V SDRAM	48	SSOP
CY28351	Differential Clock Buffer/Driver DDR400 and DDR333	Intel P4	DDR SDRAM	SiS 64x/65x/74x	Differential DDR-I SDRAM	1:10 Diff	10 pairs	60-200 MHz	100 ps	1.5-6 ns	2.5	48	SSOP
CY28352	Differential Clock Buffer/Driver DDR400 and DDR333	Intel P4	DDR SDRAM	SiS 64x/65x/74x	Differential DDR-I SDRAM	1:6 Diff	6 pairs	60-200 MHz	100 ps	1.5-6 ns	2.5V	28	SSOP
CY28358	200 MHz Differential Clock Buffer/Driver	Intel P4	DDR SDRAM	SiS 64x/65x/74x	DDR-I SDRAM	1:6 Diff	6 pairs	200 MHz	100 ps	0	2.5V	28	SSOP

## PREMIS™ EMI-Reduction SSCG

Cypress offers a wide selection of spread-spectrum frequency clock generators (SSCGs) for many applications such as notebook PCs, printers, fax machines, LCD displays, copiers, servers, routers and storage devices. Cypress PREMIS™ EMI-reduction devices use the SSCG technique by modulating the system clock with a much smaller frequency to reduce EMI peak emissions at their source. Cypress also offers field- and factory-programmable EMI-reduction products that enable users to develop prototype samples in minutes, which drastically reduces development cost and time-to-market. All a user needs to program PREMIS EMI-reduction products is a PC and an easy-to-use CY3672 programmer with CyberClocks™ Online software.

### Memory-Programmable Spread-Spectrum EMI-Reduction Generators

Part No.	Features	Input Frequency Range	Output Frequency Range	Output Multiplier	Spread	SSC Disable	Down/Center Spread	SSC Outputs	V <sub>DD</sub>	Oper. Temp.	Pins	Package
CY25000	Factory Programmable	xtal: 8-30 MHz ref: 3-200 MHz	3-200 MHz	Programmable 2 to 130	0.5 to 5.0%	Yes	Center/Down	1	3.3V	Comm.	8	SOIC
CY25100	Factory/Field Programmable	xtal: 8-30 MHz Clk: 8-166 MHz	3-200 MHz	Programmable 2 to 127	0.5 to 5.0%	Yes	Center/Down	1	3.3V	Comm., Indust.	8	SOIC/ TSSOP
CY25200	Factory Programmable	xtal: 8-30 MHz Clk: 8-166 MHz	3-200 MHz	Programmable 2 to 128	0.5 to 5.0%	Yes	Center/Down	6	3.3V	Comm.	16	TSSOP

### Memory-Programmable Spread-Spectrum Crystal Oscillator (SSXO)

Part No.	Features	Input Frequency Range	Output Frequency Range	Output Multiplier	Spread	SSC Disable	Down/Center Spread	SSC Outputs	V <sub>DD</sub>	Oper. Temp.	Pins	Package
CY25701	Crystal inside/Factory Programmable	N/A (Crystal inside)	10-166 MHz	Programmable 2 to 127	0.5 to 4.0%	No	Center/Down	1	3.3V	Comm.	4	JE Plastic

### Pin-Programmable Spread-Spectrum EMI-Reduction Generators

Part No.	Features	Input Frequency Range	Output Frequency Range	Output Multiplier	Spread	SSC Disable	Down/Center Spread	SSC Outputs	V <sub>DD</sub>	Oper. Temp.	Pins	Package
CY25560	3-Level Logic Inputs	25-108 MHz	25-108 MHz	1	0.6 to 3.5%	Yes	Center	1	3.3V	Comm., Indust.	8	SOIC
CY25561	3-Level Logic Inputs	54-166 MHz	54-166 MHz	1	0.6 to 3.5%	Yes	Center	1	3.3V	Comm.	8	SOIC
CY25562	3-Level Logic Inputs/ 200 MHz output	54-200 MHz	54-200 MHz	1	0.6 to 3.5%	Yes	Center	1	3.3V	Comm.	8	SOIC
CY25566	3-Level Inputs/3 outputs/200 MHz output	25-200 MHz	12.5-200 MHz	1/2, 1, 2	0.6 to 3.5%	Yes	Center	3	3.3V/ 5V	Comm.	16	SOIC
CY25568	3-Level Logic Inputs	4-32 MHz	4-128 MHz	1, 2, 4	0.6 to 3.0%	Yes	Center/Down	3	3.3V	Comm.	16	SOIC
CY25811 CY25812 CY25814	3-Level Logic Inputs	4-32 MHz	4-32 MHz 8-64 MHz 16-128 MHz	1 2 4	0.6 to 3.0%	Yes	Center/Down	1	3.3V	Comm., Indust.	8	SOIC/ TSSOP
CY25818 CY25819	3-Level Logic Inputs	8-32 MHz	8-32 MHz	1	0.5 to 3.0%	No	Down	1	3.3V	Comm.	8	SOIC

### Programmable Die (Wafer) with Spread Spectrum

Part No.	Features	Input Frequency Range	Output Frequency Range	Output Multiplier	Spread	SSC Disable	Down/Center Spread	SSC Outputs	V <sub>DD</sub>	Operating Temp.	Package
CY5057	Flash Programmable for in-package programming	25.1 MHz	5-170 MHz	Programmable 2 to 127	0.5 to 4.0%	Yes	Center/Down	1	3.3V	Extended Industrial	Die

## Clock Synthesizers

Programmable clock synthesizers combine the convenience of field programming with the high performance that customers have come to expect from Cypress's timing products, at a cost that is competitive with custom clocks at equivalent volumes. Not only can designers select output frequencies, they can also use Cyber-Clocks™ online software to optimize device parameters such as drive strength, phased-lock loop bandwidth, and crystal input capacitive loading. Each programmed clock synthesizer can be optimized for a specific board layout and are classified by application type.

### Programmable Clocks for Communication Applications

Part No.	Applications	Description & Features	PLLs	Input Frequency	Output Frequency	Outputs	V <sub>DD</sub>	Operating Temperature	Pins	Package
CY26114	Telecom Equipment	4 output clock generator with FS0, FS1	1	25 MHz Xtal	2 copies of 100 MHz, 1 copy of 50 MHz, 1 copy of 25/33/50/66 MHz (selectable)	4	3.3V	Commercial	16	TSSOP
CY26121	Telecom Equipment	4 output Clock Generator with 1 Ref & Clock Select	1	25 MHz	33.33 MHz or 66.66 MHz	5	3.3V	Commercial	16	TSSOP
CY26126	Telecom Equipment	Dual Output 125 MHz Clock Generator with OE	1	25 MHz Xtal	2 copies of 125 MHz	2	3.3V	Commercial	8	SOIC
CY26200	Telecom Equipment	Low-jitter, high-accuracy outputs	1	19.44 MHz	1.544 MHz, 2.048 MHz (selectable)	1	3.3V	Commercial, Industrial	8	SOIC

### Programmable Clocks for Consumer Applications

Part No.	Applications	Description & Features	PLLs	Input Frequency	Output Frequency	Outputs	V <sub>DD</sub>	Operating Temperature	Pins	Package
CY24115	Mini-Disc Player	Input freq. select (FS0), & output divide select (CLKSEL)	1	1-30 MHz	45.1584 and 90.3168 MHz, or 90.3168 and 180.6336 MHz	1	3.3V	Commercial	8	SOIC
CY24119	Set Top Box	27 MHz with VCXO	0	27 MHz Xtal	27 MHz (Positive/Negative) Slope	1	3.3V	Commercial	8	SOIC
CY2412	Home Audio/Video	VCXO with Analog Adjust, linear VCXO control curve	1	13.5 MHz Xtal	27, 27 & 54 MHz or 27,13.5,54 MHz	3	3.3V	Commercial	8	SOIC
CY24133	Digital TV	Low jitter, high accuracy outputs	1	27 MHz	3.072, 4.096, 6.144, 11.2896, 12.288 MHz (selectable) & 27 MHz ref	2	3.3V	Commercial	16	TSSOP
CY241V08A-01	Streaming	VCXO with Analog Adjust, linear VCXO control curve	1	13.5 MHz Xtal	1 copy of 27 MHz	1	3.3V	Commercial	8	SOIC
CY241V08A-02	Streaming	VCXO with Analog Adjust, linear VCXO control curve	0	27 MHz Xtal (pullable)	1 copy of 27 MHz	1	3.3V	Commercial	8	SOIC
CY241V08A-04	Streaming	VCXO with Analog Adjust, linear VCXO control curve, low drive	1	13.5 MHz Xtal	1 copy of 27 MHz	1	3.3V	Commercial	8	SOIC
CY241V08A-05	Streaming	VCXO with Analog Adjust, nonlinear VCXO control curve	1	13.5 MHz Xtal	1 copy of 27 MHz	1	3.3V	Commercial	8	SOIC
CY241V08A-06	Streaming	VCXO with Analog Adjust, nonlinear VCXO control curve, low drive	1	13.5 MHz Xtal	1 copy of 27 MHz	1	3.3V	Commercial	8	SOIC
CY241V08A-11	Streaming	VCXO with Analog Adjust, linear VCXO control curve	1	13.5 MHz Xtal (pullable)	1 copy of 54 MHz	1	3.3V	Commercial	8	SOIC
CY244ZXC	DTV, STB, DVD-R	AVCXO	4	Crystal 27 MHz/54 MHz	200 MHz	7	3.3V	Commercial	16 or 20	TSSOP



## Programmable Clocks for Consumer Applications (Cont'd)

Part No.	Applications	Description & Features	PLLs	Input Frequency	Output Frequency	Outputs	V <sub>DD</sub>	Operating Temperature	Pins	Package
CY24204	DVD, STB	VCXO with Analog Adjust	1	27 MHz Xtal	2 copies of 27 MHz, 2 copies of frequency selectable	4	3.3V	Commercial	16	TSSOP
CY24206	DVD, STB	Low jitter, high accuracy outputs	1	27 MHz	1 copy of 27 MHz, 3 copies of frequency selectable	4	3.3V	Commercial	16	TSSOP
CY24207	PDP	VCXO with Analog Adjust	1	27 MHz Xtal	2 copies of 27 MHz, 2 copies of frequency selectable	4	3.3V	Commercial	16	TSSOP

## General-Purpose Programmable Clocks

Part No.	Applications	Description & Features	PLLs	Input Frequency	Output Frequency	Outputs	V <sub>DD</sub>	Operating Temperature	Pins	Package
CY2071A	Consumer Electronics, STB, Telecommunications	EPROM Factory or Field Programmable, Frequency Select	1	1-30 MHz	0.5-100 MHz	3	3.3V/5V	Commercial, Industrial	8	SOIC
CY2077	Consumer Electronics, STB, Telecommunications	EPROM Factory or Field Programmable, Frequency Select	1	1-75 MHz	0.39-133 MHz, 5V 0.39-100 MHz, 3.3V	1	3.3V/5V	Commercial, Industrial	8	SOIC/TSSOP
CY2213	Network/Telecom/General Purpose	LVPECL outputs, output multiplier select, OE, I <sup>2</sup> C	1	10-30 MHz Xtal or 1-133 MHz ext. ref.	125-400 MHz or 500 MHz	1	3.3V	Commercial	16	TSSOP
CY22050	Network/Telecom/General Purpose	Flash Programmable/Field or Factory Programmable	1	1-133 MHz	0.08-200 MHz	6	2.5V/ 3.3V	Commercial, Industrial	16	TSSOP
CY22150	Network/Telecom/General Purpose	Flash Field or Factory Programmable, 2-wire serially programmable	1	1-133 MHz	0.008-200 MHz	6	2.5V/ 3.3V	Commercial, Industrial	16	TSSOP
CY22381	High-end Multimedia, Communications, Industrial, A/D converters, Consumer	Factory or Field Programmable, FS, OE, Powersave	3	1-166 MHz	0.008-200 MHz	3	3.3V	Commercial, Industrial	8	SOIC
CY22392	High-end Multimedia, Communications, Industrial, A/D converters, Consumer	Factory or Field Flash Programmable, FS, OE, Powersave	3	1-166 MHz	0.008-200 MHz	3	3.3V	Commercial, Industrial	16	TSSOP
CY22393	High-end Multimedia, Communications, Industrial, A/D converters, Consumer	Flash & Serial Programmable, Field Programmable, Frequency Select	3	1-166 MHz	0.008-200 MHz	6	3.3V	Commercial, Industrial	16	TSSOP
CY22394	High-end Multimedia, Communications, Industrial, A/D converters, Consumer	Flash & Serial Programmable, Field Programmable, Frequency Select	3	1 MHz-166 MHz	0.008-200 MHz (CMOS) 100-400 MHz (LVPECL)	5	3.3V	Commercial, Industrial	16	TSSOP
CY22395	High-end Multimedia, Communications, Industrial, A/D converters, Consumer	Flash & Serial Programmable, Field Programmable, Frequency Select	3	1-166 MHz	0.008-200 MHz	5	2.5V/ 3.3V	Commercial, Industrial	16	TSSOP

## Framers & Mappers

### Link-Layer Devices

The Cypress MetroLink™ Link-Layer Device (LLD) family provides Multi-Service Provisioning Platform (MSPP) and Add-Drop Multiplexer (ADM) manufacturers an off-the-shelf solution for the emerging Generic Framing Procedure (GFP) protocol. GFP is an ITU draft standard designed for the encapsulation of any protocol, like Ethernet, storage (Fibre Channel, ESCON) and video (DVB-ASI) client protocols, for transport over the SONET/SDH network backbone. Cypress products support both variants (framed and transparent) of the protocol to allow great flexibility in system architecture. MetroLink LLDs, when used with Cypress's family of virtual concatenation framers (POSIC™ family), client protocol (HOTLink II™), and SONET/SDH serializer/deserializer (SERDES), offer a complete linecard solution for data over SONET/SDH transport solutions.

#### MetroLink™ (GFP)

Part No.	No. of Channels	Client Protocols	Encapsulation Protocols
CYL2T0201-AIP	2	GbE, Fibre Channel, ESCON	GFP-T

## SONET & SDH Framers

Cypress offers the most flexible SONET framers in the industry. The POSIC2GVC-R™ OC-48/STM-16 Framer is a pioneering product in the market that provides virtual concatenation per ITU standard G.707/Y.1322. This enables efficient bandwidth utilization and dynamic bandwidth allocation. The Generic Framing Procedure (GFP) used by POSIC allows it to support many applications of data transport over SONET/SDH, like Ethernet, Fibre Channel, ESCON and DVB-ASI. In addition, POSIC2GVC-R transports asynchronous transfer mode (ATM) cells across SONET, and data using Packet over SONET/SDH (PoS/HDLC/PPP).

### SONET 7 SDH Channelized Framers

Part No.	Standard	Operating Temperature	Package	Pins/Balls	Features
CY7C9537B	OC-48/STM-16	Commercial	BGA	504	GFP/ATM/HDLC/PPP, 16 Channels
CY7C9537B	OC-48/STM-16	Industrial	BGA	504	GFP/ATM/HDLC/PPP, 16 Channels

### SONET & SDH Framers w/Virtual Concatenation

Part No.	Standard	Operating Temperature	Package	Pins/Balls	Features
CY7C9528	OC-12/STM-4/ OC-3/STM-1	Commercial	BGA	504	GFP/ATM/HDLC/PPP, Virtual Concatenation, 16 Channels
CY7C9528	OC-12/STM-4/ OC-3/STM-1	Industrial	BGA	504	GFP/ATM/HDLC/PPP, Virtual Concatenation, 16 Channels
CY7C9536B	OC-48/STM-16	Commercial	BGA	504	GFP/ATM/HDLC/PPP, Virtual Concatenation, 16 Channels
CY7C9536B	OC-48/STM-16	Industrial	BGA	504	GFP/ATM/HDLC/PPP, Virtual Concatenation, 16 ChannelsA
CY7C9538	OC-48/STM-16	Commercial	BGA	504	GFP/ATM/HDLC/PPP, Virtual Concatenation, 16 Channels
CY7C9538	OC-48/STM-16	Industrial	BGA	504	GFP/ATM/HDLC/PPP, Virtual Concatenation, 16 Channels

## Memories

### Asynchronous SRAMs

With densities from 4 Kb to 16 Mb and a wide array of bus widths, packages, and temperature ranges, Cypress's selection of fast asynchronous SRAMs is second to none. This portfolio includes the high-performance x16 and x24 families that are optimized for the latest generation of fast digital signal processors (DSPs).

#### Asynchronous SRAMs

Part No.	Density	Address	Organization	V <sub>CC</sub>	Speed	Package	Operating Temperature
CY6116A	16 Kb	2 Kb	2 Kb x 8	5V	35 ns	28 LCC	Military
CY7C1006B	1 Mb	256 Kb	256 Kb x 4	5V	12 ns	28 SOJ	Commercial
CY7C1007B	1 Mb	1 Mb	1 Mb x 1	5V	12 ns	28 SOJ	Commercial
CY7C1009B	1 Mb	128 Kb	128 Kb x 8	5V	12 ns	32 SOJ	Commercial
CY7C1011BV33	2 Mb	128 Kb	128 Kb x 16	3.3V	12 ns	44 TSOP II	Commercial
CY7C1011CV33	2 Mb	128 Kb	128 Kb x 16	3.3V	10 ns	48 VFBGA	Commercial
CY7C1012AV18	12 Mb	512 Kb	512 Kb x 24	1.8V			
CY7C1012AV25	12 Mb	512 Kb	512 Kb x 24	2.5V			
CY7C1012AV33	12 Mb	512 Kb	512 Kb x 24	3.3V	10 ns	119 BGA	Commercial
CY7C1018BV33	1 Mb	128 Kb	128 Kb x 8	3.3V	1 2ns	32 SOJ	Commercial
CY7C1018CV33	1Mb	128 Kb	128 Kb x 8	3.3V	10 ns	32 SOJ	Commercial
CY7C1019	1 Mb	128 Kb	128 Kb x 8	5V	12 ns	32 SOJ	Commercial
CY7C10191B	1 Mb	128 Kb	128 Kb x 8	5V	10 ns	32 SOJ	Commercial
CY7C1019B	1 Mb	128 Kb	128 Kb x 8	5V	12 ns	32 SOJ	Commercial
CY7C1019BV33	1 Mb	128 Kb	128 Kb x 8	3.3V	1 ns	32 SOJ	Commercial
CY7C1019CV33	1 Mb	128 Kb	128 Kb x 8	3.3V	10 ns	32 SOJ	Commercial
CY7C1020	512 Kb	32 Kb	32 Kb x 16	5V	10 ns	44 SOJ	Commercial
CY7C1020B	512 Kb	32 Kb	32 Kb x 16	5V	12 ns	44 SOJ	Commercial
CY7C1020CV33	512 Kb	32 Kb	32 Kb x 16	3.3V	10 ns	44 TSOP II	Commercial
CY7C1020V33	512 Kb	32 Kb	32 Kb x 16	3.3V	10 ns	44 SOJ	Commercial
CY7C1021	1 Mb	64 Kb	64 Kb x 16	5V	12 ns	44 SOJ	Commercial
CY7C10211B	1 Mb	64 Kb	64 Kb x 16	5V	10 ns	44 SOJ	Commercial
CY7C1021B	1 Mb	64 Kb	64 Kb x 16	5V	12 ns	44 SOJ	Commercial
CY7C1021BV33	1 Mb	64 Kb	64 Kb x 16	3.3V	10 ns	48 FBGA	Commercial
CY7C1021CV33	1 Mb	64 Kb	64 Kb x 16	3.3V	10 ns	48 FBGA	Commercial
CY7C1024AV33	3 Mb	128 Kb	128 Kb x 24	3.3V	10 ns	100 TQFP	Commercial
CY7C1041B	4 Mb	256 Kb	256 Kb x 16	5V	15 ns	44 SOJ	Commercial
CY7C1041BV33	4 Mb	256 Kb	256 Kb x 16	3.3V	12 ns	44 SOJ	Commercial
CY7C1041CV33	4 Mb	256 Kb	256 Kb x16	3.3V	10 ns	44 SOJ	Commercial
CY7C1046B	4 Mb	1 Mb	1 Mb x 4	5V	15 ns	32 SOJ	Commercial
CY7C1046BV33	4 Mb	1 Mb	1 Mb x 4	3.3V	12 ns	32 SOJ	Commercial
CY7C1046CV33	4 Mb	1 Mb	1 Mb x 4	3.3V	10 ns	32 SOJ	Commercial
CY7C1049B	4 Mb	512 Kb	512 Kb x8	5V	12 ns	36 SOJ	Commercial
CY7C1049BV33	4 Mb	512 Kb	512 Kb x 8	3.3V	12 ns	36 SOJ	Commercial
CY7C1049CV33	4 Mb	512 Kb	512 Kb x 8	3.3V	10 ns	36 SOJ	Commercial
CY7C1061AV18	16 Mb	1 Mb	1 Mb x 16	1.8V			
CY7C1061AV25	16 Mb	1 Mb	1 Mb x 16	2.5V			
CY7C1061AV33	16 Mb	1 Mb	1 Mb x 16	3.3V	10 ns	54 TSOP II	Commercial

## Asynchronous SRAMs (Cont'd)

Part No.	Density	Address	Organization	V <sub>CC</sub>	Speed	Package	Operating Temperature
CY7C1062AV18	16 Mb	512 Kb	512 Kb x 32	1.8V			
CY7C1062AV25	16 Mb	512 Kb	512 Kb x 32	2.5V			
CY7C1062AV33	16 Mb	512 Kb	512 Kb x 32	3.3V	10 ns	119 BGA	Commercial
CY7C1069AV33	16 Mb	2 Mb	2 Mb x 8	3.3V	10 ns	54 TSOP II	Commercial
CY7C106B	1 Mb	256 Kb	256 Kb x 4	5V	12 ns	28 SOJ	Commercial
CY7C107B	1 Mb	1 Mb	1 Mb x 1	5V	12 ns	28 SOJ	Commercial
CY7C109B	1 Mb	128 Kb	128 Kb x 8	5V	12 ns	32 SOJ	Commercial
CY7C128A	16 Kb	2 Kb	2 Kb x 8	5V	15 ns	24 PDIP	Commercial
CY7C1399B	256 Kb	32 Kb	32 Kb x 8	3.3V	10 ns	28 SOJ	Commercial
CY7C147	4 Kb	4 Kb	4 Kb x 4	5V	25 ns	18 LCC	Commercial
CY7C149	4 Kb	4 Kb	4 Kb x 4	5V	25 ns	18 PDIP	Commercial
CY7C150	4 Kb	4 Kb	4 Kb x 4	5V	10 ns	24 CERDIP	Commercial
CY7C164	64 Kb	16 Kb	16 Kb x 4	5V	15 ns	22 PDIP	Commercial
CY7C166	64 Kb	16 Kb	16 Kb x 4	5V	15 ns	24 PDIP	Commercial
CY7C167A	16 Kb	16 Kb	16 Kb x 1	5V	15 ns	20 PDIP	Commercial
CY7C168A	16 Kb	4 Kb	4 Kb x 4	5V	15 ns		Commercial
CY7C182	64 Kb	8 Kb	8 Kb x 9	5V	20 ns	28 PDIP	Commercial
CY7C185	64 Kb	8 Kb	8 Kb x 8	5V	15 ns	28 SOJ	Commercial
CY7C186	64 Kb	8 Kb	8 Kb x 8	5V	35 ns	28 PDIP	Commercial
CY7C187	64 Kb	64 Kb	64 Kb x 1	5V	15 ns	22 PDIP	Commercial
CY7C188	256 Kb	32 Kb	32 Kb x 9	5V	15 ns	32 SOJ	Commercial
CY7C192	256 Kb	64 Kb	64 Kb x 4	5V	12 ns	28 SOJ	Commercial
CY7C194	256 Kb	64 Kb	64 Kb x 4	5V	12 ns	24 SOJ	Commercial
CY7C194B					15 ns	24 SOJ	Commercial
CY7C195	256 Kb	64 Kb	64 Kb x 4	5V	12 ns	28 SOJ	Commercial
CY7C195B					15 ns	28 SOJ	Commercial
CY7C197	256 Kb	256 Kb	256 Kb x 1	5V	12 ns	24 SOJ	Commercial
CY7C197B					12 ns	24 SOJ	Commercial
CY7C198	256 Kb	32 Kb	32 Kb x 8	5V	25 ns	28 CERDIP	Military
CY7C199	256 Kb	32 Kb	32 Kb x 8	5V	10 ns	28 SOJ	Commercial
CY7C199C	256 Kb	32 Kb	32 Kb x 8	5V	12 ns	28 SOJ	Commercial

## Dual-Port RAMs

Cypress's family of over 85 synchronous and asynchronous dual-port RAMs range in density from 64 Kb to 18 Mb with speeds of up to 167 MHz. Cypress's large, fast dual-port RAMs provide the higher performance and increased buffering capacity needed by newer system designs while using less board space than multiple smaller devices.

Its flagship product, the FLEx72™ 18-Mb dual-port RAM, leads Cypress's broad dual-port memory portfolio. This product is the industry's highest-density and highest-bandwidth device, operating at 133 MHz, which enables over 24 Gbps bandwidth in a system.

- Available in 5V and 3.3V versions
- Synchronous and asynchronous architectures
- Low standby power and parity support in x9, x18, x36, and x72 configurations

### 3.3V Asynchronous Dual-Port RAMs

Part No.	Density	Bus Width	Speed	Operating Temperature	Pins/Balls	Package	Features
CY7C006AV	128K	x8	20 ns	Commercial	64	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C007AV	256K	x8	20 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C008V	512K	x8	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C009V	1 Mb	x8	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C016AV	128K	x9	20 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C017AV	256K	x9	20 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C019V	1 Mb	x9	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C024AV	64K	x16	20 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C025AV	128K	x16	20 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C026AV	256K	x16	20 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C027V	512K	x16	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C028V	1 Mb	x16	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C036AV	256K	x18	20 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C037V	512K	x18	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C038V	1 Mb	x18	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C056V	512K	x36	12 ns	Commercial	144	TQFP	Burst Mode, Bus Matching, Byte Selectability, Master/Slave Pin, Semaphore
CY7C057V	1 Mb	x36	12 ns	Commercial	144	TQFP	Burst Mode, Bus Matching, Byte Selectability, Master/Slave Pin, Semaphore
CY7C138AV	32K	x8	20 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C139AV	32K	x9	20 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C144AV	64K	x8	20 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore

### 3.3V Synchronous Dual-Port RAMs

Part No.	Density	Bus Width	Speed	Operating Temperature	Pins/Balls	Package	Features
CYD02S18V	2M	X18 X36	167 MHz	Commercial, Industrial	256	BGA	Migration Enabled
CYD04S18V	4M	X18 X36 X72	167 MHz	Commercial, Industrial	256,484	BGA	Migration Enabled
CYD09S18V	9M	X18 X36 X72	167 MHz	Commercial, Industrial	256,484	BGA	Migration Enabled

### 3.3V Synchronous Dual-Port RAMs (Cont'd)

Part No.	Density	Bus Width	Speed	Operating Temperature	Pins/Balls	Package	Features
CYD18S18V	18M	X18 X36 X72	167 MHz	Commercial, Industrial	256,484	BGA	Migration Enabled
CY7C0831V	2M	X18	167 MHz	Commercial, Industrial	144	BGA	Burst Mode, Byte Selectable, Counter Wraparound
CY7C0832V	4M	X18	167 MHz	Commercial, Industrial	144	BGA	Burst Mode, Byte Selectable, Counter Wraparound
CY7C0833V	9M	X18	167 MHz	Commercial, Industrial	144	BGA	Burst Mode, Byte Selectable, Counter Wraparound
CY7C0831V	2 Mb	x18	167 MHz	Commercial	120	TQFP	Burst Mode, Byte Selectability, Counter Wraparound
CY7C0832V	4 Mb	x18	167 MHz	Commercial	120	TQFP	Burst Mode, Byte Selectability, Counter Wraparound
CY7C0851V	2 Mb	x36	167 MHz	Commercial	172	BGA	Burst Mode, Byte Selectability, Counter Wraparound
CY7C0852V	4 Mb	x36	167 MHz	Commercial	172	BGA	Burst Mode, Byte Selectability, Counter Wraparound
CY7C0853V	9 Mb	x36	133 MHz	Commercial	172	BGA	Burst Mode, Byte Selectability, Counter Wraparound
CY7C09079V	256K	x8	100 MHz	Commercial	100	TQFP	Byte Selectability
CY7C09089V	512K	x8	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09099V	1 Mb	x8	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09159AV	64K	x9	67 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09169AV	128K	x9	67 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09179V	256K	x9	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09189V	512K	x9	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09199V	1 Mb	x9	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09269V	256K	x16	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09279V	512K	x16	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09289V	1 Mb	x16	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09349AV	64K	x18	67 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09359AV	128K	x18	67 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09369V	256K	x18	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09379V	512K	x18	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09389V	1 Mb	x18	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09569V	512K	x36	100 MHz	Commercial	144	TQFP	Burst Mode, Bus Matching, Byte Selectability, Master/Slave Pin
CY7C09579V	1 Mb	x36	100 MHz	Commercial	144	TQFP	Burst Mode, Bus Matching, Byte Selectability, Master/Slave Pin
CYD18S72V	18 Mb	x72	100 MHz	Commercial	484	FBGA	Byte Selectability
CYD18S72V	18 Mb	x72	133 MHz	Commercial	484	FBGA	Byte Selectability

## 5V Asynchronous Dual-Port RAMs

Part No.	Density	Bus Width	Speed	Operating Temperature	Pins/Balls	Package	Features
CY7C007A	256K	x8	15 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C008	512K	x8	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C009	1 Mb	x8	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C018	512K	x9	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C019	1 Mb	x9	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C024	64K	x16	15 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C0241	64K	x18	15 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C025	128K	x16	15 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C0251	128K	x18	15 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C026A	256K	x16	15 ns	Commercial	100	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C027	512K	x16	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C028	1 Mb	x16	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C036A	256K	x18	15 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C037	512K	x18	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C038	1 Mb	x18	12 ns	Commercial	100	TQFP	Busy, Dual Chip Enables, Interrupt, Master/Slave Pin, Semaphore
CY7C131	8K	x8	15 ns	Commercial	52	PLCC	Busy, Interrupt, Master
CY7C135	32K	x8	15 ns	Commercial	52	PLCC	No Arbitration
CY7C136	16K	x8	15 ns	Commercial	52	PLCC	Busy, Interrupt, Master
CY7C138	32K	x8	15 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C139	32K	x9	15 ns	Commercial	68	PLCC	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C141	8K	x8	15 ns	Commercial	52	PLCC	Busy, Interrupt, Slave
CY7C144	64K	x8	15 ns	Commercial	64	TQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C145	64K	x9	15 ns	Commercial	80	PTQFP	Busy, Interrupt, Master/Slave Pin, Semaphore
CY7C146	16K	x8	25 ns	Commercial	52	PLCC	Busy, Interrupt, Slave

## 5V Synchronous Dual-Port RAMs

Part No.	Density	Bus Width	Speed	Operating Temperature	Pins/Balls	Package	Features
CY7C09089	512K	x8	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09099	1 Mb	x8	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, low-Through/Pipeline Select on Both Ports
CY7C09189	512K	x9	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09199	1 Mb	x9	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09269A	256K	x16	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09279	512K	x16	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09289	1 Mb	x16	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09369A	256K	x18	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09379	512K	x18	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports
CY7C09389	1 Mb	x18	100 MHz	Commercial	100	TQFP	Burst Counter, Dual-Chip Enables, Flow-Through/Pipeline Select on Both Ports



## PCI (Synchronous) Dual-Port RAMs

Part No.	Density	Bus Width	Speed	Operating Temperature	Pins/Balls	Package	Features
CY7C09449PV	128K	x8	50 MHz	Commercial	160	TQFP	Embedded Host Bridge, Master and Target PCI 2.2

## FIFOs

Cypress offers more than 100 First-in/First-out (FIFO) memories in a variety of synchronous and asynchronous architectures with industry-standard pinouts and densities of up to 1 Mb. Cypress's FIFO families include the x36 synchronous line of unidirectional, bidirectional, and tri-bus configurations; double syncs—two standard synchronous FIFOs in a single, 64-pin TQFP package; a space-saving line of smaller TQFPs; and DeepSync™ FIFOs.

### 3.3V Synchronous FIFOs

Part No.	Density	Bus Width	Direction	Package	Operating Temperature	Speed	Pins/Balls	I <sub>CC</sub>	Features
CY7C4201V	2K	x9	Unidirectional	TQFP	Commercial	67 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4205V	4K	x18	Unidirectional	TQFP	Commercial	67 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4211V	4K	x9	Unidirectional	TQFP	Commercial	67 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4215V	8K	x18	Unidirectional	TQFP	Commercial	67 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4221V	8K	x9	Unidirectional	TQFP	Commercial	67 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4225V	16K	x18	Unidirectional	TQFP	Commercial	67 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4231V	16K	x9	Unidirectional	PLCC	Commercial	67 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4235V	32K	x18	Unidirectional	TQFP	Commercial	67 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4241V	32K	x9	Unidirectional	PLCC	Commercial	67 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4245V	64K	x18	Unidirectional	TQFP	Commercial	67 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4251V	64K	x9	Unidirectional			15 ns			
CY7C4255V	128K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	30 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4261V	128K	x9	Unidirectional	PLCC	Commercial	67 MHz	32	25 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4265V	256K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	30 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4271V	256K	x9	Unidirectional	PLCC	Commercial	100 MHz	32	20 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4275V	512K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	30 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4281V	512K	x9	Unidirectional	PLCC	Commercial	100 MHz	32	25 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4282V	512K	x9	Unidirectional	TQFP	Commercial	100 MHz	64	25 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4285V	1M	x18	Unidirectional	TQFP	Commercial	100 MHz	64	30 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4291V	1M	x9	Unidirectional	PLCC	Commercial	100 MHz	32	25 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4292V	1M	x9	Unidirectional	TQFP	Commercial	100 MHz	64	25 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C43642AV	64K	x36	Bidirectional	TQFP	Commercial	133 MHz	120	60 mA	Retransmit
CY7C43643AV	32K	x36	Unidirectional	TQFP	Commercial	133 MHz	128	60 mA	Bus Matching/Retransmit

### 3.3V Synchronous FIFOs (Cont'd)

Part No.	Density	Bus Width	Direction	Package	Operating Temperature	Speed	Pins/Balls	I <sub>CC</sub>	Features
CY7C43644AV	64K	x36	Bidirectional	TQFP	Commercial	133 MHz	128	60 mA	Bus Matching/Retransmit
CY7C43646AV	32K	x36	Tri-Bus	TQFP	Commercial	133 MHz	128	60 mA	Retransmit
CY7C43662AV	256K	x36	Bidirectional	TQFP	Commercial	133 MHz	120	60 mA	Retransmit
CY7C43643AV	128K	x36	Unidirectional	TQFP	Commercial	133 MHz	128	60 mA	Bus Matching/Retransmit
CY7C43664AV	256K	x36	Bidirectional	TQFP	Commercial	133 MHz	128	60 mA	Bus Matching/Retransmit
CY7C43666AV	256K	x36	Tri-Bus	TQFP	Commercial	133 MHz	128	60 mA	Retransmit
CY7C43682AV	1M	x36	Bidirectional	TQFP	Commercial	133 MHz	120	60 mA	Retransmit
CY7C43683AV	512K	x36	Unidirectional	TQFP	Commercial	133 MHz	128	60 mA	Bus Matching/Retransmit
CY7C43684AV	1M	x36	Bidirectional	TQFP	Commercial	133 MHz	128	60 mA	Bus Matching/Retransmit
CY7C43686AV	1M	x36	Tri-Bus	TQFP	Commercial	133 MHz	128	60 mA	Retransmit

### 5V Asynchronous FIFOs

Part No.	Density	Bus Width	Direction	Package	Operating Temperature	Speed	Pins/Balls	I <sub>CC</sub>	Features
CY7C419	2K	x9	Unidirectional	PLCC	Commercial	10 ns	32	35 mA	Full/Empty/Half Full/Retransmit
CY7C421	4K	x9	Unidirectional	PLCC	Commercial	10 ns	32	35 mA	Full/Empty/Half Full/Retransmit
CY7C425	8K	x9	Unidirectional	PLCC	Commercial	10 ns	32	35 mA	Full/Empty/Half Full/Retransmit
CY7C429	16K	x9	Unidirectional	PLCC	Commercial	10 ns	32	35 mA	Full/Empty/Half Full/Retransmit
CY7C433	32K	x9	Unidirectional	TQFP	Commercial	10 ns	32	35 mA	Full/Empty/Half Full/Retransmit
CY7C460A	64K	x9	Unidirectional	PLCC	Commercial	10 ns	32	60 mA	Full/Empty/Half Full/Retransmit
CY7C462A	128K	x9	Unidirectional	PLCC	Commercial	10 ns	32	60 mA	Full/Empty/Half Full/Retransmit
CY7C464A	256K	x9	Unidirectional	PLCC	Commercial	10 ns	32	60 mA	Full/Empty/Half Full/Retransmit
CY7C466A	512K	x9	Unidirectional	PLCC	Commercial	10 ns	32	60 mA	Full/Empty/Half Full/Retransmit

### 5V Synchronous FIFOs

Part No.	Density	Bus Width	Direction	Package	Operating Temperature	Speed	Pins/Balls	I <sub>CC</sub>	Features
CY7C4201	2K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4205	4K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4211	4K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4215	8K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4221	8K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4225	16K	x18	Unidirectional	TQFP	Commercial	67 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4231	16K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4235	32K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4241	32K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4245	64K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs

## 5V Synchronous FIFOs (Cont'd)

Part No.	Density	Bus Width	Direction	Package	Operating Temperature	Speed	Pins/Balls	I <sub>CC</sub>	Features
CY7C4251	64K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4255	128K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4261	128K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4265	256K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	45 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4271	256K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4275	512K	x18	Unidirectional	TQFP	Commercial	100 MHz	64	50 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4282	512K	x9	Unidirectional	TQFP	Commercial	100 MHz	64	40 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4285	1M	x18	Unidirectional	TQFP	Commercial	100 MHz	64	50 mA	Full/Empty/Half Full/IndTemp/Out En/Prog Almost Full/Almost Empty/2 Ind FIFOs
CY7C4291	1M	x9	Unidirectional	PLCC	Commercial	100 MHz	32	40 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C4292	1M	x9	Unidirectional	TQFP	Commercial	100 MHz	64	40 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty
CY7C43642	64K	x36	Bidirectional	TQFP	Commercial	133 MHz	120	100 mA	Retransmit
CY7C43643	32K	x36	Unidirectional	TQFP	Commercial	133 MHz	128	100 mA	Bus Matching/Retransmit
CY7C43644	64K	x36	Bidirectional	TQFP	Commercial	133 MHz	128	100 mA	Bus Matching/Retransmit
CY7C43662	256K	x36	Bidirectional	TQFP	Commercial	133 MHz	120	100 mA	Retransmit
CY7C43663	128K	x36	Unidirectional	TQFP	Commercial	133 MHz	128	100 mA	Bus Matching/Retransmit
CY7C43664	256K	x36	Bidirectional	TQFP	Commercial	133 MHz	128	100 mA	Bus Matching/Retransmit
CY7C43666	256K	x36	Tri-Bus	TQFP	Commercial	133 MHz	128	100 mA	Retransmit
CY7C43682	1M	x36	Bidirectional	TQFP	Commercial	133 MHz	120	100 mA	Retransmit
CY7C43683	512K	x36	Unidirectional	TQFP	Commercial	133 MHz	128	100 mA	Bus Matching/Retransmit
CY7C43684	1M	x36	Bidirectional	TQFP	Commercial	133 MHz	128	100 mA	Bus Matching/Retransmit
CY7C43686	1M	x36	Tri-Bus	TQFP	Commercial	133 MHz	128	100 mA	Retransmit
CY7C4421	1K	x9	Unidirectional	TQFP	Commercial	100 MHz	32	35 mA	Full/Empty/Output Enable/Programmable Almost Full/Almost Empty

Memories

## MicroPower™ SRAMs

Cypress Micropower SRAMs are standard 6T cell SRAMs. The available densities range from 64Kb to 16Mb. The applications served are Mobile Phones, Pagers, Handheld games, POS & WLAN. These devices are available in three voltage options: 5V, 3V and 1.8V in speeds of 70ns, 55ns and 45ns. These devices have ultra low active current and stand-by current to extend the operation time of battery powered products.

### MicroPower™ SRAMs

Part No.	Density	Address	Organization	Org.	V <sub>CC</sub>	Voltage Range	Power	Speed	Package	Operating Temperature
CY62126DV30	1 Mb	64 Kb	64 Kb x 16	x16	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	48 VFBGA, TSOP II	Industrial
CY62127DV30	1 Mb	64 Kb	64 Kb x 16	x16	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	48 VFBGA, TSOP II	Industrial
CY62128B	1 Mb	128 Kb	128 Kb x 8	x8	5V	4.5V to 5.5V	LL	55 ns, 70 ns	32 SOIC, TSOP II, STSOP	Commercial Industrial
CY62128DV30	1 Mb	128 Kb	128 Kb x 8	x8	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	32 TSOP, SOIC, STSOP, RTSOP	Industrial
CY62136CV30	2 Mb	128 Kb	128 Kb x 16	x16	3V	2.7V to 3.3V	LL	55 ns, 70 ns	48 VFBGA	Industrial
CY62136CV33	2 Mb	128 Kb	128 Kb x 16	x16	3.3V	3.0V to 3.6V	LL	55 ns, 70 ns	48 VFBGA	Industrial
CY62137V	2 Mb	128 Kb	128 Kb x 16	x16	3V	2.7V to 3.3V	LL	55 ns, 70 ns	48 VFBGA, TSOP II	Industrial
CY62137CV30	2 Mb	128 Kb	128 Kb x 16	x16	3V	2.7V to 3.3V	LL	55 ns, 70 ns	48 VFBGA	Industrial
CY62138CV30	2 Mb	256 Kb	256 Kb x 8	x8	3V	2.7V to 3.3V	LL, SL	55 ns, 70 ns	36 VFBGA	Industrial
CY62146DV30	4 Mb	256 Kb	256 Kb x 16	x16	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	48 VFBGA, TSOP II	Industrial
CY62147DV18	4 Mb	256 Kb	256 Kb x 16	x16	1.8V	1.65V to 2.2V	LL	55 ns, 70 ns	48 VFBGA	Industrial
CY62147DV30	4 Mb	256 Kb	256 Kb x 16	x16	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	48 VFBGA, TSOP II	Industrial
CY62148B	4 Mb	512 Kb	512 Kb x 8	x8	5V	4.5V to 5.5V	LL	70 ns	32 SOIC, TSOP II	Commercial Industrial
CY62148DV30	4 Mb	512 Kb	512 Kb x 8	x8	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	36 VFBGA, SOIC, TSOP II	Industrial
CY62157DV18	8 Mb	512 Kb	512 Kb x 16	x16	1.8V	1.65V to 1.95V	L, LL	45,55,70 ns	48 VFBGA, TSOP II	Industrial
CY62157DV30	8 Mb	512 Kb	512 Kb x 16	x16	3V	2.2V to 3.6V	LL, L	45,55,70 ns	48 VFBGA, TSOP II	Industrial
CY62158DV30	8 Mb	1024 Kb	1024 Kb x 8	x8	3V	2.2V to 3.6V	L, LL	45,55,70 ns	48 VFBGA, TSOP II	Industrial
CY62167DV18	16 Mb	1024 Kb	1024 Kb x 16	x16	1.8V	1.65V to 2.2V	L, LL	55 ns, 70 ns	48 VFBGA	Industrial
CY62167DV20	16 Mb	1024 Kb	1024 Kb x 16	x16	1.8V	1.65V to 2.2V	L, LL	55 ns, 70 ns	48 VFBGA	Industrial
CY62167DV30	16 Mb	1024 Kb	1024 Kb x 16	x16	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	48 VFBGA, TSOP II	Industrial
CY62168DV30	16 Mb	2048 Kb	2048 Kb x 8	x8	3V	2.2V to 3.6V	L, LL	55 ns, 70 ns	48 VFBGA	Commercial Industrial
CY62256	256 Kb	32 Kb	32 Kb x 8	x8	5V	4.5V to 5.5V	LL	70 ns	28 SNC, TSOP II, RTSOP II, PDIP	Commercial Industrial
CY62256V	256 Kb	32 Kb	32 Kb x 8	x8	3V	2.7V to 3.6V	LL	70 ns	28 SNC, TSOP II, RTSOP II	Commercial Industrial
CY6264	64 Kb	8 Kb	8 Kb x 8	x8	5V	4.5V to 5.5V	L	55 ns, 70 ns	28 SNC	

Contact Sales for Pb-free parts if required

## Specialty DRAMs

Specialty DRAMs include 1T Pseudo SRAMs (PSRAMs) and JEDEC-standard low-power synchronous DRAMs (LP-SDRAMs). The current PSRAM densities range from 2 Mb to 16 Mb. The target applications are mobile phones, PDAs and other battery-powered applications. For new products under development please refer CY Specialty DRAM Road Map or CY New Product Status Guide.

### Specialty DRAMs

Part No.	Density <sup>[1]</sup>	Address	Organization	V <sub>CC</sub>	Voltage Range	Power	Speed	Package	Operating Temperature
CYK128K16MCCB	2 Mb	128 Kb	128 Kb x 16	3V	2.7V to 3.3V	Super low	55 ns, 70 ns	48 VFBGA, KGD	Industrial
CYK128K16SCCB	2 Mb	128 Kb	128 Kb x 16	3V	2.7V to 3.3V	Super low	55 ns, 70 ns	48 VFBGA, KGD	Industrial
CYK256K16MCCB	4 Mb	256 Kb	256 Kb x 16	3V	2.7V to 3.3V	Super low	55 ns, 70 ns	48 VFBGA, KGD	Industrial
CYK256K16SCCB	4 Mb	256 Kb	256 Kb x 16	3V	2.7V to 3.3V	Super low	55 ns, 70 ns	48 VFBGA, KGD	Industrial
CYK512K16SCCA	8 Mb	512 Kb	512 Kb x 16	3V	2.7V to 3.3V	Super low	55 ns, 70 ns	48 FBGA, KGD	Industrial
CYK001M16ZCCA	16 Mb	1 Mb	1 Mb x 16	3V	2.7V to 3.3V	Super low	55 ns, 70 ns	48 FBGA, KGD	Industrial
CYK001M16SCCA	16 Mb	1 Mb	1 Mb x 16	3V	2.7V to 3.3V	Super low	55 ns, 70 ns	48 FBGA, KGD	Industrial

1.2 Mb/4 Mb: M - 1 Chip Select, S - 2 Chip Select; 16 Mb: Z - ZZ Mode, 1 Chip Select, S - No ZZ Mode, 2 Chip Select

## PROMs

Cypress is the undisputed market leader in high-speed CMOS PROM devices, offering a variety of densities, configurations, and packaging options. Cypress has served this market almost from the company's inception and continues to provide non-volatile memory solutions for a number of application segments, including telecommunications, industrial, and the military.

We provide PROMs that are reprogrammable, registered, and power-switched devices in densities starting as low as 4 Kb.

### CMOS PROMs

Part No.	Density	Address	Organization	V <sub>CC</sub>	Speed	Package	Operating Temperature
CY7C225A	4 Kb	512 Kb	512 Kb x 8	5V	25 ns	24 PDIP	Commercial
CY7C235A	8 Kb	1 Kb	1 Kb x 8	5V	25 ns	24 PDIP	Commercial
CY7C245A	16 Kb	2 Kb	2 Kb x 8	5V	15 ns	28 PLCC	Commercial
CY7C261	64 Kb	8 Kb	8 Kb x 8	5V	20 ns	24 PDIP	Commercial
CY7C263	64 Kb	8 Kb	8 Kb x 8	5V	20 ns	28 PLCC	Commercial
CY7C264	64 Kb	8 Kb	8 Kb x 8	5V	35 ns	24 PDIP	Commercial
CY7C265	64 Kb	8 Kb	8 Kb x 8	5V	15 ns	28 PLCC	Commercial
CY7C266	64 Kb	8 Kb	8 Kb x 8	5V	20 ns	32 PLCC	Commercial
CY7C271	256 Kb	32 Kb	32 Kb x 8	5V	35 ns	32 W-LCC	Military
CY7C271A	256 Kb	32 Kb	32 Kb x 8	5V	25 ns	32 PLCC	Commercial
CY7C274	256 Kb	32 Kb	32 Kb x 8	5V	30 ns	28 W-CERDIP	Commercial
CY7C276	256 Kb	16 Kb	16 Kb x 16	5V	15 ns	44 WLCC	Commercial
CY7C277	256 Kb	32 Kb	32 Kb x 8	5V	30 ns	28 PDIP	Commercial
CY7C281A	8 Kb	1 Kb	1 Kb x 8	5V	25 ns	28 PLCC	Commercial
CY7C291A	16 Kb	2 Kb	2 Kb x 8	5V	20 ns	28 PLCC	Commercial

## QuadPort™ DSEs

Cypress's QuadPort™ datapath switching element (DSE) family offers four completely independent ports that can simultaneously access the 64K x 18-bit data storage array and operate in different frequency domains. Each port can read or write data at 133 MHz, giving the device up to 10 Gbps of data throughput (bandwidth).

The QuadPort DSE can be used for various applications such as:

- 2 x 2 switch buffer
- Data aggregation
- Data redundancy
- Packet header manipulation to help remove costly FPGAs out of the datapath.

### Synchronous QuadPort DSEs

Part No.	V <sub>CC</sub>	Frequency Range	Bus Width	Organization	Speed	Operating Temperature	Pins/Balls	Package	Features
QuadPort DSE 1Mb	3.3V	9.6 Gbps	18	64K	100 MHz	Commercial	272	BGA	Address Read Back/BIST/Byte Selectability/Counter Mask Register/JTAG
QuadPort DSE 1Mb	3.3V	9.6 Gbps	18	64K	133 MHz	Commercial	272	BGA	Address Read Back/BIST/Byte Selectability/Counter Mask Register/JTAG
QuadPort DSE 512 Kb	3.3V	9.6 Gbps	18	32K	133 MHz	Commercial	272	BGA	Address Read Back/BIST/Byte Selectability/Counter Mask Register/JTAG
QuadPort DSE 256 Kb	3.3V	9.6 Gbps	18	16K	133 MHz	Commercial	272	BGA	Address Read Back/BIST/Byte Selectability/Counter Mask Register/JTAG



## SRAM Modules

Cypress is a leading supplier of high-density, high-performance multichip-module SRAMs. These modules are used in a variety of applications from PC cache to high-bandwidth networking and wireless applications.

Modules are a convenient way for system designers to achieve unusually large SRAM densities or configurations without using a large amount of space on their printed circuit board. For example, Cypress's SRAM module portfolio allows a designer to design a system with one SRAM that has 72-Mb memory and 72-bit bus width.

### SRAM Modules (Asynchronous)

Part No.	Density	Address	Organization	V <sub>CC</sub>	Speed	Package	Operating Temperature
CYM1441	2 Mb	256 Kb	256 Kb x 8	5V	25 ns	60 PLASTIC ZIP	Commercial
CYM1464	4 Mb	512 Kb	512 Kb x 8	5V	20 ns	32 PLASTIC DIP	Commercial
CYM1560	9 Mb	1 Mb	1 Mb x 9	5V	30 ns	44 PLASTIC SIP	Commercial
CYM1831B	2 Mb	64 Kb	64 Kb x 32	5V	20 ns	64 PLASTIC ZIP	Commercial
CYM1831	2 Mb	64 Kb	64 Kb x 32	5V	15 ns	64 SIMM	Commercial
CYM1831	2 Mb	64 Kb	64 Kb x 32	5V	15 ns	64 PLASTIC ZIP	Commercial
CYM1832	2 Mb	64 Kb	64 Kb x 32	5V	25 ns	60 PLASTIC ZIP	Commercial
CYM1836	4 Mb	128 Kb	128 Kb x 32	5V	15 ns	64 SIMM	Commercial
CYM1836V33	4 Mb	128 Kb	128 Kb x 32	3.3V	15 ns	72 SIMM	Commercial
CYM1841B	8 Mb	256 Kb	256 Kb x 32	5V	15 ns	72 SIMM	Commercial
CYM1841B	8 Mb	256 Kb	256 Kb x 32	5V	20 ns	64 SIMM	Commercial
CYM1846P	16 Mb	512 Kb	512 Kb x 32	5V	15 ns	72 SIMM	Commercial
CYM1846V33	16 Mb	512 Kb	512 Kb x 32	3.3V	15 ns	72 SIMM	Commercial
CYM1851	32 Mb	1 Mb	1 Mb x 32	5V	15 ns	72 SIMM	Commercial
CYM1851	32 Mb	1 Mb	1 Mb x 32	5V	15 ns	72 SIMM	Commercial
CYM1851V33	32 Mb	1 Mb	1 Mb x 32	3.3V	15 ns	72 SIMM	Commercial
CYM1861AV33	64 Mb	2 Mb	2 Mb x 32	3.3V	20 ns	72 SIMM	Commercial
CYM26KAH24AV33	6 Mb	256 Kb	256 Kb x 24	3.3V	10 ns	119 BGA	Commercial
CYM8301BV33	12 Mb	512 Kb	512 Kb x 24	3.3V	10 ns	119 BGA	Commercial
CYM9136A	512 Kb	32 Kb	32 Kb x 16	5V	30 ns	81 PLASTIC ZIP	Commercial
CYM9139A	256 Kb	32 Kb	32 Kb x 8	5V	25 ns	44 PLASTIC ZIP	Commercial
CYM9169A	1 Mb	64 Kb	64 Kb x 16	5V	55 ns	80 PLASTIC ZIP	Commercial
CYM9238	8 Mb	256 Kb	256 Kb x 32	5V	25 ns	62 PLASTIC ZIP	Commercial
CYM9239	4 Mb	512 Kb	512 Kb x 9	5V	25 ns	43 PLASTIC ZIP	Commercial
CYM9240	36 Kb	4 Kb	4 Kb x 9	5V	25 ns	43 PLASTIC ZIP	Commercial

### MicroPower™ Modules

Part No.	Density	Addr	Organization	V <sub>CC</sub>	Speed	Package	Operating Temperature
CYM1465AL	4 Mb	512 Kb	512 Kb x 8	3.3V	100 ns	32 PLASTIC DIP	Commercial
CYM1465A	4 Mb	512 Kb	512 Kb x 8	5V	100 ns	32 PLASTIC DIP	Commercial
CYM1481AL	16 Mb	2 Mb	2 Mb x 8	3.3V	100 ns	36 PLASTIC SIP	Commercial
CYM1481A	16 Mb	2 Mb	2 Mb x 8	5V	100 ns	36 PLASTIC SIP	Commercial
CYM8210B	32 Mb	2 Mb	2 Mb x 16	5V	70 ns	80 SIMM	Commercial

## Synchronous SRAMs

Cypress's high-speed synchronous SRAMs include standard synchronous pipelined, No Bus Latency™ (NoBL™), Quad Data Rate™ (QDR™), and Double Data Rate (DDR) SRAMs and are typically used in networking applications.

We are uniquely positioned in this market with enough revenue to support the R&D expenditures associated with owning our own fab while maintaining the focus necessary to handle customer SRAM needs.

Cypress is on the leading edge of technology by being the first to market with 90-nm technology. Additionally, we are currently the market leader in the 72-Mb standard synchronous, NoBL, QDR-II, and DDR-II SRAM devices—the world's highest-density and highest-bandwidth SRAMs.

### DDR SRAMs

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1308CV25	4 Word Burst	9 Mb	256 K	256 Kb x 36	2.5V	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial
CY7C1323AV25	4 Word Burst	18 Mb	512 K	512 Kb x 36	2.5V	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial

### DDR-II-CIO SRAMs

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1318AV18	2 Word Burst	18 Mb	1 Mb	1 Mb x 18	1.8V	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial
CY7C1320AV18	2 Word Burst	18 Mb	512 Kb	512 Kb x 36	1.8V	HSTL I/Os: 1.4V to 1.9V	200 MHz	165 FBGA	Commercial

### DDR-II-SIO SRAMs

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1393AV18	2 Word Burst	18 Mb	1 Mb	1 Mb x 18	1.8V	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial

### NoBL™ SRAMs

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1231F	Flow-through	2 Mb	128 Kb	128 Kb x 18	3.3V	3.3V	100 MHz	100 TQFP	Commercial
CY7C1333F	Flow-through	2 Mb	64 Kb	64 Kb x 32	3.3V	3.3V	100 MHz	100 TQFP	Commercial
CY7C1334F	Pipeline	2 Mb	64 Kb	64 Kb x 32	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1350F	Pipeline	4 Mb	128 Kb	128 Kb x 36	3.3V	2.5V, 3.3V	200 MHz	100 TQFP, 119 BGA	Commercial
CY7C1351F	Flow-through	4 Mb	128 Kb	128 Kb x 36	3.3V	2.5V, 3.3V	117 MHz	100 TQFP, 119 BGA	Commercial
CY7C1352F	Pipeline	4 Mb	256 Kb	256 Kb x 18	3.3V	2.5V, 3.3V	200 MHz	100 TQFP	Commercial
CY7C1353F	Flow-through	4 Mb	256 Kb	256 Kb x 18	3.3V	2.5V, 3.3V	100 MHz	100 TQFP	Commercial
CY7C1354B	Pipeline	9 Mb	256 Kb	256 Kb x 36	3.3V	2.5V, 3.3V	200 MHz	100 TQFP, 119 BGA	Commercial
CY7C1354BV25	Pipeline	9 Mb	256 Kb	256 Kb x 36	2.5V	2.5V	200 MHz	100 TQFP, 119 BGA	Commercial
CY7C1355B	Flow-through	9 Mb	256 Kb	256 Kb x 36	3.3V	3.3V	133 MHz	100 TQFP, 119 BGA	Commercial
CY7C1356B	Pipeline	9 Mb	512 Kb	512 Kb x 18	3.3V	3.3V	200 MHz	100 TQFP, 119 BGA	Commercial
CY7C1357B	Flow-through	9 Mb	512 Kb	512 Kb x 18	3.3V	3.3V	133 MHz	100 TQFP, 165 FBGA	Commercial

## NoBL™ SRAMs (Cont'd)

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1370C	Pipeline	18 Mb	512 Kb	512 Kb x 36	3.3V	2.5V, 3.3V	225 MHz	100 TQFP, 119 BGA	Commercial
CY7C1370CV25	Pipeline	18 Mb	512 Kb	512 Kb x 36	2.5V	2.5V	225 MHz	100 TQFP, 119 BGA	Commercial
CY7C1371C	Flow-through	18 Mb	512 Kb	512 Kb x 36	3.3V	2.5V, 3.3V	133 MHz	100 TQFP, 119 BGA	Commercial
CY7C1372C	Pipeline	18 Mb	1 Mb	1 Mb x 18	3.3V	2.5V, 3.3V	225 MHz	100 TQFP, 119 BGA	Commercial
CY7C1372CV25	Pipeline	18 Mb	1 Mb	1 Mb x 18	2.5V	2.5V	225 MHz	100 TQFP, 119 BGA	Commercial
CY7C1373C	Flow-through	18 Mb	1 Mb	1 Mb x 18	3.3V	2.5V, 3.3V	133 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1379B	Flow-through	9 Mb	256 Kb	256 Kb x 32	3.3V	3.3V	117 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1470V25	Pipeline	72 Mb	2 Mb	2 Mb x 36	2.5V	1.8V, 2.5V	200 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1470V33	Pipeline	72 Mb	2 Mb	2 Mb x 36	3.3V	2.5V, 3.3V	200 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1471V25	Flow-through	72 Mb	2 Mb	2 Mb x 36	2.5V	1.8V, 2.5V	133 MHz	100 TQFP	Commercial
CY7C1471V33	Flow-through	72 Mb	2 Mb	2 Mb x 36	3.3V	2.5V, 3.3V	133 MHz	100 TQFP	Commercial
CY7C1472V25	Pipeline	72 Mb	4 Mb	4 Mb x 18	2.5V	1.8V, 2.5V	250 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1472V33	Pipeline	72 Mb	4 Mb	4 Mb x 18	3.3V	2.5V, 3.3V	200 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1473V25	Flow-through	72 Mb	4 Mb	4 Mb x 18	2.5V	1.8V, 2.5V	133 MHz	100 TQFP	Commercial
CY7C1473V33	Flow-through	72 Mb	4 Mb	4 Mb x 18	3.3V	2.5V, 3.3V	133 MHz	100 TQFP	Commercial
CY7C1474V25	Pipeline	72 Mb	1 Mb	1 Mb x 72	2.5V	1.8V, 2.5V	200 MHz	209 BGA	Commercial
CY7C1474V33	Pipeline	72 Mb	1 Mb	1 Mb x 72	3.3V	2.5V, 3.3V	167 MHz	209 BGA	Commercial
CY7C1475V25	Flow-through	72 Mb	1 Mb	1 Mb x 72	2.5V	1.8V, 2.5V	133 MHz	209 BGA	Commercial
CY7C1480V33	Pipeline	72 Mb	2 Mb	2 Mb x 36	3.3V	2.5V, 3.3V	167 MHz	100 TQFP, 165 FBGA	Commercial

## QDR SRAMs

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1302CV25	2 Word Burst	9 Mb	512 Kb	512 Kb x 18	2.5	HSTL I/Os: 1.4V to 1.9V	100 MHz	165 FBGA	Commercial
CY7C1303AV25	2 Word Burst	18 Mb	1 Mb	1 Mb x 18	2.5	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial
CY7C1304CV25	4 Word Burst	9 Mb	512 Kb	512 Kb x 18	2.5	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial
CY7C1305AV25	4 Word Burst	18 Mb	1 Mb	1 Mb x 18	2.5	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial

## QDR-II SRAMs

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1312AV18	2 Word Burst	18 Mb	1 Mb	1 Mb x 18	1.8V	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial
CY7C1313AV18	4 Word Burst	18 Mb	1 Mb	1 Mb x 18	1.8V	HSTL I/Os: 1.4V to 1.9V	250 MHz	165 FBGA	Commercial
CY7C1314AV18	2 Word Burst	18 Mb	512 Kb	512 Kb x 36	1.8V	HSTL I/Os: 1.4V to 1.9V	167 MHz	165 FBGA	Commercial
CY7C1315AV18	4 Word Burst	18 Mb	512 Kb	512 Kb x 36	1.8V	HSTL I/Os: 1.4V to 1.9V	200 MHz	165 FBGA	Commercial
CY7C1512V18	2 Word Burst	72 Mb	4 Mb	4 Mb x 18	1.8V	HSTL I/Os: 1.4V to 1.9V	250 MHz	165 FBGA	Commercial

## Standard Synchronous SRAMs

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1031	Pentium Burst	1 Mb	64 Kb	64 Kb x 18	5V	5v	10 ns	52 PLCC	Commercial
CY7C1032	Power PC Burst	1 Mb	64 Kb	64 Kb x 18	5V	5V	8 ns	52 PLCC	Commercial
CY7C1212F	Pipeline SCD	1 Mb	64 Kb	64 Kb x 18	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1214F	Flow-through	1 Mb	32 Kb	32 Kb x 32	3.3V	3.3V	100 MHz	100 TQFP	Commercial
CY7C1215F	Pipeline SCD	1 Mb	32 Kb	32 Kb x 32	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1217F	Flow-through	1 Mb	32 Kb	32 Kb x 36	3.3V	3.3V	100 MHz	100 TQFP	Commercial
CY7C1218F	Pipeline SCD	1 Mb	32 Kb	32 Kb x 36	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1219F	Pipeline DCD	1 Mb	32 Kb	32 Kb x 36	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1223F	Pipeline DCD	2 Mb	128 Kb	128 Kb x 18	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1297F	Flow-through	1 Mb	64 Kb	64 Kb x 18	3.3V	3.3V	117 MHz	100 TQFP	Commercial
CY7C1298F	Pipeline DCD	1 Mb	64 Kb	64 Kb x 18	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1324F	Flow-through	2 Mb	128 Kb	128 Kb x 18	3.3V	3.3V	133 MHz	100 TQFP	Commercial
CY7C1325F	Flow-through	4 Mb	256 Kb	256 Kb x 18	3.3V	2.5V, 3.3V	133 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1326F	Pipeline SCD	2 Mb	128 Kb	128 Kb x 18	3.3V	3.3V	100 MHz	100 TQFP	Commercial
CY7C1327F	Pipeline SCD	4 Mb	256 Kb	256 Kb x 18	3.3V	2.5V, 3.3V	166 MHz	100 TQFP, 119 BGA	Commercial
CY7C1328F	Pipeline DCD	4 Mb	256 Kb	256 Kb x 18	3.3V	2.5V, 3.3	200 MHz	100 TQFP	Commercial
CY7C1329G	Pipeline SCD	2 Mb	64 Kb	64 Kb x 32	3.3V	2.5V, 3.3V	167 MHz	100 TQFP	Commercial
CY7C1336F	Flow-through	2 Mb	64 Kb	64 Kb x 32	3.3V	3.3V	117 MHz	100 TQFP	Commercial
CY7C1338F	Flow-through	4 Mb	128 Kb	128 Kb x 32	3.3V	2.5V, 3.3V	117 MHz	100 TQFP	Commercial
CY7C1339F	Pipeline SCD	4 Mb	128 Kb	128 Kb x 32	3.3V	2.5V, 3.3V	166 MHz	100 TQFP, 119 BGA	Commercial
CY7C1340F	Pipeline DCD	4 Mb	128 Kb	128 Kb x 32	3.3V	2.5V, 3.3V	200 MHz	100 TQFP, 119 BGA	Commercial
CY7C1344F	Flow-through	2 Mb	64 Kb	64 Kb x 36	3.3V	3.3V	100 MHz	100 TQFP, 119 BGA	Commercial
CY7C1345F	Flow-through	4 Mb	128 Kb	128 Kb x 36	3.3V	2.5V, 3.3V	117 MHz	100 TQFP, 119 BGA	Commercial
CY7C1346F	Pipeline SCD	2 Mb	64 Kb	64 Kb x 36	3.3V	3.3V	133 MHz	100 TQFP, 119 BGA	Commercial
CY7C1347F	Pipeline SCD	4 Mb	128 Kb	128 Kb x 36	3.3V	2.5V, 3.3V	133 MHz	100 TQFP	Commercial
CY7C1360B	Pipeline SCD	9 Mb	256 Kb	256 Kb x 36	3.3V	3.3V	200 MHz	100 TQFP	Commercial
CY7C1361B	Flow-through	9 Mb	256 Kb	256 Kb x 36	3.3V	3.3V	100 MHz	100 TQFP	Commercial
CY7C1362B	Pipeline SCD	9 Mb	512 Kb	512 Kb x 18	3.3V	3.3V	200 MHz	100 TQFP, 119 BGA, 165 FBGA	Commercial
CY7C1363B	Flow-through	9 Mb	512 Kb	512 Kb x 18	3.3V	3.3V	133 MHz	100 TQFP, 119 BGA,	Commercial
CY7C1364B	Pipeline SCD	9 Mb	256 Kb	256 Kb x 32	3.3V	3.3V	166 MHz	100 TQFP	Commercial
CY7C1365B	Flow-through	9 Mb	256 Kb	256 Kb x 32	3.3V	3.3V	117 MHz	100 TQFP	Commercial
CY7C1366B	Pipeline DCD	9 Mb	256 Kb	256 Kb x 36	3.3V	2.5V, 3.3V	166 MHz	100 TQFP, 119 BGA	Commercial
CY7C1367B	Pipeline DCD	9 Mb	512 Kb	512 Kb x 18	3.3V	2.5V, 3.3V	166 MHz	100 TQFP	Commercial
CY7C1368B	Pipeline DCD	9 Mb	256 Kb	256 Kb x 32	3.3V	3.3V	166 MHz	100 TQFP	Commercial
CY7C1380C	Pipeline SCD	18 Mb	512 Kb	512 Kb x 36	3.3V	2.5V, 3.3V	225 MHz	100 TQFP, 119 BGA, 165 FBGA	Commercial

**Standard Synchronous SRAMs (Cont'd)**

Part No.	Architecture	Density	Address	Organization	V <sub>CC</sub>	V <sub>CCQ</sub>	Speed	Package	Operating Temperature
CY7C1380CV25	Pipeline SCD	18 Mb	512 Kb	512 Kb x 36	2.3V	2.5V	167 MHz	100 TQFP, 119 BGA	Commercial
CY7C1381C	Flow-through	18 Mb	512 Kb	512 Kb x 36	3.3V	2.5V, 3.3V	133 MHz	100 TQFP, 119 BGA, 165 FBGA	Commercial
CY7C1382C	Pipeline SCD	18 Mb	1 Mb	1 Mb x 18	3.3V	2.5V, 3.3V	200 MHz	100 TQFP, 165 FBGA	Commercial
CY7C1383C	Flow-through	18 Mb	1 Mb	1 Mb x 18	3.3V	2.5V, 3.3V	133 MHz	100 TQFP	Commercial
CY7C1386C	Flow-through	18 Mb	512 Kb	512 Kb x 36	3.3V	2.5V, 3.3V	200 MHz	100 TQFP	Commercial
CY7C1387C	Pipeline DCD	18 Mb	1 Mb	1 Mb x 18	3.3V	2.5V, 3.3V	200 MHz	100 TQFP, 165 FBGA	Commercial

## Wafers & Die

Cypress's memory products are also sold in both wafer and die form. They are classified as follows:

### Wafers

Wafers are probed at room and hot temperature to guarantee full functionality. Other parameters are guaranteed based on the level of product that is supplied to the customer.

### Known Good Die (KGD)

KGD is available in both die-in-wafer form and background die. Product in wafer form is not background and is about 25 mm to 30 mm thick. Background die are 11 mm or 14 mm thick, sawed, and shipped as a wafer or in waffle packs.

### Async SRAMs

Part No.	Type	Architecture	Density	Org.	V <sub>CC</sub>	KGD	Description
CY6116A	Wafer - Std.		16 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1006B	Wafer - Std.		1 Mb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1007B	Wafer - Std.		1 Mb	x1	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1009B	Wafer - Std.		1 Mb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1011BV33	Wafer - Std.		2 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1011CV33	Wafer - Std.		2 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1012AV33	Wafer - Std.		12 Mb	x24	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1018BV33	Wafer - Std.		1 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1018CV33	Wafer - Std.		1 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1019	Wafer - Std.		1 Mb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C10191B	Wafer - Std.		1 Mb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1019BV33	Wafer - Std.		1 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1019CV33	Wafer - Std.		1 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1020	Wafer - Std.		512 Kb	x16	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1020B	Wafer - Std.		512 Kb	x16	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1020CV33	Wafer - Std.		512 Kb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1020V33	Wafer - Std.		512 Kb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1021	Wafer - Std.		1 Mb	x16	5V	KGD1	Die (25-30 mil) in wafer form
CY7C10211B	Wafer - Std.		1 Mb	x16	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1021B	Wafer - Std.		1 Mb	x16	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1021BV33	Wafer - Std.		1 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1021CV33	Wafer - Std.		1 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1024AV33	Wafer - Std.		3 Mb	x24	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1041B	Wafer - Std.		4 Mb	x16	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1041BV33	Wafer - Std.		4 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1041CV33	Wafer - Std.		4 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1046B	Wafer - Std.		4 Mb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1046BV33	Wafer - Std.		4 Mb	x4	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1046CV33	Wafer - Std.		4 Mb	x4	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1049B	Wafer - Std.		4 Mb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1049BV33	Wafer - Std.		4 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1049CV33	Wafer - Std.		4 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form

## Async SRAMs (Cont'd)

Part No.	Type	Architecture	Density	Org.	V <sub>CC</sub>	KGD	Description
CY7C1061AV33	Wafer - Std.		16 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1062AV33	Wafer - Std.		16 Mb	x32	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C1069AV33	Wafer - Std.		16 Mb	x8	3.3	KGD1	Die (25-30 mil) in wafer form
CY7C106B	Wafer - Std.	Corner Power	1 Mb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C107B	Wafer - Std.	Corner Power	1 Mb	x1	5V	KGD1	Die (25-30 mil) in wafer form
CY7C109B	Wafer - Std.	Corner Power	1 Mb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C128A	Wafer - Std.		16 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C1399B	Wafer - Std.		256 Kb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY7C149	Wafer - Std.		4 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C150	Wafer - Std.		4 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C164	Wafer - Std.		64 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C166	Wafer - Std.		64 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C167A	Wafer - Std.		16 Kb	x1	5V	KGD1	Die (25-30 mil) in wafer form
CY7C168A	Wafer - Std.		16 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C182	Wafer - Std.		64 Kb	x9	5V	KGD1	Die (25-30 mil) in wafer form
CY7C185	Wafer - Std.		64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C186	Wafer - Std.		64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C187	Wafer - Std.		64 Kb	x1	5V	KGD1	Die (25-30 mil) in wafer form
CY7C188	Wafer - Std.		256 Kb	x9	5V	KGD1	Die (25-30 mil) in wafer form
CY7C192	Wafer - Std.		256 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C194	Wafer - Std.		256 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C195	Wafer - Std.		256 Kb	x4	5V	KGD1	Die (25-30 mil) in wafer form
CY7C197	Wafer - Std.		256 Kb	x1	5V	KGD1	Die (25-30 mil) in wafer form
CY7C198	Wafer - Std.		256 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form

## MicroPower™ SRAMs

Part No.	Type	Architecture	Density	Org.	V <sub>CC</sub>	KGD	Description
CY62126BV	Wafer - Std.	MoBL™	1 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62126DV30	Wafer - Std.	MoBL	1 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62127BV	Wafer - Std.	MoBL	1 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62127DV18	Wafer - Std.	MoBL	1 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62127DV20	Wafer - Std.	MoBL	1 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62127DV30	Wafer - Std.	MoBL	1 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62128B	Wafer - Std.	MoBL	1 Mb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY62128DV30	Wafer - Std.	MoBL	1 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62128V	Wafer - Std.		1 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62136CV	Wafer - Std.	MoBL	2 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62136CV18	Wafer - Std.	MoBL2™	2 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62136CV30	Wafer - Std.	MoBL	2 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62136CV33	Wafer - Std.	MoBL	2 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62136V	Wafer - Std.	MoBL	2 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62137CV	Wafer - Std.	MoBL	2 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62137CV18	Wafer - Std.	MoBL2	2 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62137CV25	Wafer - Std.	MoBL	2 Mb	x16	2.5V	KGD1	Die (25-30 mil) in wafer form
CY62137CV30	Wafer - Std.	MoBL	2 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form

## MicroPower™ SRAMs (Cont'd)

Part No.	Type	Architecture	Density	Org.	V <sub>CC</sub>	KGD	Description
CY62137CV33	Wafer - Std.	MoBL	2 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62137V	Wafer - Std.	MoBL	2 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62138CV	Wafer - Std.	MoBL	2 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62138CV25	Wafer - Std.	MoBL	2 Mb	x8	2.5V	KGD1	Die (25-30 mil) in wafer form
CY62138CV30	Wafer - Std.	MoBL	2 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62138CV33	Wafer - Std.	MoBL	2 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62138V	Wafer - Std.	MoBL	2 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62146CV18	Wafer - Std.	MoBL2	4 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62146CV30	Wafer - Std.	MoBL	4 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62146CV33	Wafer - Std.	MoBL	4 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62146V	Wafer - Std.	MoBL	4 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62147CV18	Wafer - Std.	MoBL2	4 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62147CV25	Wafer - Std.	MoBL	4 Mb	x16	2.5V	KGD1	Die (25-30 mil) in wafer form
CY62147CV30	Wafer - Std.	MoBL	4 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62147CV33	Wafer - Std.	MoBL	4 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62147V	Wafer - Std.	MoBL	4 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62148B	Wafer - Std.	MoBL	4 Mb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY62148CV25	Wafer - Std.	MoBL	4 Mb	x8	2.5V	KGD1	Die (25-30 mil) in wafer form
CY62148CV30	Wafer - Std.	MoBL	4 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62148CV33	Wafer - Std.	MoBL	4 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62148V	Wafer - Std.	MoBL	4 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62157CV18	Wafer - Std.	MoBL2	8 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62157CV25	Wafer - Std.	MoBL	8 Mb	x16	2.5V	KGD1	Die (25-30 mil) in wafer form
CY62157CV30	Wafer - Std.	MoBL	8 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62157CV33	Wafer - Std.	MoBL	8 Mb	x16	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62157DV18	Wafer - Std.	MoBL2	8 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62157DV20	Wafer - Std.	MoBL2	8 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62158CV25	Wafer - Std.	MoBL	8 Mb	x8	2.5V	KGD1	Die (25-30 mil) in wafer form
CY62158CV30	Wafer - Std.	MoBL	8 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62158CV33	Wafer - Std.	MoBL	8 Mb	x8	3.3V	KGD1	Die (25-30 mil) in wafer form
CY62167DV18	Wafer - Std.	MoBL2	16 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62167DV20	Wafer - Std.	MoBL2	16 Mb	x16	1.8V	KGD1	Die (25-30 mil) in wafer form
CY62167DV30	Wafer - Std.	MoBL	16 Mb	x16	3V	KGD1	Die (25-30 mil) in wafer form
CY62168DV30	Wafer - Std.	MoBL	16 Mb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY62256	Wafer - Std.		256 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY62256V	Wafer - Std.		256 Kb	x8	3V	KGD1	Die (25-30 mil) in wafer form
CY6264	Wafer - Std.		64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form

## Specialty DRAMs

Part No.	Type	Architecture	Density	Org.	V <sub>CC</sub>	KGD	Description
CYK001M16SCCA	Wafer - Std.	MoBL3™	16 Mb	x16	3V	KGD3	Die (25-30 mil) in wafer form
CYK512K16SCCA	Wafer - Std.	MoBL3	8 Mb	x16, x8	3V	KGD3	Die (25-30 mil) in wafer form
CYK256K16SCCB	Wafer - Std.	MoBL3	4 Mb	x16, x8	3V	KGD3	Die (25-30 mil) in wafer form
CY128K16SCCB	Wafer - Std.	MoBL3	2 Mb	x16, x8	3V	KGD3	Die (25-30 mil) in wafer form



**PROMs**

Part No.	Type	Architecture	Density	Org.	V <sub>CC</sub>	KGD	Description
CY7C225A	Wafer - Std.	Registered	4 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C235A	Wafer - Std.	Registered	8 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C245A	Wafer - Std.	Reprogrammable Registered	16 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form.
CY7C261	Wafer - Std.	Power-Switched and Reprogrammable	64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C263	Wafer - Std.	Power-Switched and Reprogrammable	64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C264	Wafer - Std.	Power-Switched and Reprogrammable	64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C265	Wafer - Std.	Registered	64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C266	Wafer - Std.	Power-Switched and Reprogrammable	64 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C271	Wafer - Std.	Power-Switched and Reprogrammable	256 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C271A	Wafer - Std.	Power-Switched and Reprogrammable	256 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C274	Wafer - Std.	Power-Switched and Reprogrammable	256 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C276	Wafer - Std.	Reprogrammable	256 Kb	x16	5V	KGD1	Die (25-30 mil) in wafer form
CY7C277	Wafer - Std.	Reprogrammable Registered	256 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C281A	Wafer - Std.		8 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form
CY7C291A	Wafer - Std.	Reprogrammable	16 Kb	x8	5V	KGD1	Die (25-30 mil) in wafer form

## Network Processing

### Network Search Engines

Cypress provides advanced silicon solutions that address the packet processing requirements of leading Internet infrastructure companies. Cypress's family of packet processing products consists of high-performance network search engines (NSEs) that can facilitate wire-speed classification at OC-48, OC-192, and beyond. Cypress's portfolio of NSEs includes devices with up to 1.5 million entries, with data widths configurable from 36 bits to 576 bits. These NSEs can search the network database at up to 266 MSPS.

Ayama™ 10000 NSEs extend Cypress leadership with differentiated features such as Mini-Key™ power management and Soft Priority™ table management.

Ayama™ 20000 NSEs incorporate all the features of the Ayama 10000 NSEs and work seamlessly with Intel® IXP2400 and Intel IXP2800 processors through the LA-1 interface. These devices feature the FastLink™ cascade interface, which allows seamless interoperability with the Ayama 10000 and Sahasra™ 50000 family of devices to enable scaling the search subsystem capacity. With this complete portfolio, Cypress provides the optimal policy/forwarding solution. In addition, Cypress offers a development card for the IXP2400 platform and an integrated CYNAPSE™ SDK with reference applications, diagnostic code, APIs, simulation models and device drivers.

Cypress's Sahasra 50000 NSE is a family of highly integrated, embedded-SRAM-based network search engines which use advanced algorithms to achieve significant route capacity improvements over TCAM-based NSEs for applications using exact match or longest-prefix match. The CYNSE50000 device is available in two densities—the CYNSE51500 which stores 1.5 million IPv4 entries and the CYNSE50650 with 650K IPv4 entries.

#### ASIC-Compatible NSEs (NSE70000/Ayama™ 10000)

Part No.	No. Device Entries	Million Lookups Per Second	Voltage	Package	Operating Temperature
CYNSE70032	32K	83	1.8V	BGA	Commercial, Industrial
CYNSE70064A	64K	83	1.8V	BGA	Commercial, Industrial
CYNSE70128	128K	100	1.65V	BGA	Commercial, Industrial
CYNSE70256	256K	83	1.5V	BGA	Commercial, Industrial
CYNSE10128	128K	266	1.2V	Flip Chip BGA	Commercial, Industrial
CYNSE10256	256K	266	1.2V	Flip Chip BGA	Commercial, Industrial
CYNSE10512	512K	266	1.2V	Flip Chip BGA	Commercial, Industrial

#### NPU-Compatible NSEs (Ayama 20000)

Part No.	No. Device Entries	Million Lookups Per Second	Voltage	Package	Operating Temperature
CYNSE20256	256K	266	1.2V	Flip Chip BGA	Commercial, Industrial
CYNSE20512	512K	266	1.2V	Flip Chip BGA	Commercial, Industrial

#### Algorithmic NSEs (Sahasra™ 50000)

Part No.	No. Device Entries	Million Lookups Per Second	Voltage	Package	Operating Temperature
CYNSE50650	650K	250	1.2V	Flip Chip BGA	Commercial, Industrial
CYNSE51500	1500K	250	1.2V	Flip Chip BGA	Commercial, Industrial

## Coprocessors

Cypress’s network database coprocessor (NDC) performs the following three primary functions:

**Interconnection bridge function**—The CYNCP80192 device acts as a bridge between the network processor(s) and a search subsystem of Cypress’s CYNSE70xxx network search engines (NSEs) plus optional associated SRAMs that contain a search database and the associated data for a variety of network protocol layers. The CYNCP80192 device interfaces to the network processor with an SRAM interface and offloads the search function to provide support for fast packet processing in routers and switches.

**Pipeline management function**—Cypress’s NSEs have a pipelined architecture to optimize search performance and throughput. The CYNCP80192 device manages the pipeline for optimal search performance and packs instructions back-to-back in order to avoid any bubbles in the pipeline.

**Table management function**—The CYNCP80192 device builds on the simple instructions of the NSEs to provide advanced instructions for table management.

### Coprocessors

Part No.	No. Device Entries	Million Lookups Per Second	Voltage	Package	Operating Temperature
CYNCP80192	N/A	N/A	2.5V/3.3V	BGC	Commercial

## Neuron® Chips

### Embedded Processors and Controllers

Echelon's Neuron® Chips are sophisticated, very large-scale integration (VLSI) devices that make it possible to implement low-cost control networking applications. They provide all the key functions necessary to intelligently process inputs from sensors and control actuator devices, and propagate control information across a variety of networking media such as twisted-pair cables, power lines, and fiber optics. Neuron chips provide support for all layers of the LONTALK® control networking protocol, as ANSI/EIA 709.1-A-1999.

Control networks using Neuron Chips are used in a wide variety of applications in building automation, industrial control, transportation systems, etc. These include heating, ventilating, and air-conditioning (HVAC), lighting control, access control, fire and security monitoring, machine control, food industry applications, electrical metering and utility automation, home automation, domestic appliances, scientific and medical instrumentation, semiconductor processing, fuel monitoring and distribution, aircraft flight control, train braking and signage, and entertainment applications.

Cypress offers a line of high-performance, low-cost communications and control processors that are compatible with legacy designs and provide double the maximum clock rate of earlier products and expanded internal memory configuration options.

### Neuron® Chip Network Processors

Part No.	External Memory Bus	EEPROM	Max. Clock	Package
CY7C53120L8	No	8 Kb	20 MHz	TQFP-44
CY7C53150	Yes	0.5 Kb	20 MHz	TQFP-64
CY7C53150L	Yes	3 Kb	10 MHz	TQFP-64

## Physical Layer Devices (PHYs)

### Video (SMPTE) PHYs

Cypress supplies a chipset for the transmission of digital video signals that complies with the SMPTE video-encoding standard. Based on our popular HOTLink<sup>®</sup> family, Cypress's device supports both the SMPTE-259M and DVB standards. It is widely used in professional digital video equipment such as editing (titles, overlays, real-time special effects), routing (e.g., within a broadcast studio), recording and storage.

### Video (SMPTE) PHYs

Part No.	Standard	Frequency Range	Operating Temperature	Package	Pins/Balls	Features
CY7B9234	DVB/SMPTE	270 MHz	Commercial	PLCC	28	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CY7B9234	DVB/SMPTE	270 MHz	Commercial	PLCC, Tape & Reel	28	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CY7B9334	DVB/SMPTE	270 Mbps	Commercial	PLCC	28	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CY7B9334	DVB/SMPTE	270 Mbps	Commercial	PLCC, Tape & Reel	28	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CY7C9235	DVB/SMPTE	270 Mbps	Commercial	PLCC	44	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CY7C9235A	DVB/SMPTE	270 Mbps	Commercial	PLCC	44	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CY7C9335	DVB/SMPTE	270 Mbps	Commercial	TQFP	100	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CY7C9335A	DVB/SMPTE	270 Mbps	Commercial	TQFP	100	8B/10B encoded or 10-bit unencoded/DVB-ASI and SMPTE 259M-BCD compliant chipset
CYV15G0101DXB	DVB/SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	100	DVB-ASI, SMPTE 259M-BCD, SMPTE 292M compliant chipset
CYV15G0201DXB	DVB/SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	196	DVB-ASI, SMPTE 259M-BCD, SMPTE 292M compliant chipset
CYV15G0401DXB	DVB/SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	256	DVB-ASI, SMPTE 259M-BCD, SMPTE 292M compliant chipset
CYV15G0402DXB	DVB/SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	256	DVB-ASI, SMPTE 259M-BCD, SMPTE 292M compliant chipset
CYV15G0403DXB	DVB/SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	256	DVB-ASI, SMPTE 259M-BCD, SMPTE 292M compliant chipset
CYV15G0404DXB	DVB/SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	256	DVB-ASI, SMPTE 259M-BCD, SMPTE 292M Independent Channel with Reclockers device
CYV15G0104TRB	SMPTE	0.2-1.5Gbps	Commercial	Thermally Enhanced BGA	256	SMPTE 259M/292M Single Independent Serializer + Reclocking Deserializer
CYV15G0204TRB	SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	256	SMPTE 259M/292M Dual Independent Serializer + Reclocking Deserializer
CYV15G0204RB	SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	256	SMPTE 259M/292M Dual Independent Reclocking Deserializer
CYV15G0203TB	SMPTE	0.2-1.5 Gbps	Commercial	Thermally Enhanced BGA	256	SMPTE 259M/292M Dual Independent Serializer
CYV15G0403TB	SMPTE	0.2-1.5Gbps	Commercial	Thermally Enhanced BGA	256	SMPTE 259M/292M Quad Independent Serializer
CYV15G0404RB	SMPTE	0.2-1.5Gbps	Commercial	Thermally Enhanced BGA	256	SMPTE 259M/292M Quad Independent Reclocking Deserializer

## Backplane PHYs

Cypress has the broadest and most flexible portfolio of backplane physical layer (PHY) devices in the industry. This portfolio is made up of the HOTLink<sup>®</sup>, HOTLink DX<sup>™</sup> and HOTLink II<sup>™</sup> transceiver families that cover data transmission rates of 50 Mbps up to 1.5 Gbps. These flexible devices are ideal for proprietary serial backplane applications. They also comply with many industry standards such as Gigabit Ethernet, Fibre Channel, Enterprise System Connection (ESCON), Digital Video Broadcast (DVB), Society of Motion Picture & Television Engineers (SMPTE), and High-Definition Television (HDTV).

### Transceivers (≤ 0.4 Gbps)

Part No.	Standard	Frequency Range	Operating Temperature	Package	Pins/Balls	Features
CY7B923	DVB, ESCON, Fibre Channel, ATM	150-400 Mbps	Commercial	PLCC	28	8B/10B, BIST
CY7B933	DVB, ESCON, Fibre Channel, ATM	150-400 Mbps	Commercial	PLCC	28	8B/10B, BIST
CY7C924ADX	ATM, ESCON, Fibre Channel, ATM UTOPIA	50-200 Mbps	Commercial	TQFP	100	8B/10B, BIST
CY7C9689A	TAXI	50-200 Mbps	Commercial	TQFP	100	4B/5B or 5B/6B, BIST

### Transceivers (up to 1.5 Gbps)

Part No.	Standard	Frequency Range	Operating Temperature	Package	Pins/Balls	Features
CYP15G0101DXB	Ethernet, Fibre Channel, ESCON, SMPTE	0.2-1.5 Gbps	Commercial	FBGA	100	8B/10B, Redundancy, BIST, JTAG
CYP15G0201DXB	Ethernet, Fibre Channel, ESCON, SMPTE	0.2-1.5 Gbps	Commercial	FBGA	196	Channel Bonding, 8B/10B, Redundancy, BIST, JTAG
CYP15G0401DXB	Ethernet, Fibre Channel, ESCON, SMPTE	0.2-1.5 Gbps	Commercial	BGA	256	Channel Bonding, 8B/10B, Redundancy, BIST, JTAG
CYP15G0402DXB	Gigabit Ethernet, 1x Fibre Channel	0.2-1.5 Gbps	Commercial	BGA	256	Redundancy, BIST
CYP15G0403DXB	Ethernet, Fibre Channel, ESCON, SMPTE	0.2-1.5 Gbps	Commercial	BGA	256	Independent Clocking, 8B/10B, Redundancy, BIST, JTAG

## SONET & SDH PHYs

Cypress offers a family of high-performance, SONET/SDH physical layer (PHY) and framing devices that operate at OC-1 (51.85 Mbps), OC-3 (155.52 Mbps), and OC-48 (2.488 Gbps) speeds.

Industry leading jitter specs, power consumption, integrated transmitter, receiver and post-amp, fully on-chip phase-locked loops (PLLs), Bellcore compliance, easier terminations and biasing, and other superior features make this the device of choice.

### OC-1/3 SERDES PHYs

Part No.	Standard	Frequency Range	Operating Temperature	Package	Pins/Balls	Features
CY7B951	ATM/IP/SONET/SDH/Proprietary	155 Mbps	Commercial	SOIC		Integrated SERDES and CDR for SONET/SDH/ATM/Loop-back testing/Meets all WAN Bell specs
CY7B952	ATM/IP/SONET/SDH	155 Mbps	Commercial	SOIC	24	Clock & Data Recovery of SONET/SDH/ATM, Loop-back testing, Meets LAN Bellcore specs

### OC-48 SERDES PHYs

Part No.	Standard	Frequency Range	Operating Temperature	Package	Pins/Balls	Features
CYS25G0101DX	ATM/IP/SONET/SDH	2.488 Gbps	Commercial	TQFP	120	Integrated 2.488Gbps SERDES and CDR, Loop-back Testing

## Programmable Logic Devices (PLDs)

### PLD Development Tools & Software

Cypress development tools and software include a comprehensive suite of products designed to simplify programmable logic design. Extensive support for our programmable logic families, including Delta39K™ and Quantum38K™ CPLDs, and the Programmable Serial Interface (PSI®) family of programmable PHYs, make Cypress the logical choice. As part of Cypress's product offering, we have created the following solutions:

**Design Software.** Cypress's Warp® software is a complete design environment for CPLDs and programmable PHYs. Warp software offers a complete HDL or schematic design methodology, UltraGen™ synthesis technology, and fully integrated timing simulation.

**Broad Library of Programmable Cores/IP.** IP Oasis™, our partnership program with leading intellectual property (IP) suppliers, provides cores that have been tested and optimized specifically for Cypress CPLDs. These cores enable designers to optimize their system architecture while reducing critical time to market.

**Extensive Programming Support.** In-System Reprogrammable™ (ISR™) technology allows a designer to reprogram Cypress CPLDs even after they are mounted on a circuit board. This means the designer can change the implementation on a CPLD late in the design process.

In addition to ISR, broad third-party programming and Automated Test Equipment (ATE) support makes getting programming support for Cypress devices simple.

### Warp® Development Tools

Part No.	Product Description	Platform	Support	Operating System	EDA Tools Supported by Cypress
CY3120R62	Warp VHDL/Verilog PC	PC	VHDL/Verilog	NT, Win2000, Win95, Win98	Aldec, Cadence, Exemplar, Mentor Graphics, Model Technology, Synopsys, Synplicity
CY3125R62	Warp VHDL/Verilog Workstation	Workstation	VHDL/Verilog	UNIX	Aldec, Cadence, Exemplar, Mentor Graphics, Model Technology, Synopsys, Synplicity
CY3128R62	Warp Professional VHDL/Verilog PC	PC	VHDL/Verilog	NT, Win2000, Win95, Win98	Aldec, Cadence, Exemplar, Mentor Graphics, Model Technology, Synopsys, Synplicity
CY3130R62	Warp Enterprise VHDL PC	PC	VHDL	NT, Win2000, Win95, Win98	Aldec, Cadence, Exemplar, Mentor Graphics, Model Technology, Synopsys, Synplicity
CY3138R62	Warp Enterprise Verilog PC	PC	Verilog	NT, Win2000, Win95, Win98	Aldec, Cadence, Exemplar, Mentor Graphics, Model Technology, Synopsys, Synplicity
CY3600I	Flash 370i ISR Programming Kit	PC	Jam	NT, Win2000, Win95, Win98	N/A
CY3620R62	WarpISR VHDL/Verilog PC	PC	VHDL/Verilog	NT, Win2000, Win95, Win98	Aldec, Cadence, Exemplar, Mentor Graphics, Model Technology, Synopsys, Synplicity
CY3900I	Delta39K/Ultra37000 ISR Programming Kit	PC	Stapl	NT, Win2000, Win95, Win98	N/A



## Programmable Logic Devices

Programmable logic devices (PLDs) allow designers to make key system changes late in the development cycle, thus providing flexibility and fast time-to-market. With Delta39K™ and Ultra37000™ devices, Cypress offers a wide range of CPLD options with products ranging from 32 to over 3000 macrocells.

In addition, Cypress's Warp® software is one of the most popular HDL development tools in the industry. Warp software provides a complete PLD design environment including both VHDL and Verilog synthesis, simulation and a variety of analysis tools. There is also a large selection of available IP cores.

*Note: Please use, the Delta39K and Ultra37000 families for all new designs.*

### Delta39K™ CPLDs

Part No.	No. Macrocells	No. Equivalent Gates	fMax	tPD	V <sub>CC</sub>	I/O Pins
CY39030V	512	30000	233 MHz	7.2 ns	2.5V/3.3V	174
CY39050V	768	50000	233 MHz	7.2 ns	2.5V/3.3V	218
CY39100V	1536	100000	222 MHz	7.5 ns	2.5V/3.3V	136
CY39165V	2560	165000	181 MHz	8.5 ns	2.5V/3.3V	386
CY39200V	3072	200000	181 MHz	8.5 ns	2.5V/3.3V	428

### Ultra37000™ CPLDs

Part No.	No. Macrocells	No. Equivalent Gates	fMax	tPD	V <sub>CC</sub>	I/O Pins
CY37032P	32	960	200 MHz	6 ns	5V	37
CY37032VP	32	960	143 MHz	8.5 ns	3.3V	37
CY37064P	64	2000	200 MHz	6 ns	5V	69
CY37064VP	64	2000	143 MHz	8.5 ns	3.3V	69
CY37128P	128	3800	167 MHz	6.5 ns	5V	69
CY37128VP	128	3800	125 MHz	10 ns	3.3V	133
CY37192P	192	5700	154 MHz	7.5 ns	5V	125
CY37192VP	192	5700	100 MHz	12 ns	3.3V	125
CY37256P	256	7700	154 MHz	7.5 ns	5V	197
CY37256VP	256	7700	100 MHz	12 ns	3.3V	197
CY37384VP	384	11500	83 MHz	15 ns	3.3V	197
CY37512P	512	15000	125 MHz	10 ns	5V	269
CY37512VP	512	15000	83 MHz	15 ns	3.3V	269

## PSoC™ Mixed-Signal Arrays

### PSoC™ Mixed-Signal Array

Cypress's Programmable System-on-Chip™ (PSoC™) offers the embedded system designer a revolutionary new choice—a true system-on-chip at standard 8-bit MCU prices.

The new CY8C27x device family provides highly stable, instrumentation-quality analog performance—including rail-to-rail inputs, programmable gain, 14-bit analog-to-digital converters (up to four independent converters are available in a single PSoC device), and exceptionally low noise, input leakage and voltage offset, along with rich digital functions including an 8-bit microcontroller core.

Containing over 100 reconfigurable analog and digital library components created from 12 fundamental analog and 8 digital blocks, PSoC CY8C27x devices are true systems on a chip. Each device contains a 24-MHz, 8-bit MCU; 16 KBytes of flash memory; 256 bytes of SRAM; an 8 x 8 multiplier with 32-bit accumulator; power and sleep monitoring circuits; and a precision real-time clock.

### PSoC™ Mixed-Signal Array

Part No.	Package	Pins/ Balls	Memory Size	RAM	Digital PSoC Blocks	Analog PSoC Blocks	I/O pins	Operating Frequency	V <sub>CC</sub>	Operating Temperature	Development Tools
CY8C21123	SOIC	8	4 KB Flash	256 bytes	2-Basic 2-Comms	2 Comparators	6	93 KHz-24 MHz	2.4V/5.25V	-40 to +85 °C	
CY8C21223	SSOP	20	4 KB Flash	256 bytes	2-Basic 2-Comms	2 Comparators	12	93 KHz-24 MHz	2.4V/5.25V	-40 to +85 °C	
CY8C21323	MLF	24	4 KB Flash	256 bytes	2-Basic 2-Comms	2 Comparators	16	93 KHz-24 MHz	2.4V/5.25V	-40 to +85 °C	
CY8C22113	PDIP	8	2 KB Flash	256 bytes	2-Basic 2-Comms	3:1-CT 2-SC	6	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3209-Pod
CY8C22213	PDIP	20	2 KB Flash	256 bytes	2-Basic 2-Comms	3:1-CT 2-SC	16	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3209-Pod
CY8C24123	PDIP	8	4 KB Flash	256 bytes	2-Basic 2-Comms	6:2-CT 4-SC	6	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3208-Pod
CY8C24223	PDIP	20	4 KB Flash	256 bytes	2-Basic 2-Comms	6:2-CT 4-SC	16	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3208-Pod
CY8C24423	PDIP	28	4 KB Flash	256 bytes	2-Basic 2-Comms	6:2-CT 4-SC	24	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3208-Pod
CY8C25122	PDIP	8	4 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	6	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3206-Pod
CY8C26233	PDIP	20	8 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	16	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3206-Pod
CY8C26443	PDIP	28	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	24	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3206-Pod
CY8C26443	PDIP	48	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	44	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3206-Pod
CY8C27143	PDIP	8	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	6	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27243	SOIC	20	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	16	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27243	SSOP	20	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	16	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27243	SOIC	20	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	16	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27443	PDIP	28	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	24	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod

**PSoC™ Mixed-Signal Array (Cont'd)**

Part No.	Package	Pins/ Balls	Memory Size	RAM	Digital PSoC Blocks	Analog PSoC Blocks	I/O pins	Operating Frequency	V <sub>CC</sub>	Operating Temperature	Development Tools
CY8C27443	SSOP	28	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	24	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27443	SOIC	28	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	24	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27466	PDIP	28	32 KB Flash	2K	4-Basic 4-Comms	12:4-CT 8-SC	24	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	
CY8C27543	TQFP	44	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	40	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27566	TQFP	44	32 KB Flash	2K	4-Basic 4-Comms	12:4-CT 8-SC	40	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	
CY8C27643	SSOP	48	16 KB Flash	256 bytes	4-Basic 4-Comms	12:4-CT 8-SC	44	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	CY3205-DK CY3207-Pod
CY8C27666	SSOP	48	32 KB Flash	2K	4-Basic 4-Comms	12:4-CT 8-SC	44	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	
CY8C27866	TQFP	100	32 KB Flash	2K	4-Basic 4-Comms	12:4-CT 8-SC	64	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	
CY8C29466	PDIP	28	32 KB Flash	2K	8-Basic 8-Comms	12:4-CT 8-SC	24	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	
CY8C29566	TQFP	44	32 KB Flash	2K	8-Basic 8-Comms	12:4-CT 8-SC	40	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	
CY8C29666	SSOP	48	32 KB Flash	2K	8-Basic 8-Comms	12:4-CT 8-SC	44	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	
CY8C29866	TQFP	100	32 KB Flash	2K	8-Basic 8-Comms	12:4-CT 8-SC	64	93 KHz-24 MHz	3V/5.25V	-40 to +85 °C	

## USB Controllers

### USB Embedded Hosts

#### USB Embedded Host Controllers for the Intelligent Device

For the embedded host market, Cypress offers high-performance USB host/peripheral controllers for use in a variety of embedded applications such as PDAs, set-top boxes, and MP3 players. These dual-role devices switch to host mode when connected to a peripheral and to peripheral mode when connected to a PC. In addition, our embedded host/peripheral controllers support both full- and low-speed USB devices in either mode.

#### USB On-The-Go (OTG): The new USB Standard for Embedded Devices

OTG, a new supplement to the USB 2.0 specification, is for the portable market. Cypress has extended its position as an industry leader in USB peripheral technology by taking a leading role in the OTG working group and in defining the specification.

**SL811HS** World's first Dual-Role Device (DRD); Serial Interface Engine (SIE) with 8-bit microprocessor interface

**EZ-Host™** Microprocessor-based 4-port embedded host/peripheral controller

**EZ-OTG™** Microprocessor-based 2-port USB On-The-Go controller

#### EZ-Host™

Part No.	Application	Endpoints	Data Transfers	Core	Memory Size	Memory Architecture	I/Os	I/O Options	Hub Ports	Pins	Pkg	Dev. Kit	Software Tools
CY7C67300	USB Embedded Hosts	8 in periph mode	Bulk, Interrupt, Isochronous	CY16	16 KB	ROM/RAM	32	GPIO/HPI/HSS/SPI/I2C/UART/IDE/PWM	4	100	TQFP	CY3663	GNUPro

#### EZ-OTG™

Part No.	Application	Endpoints	Data Transfers	Core	Memory Size	Memory Architecture	I/Os	I/O Options	Hub Ports	Pins	Pkg	Dev. Kit	Software Tools
CY7C67200	USB Embedded Hosts	8 in periph mode	Bulk, Interrupt, Isochronous	CY16	16 KB	ROM/RAM	23	GPIO/HPI/HSS/SPI/I2C/UART	2	48	FBGA	CY3663	GNUPro

#### SL811HS

Part No.	Application	Endpoints	Data Transfers	Core	Memory Size	Memory Architecture	I/Os	I/O Options	Hub Ports	Pins	Pkg	Dev. Kit	Software Tools
SL811HS	USB Embedded Hosts	16 in host mode	Bulk, Interrupt, Isochronous	None	256 Bytes	SRAM	8		1	28	PLCC	CY3662	

## USB Low-Speed Peripherals

Cypress is the industry leader in low-speed USB solutions and offers a broad range of devices that support applications requiring a signaling rate of 1.5 Mbps. Our low-speed USB microcontrollers offer powerful, flexible, and integrated solutions for a wide range of USB applications. The devices feature the industry's smallest 8-bit RISC core with RAM, EPROM, USB logic, and a USB transceiver.

Cypress's USB microcontrollers provide the optimum low-speed USB solution. No other USB supplier makes it so easy and inexpensive to design and build USB applications.

**M8™ Series:** The world's first integrated low-speed USB microcontroller

**enCoRe™:** enhanced Component Reduction technology reduces system cost through external component integration

### USB M8 Series

Part No.	Endpoints	Core	Memory Size	Memory Architecture	I/Os	Development Kit
CY7C3101A	2	M8 (8-bit RISC)	4 KB	EPROM	16	CY3650
CY7C63413	3	M8 (8-bit RISC)	8 KB	EPROM	32	CY3654, CY3654-P02
CY7C63513	3	M8 (8-bit RISC)	8 KB	EPROM	40	CY3654, CY3654-P02

### enCoRe

Part No.	Endpoints	Core	Memory Size	Memory Architecture	I/Os	Development Kit
CY7C632xx	2	M8 (8-bit RISC)	3 KB	EPROM	10+2	CY3654, CY3654-P05
CY7C637xx	3	M8 (8-bit RISC)	8 KB	EPROM	10+1	CY3654, CY3654-P05

## USB Full-Speed Peripherals

Cypress offers a variety of performance levels and feature sets among its full-speed product families for applications that require USB signal rates of up to 12 Mbps. These offerings include unique architectures that give developers the freedom and flexibility to choose the solution that best fits their needs.

Our full-speed product line features low-cost Serial Interface Engines (SIEs), plus those that include a robust 8-bit RISC processor, or the popular 8051.

**EZ-USB®** Single-chip, low-power solution for full-speed USB peripherals

**EZ-USB FX™** Faster, Extended technology for ultra high performance

**M8™ Series** 8-bit RISC controller for mid-performance, full-speed peripherals such as audio or smart card readers

### EZ-USB® (Full-Speed, 12 Mbps)

Part No.	Endpoints	Data Transfers	Core	Memory Size	Memory Architecture	I/Os	I/O Options	Pins	Pkg.	Dev. Kit	Software Tools
AN2131	31	Bulk, Interrupt, Isochronous	Enhanced 8051	8 KB	RAM	24	8-bit Databus/GPIO/I <sup>2</sup> C/ Memory Expansion Port/Turbo Mode/UART	80	PQFP	AN2131-DK001	Keil S/W Tools (available from Keil)
AN2131	31	Bulk, Interrupt, Isochronous	Enhanced 8051	8 KB	RAM	18	GPIO/I <sup>2</sup> C/UART	44	PQFP	AN2131-DK001	Keil S/W Tools (available from Keil)
AN2135	31	Bulk, Interrupt, Isochronous	Enhanced 8051	8 KB	RAM	8	8-bit Databus/GPIO/I <sup>2</sup> C/ Turbo Mode/UART	44	PQFP	AN2131-DK001	Keil S/W Tools (available from Keil)

### EZ-USB FX™ (Full-Speed, 12 Mbps)

Part No.	Endpoints	Data Transfers	Core	Memory Size	Memory Architecture	I/O	I/O Options	Pins	Pkg.	Dev. Kit	Software Tools
CY7C64613	31	Bulk, Interrupt, Isochronous	Enhanced 8051	8 KB	RAM	40	16-bit Databus/DMA/ GPIO/I <sup>2</sup> C/Memory Expansion Port/UART	128	PQFP	CY3671	Keil S/W Tools (available from Keil)
CY7C64613	31	Bulk, Interrupt, Isochronous	Enhanced 8051	8 KB	RAM	16	8-bit Databus/DMA/ GPIO/I <sup>2</sup> C/UART	52	PQFP	CY3671	Keil S/W Tools (available from Keil)
CY7C64613	31	Bulk, Interrupt, Isochronous	Enhanced 8051	8 KB	RAM	32	16-bit Databus/DMA/ GPIO/I <sup>2</sup> C/UART	80	PQFP	CY3671	Keil S/W Tools (available from Keil)

## USB High-Speed Peripherals

USB 2.0 extends the speed of the peripheral-to-PC connection by up to 480 Mbps—40x more than previous capabilities. And because USB 2.0 is fully forward- and backward-compatible with existing USB technology, consumers have the benefit of using devices they already have. USB 2.0 is also expected to lead to the development of higher-performance peripherals that will bring new applications to the PC.

Cypress offers the broadest range of USB 2.0 solutions. From a high-performance USB 2.0 transceiver to an extremely flexible single-chip solution, Cypress can provide the best solution for any application imaginable.

**EZ-USB FX2™** Programmable MCU—Fully-integrated, single-chip solution for high-speed USB peripherals

**EZ-USB SX2™** Intelligent Serial Interface Engine (SIE) core automatically handles the low-level USB protocol, shortening the USB learning curve

**EZ-USB TX2™** High-speed UTMI-compliant transceiver

**EZ-USB AT2™** Fourth-generation, high-speed, and mass storage fixed-function bridge supporting ATA-6 hard drives

**ISD-300LP** Low-power, mass-storage fixed-function device designed for bus-powered applications like CompactFlash card readers, MP3/PVR players, or portable 2.5" hard-drives

### EZ-USB AT2™

Part No.	USB Application	Endpoints	Data Transfers	Memory Size	Memory Architecture	I/O Options	Pins	Package	Dev. Kit
CY7C68300A	USB Mass Storage (high-speed)	4	Bulk Only Transport	2 KB	Single-port RAM	ATA or ATAPI	56	SSOP	CY4615A

### EZ-USB FX2/FX2LP™

Part No.	Application	Endpoints	Data Transfers	Core	Memory Size	Memory Architecture	I/Os	I/O Options	Pins	Package	Dev. Kit
CY7C68013	USB High Speed (480 Mb/s)	7	Bulk, Interrupt, Isochronous	Enhanced 8051	8 KB	RAM	40	8/16-bit Databus, DMA, GPIO, I <sup>2</sup> C, UART	100	TQFP	CY3681
CY7C68013A	USB High Speed (480 Mb/s)	7	Bulk, Interrupt, Isochronous	Enhanced 8051	16 KB	RAM	40	8/16-bit Databus, DMA, GPIO, I <sup>2</sup> C, UART			CY3681

### EZ-USB SX2™

Part No.	Application	Endpoints	Data Transfers	I/O Options	Pins	Package	Dev. Kit
CY7C68001	USB High Speed (480 Mb/s)	5	Bulk, Interrupt, Isochronous	8/16-bit Databus, DMA, GPIO, I <sup>2</sup> C, UART	56	SSOP	CY3682

### EZ-USB TX2™

Part No.	Application	Endpoints	Data Transfers	I/O Options	Pins	Package	Dev. Kit
CY7C68000	USB High Speed (480 Mb/s)	N/A	Bulk, Interrupt, Isochronous	UTMI, 8/16-bit uni- or bi-directional	56	SSOP	CY3683

### ISD-300LP

Part No.	Application	Endpoints	Data Transfers	Memory Size	Memory Architecture	I/O Options	Pins	Package	Dev. Kit
CY7C68310	USB Mass Storage (high-speed)	4	Bulk Only Transport	2 KB	Single-port RAM	ATA or ATAPI	80	TQFP	CY4617

## USB Hubs

In addition to the broad portfolio of USB products of all speeds, Cypress offers a family of USB hub solutions. These solutions include a broad family of full-speed and high-speed USB controllers for hub applications ideally suited for integrated keyboard, motherboard and monitor hubs. Also included in Cypress's USB hub microcontroller family are standalone USB hubs (up to 7 downstream ports). Our EPROM-based solutions provide high flexibility enabling fast time-to-market.

### Full-Speed Hubs

Part No.	Application	Endpts	Data Transfers	Core	Mem. Size	Memory Architecture	I/Os	I/O Options	Hub Ports	Pins	Package	Prog. Adapter Base
CY7C65113	USB Standalone Hubs		Bulk, Interrupt, Isochronous	M8 (8-bit RISC)	8 KB	EPROM	11	GPIO, I <sup>2</sup> C, Prog. Drive	4	28	SOIC	CY3083-SC28
CY7C66013	USB Integrated Hub + Peripheral	5	Bulk, Interrupt, Isochronous	M8 (8-bit RISC)	8 KB	EPROM	29	GPIO, I <sup>2</sup> C, Prog. Drive	4	48	PDIP	CY3083-DP48
CY7C66113	USB Integrated Hub + Peripheral	5	Bulk, Interrupt, Isochronous	M8 (8-bit RISC)	8 KB	EPROM	39	DAC Port, GPIO, HAPI, I <sup>2</sup> C, Prog. Drive	4	56	SSOP	CY3083-SS56

*Use Development Kits: CY3654, CY3654-P03; Software Tools: C-Compiler (CY366x); Programmer: CY3649-XXXV*

### High-Speed Hubs

Part No.	Application	Data Transfers	Hub Ports	Pins	Package	Development Kit
CY7C65640	USB TetraHub - Hi-Speed Hub	Bulk, Interrupt, Isochronous	4	56	QFN	CY4602



## WirelessUSB™

### WirelessUSB Solutions

Cypress WirelessUSB™ solutions are designed for multipoint-to-point short-range wireless connectivity. WirelessUSB enables PC peripherals, game controllers, remote controls, toys and many other applications the ability to replace the wire with a low-cost 2.4-GHz wireless solution. The wireless connectivity is completely transparent to the user, as the WirelessUSB system adds <4 ms of latency and, for PC peripherals, acts as a USB HID-class device. WirelessUSB offers a robust user experience with low cost and long battery life.

WirelessUSB LR expands the portfolio by delivering more than 50 meters of wireless connectivity and an industrial temperature grade for building automation, home automation, industrial control, utility metering, transportation, paging systems and presentation equipment applications. WirelessUSB LR offers an N:1 protocol and development environment that allow designers to co-locate up to ~65,000 nodes.

Features Include:

- 2.4-GHz ISM band/worldwide usage
- Bidirectional/unidirectional options
- Range options (10 meters to over 50 meters)
- 1 Mbps symbol rate
- Data throughput of 62.5 Kbps
- Robust Direct Sequence Spread Spectrum
- Optimized for battery powered devices
- Co-locate >100 nodes in a single room
- 128-bit encryption support

### WirelessUSB LS™

Part No.	Throughput	Range	Package	Temp Range	Voltage	Chipset	Description
CYWUSB6932-28SEC	62.5 kbps	10 Meters	28 SOIC	Commercial	2.7V-3.6V	No	Transmit only
CYWUSB6934-28SEC	62.5 kbps	10 Meters	28 SOIC	Commercial	2.7V-3.6V	No	Transceiver
CYWUSB6934-48LFC	62.5 kbps	10 Meters	48 QFN	Commercial	2.7V-3.6V	No	Transceiver

### WirelessUSB LR™

Part No.	Throughput	Range	Package	Temp Range	Voltage	Chipset	Description
CYWUSB6935-48LFI	62.5 kbps	50 Meters	48 QFN	Industrial	2.7V-3.6V	No	Transceiver
CYWUSB6935-48LFC	62.5 kbps	50 Meters	48 QFN	Commercial	2.7V-3.6V	No	Transceiver

### Development Tools

Part No.	Description	Families Supported
CY3632	WirelessUSB development tool with included RF protocol listener	WUSB LS & LR
CY4632	Keyboard/mouse/receiver production-ready Reference Design Kit	WUSB LS
CY3633	PlayStation®2 & Xbox™ Gamepad Development Kit (requires CY3632)	WUSB LS
CY3635	WirelessUSB N:1 (Multi-node) development kit environment	WUSB LR

## Ordering Information

### Physical Layer Devices

PREFIX	DEVICE	SUFFIX	FAMILY
CY	P 15G 04 01 DX	-BG C T	Quad Hotlink II™ Transceiver
CY	P 15G 04 02 DX	-BG C T	Quad Hotlink II™ SERDES
CY	P 25G 01 01 DX	-AT C T	OC-48 SERDES
CY	S 25G 01 K100	-MG C	

Processing	T = Surface-Mounted Devices to be Tape and Reeled
Temperature Range	C = 0 to +70 °C I = -40 to +85 °C
Package	BG = Ball Grid Array AT = Thermally Enhanced Thin Quad Plastic Flatpack (TQFP) MG = Multi-Chip Ball Grid Array
Device Type	DX = Duplex Operation * Prog PHYs are all Duplex Operation
Functional Version of Device	
Number of Serial Links	
Data Rate Per Channel	15G = 1.5 GBPS 25G = 2.5 GBPS
SONET Compliance	P = Not SONET Compliant S = SONET Compliant

### Network Search Engines

PREFIX	DEVICE	SUFFIX	FAMILY
CY	NSE 70 032	-83 BGC	

Package	
MHz	
Entry Size (In Thousands)	032, 064: Entries of 34-bit Words 128, 256, 512: Entries of 36-bit Words
NSE Family Prefix	
Network Search Engine	

## Network Coprocessors

PREFIX	DEVICE	SUFFIX	FAMILY
CY	NCP 80 192	-BGC	
CY	NCP 81 000	-BGC	

Package  
 NCP Family Prefix  
 Network Coprocessors

## POSIC

PREFIX	DEVICE	SUFFIX	FAMILY
CY	7C95 3 6	-BLC	POSIC
CY	7C95 3 7	-BLI	
CY	7C95 3 8		
CY	7C95 4 6		
CY	7C95 4 7	FAC	
CY	7C95 5 8		

Package  
 POSIC Speed  
 3 = 2.5 Gbps  
 4 = 10 Gbps  
 5 = 40 Gbps  
 POSIC

## RAM, PROM, Dual-Port Static RAM, FIFO, Data Communications

PREFIX	DEVICE	SUFFIX	FAMILY
CY	7 C 128 x	-45 D M B	POSIC
CY	6 2256L	-70 S C	
CY	7 C 1359	-100 A C	
CY	7 C 245L	-35 P C	
CY	7 C 09389V	-15 J C	
CY	7 C 4292V	-25 AS C	
CY	7 B 991	-5 J C	

### Technology

C = CMOS  
B = BiCMOS

### Processing

B = MIL-STD-883C for Military Product  
= Level 2 Processing for Commercial Product  
T = Surface-Mounted Devices to be Tape and Reeled  
R = Level 2 Processing on Tape and Reeled Devices

### Temperature Range

C = Commercial (0 to +70 °C)  
I = Industrial (-40 to +85 °C)  
E = Automotive (-40 to +125 °C)  
M = Military (-55 to +125 °C)

### Package

A, AJ = Thin Quad Plastic Flatpack (TQFP)  
AS = Small Thin Quad Plastic Flatpack (STQFP)  
B = Plastic Pin Grid Array (PPGA)  
BA, BB = Fine Pitch Ball Grid Array (FBGA)  
BG = Ball Grid Array (BGA)  
BV = Very Fine Ball Grid Array (VFBGA)  
D = Ceramic Dual In-Line Package (CERDIP)/Braze Dip  
E = Tape Automated Bonding (TAB)  
F = Flatpack (Solder-Sealed Flat Package)  
G = Pin Grid Array (PGA)  
H = Windowed Leaded Chip Carrier  
J = Plastic Leaded Chip Carrier (PLCC)  
K = CERPACK (Glass-Sealed Flat Package)  
L = Leadless Chip Carrier (LCC)  
N = Plastic Quad Flatpack (PQFP)  
P = Plastic Dual In-Line (PDIP)  
Q = Windowed Leadless Chip Carrier (LCC)  
R = Windowed Pin Grid Array (PGA)  
S = SOIC (Gull Wing)  
T = Windowed CERPACK  
U = Ceramic Quad Flatpack (CQFP)  
V = SOIC (J Lead)  
W = Windowed Ceramic Dual In-Line Package (CERDIP)  
X = DICE (Waffle Pack)  
Y = Ceramic Leaded Chip Carrier  
Z = Thin Shrink Small Outline Package/  
Thin Small Outline Package  
ZA = Small TSOP I (STSOP)  
ZR = Reverse Thin Small Outline Package  
ZS = Thin Small Outline Package II (TSOPII)  
ZU = Reverse Thin Small Outline Package II (Reverse TSOPII)

### Speed (ns, MHz or Other)

### Power/Interface/Voltage/Revision

L = Low-Power Option  
LL = Super-Low Power  
P = PCI Interface  
V = 3.3V Option  
V33 = 3.3V Option  
V30 = 3.0V Option  
V26 = 2.6V Option  
V25 = 2.5V Option  
V18 = 1.8V Option  
A, B, C, D, E = Revision Level

## Modules

PREFIX	DEVICE	SUFFIX	FAMILY
CYM	1838	H G -30 M B	<p><b>Processing</b>            B = MIL-STD-883C            = Standard</p> <p><b>Temperature Range</b>            C = Commercial (0 to +70 °C)            I = Industrial (-40 to +85 °C)            M = Military (-55 to +125 °C)</p> <p><b>Speed</b></p> <p><b>Configuration</b>            B = PLASTIC PGA            BB = THIN BALL GRID ARRAY            BG = BALL GRID ARRAY            D = DUAL-IN-LINE            E = C.O.B. (CHIP ON BOARD)            F = FLAT SINGLE-IN-LINE            G = PIN GRID ARRAY            J = SINGLE-IN-LINE MEMORY MODULE            M = SINGLE-IN-LINE MEMORY MODULE (SIMM)            N = ANGLED SINGLE-IN-LINE MEMORY MODULE            P = PLASTIC DIP            R = LOW PROFILE ZIP            S = PLASTIC SIP            T = LOW PROFILE TIN SIM            V = PLASTIC VIL            W = CERAMIC VIL            Y = CERAMIC ZIP            Z = ZIGZAG-IN-LINE</p> <p><b>Type</b>            H = Hermetic            P = Plastic</p> <p><b>Power and Other Information</b>            L = 2.0V Data Retention Guaranteed            = 2.0V Data Retention Not Guaranteed</p>
CYM	1465	L P D -85 C	

## PALs & PLDs

PREFIX	DEVICE	SUFFIX	FAMILY
PAL C	16R8	-25 L M B	PAL 20
PAL G	22V10	-25 W C	PAL 24 Variable Product Terms
PAL CE	16V8	-25 P C	Flash-Erasable PAL20
PLD C	20G10	-25 W C	Generic PLD 24
CY	7C335	-83 P C	Universal Synchronous EPLD
Cy	7C3741B	-25 J C	Max 340 Erasable PLD (EPLD)
CY	7C3741	-100 J C	Flash-Erasable CPLD
CY	37512 V P400	-83 BB C	Ultra37000 CPLD
Cy	38100 V 484	-125 BB C	Quantum38K CPLD
Cy	39200 V 676	-181 BB C	Delta39K CPLD
CY	3L V 002	-10 C C	CPLD Boot EEPROM for 38K/39K

**37000/38K/39K**  
**Supply Voltage**  
 V = 3.3V  
 Z = 1.8V  
 (5V If Not Specified)

**37000/38K/39K**  
**PIN COUNT**  
 (eg: P400 = 400 Leads)

### Processing

B = MIL-STD-883C for Military Product  
 = LEVEL 2 Processing for Commercial Product  
 T = Surface-Mounted Devices to be Tape and Reeled  
 R = Level 2 Processing On Tape and Reeled Devices

### Temperature Range

C = Commercial (0 to +70 °C)  
 I = Industrial (-40 to +85 °C)  
 M = Military (-55 to +125 °C)

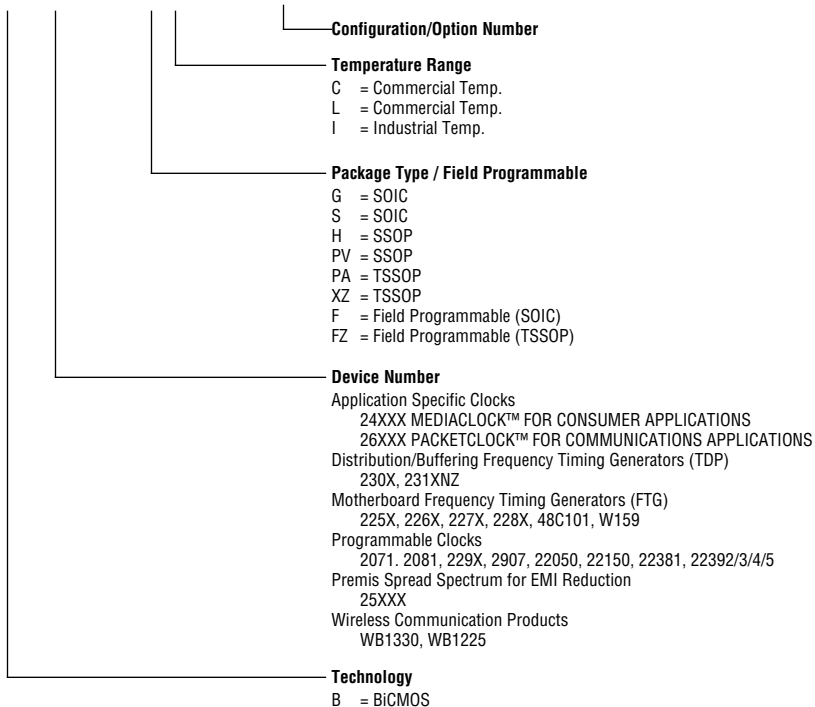
### Package

A = Thin Quad Plastic Flatpack (TQFP)  
 B = Plastic Pin Grid Array (PPGA)  
 D = Ceramic Dual In-Line Package (CERDIP)/Braze DIP  
 E = Tape Automated Bonding (TAB)  
 F = Flatpack (Solder-Sealed Flat Package)  
 G = Pin Grid Array (PGA)  
 H = Windowed Leaded Chip Carrier  
 J = Plastic Leaded Chip Carrier (PLCC)  
 K = CERPACK (Glass-Sealed Flat Package)  
 L = Leadless Chip Carrier (LCC)  
 N = Plastic Quad Flatpack (PQFP)  
 P = Plastic Dual In-Line (PDIP)  
 Q = Windowed Leadless Chip Carrier (LCC)  
 Q = Quarter Size Outline Package (for PALCE16V8 and PALCE20V8 only)  
 R = Windowed Pin Grid Array (PGA)  
 S = SOIC (GULL WING)  
 T = Windowed CERPACK  
 U = Ceramic Quad Flatpack (CQFP)  
 V = SOIC (J LEAD)  
 W = Windowed Ceramic Dual In-Line Package (CERDIP)  
 X = DICE (Waffle Pack)  
 Y = Ceramic Leaded Chip Carrier  
 BB = Fine Pitch Ball Grid Array (FBGA)  
 BG = Ball Grid Array  
 NT = Thermally Enhanced Plastic Quad Flat Pack (EQFP)  
 MB = Self Boot – Fine Pitch Ball Grid Array (FBGA)  
 MG = Self Boot – Ball Grid Array (BGA)

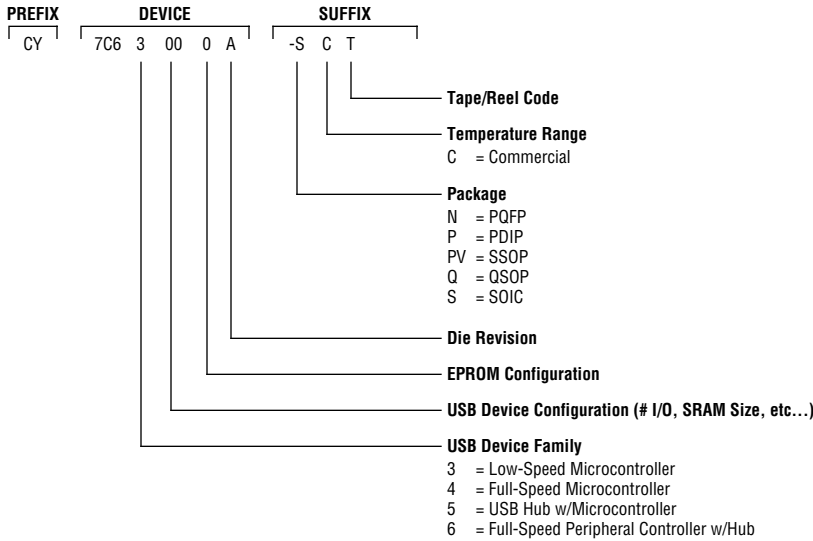
### Speed

## Timing Technology

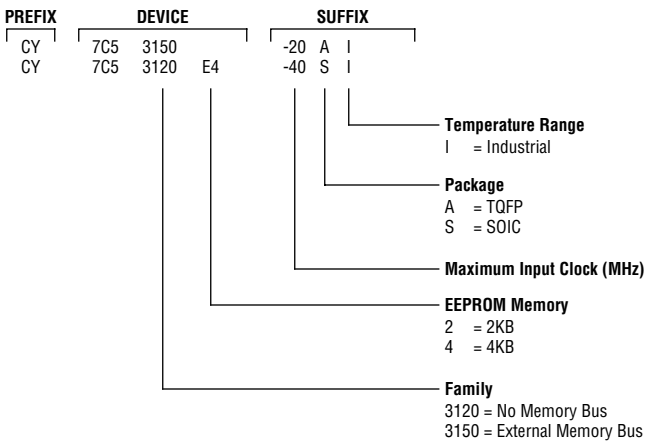
PREFIX	DEVICE	SUFFIX	OPTION
CY	2061A	S C	-1
W	2291	S L	-201
W	134	G	-01
W	48C101		
	B 1225		



## USB

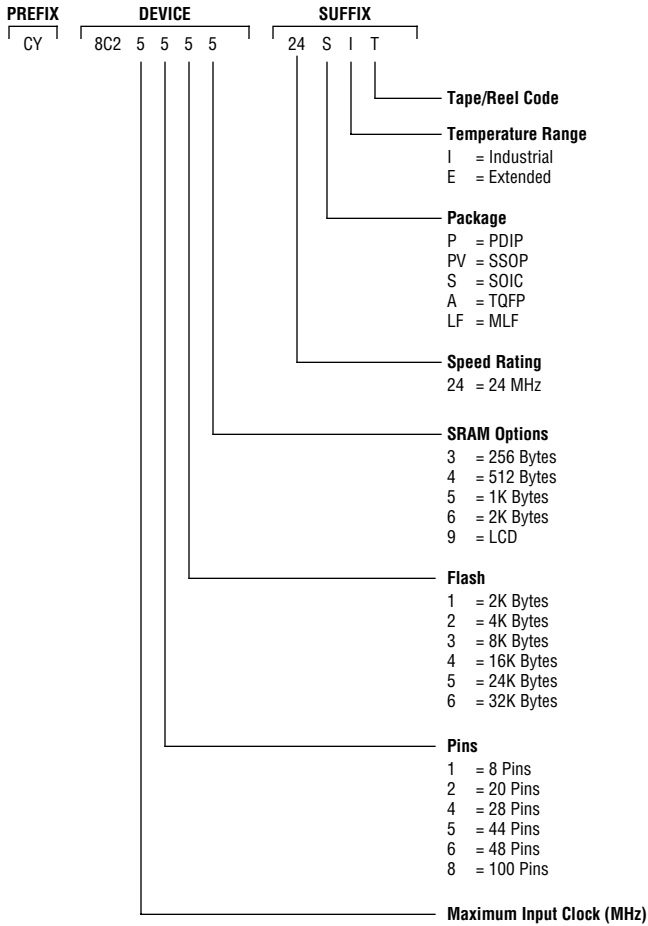


## Neuron® Chips





## PSoC™ Mixed-Signal Array





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