Cypress Automotive Products Roadmap

Corporate Presentation

Q2 2018

Cypress Automotive Roadmaps Slide Index

Automotive TrueTouch® Roadmap

CYPRESS
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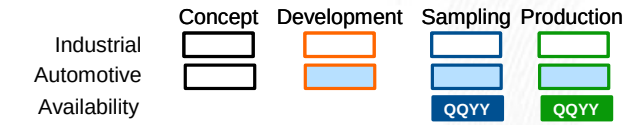
Automotive Portfolio: TrueTouch®

Active Touch Area	Gen6			Gen7
	Touchscreen			Next Generation
	Gestures, AMS[1] Thick Glove[2] or Thick Overlay	In-Cell[3], Gestures, AMS Thick Glove[6]or Thick/Curved Overlay	SLIM[4], Force Touch[5], Gestures, AMS Thick Glove or Thick/Curved Overlay	
	10 Finger, AutoArmor™[7], DualSense™[8], H_2O[9], Glove Touch[10], Grades: A[11] and S[12]			
> 12"	**CYAT8168X** 88 I/O, 100-Hz RR[13]	**CYAT8268X** **54 I/O, 100-Hz RR**	**CYAT8X68X** 88 I/O, 100-Hz RR	**CYAT8X7XX** NDA Required, Contact Sales
> 12"	**CYAT8168X** 77/71 I/O[14], 120-Hz RR	**CYAT8268X** **46/39 I/O, 120-Hz RR**	**CYAT8X68X** 77/71 I/O, 120-Hz RR	
7–12"	**CYAT8168X** 61 I/O, 120-Hz RR	**CYAT8268X** **31 I/O, 120-Hz RR**	**CYAT8X68X** 61 I/O, 120-Hz RR	**CYAT8X7XX** NDA Required, Contact Sales
3–8"	**CYAT8165X** 48 I/O, 100-Hz RR	**CYAT8268X** 17 I/O, 120-Hz RR	**CYAT8X65X** 48 I/O, 100-Hz RR	
3–8"	**CYAT816XX** 36 I/O, 120-Hz RR		**CYAT8X6XX** 36 I/O, 100-Hz RR	

[1] Automatic mode switching
[2] 1-mm to 5-mm glove thickness (ski gloves)
[3] A type of sensor stack-up in which the RX sensor is inside the LCD module under the color-filter glass
[4] Single-layer independent multi-touch
[5] The ability of touchscreen to distinguish between different levels of force being applied on the touchscreen
[6] Less than 1-mm glove thickness (normal leather gloves)
[7] Enables compliance with chip-level emission, immunity and system-level specifications
[8] Self-capacitance + mutual-capacitance
[9] Waterproofing and wet-finger tracking
[10] A feature that allows the detection of gloved fingers on a touch sensor
[11] AEC-Q100: -40°C to +85°C
[12] AEC-Q100: -40°C to +105°C
[13] Refresh rate
[14] Number of available I/Os depends on package selection



Automotive Portfolio: TrueTouch® Software[1]

Software	MPN	PSoC® Designer™	TrueTouch® Host Emulator[2]	TrueTouch Driver for Android[3]	Manufacturing Test Kit[4]
Current Version		5.4 SP1	3.4	3.5	1.9.0
Gen 1	CY8CTMA120	Production			
	CY8CTMG120	Production			
Gen 3	CY8CTMA616		Production	TTDA 2.5.1 Production	Production
	CY8CTMA884		Production		Production
Gen 4	CY8CTMA460		Production	TTDA 2.5 Production	Production
	CY8CTMA461		Production		Production
	CY8CTMA768		Production		Production
	CY8CTMA1036		Production		Production
Gen 6	CYAT8165X-48		Production	Contact Sales	Production
	CYAT8168X-61		Production		Production
	CYAT8168X-71		Production		Production
	CYAT8168X-77		Production		Production
	CYAT8168X-88		Production		Production

Contact Cypress for the latest TrueTouch software, drivers, and tools

[1] PSoC Designer, TTHE and MTK releases are backward compatible. The latest version is recommended for new designs.
[2] TrueTouch Host Emulator (TTHE) is a front-end tool used to configure, tune, debug and demonstrate TrueTouch devices
[3] TrueTouch Driver for Android (TTDA) is the driver for Android that translates touch information into Linux/Android events
[4] TrueTouch Manufacturing Test Kit (MTK) enables customers and ITO partners to test touch panels that use Cypress TrueTouch controllers through the manufacturing flow

CYAT8168X

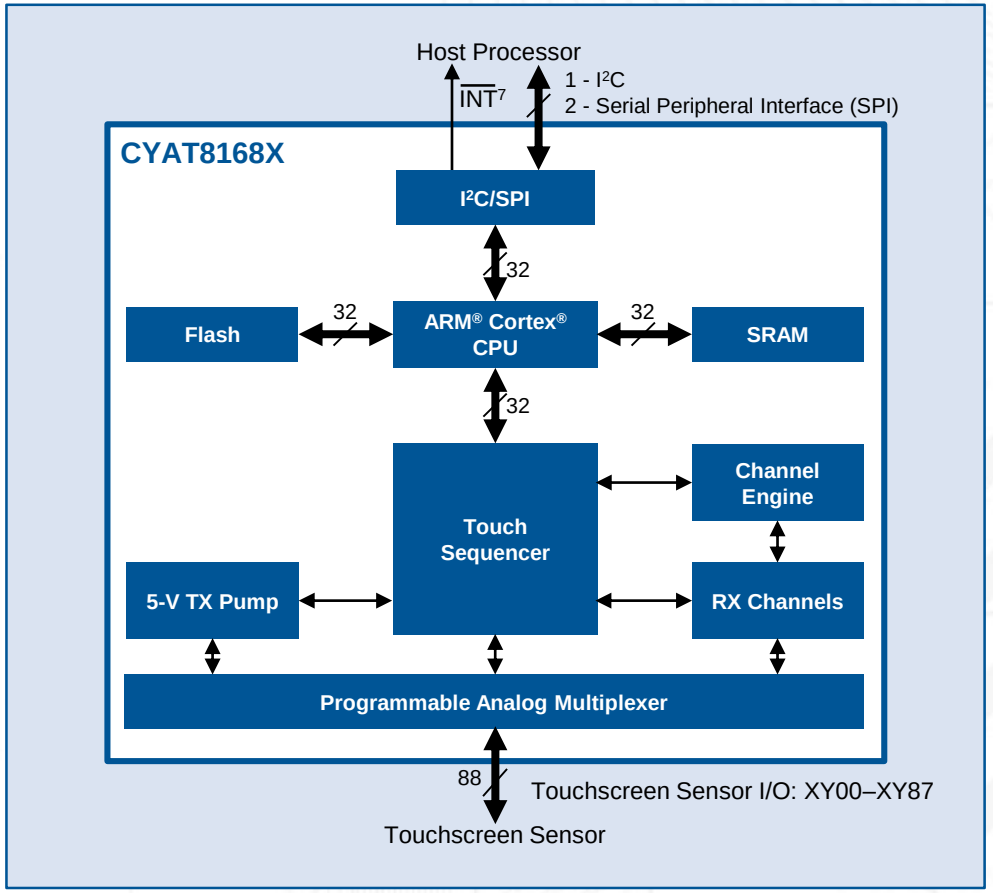
Automotive TrueTouch® Gen6 Family

Applications

Large touchscreen human machine interface (HMI) systems

Features

- **Advanced User Interface**
  - Waterproofing[1]: Works with water droplets, condensation, sweat and wet-finger tracking
  - Tracking with up to 5-mm thick gloves or thick overlay
- **Proprietary Analog Front End[2] (AFE) with AutoArmor™[3]**
  - True 5-V TX-Boost™ with Multi-Phase TX[4]
  - 54 Receive Channels to support ≥100-Hz refresh rates
  - DualSense™: Self[5]- and mutual[6]-capacitance AFE (U.S. Patents 8,773,146; 8,358,142; 8,319,505; and 8,067,948)
  - AutoArmor enables compliance with chip-level emissions (IEC 61967), immunity (IEC 62132) and system-level (CISPR 25) specifications
- **System Solutions**
  - Manufacturing test kits for production testing
- **Package**
  - 128-pin TQFP, 100-pin TQFP



Collateral

Datasheet and Design Guide: Contact Sales or automotive@cypress.com

Availability

Production: Now

[1] The ability of a touchscreen sensor to work properly in the presence of water droplets, condensation or sweat
[2] Analog circuit in the touchscreen controller used to measure self- and mutual-capacitance
[3] Cypress proprietary technology used to reduce emissions and improve EMI immunity to meet automotive EMC requirements
[4] A scanning method used to drive multiple TX lines simultaneously
[5] The capacitance of a row or column line in a touchscreen sensor
[6] The capacitance between a row and a column in a touchscreen sensor
[7] Interrupt

Automotive TrueTouch® Packages

Family	Package	QFN	TQFP		
	Pins	56	64	100	128
	Body Size (mm)	8 x 8	10 x 10	14 x 14	14 x 20
	Pitch (mm)	0.5	0.5	0.5	0.5
Gen 4	CY8CTMA460	✓[1]		✓	
	CY8CTMA461	✓[1]		✓	
	CY8CTMA768			✓	
	CY8CTMA1036			✓	
Gen 6	CYAT8165X-48			✓	
	CYAT8168X-61			✓	
	CYAT8168X-71			✓	
	CYAT8168X-77			✓	
	CYAT8168X-88				✓

[1] Wettable flanks package to allow automated optical inspection (AOI)

Automotive PSoC® Roadmap

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Automotive PSoC and MCU Portfolio

8-Bit	32-Bit ARM® Cortex®-M0/M0+	32-Bit ARM Cortex®-M3	32-Bit ARM Cortex®-M4	32-Bit ARM Cortex®-M7
High Analog Integration	**Ultra-Low-Power 8-/16-Bit Replacement**	**Mid-Range Performance**	**High Performance**	**Next Generation**

Analog and Digital Integration

Programmable System-on-Chip (PSoC) is a brand of Cypress MCUs for the broad-base embedded market that delivers an ARM Cortex-M CPU (PSoC 4+) with unique software-defined peripherals and CapSense capacitive sensing

Flexible MCU (FM) is a portfolio of high-performance ARM® Cortex®-M-based MCUs for industrial and consumer applications

PSoC 7
Cortex®-M7
NDA Required, Contact Sales

PSoC 6 HMI
Cortex®-M4 and Cortex®-M0+
NDA Required, Contact Sales

PSoC 4
Cortex®-M0/M0+
48 MHz, 256KB Flash
Up to 13 PAB[1], 20 PDB[2], 98 I/Os

PSoC 5LP
Cortex®-M3
80 MHz, 256KB Flash
20 PAB, 30 PDB, 72 I/Os

FM4 MCUs
Cortex®-M4
200 MHz, 2MB Flash, 190 I/Os

PSoC 3
8051 CPU
67 MHz, 64KB Flash
Up to 19 PAB, 30 PDB, 72 I/Os

PSoC Analog Coprocessor CY8C4Axx
48 MHz, 32KB Flash
Up to 12 PAB, 11 PDB, 38 I/Os

FM3 MCUs
Cortex®-M3
144 MHz, 1.5MB Flash, 154 I/Os

PSoC 1
M8C CPU
24 MHz, 32KB Flash
16 PAB, 16 PDB, 64 I/Os

FM0+ MCUs
Cortex®-M0+
40 MHz, 512KB Flash, 102 I/Os

8FX
8-bit RISC MCU
16 MHz, 32–50KB Flash

[1] A programmable analog block that is configured using PSoC software to create analog front ends, signal conditioning circuits with opamps and filters
[2] A programmable digital block that is configured using PSoC software to implement custom digital peripherals and glue logic

	Concept	Development	Sampling	Production
Industrial				
Automotive			QQYY	QQYY
Availability				

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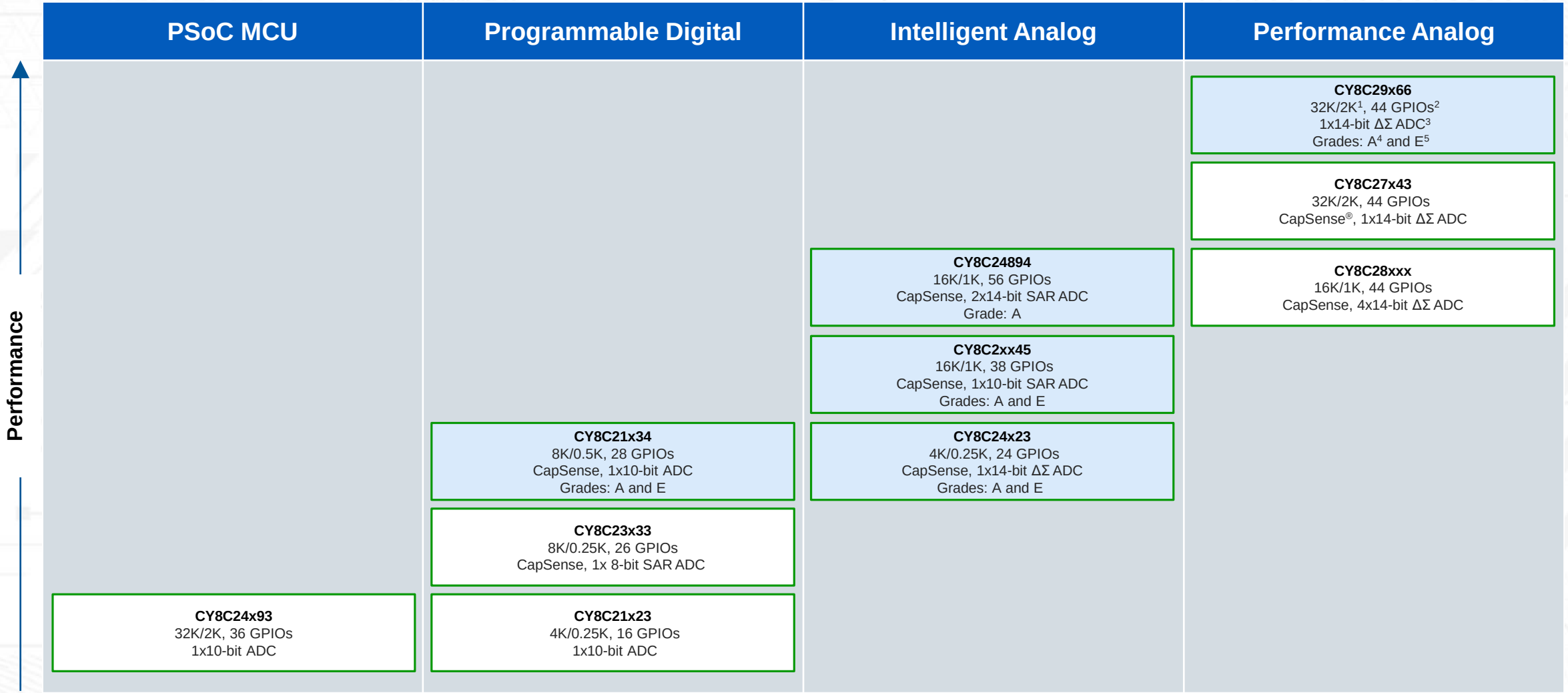
Automotive Portfolio: PSoC® 1

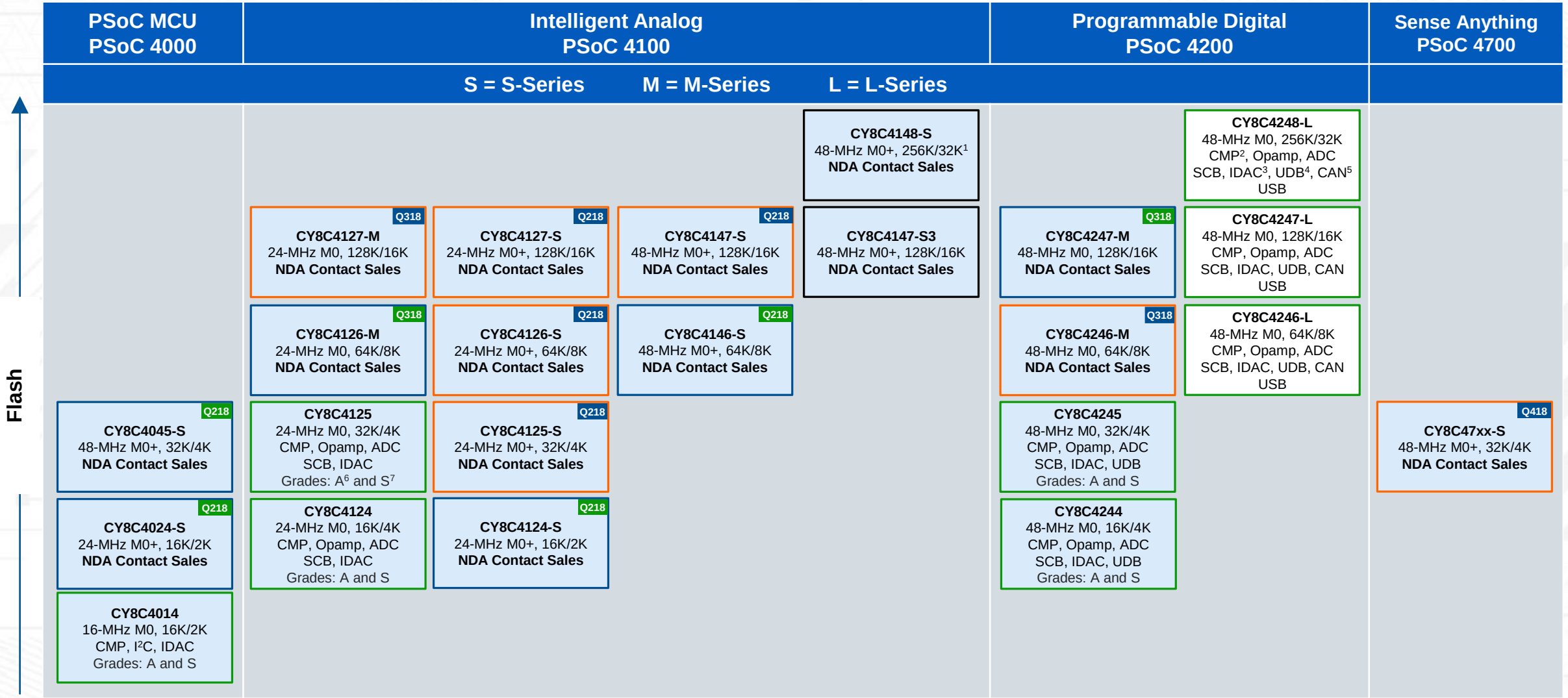
M8C CPU | 24 MHz



[1] Flash KB/SRAM KB
[2] General-purpose input/output pins
[3] Analog-to-digital converter: Includes incremental, successive approximation register (SAR) or Delta-Sigma (ΔΣ) ADCs
[4] AEC-Q100: -40°C to +85°C
[5] AEC-Q100: -40°C to +125°C

Automotive Portfolio: PSoC® 4

Flexibility | CapSense® | Ease-of-Use



[1] Flash KB/SRAM KB
[2] Comparator
[3] Current-output DAC
[4] Universal digital block
[5] Controller area network
[6] AEC-Q100: -40°C to +85°C
[7] AEC-Q100: -40°C to +105°C

Automotive Portfolio: PSoC® Software[1]

Software	PSoC Creator™[2]	PSoC Designer™[3]	PSoC Programmer[4]	EZ-Click™[5]
Current Version	4.2	5.4 SP1	3.27.1	2.0 SP2
PSoC 1		Production	Production	
PSoC 4	Production		Production	

Download the latest PSoC software version here

[1] All software and tool releases are backward compatible. The latest versions are recommended for new designs
[2] PSoC Creator is an Integrated Design Environment (IDE) that allows concurrent hardware and firmware design of PSoC 3 and PSoC 4 systems
[3] PSoC Designer is an IDE that enables firmware design using a library of precharacterized peripherals for PSoC 1 systems
[4] PSoC Programmer can be used with PSoC Designer and PSoC Creator to program and debug any design onto a PSoC device
[5] EZ-Click is a Windows® GUI-based tool that enables development of CapSense MBR solutions. It allows you to set up sensor configuration, apply global system properties, monitor real-time sensor output, and run production-line system diagnostics

PSoC® 4000S-Series

PSoC MCU

Applications

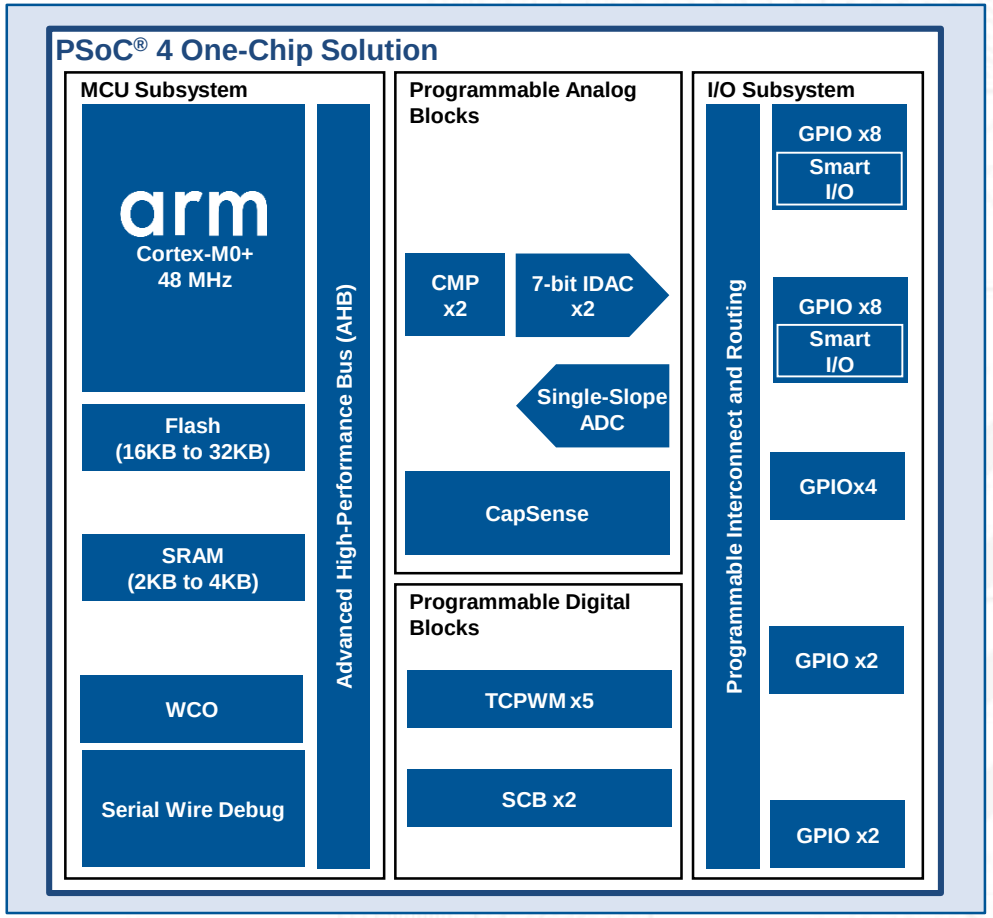
User interface for infotainment systems, user interface for heating, ventilation, and air conditioning

Features

- **32-Bit MCU Subsystem**
  - 48-MHz ARM® Cortex®-M0+ CPU
  - Up to 32KB Flash
  - 4KB SRAM
  - Real-time clock (RTC) capability with a watch crystal oscillator (WCO)
- **Programmable Analog Blocks**
  - One 10-bit, 46.8-ksps single-slope analog-to-digital converter (ADC)[1]
  - Two low-power comparators (CMP)
  - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
  - Two 7-bit current-output digital-to-analog converters (IDAC) configurable as a single 8-bit IDAC
- **Programmable Digital Blocks**
  - Five 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Two serial communication blocks (SCB) that are configurable as I²C, SPI, UART or LIN Slave
- **Packages**
  - 24-pin QFN and 28-pin SSOP
- **I/O Subsystem**
  - Up to 24 GPIOs, including 16 Smart I/Os[2]

Collateral

Datasheet: Contact Sales



Availability

Sampling: Now **Production:** Q2 2018

[1] A simple ADC used to measure slow-moving signals
[2] Embedded programmable digital logic in the I/O subsystem

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PSoC® 4100S-Series

Intelligent Analog

Applications

User interface for heating, ventilation, air conditioning, MCU, and discrete analog replacement

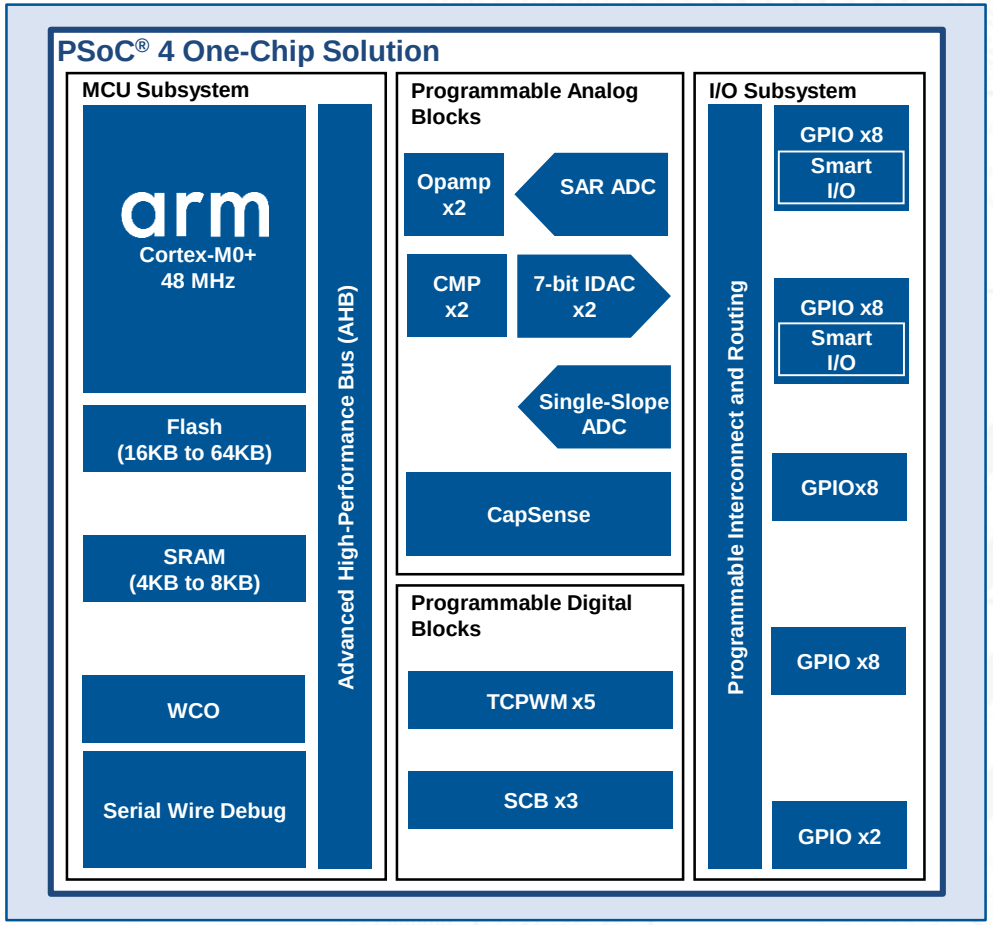
Features

- **32-Bit MCU Subsystem**
  - 48-MHz ARM® Cortex®-M0+ CPU
  - Up to 64KB Flash
  - 8KB SRAM
  - Real-time clock (RTC) capability with a watch crystal oscillator (WCO)
- **Programmable Analog Blocks**
  - One 12-bit, 1-Msps successive approximation register (SAR) analog-to-digital converter (ADC)
  - One 10-bit, 46.8-ksps single-slope ADC[1]
  - Two opamps configurable as programmable gain amplifiers (PGA), comparators, etc.
  - Two low-power comparators (CMP)
  - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
  - Two 7-bit current-output digital-to-analog converters (IDAC) configurable as a single 8-bit IDAC
- **Programmable Digital Blocks**
  - Five 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Three serial communication blocks (SCBs) that are configurable as I²C, SPI, UART or LIN Slave
- **Packages**
  - 28-pin SSOP and 40-pin QFN
- **I/O Subsystem**
  - Up to 34 GPIOs, including 16 Smart I/Os[2]

Collateral

Datasheet: Contact Sales

[1] A simple ADC used to measure slow-moving signals [2] Embedded programmable digital logic in the I/O subsystem



Availability

Sampling: Now **Production:** Q2 2018

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PSoC® 4100S Plus-Series

Intelligent Analog

Applications

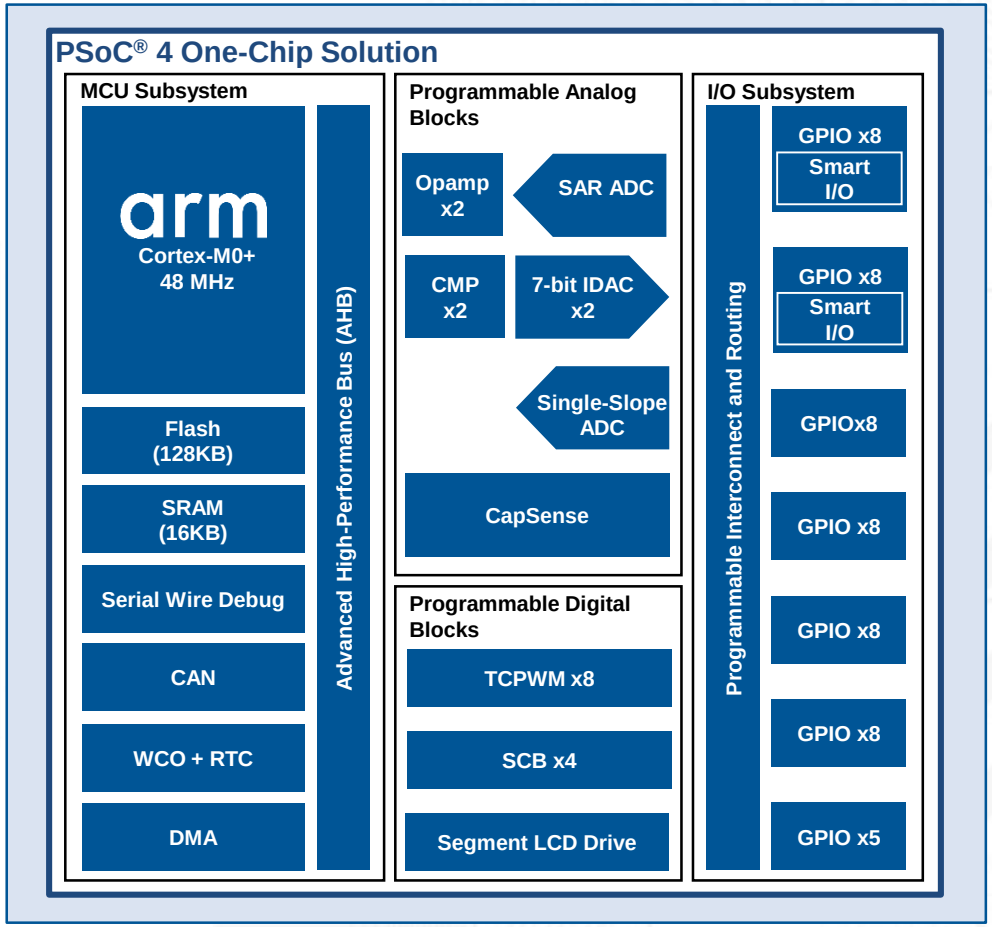
User interface for HMI applications, body control, and HVAC applications

Features

- **32-Bit MCU Subsystem**
  - 48-MHz ARM® Cortex®-M0+ CPU with DMA controller and real-time clock (RTC)
  - 128KB Flash and 16KB SRAM
  - External MHz oscillator (ECO) with PLL and 32KHz watch crystal oscillator (WCO)
- **Programmable Analog Blocks**
  - One 12-bit, 1-Msps successive approximation register (SAR) analog-to-digital converter (ADC)
  - One 10-bit, 46.8-ksps single-slope ADC[1]
  - Two opamps configurable as programmable gain amplifiers (PGA), comparators, etc.
  - Two low-power comparators (CMP)
  - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
  - Two 7-bit current-output digital-to-analog converters (IDAC) configurable as a single 8-bit IDAC
- **Programmable Digital Blocks**
  - Eight 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Five serial communication blocks (SCBs) that are configurable as I²C, SPI, UART or LIN Slave
- **One Controller Area Network (CAN) Controller**
- **Packages**
  - 64-pin TQFP
- **I/O Subsystem**
  - Up to 54 GPIOs, including 16 Smart I/Os[2]

Collateral

Datasheet: Contact Sales



Availability

Sampling: Q2 2018 **Production**: Q3 2018

[1] A simple ADC used to measure slow-moving signals [2] Embedded programmable digital logic in the I/O subsystem

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PSoC® 4100M-Series

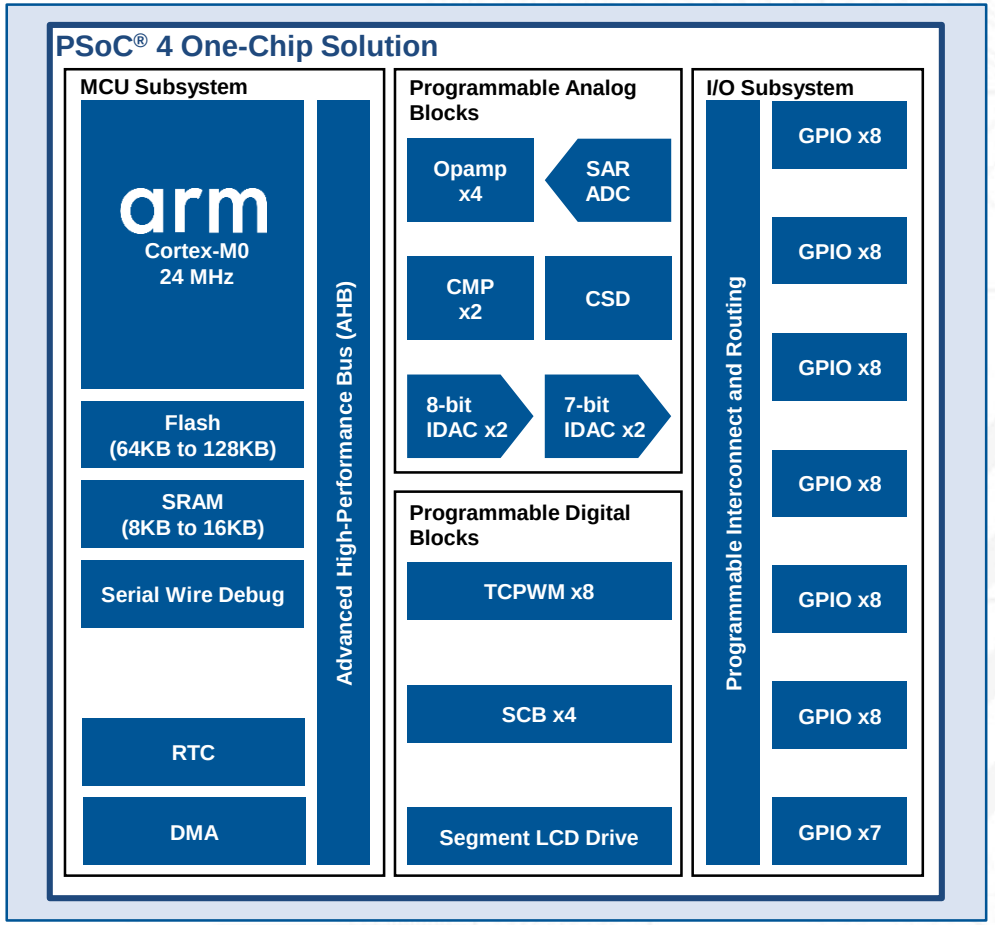
Intelligent Analog

Applications

User interface for HMI applications, body control, and HVAC applications

Features

- **32-bit MCU Subsystem**
  - 24-MHz ARM® Cortex®-M0 CPU with a DMA controller and real-time clock (RTC)
  - Up to 128KB Flash and 16KB SRAM
- **Programmable Analog Blocks**
  - Two comparators (CMP)
  - Four opamps, programmed as PGAs, CMPs, filters, etc.
  - One 12-bit/1-Msps successive approximation register (SAR) ADC
  - One CapSense® block with self- and mutual-capacitance sensing
  - Four (2x 8-bit, 2x 7-bit) current-output digital-to-analog converters (IDACs)
- **Programmable Digital Blocks**
  - Eight programmable 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Four serial communication blocks (SCBs) configurable as I^2C master or slave, SPI master or slave, or UART
- **Packages**
  - 48-pin LQFP and 64-pin TQFP
- **I/O Subsystem**
  - Up to 51 GPIOs



Collateral

Datasheet: Contact Sales

Availability

Sampling: Now **Production**: Q3 2018

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PSoC® 4200M-Series

Programmable Digital

Applications

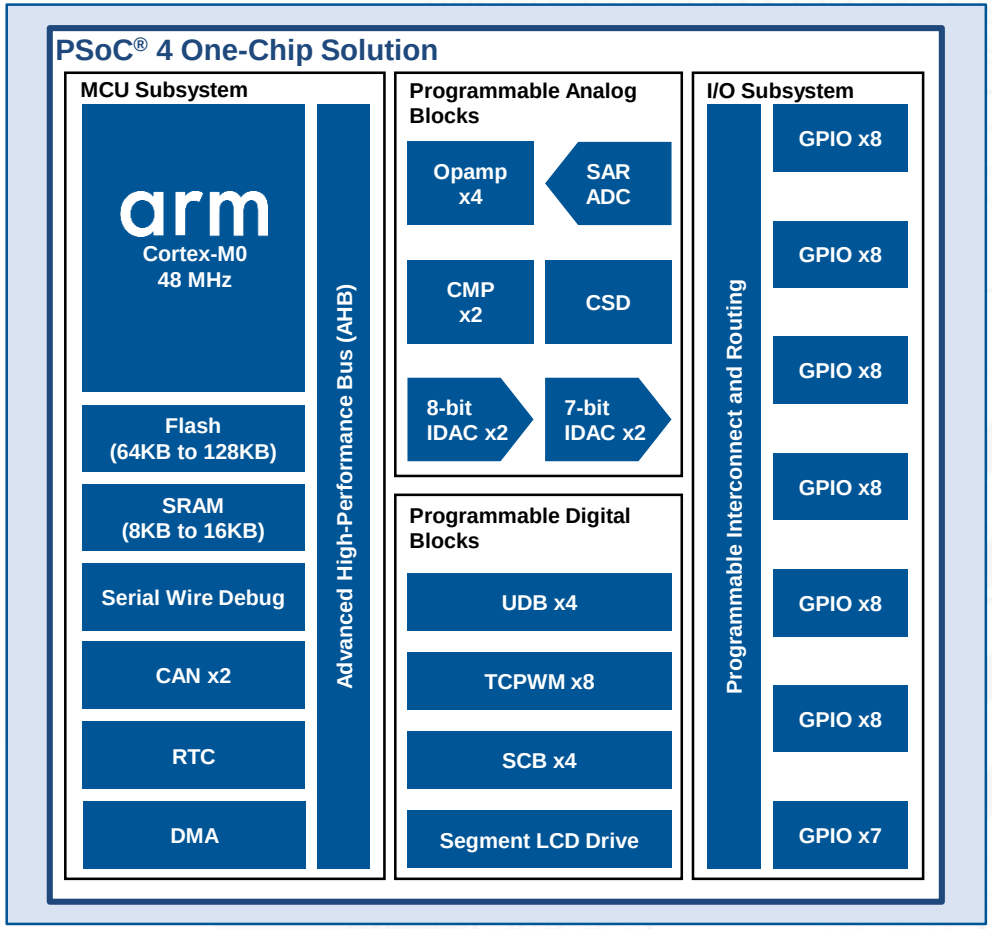
User interface for HMI applications, body control, and HVAC applications

Features

- **32-bit MCU Subsystem**
  - 48-MHz ARM® Cortex®-M0 CPU with a DMA controller and real-time clock (RTC)
  - Up to 128KB Flash and 16KB SRAM
- **Programmable Analog Blocks**
  - Two comparators (CMP)
  - Four opamps, programmed as PGAs, CMPs, filters, etc.
  - One 12-bit/1-Msps successive approximation register (SAR) analog-to-digital converter (ADC)
  - One CapSense® block with self- and mutual-capacitance sensing
  - Four (2x 8-bit, 2x 7-bit) current-output digital-to-analog converters (IDACs)
- **Programmable Digital Blocks**
  - Four universal digital blocks (UDBs): custom digital peripherals
  - Eight programmable 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Four serial communication blocks (SCBs) configurable as I^2C master or slave, SPI master or slave, or UART
- **Two Controller Area Network (CAN) Controllers**
- **Packages**
  - 48-pin LQFP, 56-pin QFN and 64-pin TQFP

Collateral

Datasheet: Contact Sales



Availability

Sampling: Now **Production**: Q3 2018

Automotive PSoC Packages

Family	Package	QFN		SOIC	SSOP		
	Pins	24	56	16	20	28	48
	Body Size (mm)	4 x 4	8 x 8	3.8 x 9.9	5.3 x 7.3	5.3 x 10.3	7.5 x 15.8
	Pitch (mm)	0.5	0.5	1.27	0.65	0.65	0.635
PSoC 1	2XX45					✓	✓
	21X34				✓	✓	
	24X23				✓	✓	
	24894		✓				
	29X66					✓	✓
PSoC 4	4000	✓		✓			
	41/42XX					✓	

Cypress Roadmap: Automotive RAM

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2Mb-to-16Mb Excelon™ F-RAM Family

Applications

Medical devices, wearables, industrial control and automation, automotive

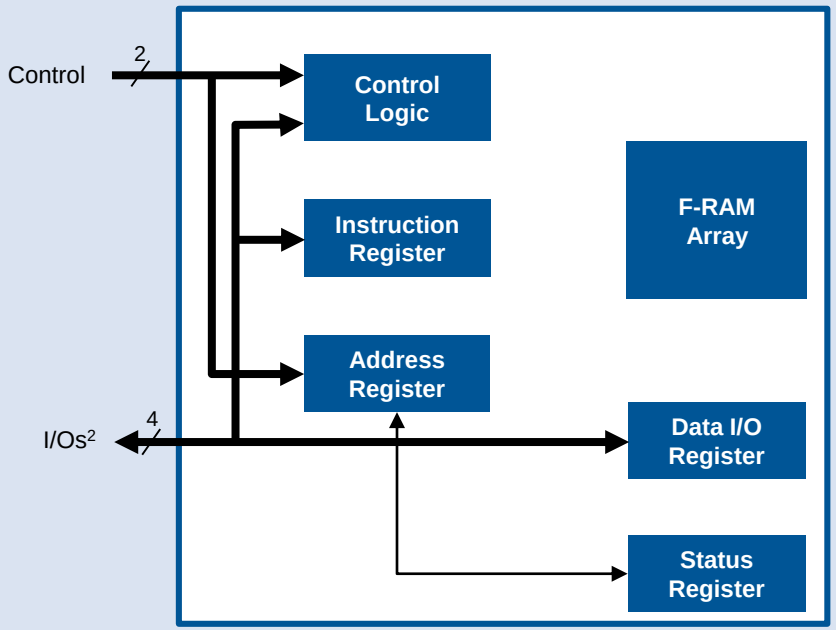
Features

- **Excelon-Ultra**
  - 4Mb
  - 108-MHz Single Data Rate (SDR)/54-MHz Double Data Rate (DDR) Quad SPI
  - Industrial temperature range: -40°C to +85°C
- **Excelon-Auto**
  - 2Mb Auto E, 4Mb Auto A
  - 50-MHz SPI
  - Automotive (AEC-Q100) temperature range grade A: -40°C to +85°C
  - Automotive (AEC-Q100) temperature range grade E: -40°C to +125°C
- **Common Features for Excelon-Ultra/Auto**
  - Operating voltage range: 1.71–1.89 V, 1.80–3.60 V
  - 100-trillion read/write cycle endurance
  - 100-year data retention

Collateral

Preliminary Datasheet: Contact Sales (Available Now)

Excelon F-RAM



Family Table

Density	Standby Current (Typ.)	Active Current (Typ.)	Packages
2Mb	1 µA	3 mA	SOIC (8)
4Mb	1 µA	3 mA	SOIC (8), GQFN (8)
8Mb	1 µA	3 mA	GQFN (8)
16Mb	1 µA	3 mA	SOIC (8), GQNF (8)

Availability

Samples: Now (2Mb Auto, 4Mb, 8Mb), Q2 2019 (2Mb, 16Mb)
Production: Q4 2018 (2Mb Auto, 4Mb, 8Mb), Q4 2019 (2Mb, 16Mb)

Asynchronous SRAM Portfolio

High Density | Wide Voltage Range | Automotive A[1], E[2] | On-Chip ECC

Density	Fast SRAM		Low-Power SRAM (MoBL®[3])			PowerSnooze™[4]
	Non-ECC (≥90nm)	ECC (65nm)	Non-ECC (≥90nm)	ECC (65nm)	ECC (65nm) ULP[5]	ECC (65nm)
32Mb–64Mb	**CY7C107x** **32Mb**; 3.3 V 12 ns; x8, x16 Ind		**CY6218x** **64Mb**; 1.8, 3.0 V 55 ns; x16 Ind **CY6217x** **32Mb**; 1.8-5.0 V 55 ns; x16 Ind	**CY6218x** **64Mb**; 1.8, 3.0 V 45 ns; x16 Ind, Auto E **CY6217x** **32Mb**; 1.8, 3.0 V 45 ns; x16 Ind, Auto E	**CY6218x** **64Mb**; 3.0 V 45 ns; x16 Ind **CY6217x** **32Mb**; 3.0 V 45 ns; x16 Ind	
2Mb–16Mb	**CY7C106xGN** **16Mb**; 1.8, 3.3 V 10 ns; x8, x16, x32 Ind **CY7C105x** **8Mb**; 3.3 V 10 ns; x8, x16 Ind **CY7C104x** **4Mb**; 3.3, 5.0 V 10 ns; x4, x8, x16 Ind, Auto A, E **CY7C1012** **12Mb**; 3.3 V 10 ns; x24 Ind **CY7C1034** **6Mb**; 3.3 V 10 ns; x24 Ind	**CY7C106xG/GE** **16Mb**; 1.8-5.0 V 10 ns; x8, x16, x32 Ind, Auto E **CY7C105x** **8Mb**; 3.3, 5.0 V 10 ns; x8, x16 Ind, Auto E **CY7C104x** **4Mb**; 1.8-5.0 V 10 ns; x8, x16 Ind, Auto E	**CY6216x** **16Mb**;1.8, 3.0, 5.0 V 45 ns; x8, x16 Ind, Auto A **CY6215x** **8Mb**; 1.8, 3.0, 2.5-5V 45 ns; x8, x16 Ind, Auto A, E **CY6214x** **4Mb**; 1.8, 3.0, 2.5-5V 45 ns; x8, x16 Ind **CY6213x** **2Mb**; 1.8, 2.5-5.0 V 45 ns; x8, x16 Ind, Auto A, E	**CY6216x** **16Mb;** 1.8-5.0 V 45 ns; x8, x16, x32 Ind, Auto E **CY6216x** **8Mb;** 3.3, 5.0 V 45 ns; x8, x16, x32 Ind, Auto E **CY6214x** **4Mb**; 1.8-5.0 V 45 ns; x8, x16 Ind, Auto A, E	**CY6216x** **16Mb;** 3.0 V 45 ns; x8, x16, x32 Ind	**CY7S106x** **16Mb**; 1.8-5.0 V 10 ns; x8, x16, x32 Ind **CY7S104x** **4Mb**; 1.8-5.0 V 10 ns; x8, x16 Ind
64Kb–1Mb	**CY7C1020** **512Kb**; 2.6, 3.3, 5.0 V 10 ns; x16 Ind, Auto E **CY7C1019/21/100x** **1Mb**; 2.6, 3.3, 5.0 V 10 ns; x4, x8, x16 Ind, Auto A, E **CY7C19x/1399** **256Kb**; 3.3, 5.0 V 10 ns; x4, x8 Ind, Auto A		**CY6212x** **1Mb**; 2.5-5.0 V 45 ns; x8, x16 Ind, Auto A, E **CY62256** **256Kb**; 1.8, 3.0, 5V 55 ns, 70 ns; x8 Ind, Auto A, E			

[1] AEC-Q100 -40°C to +85°C
[2] AEC-Q100 -40°C to +125°C
[3] More Battery Life
[4] A Fast SRAM with a deep-sleep mode in addition to the conventional standby
[5] Ultra-Low-Power

Status: Concept | Development | Sampling | Production
Availability: QQYY | QQYY

Low-Power SRAM Family with ECC[1]

Applications

Programmable logic controllers, handheld devices, multifunction printers, implantable medical devices, computation servers and automotive

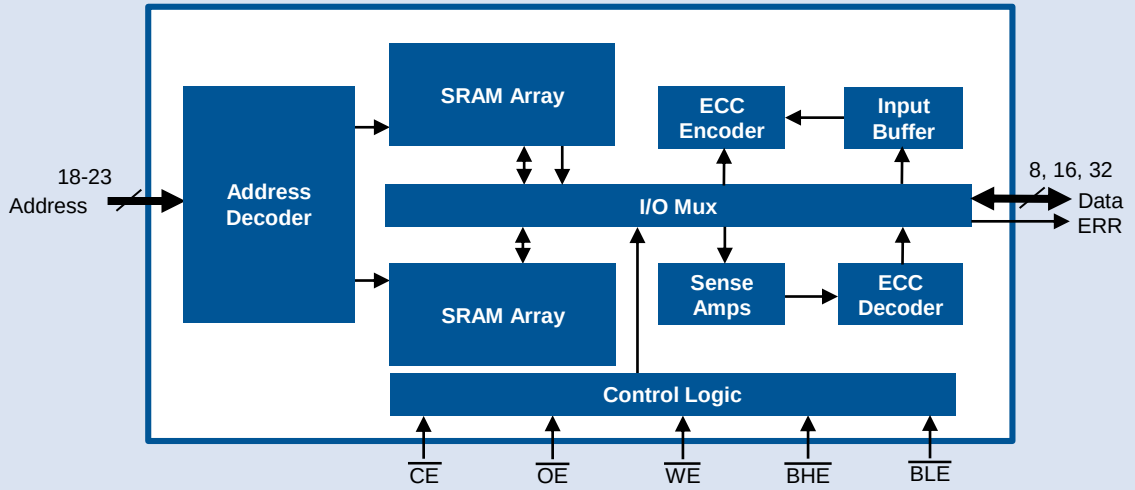
Features

- **Speed**
  - Access time: 45 ns
  - Bus-width configurations: x8, x16 and x32
- **Low Power**
  - Standby current: 8.7 µA for 4Mb
- **Features**
  - ECC[1] logic to detect and correct single-bit errors
- **Multiple Operating Temperatures**
  - Industrial and automotive temperature grades
- **RoHS[2]-Compliant Packages**
  - 48-ball and 119-ball BGA
  - 32-pin and 44-pin TSOP-II
  - 48-pin TSOP-I
  - 32-pin SOIC

Collateral

Datasheet: Asynchronous SRAM with ECC

SRAM with ECC



Family Table

Density	MPN	Standby Current (Maximum at 85°C)	Standby Current (Typical at 25°C)
4Mb	CY6214x	8.7 µA	3.5 µA
8Mb	CY6215x	16.0 µA	5.5 µA
16Mb	CY6216x	16.0 µA	5.5 µA

Availability

Production: Now

[1] Error-correcting code: Data encoded with extra parity bits to detect and correct bit errors, including unavoidable errors due to background radiation

[2] Restriction of Hazardous Substances. A European Union directive intended to eliminate the use of environmentally hazardous material in electronic components

Fast SRAM Family with PowerSnooze™[1]

Applications

Programmable logic controllers, handheld devices, multifunction printers, computation servers and automotive

Features

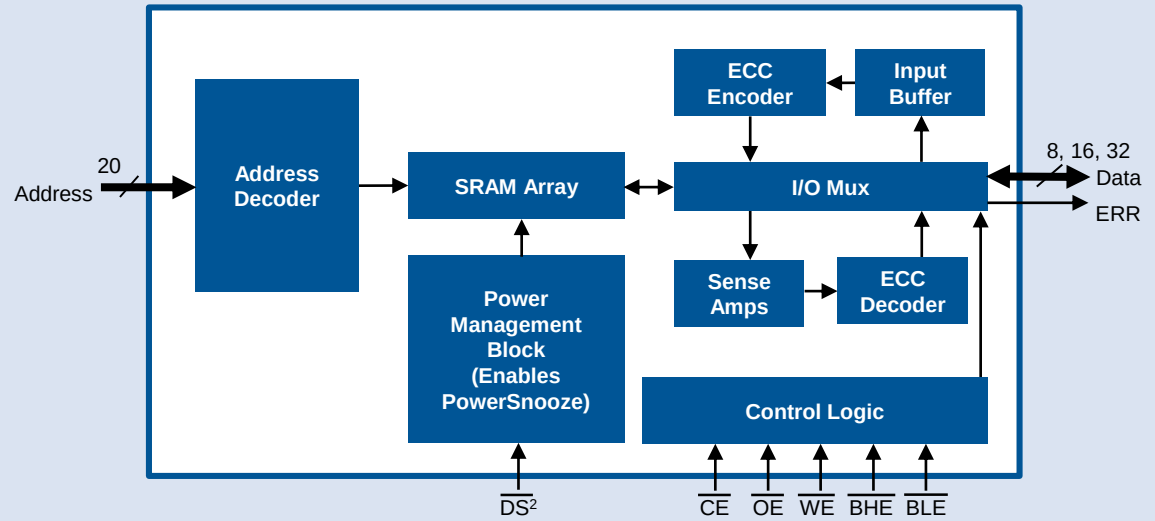
- **Speed**
  - Access time: 10 ns
  - Bus-width configurations: x8, x16 and x32
- **Low Power**
  - Deep-sleep current: 15 µA for 4Mb
- **Features**
  - ECC[2] logic to detect and correct single-bit errors
  - Bit-interleaving to avoid multi-bit errors
  - Error Indication (ERR) pin to indicate single-bit errors
- **Multiple Operating Temperatures**
  - Industrial and automotive temperature grades
- **RoHS[3]-Compliant Packages**
  - 48-ball BGA
  - 44-pin and 54-pin TSOP-II
  - 48-pin TSOP-I
  - 36-pin and 44-pin SOJ

Collateral

Datasheet: Asynchronous SRAM with ECC

[1] A Fast SRAM with a deep-sleep mode in addition to a conventional standby mode
[2] Error-correcting code
[3] Restriction of Hazardous Substances. A European Union directive intended to eliminate the use of environmentally hazardous material in electronic components

SRAM with PowerSnooze



Family Table

Density	MPN	Access Time	Deep Sleep Current (Maximum at 85ºC)
4Mb	CY7S104x	10 ns	15 µA
16Mb	CY7S106x	10 ns	22 µA

Availability

Production: Now

Fast SRAM Family with ECC[1]

Applications

Switches and routers, IP phones, test equipment, computation servers, automotive, military and aerospace systems

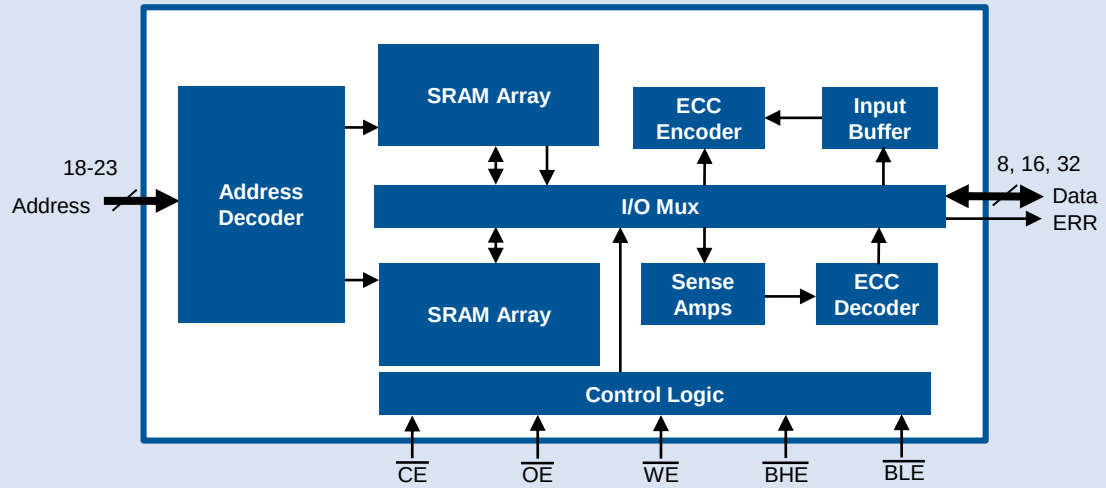
Features

- **Speed**
  - Access time: 10 ns
  - Bus-width configurations: x8, x16 and x32
- **Features**
  - ECC logic to detect and correct single-bit errors
  - Bit-interleaving to avoid multi-bit errors
  - Error indication (ERR) pin to indicate single-bit errors
- **Multiple Operating Temperatures**
  - Industrial and automotive temperature grades
- **RoHS[2]-Compliant Packages**
  - 48-ball and 119-ball BGA
  - 44-pin and 54-pin TSOP-II
  - 48-pin TSOP-I
  - 34-pin and 36-pin SOJ

Collateral

Datasheet: Asynchronous SRAM with ECC

SRAM with ECC



Family Table

Density	MPN	Access Time	Operating Current (Maximum at 85°C)
4Mb	CY7C104x	10 ns	45 mA
8Mb	CY7C105X	10 ns	110 mA
16Mb	CY7C106x	10 ns	110 mA

Availability

Production: Now

[1] Error-correcting code: Data encoded with extra parity bits to detect and correct bit errors, including unavoidable errors due to background radiation
[2] Restriction of Hazardous Substances. A European Union directive intended to eliminate the use of environmentally hazardous material in electronic components

Standard Synchronous SRAM With On-Chip ECC[1]

Applications

Switches and routers, radar and signal processing, test equipment, automotive, military and aerospace systems

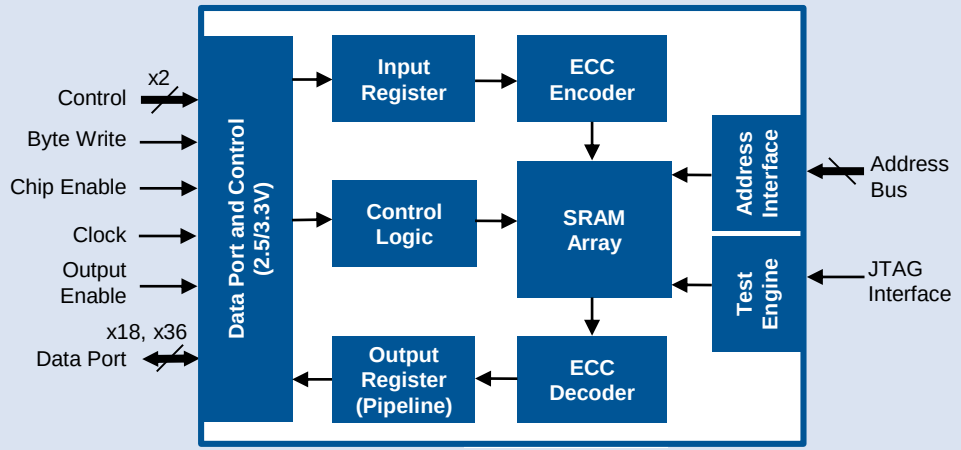
Features

- **Speed**
  - Available in two modes[2]: Pipeline and Flow-Through
  - Bus widths: x18, x36
- **Features**
  - ECC to detect and correct single-bit errors
  - Two voltage options: 2.5 V and 3.3 V
  - SCD and DCD deselect options[3]
  - Industrial and commercial temperature grades
- **Packages**
  - 165-ball BGA
  - 100-pin TQFP

Collateral

Datasheets: 36M Sync SRAM, 18M Sync SRAM

Synchronous SRAM



Family Table

Option	Density	MPN	RTR	FIT/Mb[4]
Standard Sync with On-Chip ECC Pipeline	18Mb 36Mb	CY7C1370/2K CY7C1440/2K	250 MT/s	<0.01
Standard Sync with On-Chip ECC Flow-Through	18Mb 36Mb	CY7C1371/3K CY7C1441/3K	133 MT/s	<0.01

Availability

Production: Now

[1] Error-correcting code: Data encoded with extra parity bits to detect and correct bit errors, including unavoidable errors due to background radiation
[2] Modes of synchronous SRAM operation that optimize either read latency (Flow-Through) or operating frequency (Pipeline)
[3] Modes of operation in Pipeline mode where the output driver is tri-stated after either a single cycle (SCD) or dual cycle (DCD) of issuing the deselect command
[4] The projected failure rate of a device; one FIT/Mb equals one failure per billion device hours per megabit of data

NoBL® SRAM With On-Chip ECC[1]

Applications

Switches and routers, radar and signal processing, test equipment, automotive, military and aerospace systems

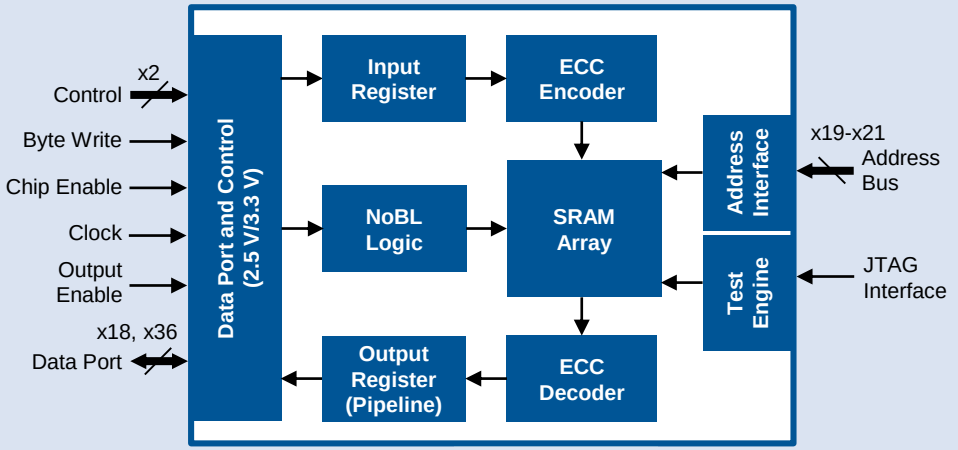
Features

- **Speed**
  - Available in two modes[2]: Pipeline and Flow-Through
  - No Bus Latency™ (NoBL) architecture for balanced read and write
  - Bus widths: x18, x36
- **Features**
  - ECC to detect and correct single-bit errors
  - Two voltage options: 2.5 V and 3.3 V
  - Industrial and commercial temperature grades
- **Packages**
  - 165-ball BGA
  - 100-pin TQFP

Collateral

Datasheets: 36M NoBL SRAM, 18M NoBL SRAM

NoBL SRAM



Family Table

Option	Density	MPN	RTR	FIT/Mb[4]
NoBL with On-Chip ECC Pipeline	18Mb 36Mb	CY7C1380/2K CY7C1460/2K	250 MT/s	<0.01
NoBL with On-Chip ECC Flow-Through	18Mb 36Mb	CY7C1381/3K CY7C1461/3K	133 MT/s	<0.01

Availability

Production: Now

[1] Error-correcting code: Data encoded with extra parity bits to detect and correct bit errors, including unavoidable errors due to background radiation
[2] Modes of synchronous SRAM operation that optimize either read latency (Flow-Through) or operating frequency (Pipeline)
[3] Modes of operation in Pipeline mode where the output driver is tri-stated after either a single cycle (SCD) or dual cycle (DCD) of issuing the deselect command
[4] The projected failure rate of a device; one FIT/Mb equals one failure per billion device hours per megabit of data

Flash Memory Automotive Family

CYPRESS
EMBEDDED IN TOMORROW™

NOR Flash Memory Automotive Family

CYPRESS
EMBEDDED IN TOMORROW™

NOR Flash Memory Automotive Family Decoder

S 25 H S 512 T

Technology:	J = 110-nm Floating Gate (FG)	N = 110-nm MirrorBit® (MB)	1 = 63-nm DRAM (DR)	
	K = 90-nm FG	P = 90-nm MB		
	L = 65-nm FG	S = 65-nm MB		
	M = 50-nm FG	T = 45-nm MB		
Density:	008 = 8Mb	064 = 64Mb	512 = 512Mb	04G = 4Gb
	016 = 16Mb	128 = 128Mb	01G = 1Gb	
	032 = 32Mb	256 = 256Mb	02G = 2Gb	
Voltage:	D = 2.5 V	L = 3.0 V	S = 1.8 V	
Family:	A = Standard Address-Data Parallel (ADP)			
	C = Burst Mode ADP			
	F = Serial			
	G = Page Mode			
	H = High-Performance Serial			
	J = Simultaneous Read/Write ADP			
	K = HyperBus™			
	P = Page Mode Simultaneous Read/Write ADP			
Series:	25 = SPI	26 = HyperBus™	27 = HyperRAM™	28 = Octal
	29 = Parallel	70 = Stacked Die	79 = Dual Quad SPI	
Prefix:	S			

NOR Flash Memory Automotive Product Portfolio: New Products

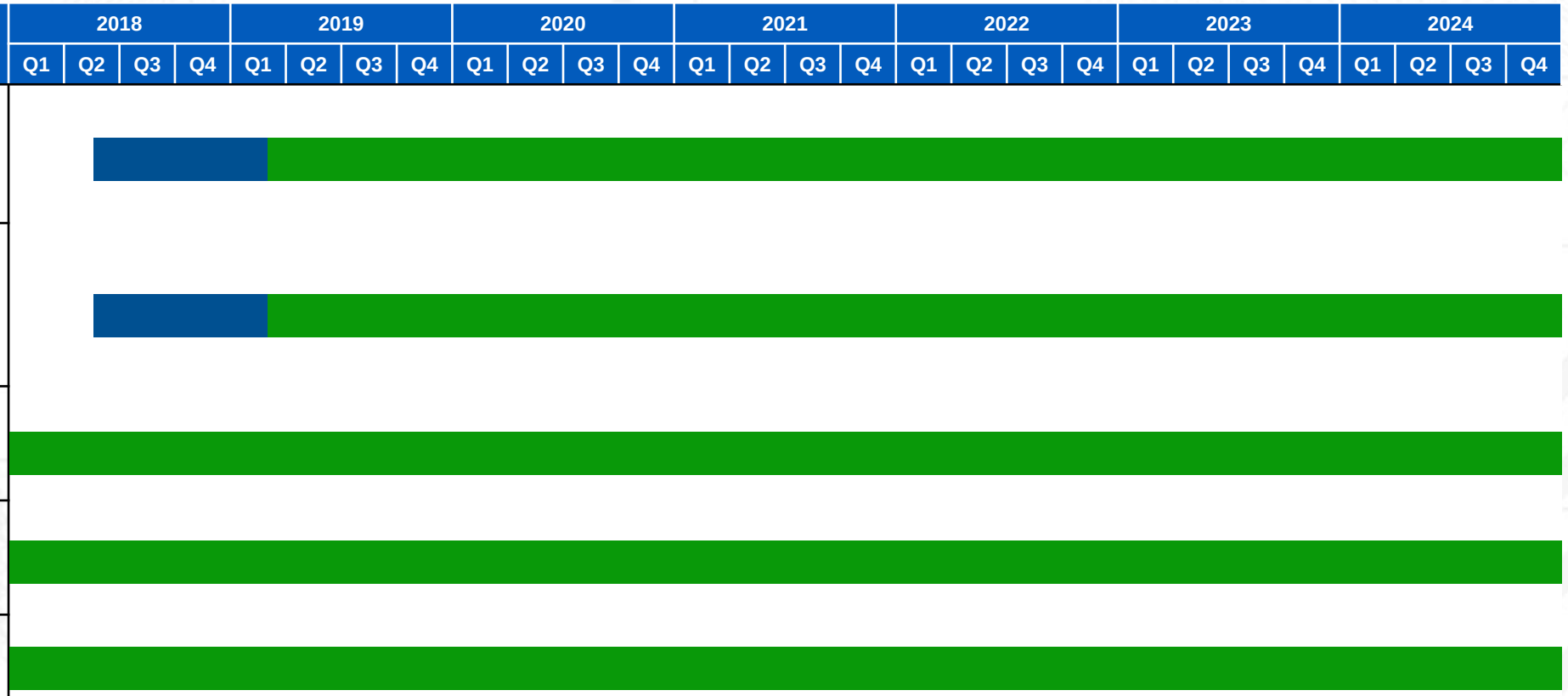
Family	Interface	Sector Size	Series	Voltage	Densities	Lead	Tech	2018	2019	2020	2021	2022		
Semper™ Flash	Quad SPI	Hybrid	S25HS-T S25HL-T	1.8 V 3.0 V	256Mb–4Gb	512Mb	45nm MB							
	HyperBus™[1]		S26HS-T S26HL-T	1.8 V 3.0 V	256Mb–4Gb	512Mb	45nm MB							
	Octal[1]		S28HS-T S28HL-T	1.8 V 3.0 V	256Mb–4Gb	512Mb	45nm MB							
QSPI	QSPI	Hybrid	S25FS-S	1.8 V	64Mb–1Gb	-	65nm MB							
			S25FL-S	3.0 V	128Mb–1Gb	-	65nm MB							
			S25FL-L	3.0 V	64–256Mb	-	65nm FG							
Dual Quad SPI	QSPI	Hybrid	S79FS-S S79FL-S	1.8 V 3.0 V	256Mb–1Gb	-	65nm MB							
HyperFlash	HyperBus	Hybrid	S26KS-S S26KL-S	1.8 V 3.0 V	128–512Mb	-	65nm MB							
HyperRAM™	HyperBus	N/A	S27KS-1 S27KL-1	1.8 V 3.0 V	64–256Mb	-	63nm DR							
Parallel	Parallel	Hybrid	S29GL-T	3.0V	512Mb-2Gb	-	45nm MB							

[1] JEDEC xSPI Compliant

Concept Samples Production EOL

x8 Memory Automotive Roadmap

Product Family	Density	(Prod[1]) [EOL]
S28HS-T[2] (1.8 V) S28HL-T[2] (3.0 V) Semper™ Flash with Octal Interface 45-nm MB[3]	4Gb[3] 2Gb[3] 1Gb 512Mb 256Mb	(TBD) (TBD) (Q3'19) (Q1'19) (Q3'20)
S26HS-T[2] (1.8 V) S26HL-T[2] (3.0 V) Semper Flash with HyperBus™ Interface 45-nm MB[3]	4Gb[3] 2Gb[3] 1Gb 512Mb 256Mb	(TBD) (TBD) (Q3'19) (Q1'19) (Q3'20)
S26KS-S (1.8 V) S26KL-S (3.0 V) HyperFlash 65-nm MB[3]	512Mb 256Mb 128Mb	
S79FS-S (1.8 V) S79FL-S (3.0 V) QSPI 65-nm MB[3]	1Gb[5] 512Mb[5] 256Mb[5]	
S27KS-1 (1.8 V) S27KL-1 (3.0 V) HyperRAM 63-nm DRAM	256Mb[6] 128Mb[6] 64Mb	(TBD)



[1] AEC-Q100
[2] JEDEC xSPI Compliant
[3] Hybrid Sector
[4] Stacked Die
[5] S79 Series (stacked die)
[6] S70 series (stacked die)

Products supported by Longevity Program unless noted

Concept
Samples
Production
EOL - LTB
EOL - LTS

x8 Serial Memory Automotive Portfolio

	HyperRAM™ S27KL-1 63-nm DR, 3.0 V	HyperRAM S27KS-1 63-nm DR, 1.8 V	Dual Quad SPI S79FL-S[1, 2] 65-nm MB, 3.0 V	HyperFlash S26KL-S[1] 65-nm MB, 3.0 V	Semper™ Flash[3] S26HL-T[1, 4] 45-nm MB, 3.0 V	Semper Flash[5] S28HL-T[1, 4] 45-nm MB, 3.0 V	Dual Quad SPI S79FS-S[1, 2] 65-nm MB, 1.8 V	HyperFlash S26KS-S[1] 65-nm MB, 1.8 V	Semper Flash[3] S26HS-T[1, 4] 45-nm MB, 1.8 V	Semper Flash[5] S28HS-T[1, 4] 45-nm MB, 1.8 V
≥256Mb	**Density** Initial Access/DDR Clock * Temperature Range All parts supported by Longevity Program unless noted		**Density (S79)** SDR Clock / DDR Clock * Temperature Range		**4Gb[7, 8]** 80 ns/166 MHz * A, B, M **2Gb[7, 8]** 80 ns/166 MHz * A, B, M Q418 **1Gb** Q319 80 ns/166 MHz * A, B, M Q218 **512Mb** Q119 80 ns/166 MHz * A, B, M Q419 **256Mb** Q320 80 ns/166 MHz * A, B, M	**4Gb[7, 8]** 80 ns/166 MHz * A, B, M **2Gb[7, 8]** 80 ns/166 MHz * A, B, M Q418 **1Gb** Q319 80 ns/166 MHz * A, B, M Q218 **512Mb** Q119 80 ns/166 MHz * A, B, M Q419 **256Mb** Q320 80 ns/166 MHz * A, B, M			**4Gb[7, 8]** 80 ns/200 MHz * A, B, M **2Gb[7, 8]** 80 ns/200 MHz * A, B, M Q418 **1Gb** Q319 80 ns/200 MHz * A, B, M Q218 **512Mb** Q119 80 ns/200 MHz * A, B, M Q419 **256Mb** Q320 80 ns/200 MHz * A, B, M	**4Gb[7, 8]** 80 ns/200 MHz * A, B, M **2Gb[7, 8]** 80 ns/200 MHz * A, B, M Q418 **1Gb** Q319 80 ns/200 MHz * A, B, M Q218 **512Mb** Q119 80 ns/200 MHz * A, B, M Q419 **256Mb** Q320 80 ns/200 MHz * A, B, M
	256Mb[6, 7] 36 ns/100 MHz * I, A, V, B	**256Mb[6.7]** 36 ns/166 MHz * I, A, V, B	**1Gb** 133 MHz/80 MHz * A, B **512Mb** 133 MHz/80 MHz * A, B **256Mb** 133 MHz/80 MHz * A, B	**512Mb** 96 ns/166 MHz * A, B, M **256Mb** 96 ns/166 MHz * A, B, M			**1Gb** 133 MHz/102 MHz * A, B **512Mb** 133 MHz/80 MHz * A, B **256Mb** 133 MHz/80 MHz * A, B	**512Mb** 96 ns/166 MHz * A, B, M **256Mb** 96 ns/166 MHz * A, B, M		
64–128Mb	**128Mb[6]** 36 ns/100 MHz * A, B **64Mb** 36 ns/100 MHz * A, B	**128Mb[6]** 36 ns/166 MHz * A, B **64Mb** 36 ns/166 MHz * A, B		**128Mb** 96 ns/166 MHz * A, B, M				**128Mb** 96 ns/166 MHz * A, B, M		

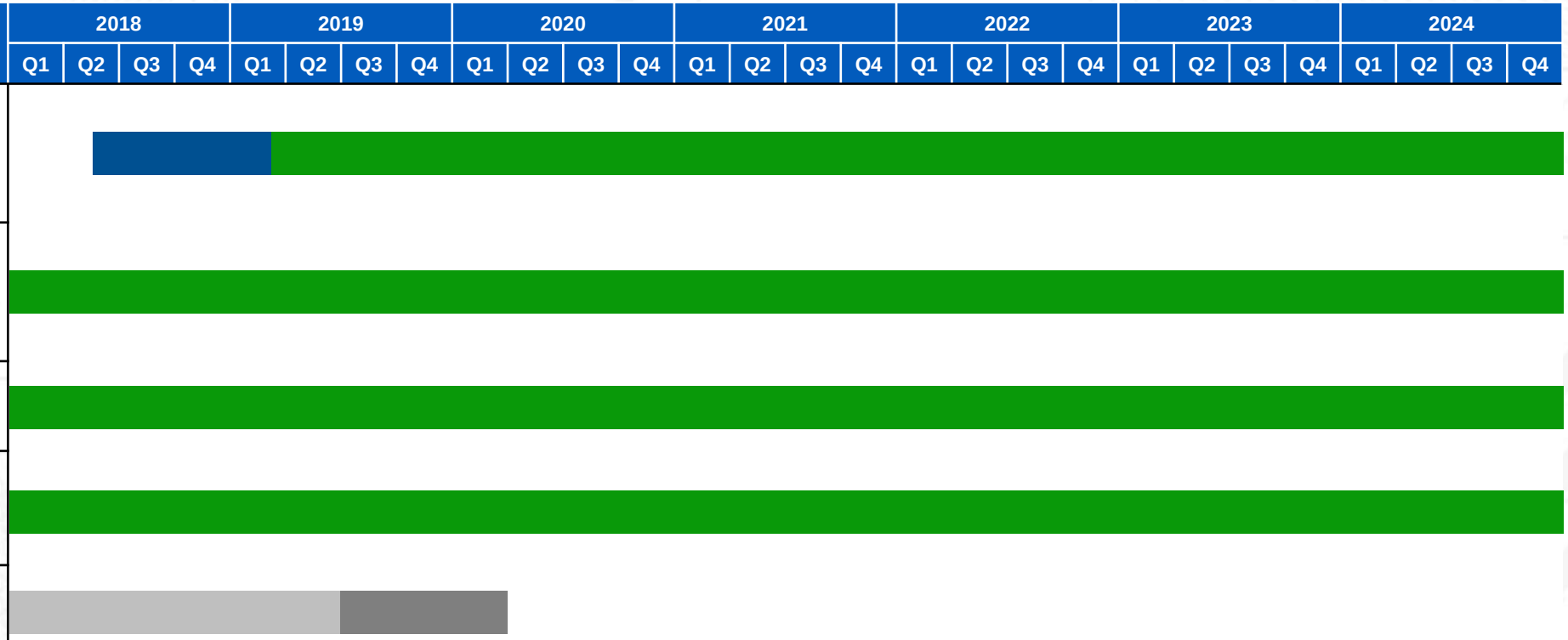
[1] Hybrid Sector
[2] S79 series (stacked die)
[3] With HyperBus™ Interface
[4] JEDEC xSPI Compliant
[5] With Octal Interface
[6] S70 series (stacked die)
[7] Contact Sales
[8] Stacked die

* A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C
B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C
M = Automotive, AEC-Q100 Grade 1: -40°C to +125°C

Status: Concept, Development, Sampling, Production
Availability: QQYY
EOL (Last-Time-Ship): QQYY

x4 NOR Flash Memory Automotive Roadmap

Product Family	Density	(Prod[1]) [EOL]
S25HS-T (1.8 V) S25HL-T (3.0 V) Semper™ Flash with QSPI 45-nm MB[2]	4Gb[3] 2Gb[3] 1Gb 512Mb 256Mb	(TBD) (TBD) (Q3'19) (Q1'19) (Q3'20)
S25FS-S (1.8 V) S25FL-S[3] (3.0 V) QSPI 65-nm MB[2]	1Gb[6] 512Mb 256Mb 128Mb[7] 64Mb[8]	
S25FL-L (3. 0 V) QSPI 65-nm FG[4]	256Mb 128Mb 64Mb	
S25FL-P (3.0 V) QSPI 90-nm MB[2]	256Mb[6] 128Mb[9] 64Mb 32Mb	
S25FL1-K (3.0 V) QSPI 90-nm FG[4]	64Mb 32Mb 16Mb	[Q1'20] [Q1'20] [Q1'20]



[1] AEC-Q100
[2] Hybrid Sector
[3] VIO 1.8V to 3.0V
[4] Uniform Sector
[5] Stacked Die
[6] S70 Series (stacked die)
[7] S25FL127S and S25FL128S
[8] FS-S only
[9] S25FL128P and S25FL129P

Products supported by Longevity Program unless noted

Concept
Samples
Production
EOL - LTB
EOL - LTS

x4 NOR Flash Memory Automotive Portfolio

	QSPI S25FL1-K[1] 90 nm, 3.0 V	QSPI S25FL-P[1] 90 nm, 3.0 V	QSPI S25FL-S[1] 65 nm, 3.0 V	QSPI S25FL-L[2] 65 nm, 3.0 V	Semper™ Flash[3] S25HL-T[1] 45 nm, 3.0 V	QSPI S25FS-S[1] 65 nm, 1.8 V	Semper Flash[3] S25HS-T[1] 45 nm, 1.8 V
≥256Mb	**Density (Name)** SDR Clock / DDR Clock * Temp Range All parts supported by Longevity Program unless noted	**256Mb**[5] 104 MHz / -- * A	**1Gb**[5] 133 MHz / 80 MHz * A, B, M **512Mb** 133 MHz / 80 MHz * A, B, M **256Mb** 133 MHz / 80 MHz * A, B, M	**256Mb** 133 MHz / 66 MHz * A, B, M	**4Gb**[4] 166 MHz / 102 MHz * A, B, M **2Gb**[4] 166 MHz / 102 MHz * A, B, M Q418 **1Gb** Q219 166 MHz / 102 MHz * A, B, M Q218 **512Mb** Q119 166 MHz / 102 MHz * A, B, M Q419 **512Mb** Q320 166 MHz / 102 MHz * A, B, M	**1Gb**[5] 133 MHz / 80 MHz * A, B, M **512Mb** 133 MHz / 80 MHz * A, B, M **256Mb** 133 MHz / 80 MHz * A, B, M	**4Gb**[4] 166 MHz / 102 MHz * A, B, M **2Gb**[4] 166 MHz / 102 MHz * A, B, M Q418 **1Gb** Q219 166 MHz / 102 MHz * A, B, M Q218 **512Mb** Q119 166 MHz / 102 MHz * A, B, M Q419 **512Mb** Q320 166 MHz / 102 MHz * A, B, M
64–128Mb	Q120 **64Mb** 108 MHz / -- * A, B	**128Mb**[6] 104 MHz / -- * A, B **128Mb**[7] 104 MHz / -- * A, B **64Mb** 104 MHz / -- * A, B	**128Mb**[8] 133 MHz / 80 MHz * A, B, M **128Mb**[9] 108 MHz / -- * A, B	**128Mb** 133 MHz / 66 MHz * A, B, M **64Mb** 108 MHz / 54 MHz * A, B, M		**128Mb** 133 MHz / 80 MHz * A, B, M **64Mb** 133 MHz / 80 MHz * A, B, M	
≤32Mb	Q120 **32Mb** 108 MHz / -- * A, B Q120 **16Mb** 108 MHz / -- * A, B	**32Mb** 104 MHz / -- * A, B					

[1] Hybrid Sector
[2] Uniform Sector
[3] With QSPI
[4] Stacked die
[5] S70 series (stacked die)

[6] S25FL129P Quad SPI
[7] S25FL128P Dual SPI
[8] S25FL128S 133-MHz SDR / 80-MHz DDR
[9] S25FL127S 108-MHz SDR

* A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C
B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C
M = Automotive, AEC-Q100 Grade 1: -40°C to +125°C

Status	Concept	Development	Engineering Sampling	AEC-Q100/ Production
Availability			QQYY	QQYY
EOL (Last-Time-Ship)			QQYY	QQYY

CYPRESS EMBEDDED IN TOMORROW™

Parallel and Burst Parallel NOR Flash Memory Automotive Roadmap

Product Family	Density	(Prod[1]) [EOL]
S29GL-T[2] (3.0 V) 45-nm MB	2Gb[4] 1Gb 512Mb	
S29GL-S[2] (3.0 V) 65-nm MB	2Gb[4] 1Gb 512Mb 256Mb 128Mb 64Mb	
S29GL-N[2] (3.0 V) 110-nm MB	64Mb 32Mb	
S29PL-J[2, 3] (3.0 V) 110-nm FG	128Mb 64Mb 32Mb	[Q1'19] [Q1'19] [Q1'19]
S29JL-J[3] (3.0 V) 110-nm FG	64Mb 32Mb	
S29AL-J (3.0 V) 110-nm FG	16M	
S29AL-J (3.0 V) 110-nm FG	8Mb	[Q1'19]
S29AS-J (1.8 V) 110-nm FG	16Mb 8Mb	
S29CD-J (2.5 V) Burst Parallel 110-nm FG	32Mb 16Mb	
S29CL-J (3.0 V) Burst Parallel 110-nm FG	32Mb 16Mb	

[1] AEC-Q100
[2] Supports Page Mode
[3] Supports Simultaneous Read/Write Operation
[4] S70 series (stacked die)

Products supported by Longevity Program unless noted

Concept
Samples
Production
EOL - LTB
EOL - LTS

Parallel and Burst Parallel NOR Flash Memory Automotive Portfolio

	Burst Parallel S29CL-J[1] 110 nm, 3.0 V	Burst Parallel S29CD-J[1] 110 nm, 2.5 V	S29AS-J 110 nm, 1.8 V	S29AL-J 110 nm, 3.0 V	S29JL-J[2] 110 nm, 3.0 V	S29PL-J[2, 3] 110 nm, 3.0 V	S29GL-N[3] 110 nm, 3.0 V	S29GL-S[3] 65 nm, 3.0 V	S29GL-T[3] 45 nm, 3.0 V
≥256Mb	**Density** Initial / Page Access * Temp Range All parts supported by Longevity Program unless noted							**2Gb**[4] 110 ns / 20 ns * A, B **1Gb** 100 ns / 15 ns * A, B **512Mb** 100 ns / 15 ns * A, B **256Mb** 90 ns / 15 ns * A, B	**2Gb**[4] 110 ns / 20 ns * A, B **1Gb** 100 ns / 15 ns * A, B **512Mb** 100 ns / 15 ns * A, B
64–128Mb					**64Mb** 55 ns / -- * A	**128Mb** Q119 60 ns / 20 ns * A **64Mb** Q119 55 ns / 20 ns * A	**64Mb** 90 ns / 25 ns * A	**128Mb** 90 ns / 15 ns * A, B **64Mb** 70 ns / 15 ns * A, B	
≤32Mb	**32Mb** 54 ns / 75 MHz * A , M, T **16Mb** 54 ns / 66 MHz * A , M, T	**32Mb** 54 ns / 75 MHz * A , M, T **16Mb** 54 ns / 66 MHz * A , M, T	**16Mb** 70 ns / -- * A **8Mb** Q119 70 ns / -- * A	**16Mb** **55 ns / --** * A, M **8Mb** 55 ns / -- * A, M	**32Mb** 60 ns / -- * A	**32Mb** Q119 55 ns / 20 ns * A	**32Mb** 90 ns / 25 ns * A		

[1] Address Data Parallel (ADP) Burst
[2] Supports Simultaneous Read/Write Operation
[3] Supports Page Mode
[4] S70 series (stacked die)

* A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C
B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C
M = Automotive, AEC-Q100 Grade 1: -40°C to +125°C
T = Automotive, AEC-Q100 Grade 0: -40°C to +145°C

Status	Concept	Development	Engineering Sampling	AEC-Q100/ Production
Availability			QQYY	QQYY
EOL (Last-Time-Ship)				QQYY

NAND Flash Memory Automotive Family

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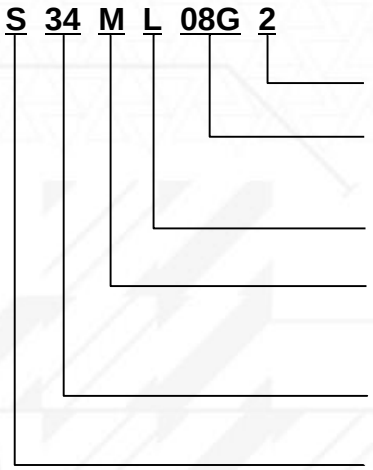
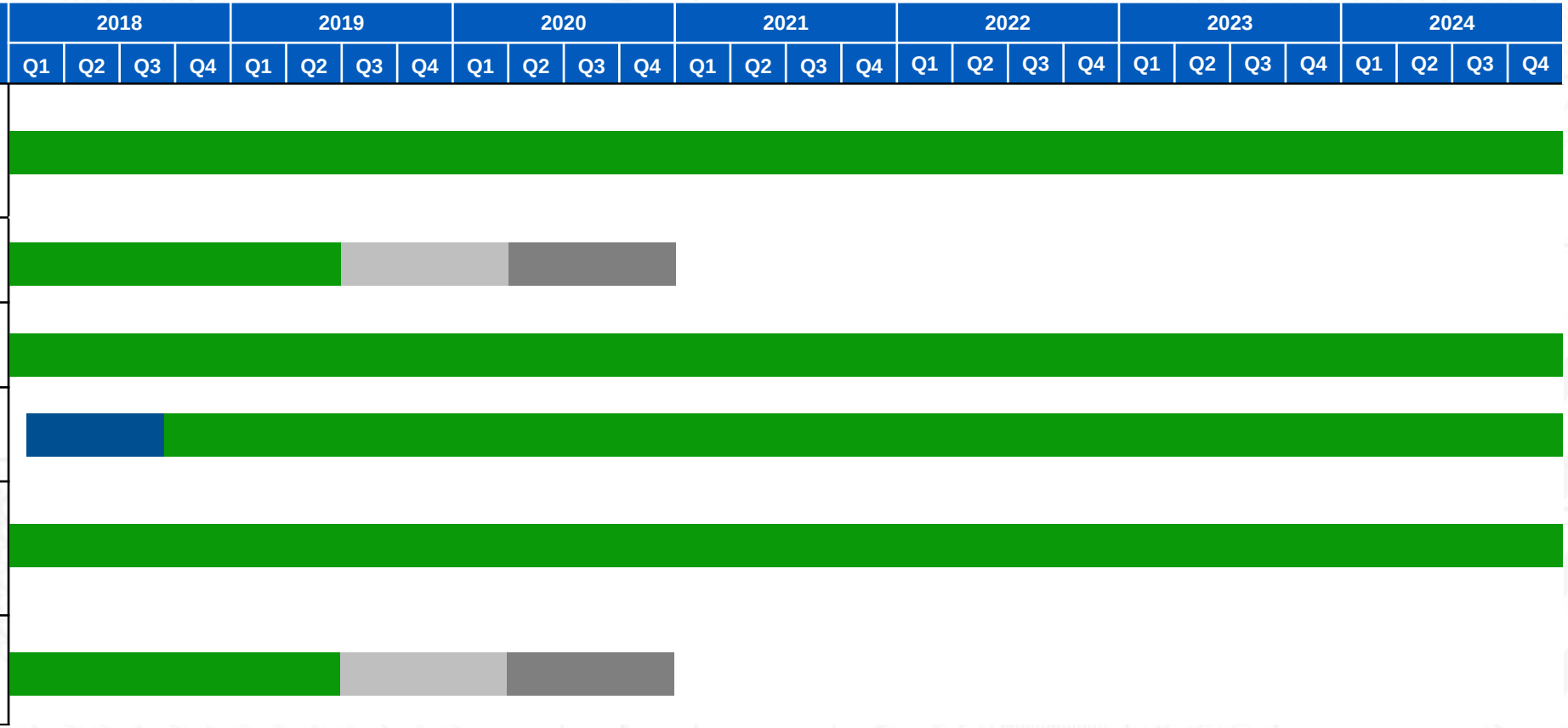
NAND Flash Memory Automotive Family Decoder



Technology:	1 = 4x-nm	2 = 32-nm	3 = 16-nm
Density:	01G = 1Gb 02G = 2Gb	04G = 4Gb 08G = 8Gb	16G = 16Gb
Voltage:	L = 3.0 V	S = 1.8 V	
Family:	M = NAND (Address-Data Multiplexed) S = SecureNAND (Address-Data Multiplexed)		
Series:	34 = NAND		
Prefix:	S		

SLC NAND Flash Memory Automotive Roadmap

Product Family	Density	(Prod[1]) [EOL]
S34MS-2 (1.8 V) 32-nm SLC ONFI[2] 1.0	16Gb 8Gb 4Gb 2Gb 1Gb	
S34MS-1 (1.8 V) 4x-nm SLC ONFI[2] 1.0	4Gb 2Gb 1Gb	[Q4'20] [Q4'20] [Q4'20]
S34SL-2 (3.0 V) 32-nm SLC ONFI[2] 1.0	4Gb 2Gb 1Gb	
S34ML-3 (3.0 V) 16-nm SLC ONFI[2] 1.0	16Gb 8Gb 4Gb	(Q4'18) (Q4'18) (Q3'18)
S34ML-2 (3.0 V) 32-nm SLC ONFI[2] 1.0	16Gb 8Gb 4Gb 2Gb 1Gb	
S34ML-1 (3.0 V) 4x-nm SLC ONFI[2] 1.0	8Gb 4Gb 2Gb 1Gb	[Q4'20] [Q4'20] [Q4'20] [Q4'20]



[1] AEC-Q100
[2] Open NAND Flash Interface

Products supported by Longevity Program unless noted

Concept
Samples
Production
EOL - LTB
EOL - LTS

SLC NAND Flash Memory Automotive Portfolio

	S34ML-1[1] 4x nm, 3.0 V SLC, ONFI 1.0[2]	S34ML-2[3] 32 nm, 3.0 V SLC, ONFI 1.0[2]	S34ML-3[1] 16 nm, 3.0 V SLC, ONFI 1.0[2]	S34SL-2[3, 4] 32 nm, 3.0 V SLC, ONFI 1.0[2]	S34MS-1[1] 4x nm, 1.8 V SLC, ONFI 1.0[2]	S34MS-2[3] 32 nm, 1.8 V SLC, ONFI 1.0[2]
8–16Gb	**Density; Bus Width** Interface Bandwidth * Temp Range All parts supported by Longevity Program unless noted **8Gb; x8** Q420 40 MBps * A, B	**16Gb; x8** 40 MBps * I, V[5] **8Gb; x8** 40 MBps * A, B	Q318 **16Gb; x8** Q418 40 MBps * A, B Q318 **8Gb; x8** Q418 40 MBps * A, B			**16Gb; x8** 40 MBps * I, V[5] **8Gb; x8** 40 MBps * A, B
1–4Gb	**4Gb; x8/16** Q420 40 MBps * A, B **2Gb; x8/16** Q420 40 MBps * A, B **1Gb; x8** Q420 40 MBps * A, B	**4Gb; x8/16** 40 MBps * A, B **2Gb; x8/16** 40 MBps * A, B **1Gb; x8/16** 40 MBps * A, B	**4Gb; x8** Q318 40 MBps * A, B	**4Gb; x8** 40 MBps * I, V **2Gb; x8** 40 MBps * I, V[5] **1Gb; x8** 40 MBps * I, V	**4Gb; x8** Q420 40 MBps * A, B **2Gb; x8/16** Q420 40 MBps * A, B **1Gb; x8/16** Q420 40 MBps * A, B	**4Gb; x8/16** 40 MBps * A, B **2Gb; x8/16** 40 MBps * I, V[5] **1Gb; x8/16** 40 MBps * A, B

[1] 1-bit error-correcting code (ECC)
[2] Open NAND Flash Interface
[3] 4-bit error-correcting code (ECC)
[4] SecureNAND™: Cypress's SLC NAND Flash Memory with full-capacity volatile and nonvolatile block protection
[5] Contact Sales

* I = Industrial: -40°C to +85°C
A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C
V = Industrial-plus: -40°C to +105°C
B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C

	Concept	Development	Engineering Sampling	AEC-Q100/ Production
Status				
Availability			QQYY	QQYY
EOL (Last-Time-Ship)				QQYY

Flash and RAM Memory Automotive MCP

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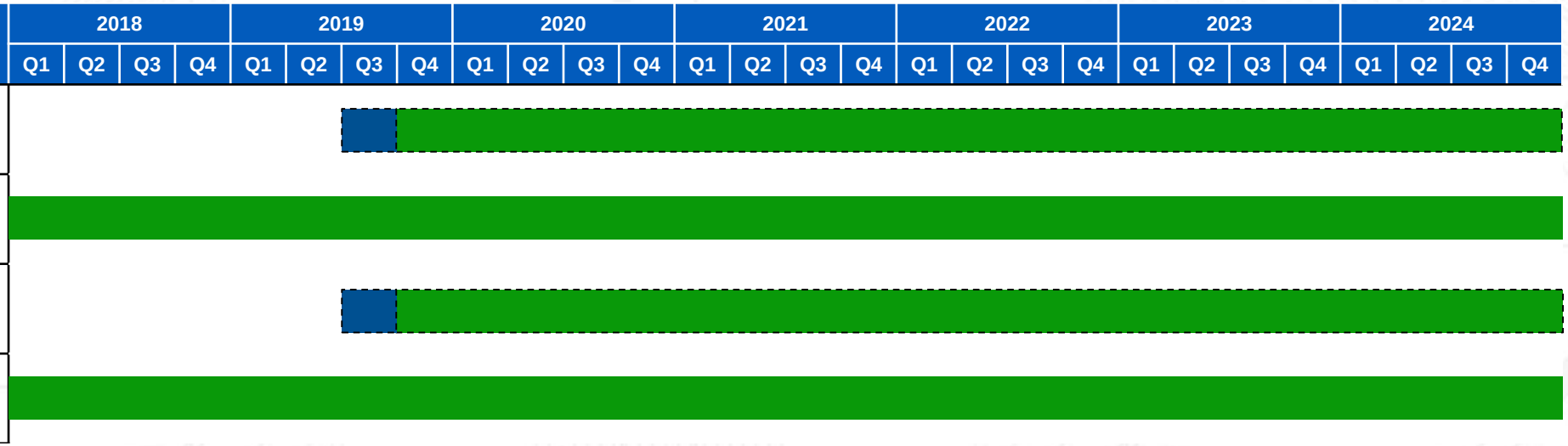
Flash and RAM Memory Automotive MCP Decoder

S 71 K S 512 R D

RAM Density:	A = 16Mb	B = 32Mb	C = 64Mb	D = 128Mb	E = 256Mb
Flash Technology:	S = 65-nm MirrorBit (MB)		T = 45-nm MB		
Flash Density:	128 = 128Mb	256 = 256Mb	512 = 512Mb	01G = 1Gb	
Voltage:	L = 3.0 V	S = 1.8 V			
Family:	H = High-Performance Serial K = HyperFlash				
Series:	71 = NOR Flash + pSRAM				
Prefix:	S				

Flash and RAM Memory Automotive MCP Roadmap

Product Family Flash / RAM	Flash / RAM Density	(Prod[1]) [EOL]
S71HS-T (1.8 V) 45-nm Semper™ Flash / HyperRAM™	1Gb / 64Mb 512Mb / 64Mb	(TBD) (TBD)
S71KS-S (1.8 V) 65-nm HyperFlash / HyperRAM	512Mb / 64Mb 256Mb / 64Mb 128Mb / 64Mb	 (TBD) (TBD)
S71HL-T (3.0 V) 45-nm Semper Flash / HyperRAM	1Gb / 64Mb 512Mb / 64Mb	(TBD) (TBD)
S71KL-S (3.0 V) 65-nm HyperFlash / HyperRAM	512Mb / 64Mb 256Mb / 64Mb 128Mb / 64Mb	 (TBD)



[1] AEC-Q100

Products supported by Longevity Program unless noted

Concept
Samples
Production
EOL - LTB
EOL - LTS

Flash and RAM Memory Automotive MCP Portfolio

	S71KL-S 65-nm MB, 3.0 V	S71HL-T 45-nm MB, 3.0 V	S71KS-S 65-nm MB, 1.8 V	S71HS-T 45-nm MB, 1.8 V
≥256Mb	**Flash Density** **RAM Density** * Temp Range			
	All parts supported by Longevity Program unless noted	**1Gb[1]** **64Mb[2]** * A, B		**1Gb[1]** **64Mb[2]** * A, B
	512Mb[1] **64Mb[2]** * A, B	**512Mb[1]** **64Mb[2]** * A, B	**512Mb[1]** **64Mb[2]** * A, B	**512Mb[1]** **64Mb[2]** * A, B
	256Mb[1] **64Mb[2]** * A, B		**256Mb[1]** **64Mb[2]** * A, B	
64–128Mb	**128Mb[1]** **64Mb[2]** * A, B		**128Mb[1]** **64Mb[2]** * A, B	

[1] HyperFlash
[2] HyperRAM™

* A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C
B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C

x8 NOR Flash Memory Packages

Family	Interface	Series	Density	Device	SOIC-16 300 mil	BGA24 8 x 8 mm 5 x 5 Ball	BGA24 8 x 6 mm 5 x 5 Ball	KGD
Semper™ Flash	HyperBus™	HS-T	512Mb	S26HS512T & S28HS512T			UD	CF
			1Gb	S26HS01GT & S28HS01GT		UD		CF
			2Gb	S26HS02GT & S28HS02GT		CF		
			4Gb	S26HS04GT & S28HS04GT		CF		
		HL-T	512Mb	S26HL512T & S28HL512T			UD	CF
			1Gb	S26HL01GT & S28HL01GT		UD		CF
			2Gb	S26HL02GT & S28HL02GT		CF		
			4Gb	S26HL04GT & S28HL04GT		CF		
HyperFlash		KS-S	128Mb	S26KS128S			✓	CF
			256Mb	S26KS256S			✓	CF
			512Mb	S26KS512S			✓	CF
			1Gb	S70KS01GS			✓	
		KL-S	128Mb	S26KL128S			✓	CF
			256Mb	S26KL256S			✓	CF
			512Mb	S26KL512S			✓	CF
			1Gb	S70KL01GS			✓	
HyperRAM	HyperBus	KS-1	64Mb	S26KS0641			✓	CF
			128Mb	S70KS1281			✓	
			256Mb	S70KS2561			✓	
		KL-1	64Mb	S26KL0641			✓	CF
			128Mb	S70KL1281			✓	
			256Mb	S70KL2561			✓	
Dual Quad SPI	QSPI	FS-S Dual Quad	256Mb	S79FS256S	✓			
			512Mb	S79FS512S	✓			
			1Gb	S79FS01GS			✓	
		FL-S Dual Quad	256Mb	S79FL256S	✓			
			512Mb	S79FL512S	✓			
			1Gb	S79FL01GS			✓	

CF = Contact Factory
UD = Under Development

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x4 NOR Flash Memory Packages

Family	Interface	Series	Density	Device	SOIC-8 150 mil	SOIC-8 208 mil	SOIC-16 300 mil	WSON 4 x 4 mm	WSON 6 x 5 mm	WSON 8 x 6 mm	BGA24 8 x 8 mm 5 x 5 Ball	BGA24 8 x 6 mm 5 x 5 Ball	BGA24 8 x 6 mm 4 x 6 Ball	KGD
Semper™ Flash	QSPI	HS-T	512Mb	S25HS512T			CF					UD		CF
			1Gb	S25HS01GT			CF				UD			CF
			2Gb	S25HS02GT							CF			
			4Gb	S25HS04GT							CF			
		HL-T	512Mb	S25HL512T			CF					UD		CF
			1Gb	S25HL01GT			CF				UD			CF
			2Gb	S25HL02GT							CF			
			4Gb	S25HL04GT							CF			
QSPI		FS-S	64Mb	S25FS064S		✓			✓			✓		✓
			128Mb	S25FS128S		✓	CF		✓	✓		✓	✓	CF
			256Mb	S25FS256S			✓			✓		✓	✓	✓
			512Mb	S25FS512S			✓			✓		✓	✓	CF
			1Gb	S70FS01GS			✓					✓		
		FL-S	128Mb	S25FL127S		✓	✓		✓			✓	✓	
			128Mb	S25FL128S			✓			✓		✓	✓	
			256Mb	S25FL256S			✓			✓		✓	✓	
			512Mb	S25FL512S			✓					✓	✓	✓
			1Gb	S70FL01GS			✓					✓		
		FL-P	32Mb	S25FL032P		✓	✓		✓	✓		✓	✓	✓
			64Mb	S25FL064P			✓			✓		✓	✓	✓
			128Mb	S25FL128P			✓			✓				
			128Mb	S25FL129P			✓			✓		✓	✓	
			256Mb	S70FL256P			✓			✓		✓		
		FL-L	64Mb	S25FL064L		✓	UD	✓	UD			✓	✓	CF
			128Mb	S25FL128L		✓	UD		✓			✓	✓	CF
			256Mb	S25FL256L			✓			✓		✓	✓	CF
		FL1-K	16Mb	S25FL116K	✓	✓			✓			✓	✓	✓
			32Mb	S25FL132K	✓	✓		✓	✓			✓	✓	✓
			64Mb	S25FL164K		✓	✓		✓			✓	✓	✓

CF = Contact Factory
UD = Under Development

Parallel and Burst Parallel NOR Flash Memory Packages

Series	Density	Device	48-Ball FBGA (0.8-mm pitch)	48-Ball FBGA (0.5-mm pitch)	56-Ball BGA (0.8-mm pitch)	64-Ball BGA (0.8-mm pitch)	64-Ball Fortified BGA (1.0-mm pitch)	48-Pin TSOP	56-Pin TSOP	80-Ball FBGA (1.0-mm pitch)	80-Pin PQFP	KGD
GL-T	512Mb	S29GL512T			✓		✓		✓			
	1Gb	S29GL01GT			✓		✓		✓			
	2Gb	S70GL02GT					✓					
GL-S	64Mb	S29GL064S	✓				✓	✓	✓			
	128Mb	S29GL128S			✓		✓		✓			
	256Mb	S29GL256S			✓		✓		✓			
	512Mb	S29GL512S			✓		✓		✓			
	1Gb	S29GL01GS					✓		✓			
	2Gb	S70GL02GS					✓					
GL-N	32Mb	S29GL032N	✓				✓	✓	✓			
	64Mb	S29GL064N	✓				✓	✓	✓			
PL-J	32Mb	S29PL032J	✓		✓							
	64Mb	S29PL064J	✓		✓							
	128Mb	S29PL127J				✓			✓			
JL-J	32Mb	S29JL032J	✓					✓				
	64Mb	S29JL064J	✓					✓				
AL-J	8Mb	S29AL008J	✓					✓				
	16Mb	S29AL016J	✓				✓	✓				
AS-J	8Mb	S29AS008J	✓					✓				
	16Mb	S29AS016J	✓	✓				✓				
CD-J	16Mb	S29CD016J								✓	✓	✓
	32Mb	S29CD032J								✓	✓	
CL-J	16Mb	S29CL016J								✓	✓	
	32Mb	S29CL032J								✓	✓	

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SLC NAND and SecureNAND Flash Memory Packages

Family	Density	Device	63-Ball BGA (0.8-mm pitch)	67-Ball BGA (0.8-mm pitch)	48-Pin TSOP
MS-2	1Gb	S34MS01G2	✓	✓	✓
	2Gb	S34MS02G2	✓	✓	✓
	4Gb	S34MS04G2	✓		✓
	8Gb	S34MS08G2	✓		
	16Gb	S34MS16G2	✓		
MS-1	1Gb	S34MS01G1	✓		
	2Gb	S34MS02G1	✓		✓
	4Gb	S34MS04G1	✓		✓
ML-3	4Gb	S34ML04G3	✓		✓
	8Gb	S34ML08G3	✓		✓
	16Gb	S34ML16G3	✓		✓
ML-2	1Gb	S34ML01G2	✓	✓	✓
	2Gb	S34ML02G2	✓	✓	✓
	4Gb	S34ML04G2	✓		✓
	8Gb	S34ML08G2	✓		✓
	16Gb	S34ML16G2	✓		✓
ML-1	1Gb	S34ML01G1	✓		✓
	2Gb	S34ML02G1	✓		✓
	4Gb	S34ML04G1	✓		✓
	8Gb	S34ML08G1	✓		✓
SL-2	1Gb	S34SL01G2	✓		
	2Gb	S34SL02G2	✓		
	4Gb	S34SL04G2	✓		

Flash and RAM Memory MCP Packages

Family	Flash Density	RAM Density	BGA24 8 x 6 mm, 1.0 mm pitch 5 x 5 Ball
S71HS-T	512Mb	64Mb	CF
	1Gb	64Mb	CF
S71KS-S	128Mb	64Mb	✓
	256Mb	64Mb	✓
	512Mb	64Mb	✓
S71HL-T	512Mb	64Mb	CF
	1Gb	64Mb	CF
S71KL-S	128Mb	64Mb	✓
	256Mb	64Mb	✓
	512Mb	64Mb	✓

CF = Contact Factory

Cypress Roadmap: Automotive Timing Solutions

CYPRESS
EMBEDDED IN TOMORROW™

Timing Solutions Portfolio

Programmable | High-Performance | EMI Reduction | Automotive

	Clock Synthesizers	Oscillators	Clock Buffers
High Performance	**CY27410** 4-PLL; Max Freq: 700 MHz 12 Outputs; Diff[1] & SE[1]; PCIe 3.0 VCXO[2]; EMI[3]; 0.7-ps RMS Jitter[4] 1.8 V/2.5 V/3.3 V; Ind[5]; 48-QFN	**CY27430** Q318 4-PLL; Max Freq: 700 MHz 8 Outputs; Diff & SE; PCIe 3.0 VCXO; EMI; 0.7-ps RMS Jitter 1.8 V/2.5 V/3.3 V; Auto A[6] S[7]; 48-QFN	**CY2941x/2x** 1-PLL; Max Freq: 2.1 GHz 1 Output; Diff & SE; 40/100 GbE VCXO; 0.11-ps RMS Jitter; Ind 8-LCC (7 x 5, 5 x 3.2)	**CY51x7** 1-PLL; Max Freq: 2.1 GHz 1 Output; Diff & SE; 40/100 GbE VCXO; 0.11-ps RMS Jitter; Ind 1.8 V/2.5 V/3.3 V; WAFER/DIE	**CY2DPx/CPx** Max Freq: 1.5 GHz 2–10 Outputs; LVPECL; 2.5/3.3 V 0.11-ps Additive Jitter[8]; Ind 8/20-TSSOP; 8-SOIC; 32-TQFP	**CY2DMx/DLx** Max Freq: 1.5 GHz 2–10 Outputs; LVDS, CML; 2.5/3.3 V 0.11-ps Additive Jitter; Ind 8/20-TSSOP; 32-TQFP
	CY29430 1-PLL; Max Freq: 2.1 GHz 1 Output; Diff & SE; 40/100 GbE VCXO; 0.11-ps RMS Jitter; Ind 16-QFN		**CY2Xx (FleXO™)** Q320 1 PLL; Max Freq: 690 MHz 1 Output; LVCMOS, LVDS, LVPECL Freq Margining; 0.6-ps RMS Jitter Ind · 6-LCC (7x5, 5x3.2); 8-TSSOP			
Standard Performance	**CY254x/CY251x** 1–4 PLL; Max Freq: 200 MHz 3–9 Outputs; I²C; EMI; Low Power[9] 100-ps CCJ[10]; Ind; 1.8/2.5/3.0/3.3 V 8-SOIC; 8/16/20-TSSOP; 24-QFN	**CY229x/CY2238x** 3–4 PLL; Max Freq: 166 MHz 3–8 Outputs; CMOS; Low Power 200-ps PPJ[11]; VCXO; Ind; 3.3/5 V 8/16/20-SOIC; 16-TSSOP	**CY25701** 1-PLL; Max Freq: 166 MHz 1 Output; CMOS; EMI 85-ps CCJ; Ind 3.3 V; 4-LCC (5 x 3.2)	**CY2037/ 5037** 1-PLL; Max Freq: 133 MHz 1 Output; CMOS 100-ps CCJ; Ind 3.3/5.0 V; WAFER	**CY230x/EP0x (Zero Delay)** Max Freq: 220 MHz 2–9 Outputs; LVCMOS ; 2.5/3.3/5 V 22-ps CCJ; Ind[5]; Auto A 8/16-SOIC; 16-TSSOP; WAFER	**CY230xNZ/ 2994x (Non-Zero Delay)** Max Freq: 200 MHz 4–18 Outputs; LVCMOS 100-ps Op-Op Skew; Ind 2.5/3.3 V; 8-TSSOP, 16-SOIC
	CY2429x 1-PLL; Max Freq: 200 MHz 2-5 Outputs; HCSL, CMOS; EMI 75-ps CCJ; PCIe 1.1; Ind; Auto A 3.3 V; 16-TSSOP; 32-QFN	**CY2239x** 3–4 PLL; Max Freq: 400 MHz 5–8 Outputs; LVPECL, CMOS; I²C 400-ps PPJ; VCXO; 3.3 V Ind; Auto A E[12]; 16-TSSOP; 32-QFN	**CY5077** 1-PLLMax Freq: 166 MHz 1 Output; CMOS 75-ps CCJ; Ind 1.8/2.5/3.0/3.3 V; WAFER	**CY5057** 1-PLL; Max Freq: 170 MHz 1 Output; CMOS; EMI <200-ps CCJ; Ind 3.3/5.0 V; WAFER	**CY23FS04/08/FP12 (Zero Delay)** Max Freq: 200 MHz 4–12 Outputs; LVCMOS; Fail Safe 200-ps CCJ; Ind; 2.5/3.3 V 16/28-SSOP	**CY7B99x (RoboClock™)** Q319 Max Freq: 200 MHz; 8–13 Outputs Configurable Skew; 2.5/3.3/5.0 V 50-ps CCJ; Ind; 24-SOIC; 32-PLCC 32/44/52/100-TQFP; 100-BGA
	CY22800/801/CY2581x 1-PLL; Max Freq: 200 MHz 1-3 Outputs; CMOS; EMI 110-ps CCJ; VCXO; Ind 3.3 V; 8-SOIC; 8-TSSOP	**CY22050/150** 1-PLL; Max Freq: 200 MHz 6 Outputs; CMOS; I²C 250-ps PPJ; Ind[5] 2.5/3.3 V; 16-TSSOP			**CY23S0x (Zero Delay)** Max Freq: 133 MHz 5–9 Outputs; LVCMOS Spread Aware; 90-ps CCJ; Ind 2.5/3.3 V; 8,16-SOIC; 16-TSSOP	

[1] Differential and single-ended outputs
[2] Voltage-controlled crystal oscillation
[3] Electromagnetic interference reduction using Lexmark profile
[4] Integrated phase noise across 12-kHz to 20-MHz offset
[5] Industrial grade: -40°C to +85°C
[6] AEC-Q100: -40°C to +85°C
[7] AEC-Q100: -40°C to +105°C
[8] Additive RMS phase jitter
[9] Power management options
[10] Cycle-to-cycle jitter
[11] Peak-to-peak period jitter
[12] AEC-Q100: -40°C to +125°C

	Concept	Development	Sampling	Production	EOL
Status					
Availability			QQYY	QQYY	QQYY

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Cypress Roadmap: Automotive PMIC

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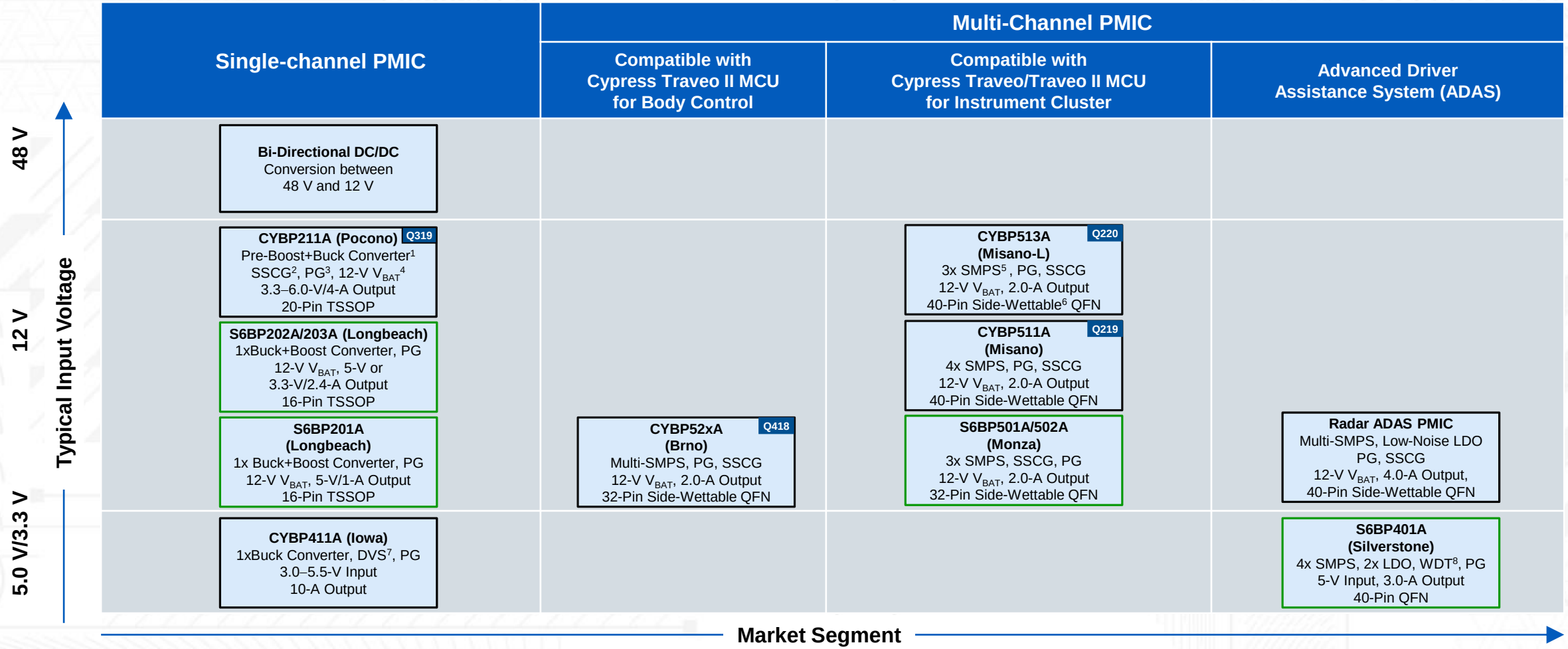
Automotive PMIC Family Portfolio



[1] A general-purpose regulator IC that integrates power MOSFETs
[2] Spread-spectrum clock generator
[3] Power good: An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready
[4] Battery voltage
[5] Switch-mode power supply: A general-purpose regulator IC that uses a switching circuit to up-convert and/or down-convert a voltage source to a different voltage for powering other ICs
[6] A package whose flanks are processed to improve soldering adherence and to simplify the optical inspection, which follows soldering
[7] Dynamic voltage scaling
[8] Watchdog timer

Status: Concept | Development | Sampling | Production
Availability: QQYY | QQYY

S6BP20x

One-Channel Buck-Boost Automotive PMIC

Applications

Instrument clusters, body electronics and ADAS

Features

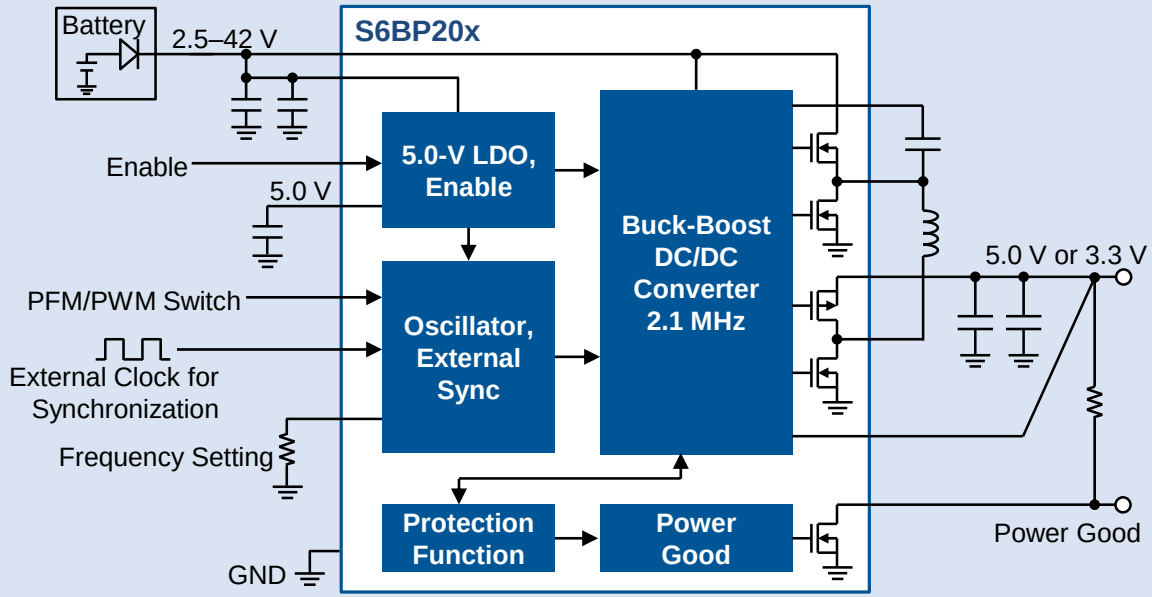
- **1-Channel PMIC:** Synchronous buck-boost converter
- **Wide Input Voltage Range:** 2.5–42 V
- **Low Quiescent Current:** 20 µA
- **Programmable Switching Frequency:** 0.2–2.1 MHz
  - Synchronization with external clock from 200 kHz to 400 kHz
  - Autonomous PFM/PWM[1] switching
- **BOM Integration:** Built-in switching transistors
- **System Safety Function[2] Support:**
  - Overvoltage protection (OVP), overcurrent protection (OCP), undervoltage lock-out (UVLO), thermal shutdown (TSD)
  - Window-monitoring voltage supervisors with power good[3] pin
- **Operating Temperature Range:** -40°C to +125°C
- **Package:** 16-pin thermally enhanced TSSOP (5-mm x 6.4-mm)
- **Qualification:** AEC-Q100 Grade-1

Collateral

Datasheet: S6BP201A, S6BP202A and S6BP203A
Evaluation Kit: S6BP201A, S6BP202A and S6BP203A

[1] Pulse-frequency modulation/pulse-width modulation
[2] A set of system functions that protect ECUs from damage and/or from generating erroneous results during abnormal power supply conditions
[3] An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready
[4] S6BP201A and S6BP202A have factory-selectable options of output voltage, power-on-reset time, UVP/OVP threshold, and SYNC Function

S6BP20x: One-Channel Buck-Boost Automotive PMIC



Family Table

Output Voltage[4]	Max. Output Current	MPN	UVP/OVP Threshold
5.0–5.2 V	1.0 A	S6BP201A	±4.5%
5.0–5.2 V	2.4 A	S6BP202A	±4.5%, ±8.0%
3.3 V	2.4 A	S6BP203A	±8.0%

Availability

Sampling: Now **Production:** Now

S6BP50x

Three-Channel Automotive PMIC

Applications

Low-end to mid-range hybrid automotive cluster systems

Features

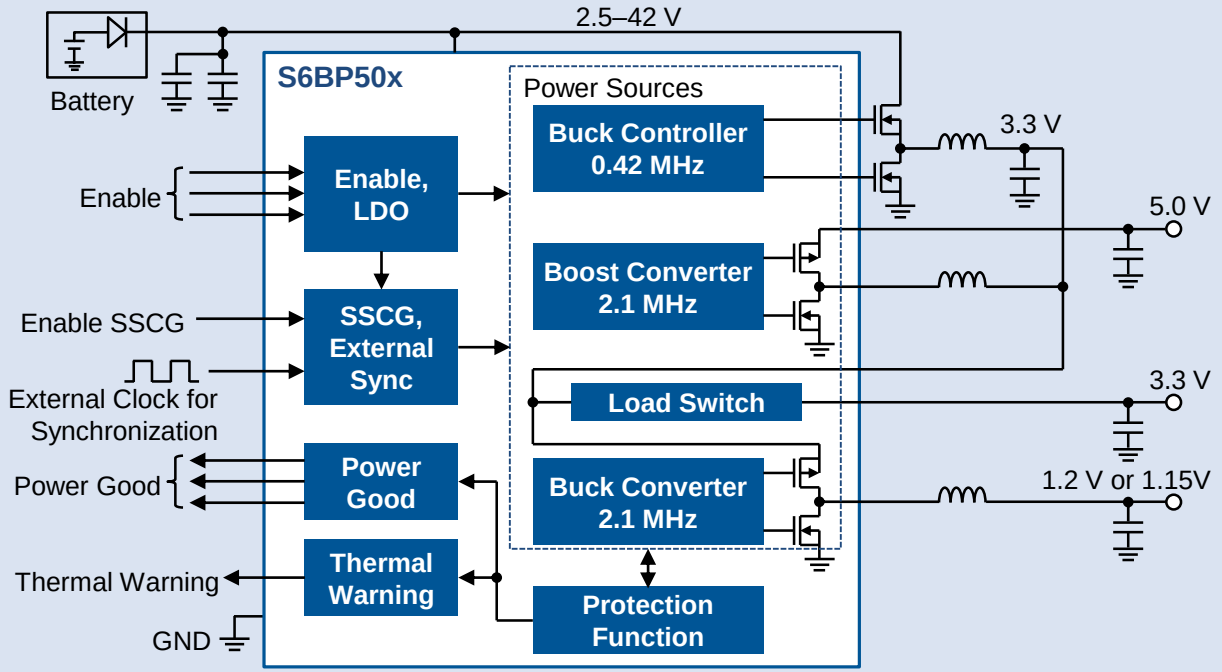
- **3-Channels:** Buck controller with load switch, boost converter, buck converter
- **Wide Range Input:** 2.5-42 V
- **Low Quiescent Current:** 15 µA
- **High Switching Frequency:**
  - Boost converter and buck converter: 2.1 MHz
  - Built-in spread-spectrum clock generator (SSCG)
  - Synchronization with external clock from 1.8–2.4 MHz
- **System Safety Function[1] Support:**
  - Overvoltage protection (OVP), overcurrent protection (OCP), undervoltage lock-out (UVLO), thermal shutdown (TSD)
  - Thermal warning
  - Window-monitoring voltage supervisors with independent power good[2] pins
- **Operating Temperature Range:** -40°C to +105°C
- **Package:** 32-pin thermally enhanced side-wettable[3] QFN (5-mm x 5-mm)
- **Qualification:** AEC-Q100 Grade-2

Collateral

Preliminary Datasheet: S6BP501A/S6BP502A
Evaluation Kit: S6SBP501A00VA1001/S6SBP502A00VA1001

[1] A set of system functions that protect ECUs from damage and/or from generating erroneous results during abnormal power supply conditions
[2] An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready
[3] A package whose flanks are processed to improve soldering adherence and to simplify the optical inspection, which follows soldering
[4] Output voltages are finely adjustable with external resistive dividers

S6BP50x: Three-Channel Automotive PMIC



Family Table

Buck Converter Output Specification[4]	MPN	Buck Controller Output Specification	Boost Converter Output Specification
1.15 V, 1.4 A	S6BP501A	3.3 V, 1.6 A	5.0 V, 1.3 A
1.2 V, 2.0 A	S6BP502A	3.3 V, 1.9 A	5.0 V, 1.3 A

Availability

Sampling: Now **Production:** Now

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S6BP401A

Six-Channel Automotive PMIC

Applications

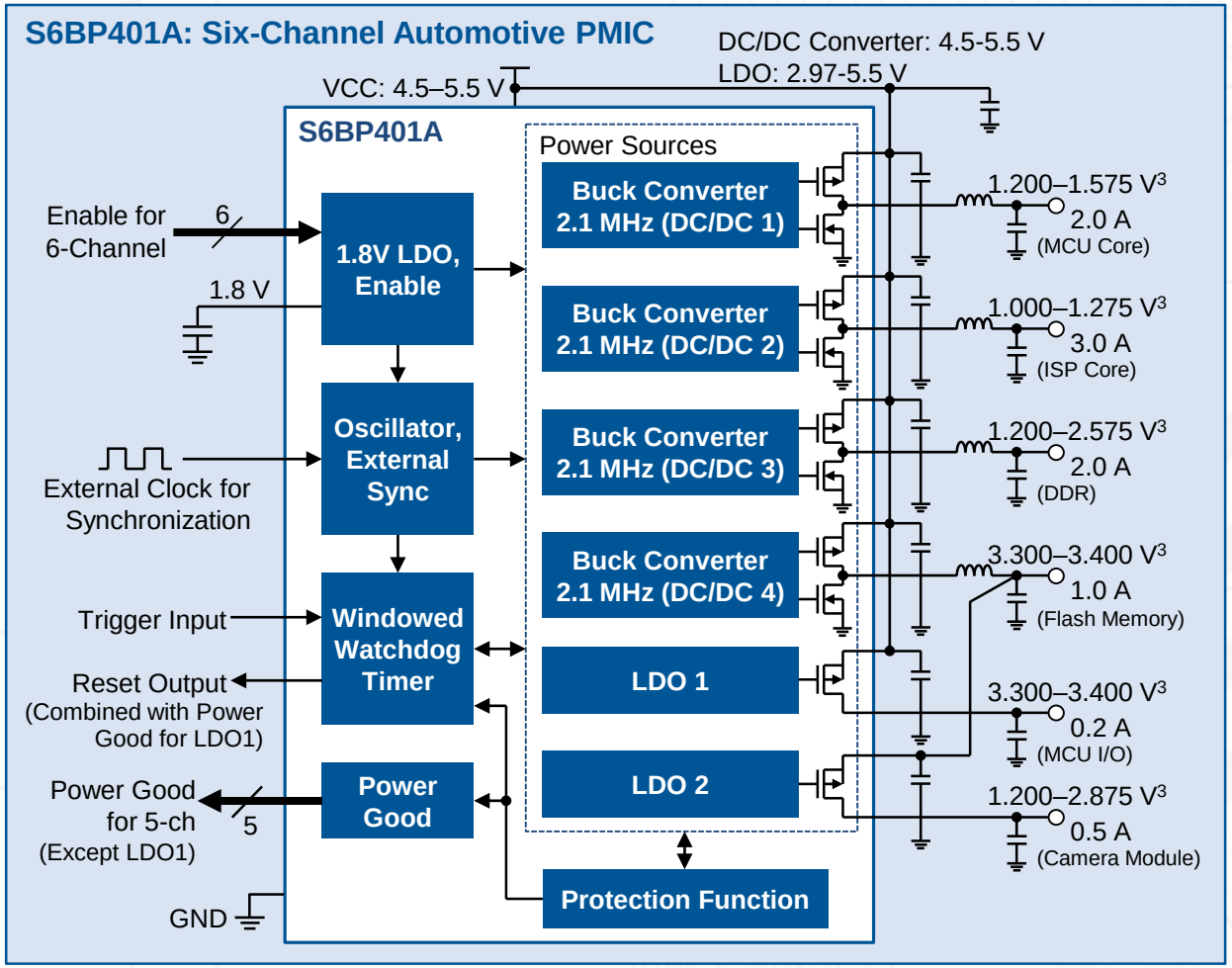
Advanced driver assistance systems (ADAS), security camera systems

Features

- **6-Channel PMIC:** 4-channel buck converters, 2-channel LDOs
- **Input Voltage Range:** 4.5–5.5 V
  - Input voltage for LDO: 1.62–5.5 V
- **High Switching Frequency:** 2.1 MHz
  - Synchronization with external clock from 1.8–2.4 MHz
- **BOM Integration:**
  - Switching transistors, voltage setting resistors, and compensation circuitry
- **System Safety Function[1] Support:**
  - Overvoltage protection (OVP), overcurrent protection (OCP), undervoltage lock-out (UVLO), thermal shutdown (TSD)
  - Window-monitoring voltage supervisors with independent power good[2] pins
  - Built-in windowed watchdog timer (WDT)
  - Independent enable pins
- **Operating Temperature Range:** -40°C to +125°C
- **Package and Qualification:** 40-pin QFN (6-mm x 6-mm), AEC-Q100 Grade-1

Collateral

Datasheet: S6BP401A
Evaluation Kit: S6SBP401AJ0SA1001, S6SBP401AM2SA1001



Availability

Sampling: Now **Production:** Now

[1] A set of system functions that protect ECUs from damage and/or from generating erroneous results during abnormal power supply conditions
[2] An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready
[3] S6BP401A has factory-selectable options of output voltage for each channel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