



# Cypress Roadmap: Automotive PMIC

Q3 2017



# Automotive PMIC Family Portfolio

	Instrument Cluster	Advanced Driver Assistance Systems (ADAS)	Body Electronics			
High-End	<b>CYBP221A</b> 1xBuck Cnv <sup>1</sup> , DVS <sup>2</sup> , PG <sup>3</sup> 3.0-V to 5.5-V Input 6-A Output	<b>CYBP221A</b> 1xBuck Cnv, DVS, PG 3.0-V to 5.5-V Input 6-A Output				
	<b>NEW</b> <b>S6BP211A</b> <b>Q418</b> Pre-Boost+Buck Cnv 12-V V <sub>BAT</sub> <sup>4</sup> 3.3-V to 6.0-V/4 A Output 20-Pin TSSOP	<b>NEW</b> <b>S6BP211A</b> <b>Q418</b> Pre-Boost+Buck Cnv 12-V V <sub>BAT</sub> 3.3-V to 6.0-V/4-A Output 20-Pin TSSOP	<b>CYBP411A</b> Multiple Power Supplies WDT <sup>7</sup> , I <sup>2</sup> C 3.3-V Input, High Output Current 40-Pin Side-Wettable QFN	<b>S6BP202A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 5-V/2.4-A Output 16-Pin TSSOP	<b>NEW</b> <b>S6BP502A</b> <b>Q417</b> 3xSMPS SSCG <sup>8</sup> , PG 12-V V <sub>BAT</sub> , 2.0-A Output 32-Pin Side-Wettable QFN	
Mid-Range	<b>S6BP203A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 3.3-V/2.4-A Output 16-Pin TSSOP	<b>NEW</b> <b>S6BP502A</b> <b>Q417</b> 3xSMPS SSCG, PG 12-V V <sub>BAT</sub> , 2.0-A Output 32-Pin Side-Wettable QFN	<b>S6BP203A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 3.3-V/2.4-A Output 16-Pin TSSOP	<b>CYBP411A</b> Multiple Power Supplies WDT, I <sup>2</sup> C 3.3-V Input, High Output Current 40-Pin Side-Wettable QFN	<b>S6BP201A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 5-V/1-A Output 16-Pin TSSOP	<b>NEW</b> <b>S6BP501A</b> <b>Q417</b> 3xSMPS SSCG, PG 12-V V <sub>BAT</sub> , 1.4-A Output 32-Pin Side-Wettable QFN
	<b>S6BP202A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 5-V/2.4-A Output 16-Pin TSSOP		<b>S6BP202A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 5-V/2.4-A Output 16-Pin TSSOP	<b>S6BP401A</b> 4xSMPS, 2xLDO WDT, PG 5-V Input, 3.0-A Output 40-Pin QFN		
Low-End	<b>S6BP201A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 5-V/1-A Output 16-Pin TSSOP	<b>NEW</b> <b>S6BP501A</b> <b>Q417</b> 3xSMPS SSCG, PG 12-V V <sub>BAT</sub> , 1.4-A Output 32-Pin Side-Wettable QFN	<b>S6BP201A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 5-V/1-A Output 16-Pin TSSOP	<b>S6BP401A</b> 4xSMPS, 2xLDO WDT, PG 5-V Input, 3.0-A Output 40-Pin QFN	<b>S6BP201A</b> 1xBuck-Boost Cnv, PG 12-V V <sub>BAT</sub> , 5-V/1-A Output 16-Pin TSSOP	

Market Segment →

- <sup>1</sup> Converter: A general-purpose regulator IC that integrates power MOSFETs
- <sup>2</sup> Dynamic voltage scaling
- <sup>3</sup> Power good: An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready
- <sup>4</sup> Battery voltage
- <sup>5</sup> 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
- <sup>6</sup> A package whose flanks are processed to improve soldering adherence and to simplify the optical inspection, which follows soldering
- <sup>7</sup> Watchdog timer
- <sup>8</sup> Spread-spectrum clock generator

	Concept	Development	Sampling	Production
Industrial				
Automotive				
Availability				

# 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  $\mu$ A
- **Programmable Switching Frequency:** 0.2–2.1 MHz
  - Synchronization with external clock from 200 kHz to 400 kHz
  - Autonomous PFM/PWM<sup>1</sup> switching
- **BOM Integration:** Built-in switching transistors
- **System Safety Function<sup>2</sup> Support:**
  - Undervoltage protection (UVP), overvoltage protection (OVP), undervoltage lock-out (UVLO), overcurrent protection (OCP), thermal shutdown (TSD)
  - Voltage supervisor with power good (PG)<sup>3</sup> pin
- **Operating Temperature Range:** -40°C to +125°C
- **Package:** 16-pin thermally enhanced TSSOP
- **Qualification:** AEC-Q100 Grade-1

### Collateral

**Datasheet:** [S6BP201A](#), [S6BP202A](#) and [S6BP203A](#)

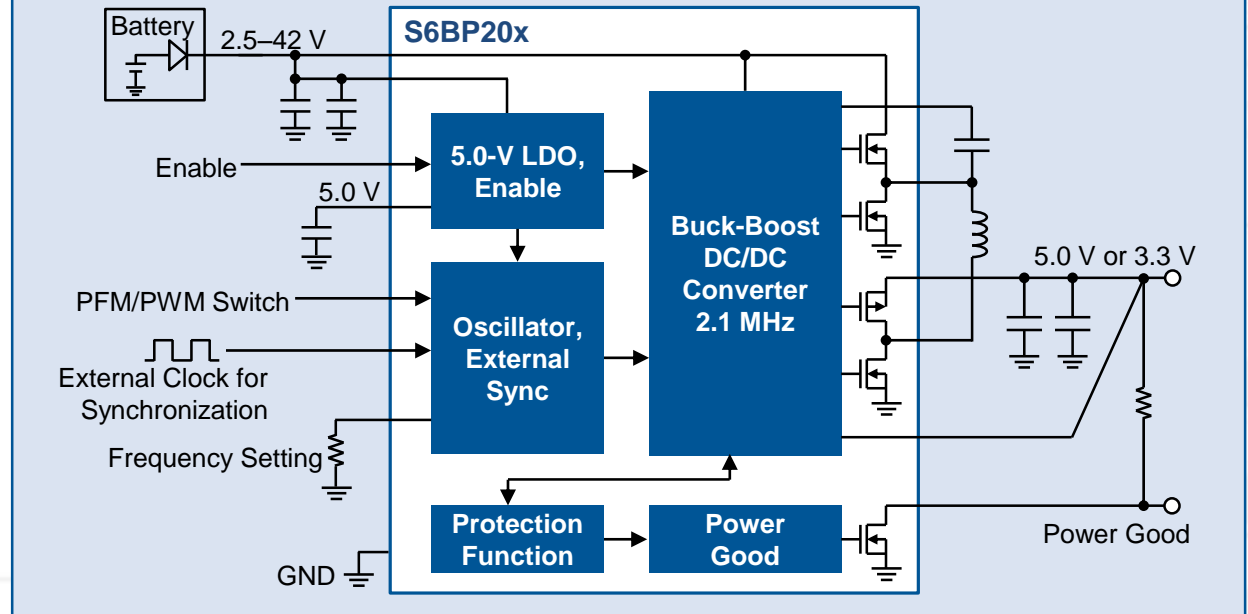
**Evaluation Kit:** [S6BP201A](#), [S6BP202A](#) and [S6BP203A](#)

<sup>1</sup> Pulse-frequency modulation/pulse-width modulation

<sup>2</sup> A set of system functions that protect ECUs from damage and/or from generating erroneous results during abnormal power supply conditions

<sup>3</sup> An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready

### S6BP20x: One-Channel Buck-Boost Automotive PMIC



### Family Table

Output Voltage <sup>4</sup>	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

<sup>4</sup> S6BP201A and S6BP202A have factory-selectable options of output voltage, power-on-reset time, UVP/OVP threshold, and SYNC Function

# S6BP50x

## Three-Channel Automotive PMIC

### Applications

Low-end to mid-range hybrid automotive cluster systems

### Features

- **3-Channels:** Buck controller, boost converter, buck converter
- **Wide Range Input:** 2.5-42 V
- **Low Quiescent Current:** 15  $\mu$ A
- **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 to 2.4 MHz
- **System Safety Function<sup>1</sup> Support:**
  - Undervoltage protection (UVP), overvoltage protection (OVP), undervoltage lock-out (UVLO), overcurrent protection (OCP), thermal shutdown (TSD) and thermal warning
  - Voltage supervisor with independent power good (PG)<sup>2</sup> pins
- **Operating Temperature Range:** -40°C to +105°C
- **Package:** 32-pin thermally enhanced side-wettable<sup>3</sup> QFN
- **Qualification:** AEC-Q100 Grade-2

### Collateral

**Preliminary Datasheet:** [S6BP501A/S6BP502A](#)

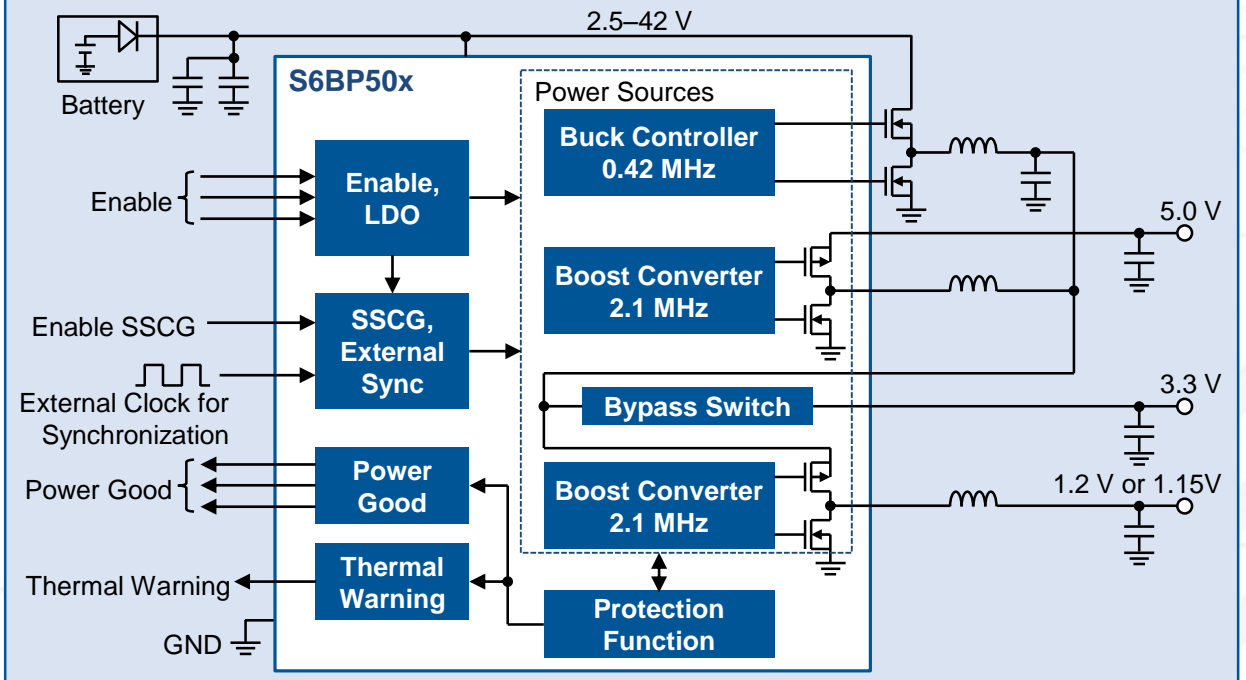
**Evaluation Kit:** [Contact Sales](#)

<sup>1</sup> A set of system functions that protect ECUs from damage and/or from generating erroneous results during abnormal power supply conditions

<sup>2</sup> An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready

<sup>3</sup> A package whose flanks are processed to improve soldering adherence and to simplify the optical inspection, which follows soldering

### S6BP50x: Three-Channel Automotive PMIC



### Family Table

Buck Converter Output Specification <sup>4</sup>	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:** Q4 2017

<sup>4</sup> Output voltages are finely adjustable with external resistive dividers

# 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
- **High Switching Frequency:** 2.1 MHz
  - Synchronization with external clock from 1.8 to 2.4 MHz
- **BOM Integration:**
  - Switching transistors, voltage setting resistors, and compensation circuitry
- **System Safety Function<sup>1</sup> Support:**
  - Built-in windowed watchdog timer (WDT), independent enable pins, voltage supervisor with independent power good (PG)<sup>2</sup> pins,
  - Overcurrent protection (OCP), overvoltage protection (OVP), undervoltage lock-out (UVLO) and thermal shutdown (TSD)
- **Operating Temperature Range:** -40°C to +125°C
- **Package and Qualification:** 40-pin QFN, AEC-Q100 Grade-1

### Collateral

Datasheet: [S6BP401A](#)

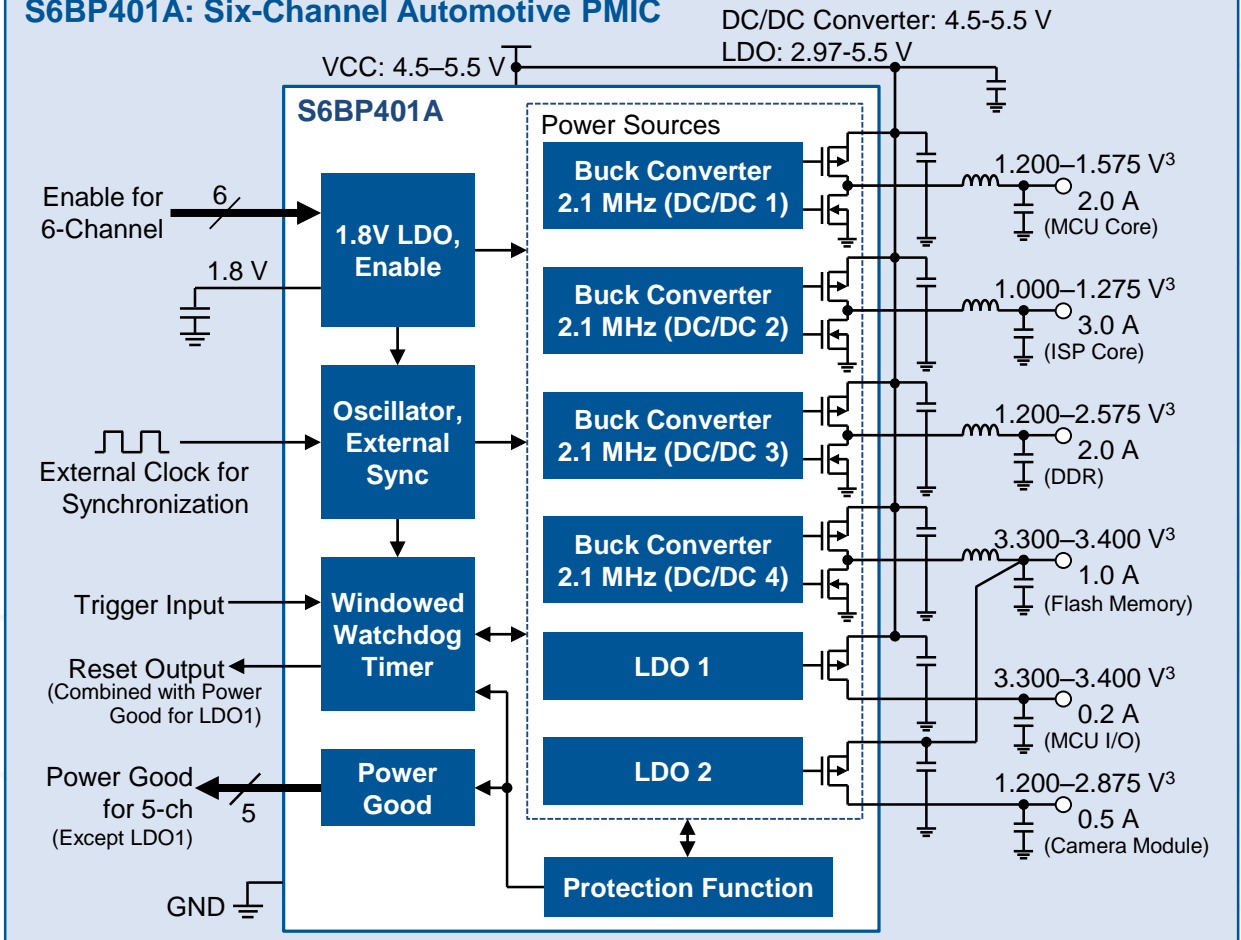
Evaluation Kit: [S6SBP401AM2SA1001](#)

<sup>1</sup> A set of system functions that protect ECUs from damage and/or from generating erroneous results during abnormal power supply conditions

<sup>2</sup> An output signal that PMICs provide to signify that the supplied power by PMICs is proper and ready

<sup>3</sup> S6BP401A has factory-selectable options of output voltage for each channel

### S6BP401A: Six-Channel Automotive PMIC



### Availability

Sampling: Now    Production: Now



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