



Robust,  
reliable  
analog  
solutions

## Motorcycle and Scooter ABS

### Extending the Anti-Lock Braking System (ABS) IC Family to Save Lives

#### TARGET APPLICATIONS

- ▶ One-channel ABS
- ▶ Two-channel ABS
- ▶ Motorcycle dynamic and chassis control
- ▶ Safety domain control

The SB0400 and SB0401 devices are antilock brake controllers designed for use in harsh motorcycle/scooter environments. The SB0400 is fully dedicated to the two-wheel anti-lock braking system (ABS) version and the SB0401 is fully dedicated to the one-wheel ABS system.

These chips integrate all drivers/pre-drivers needed to control valves, motor pumps, wheel speed sensors and other specific loads for safety reasons. These parts have design-in simplicity thanks to the serial peripheral interface (SPI). Full control and diagnostic functions are directly managed through the SPI. The device includes self-recovery features thanks to the embedded supervision that allows high safety monitoring. Furthermore, a safe master switch increases the safety by turning off all valves in case of issues. The devices offer high thermal efficiency thanks to the low  $R_{DS(ON)}$  and the exposed pad.

#### SafeAssure PROGRAM

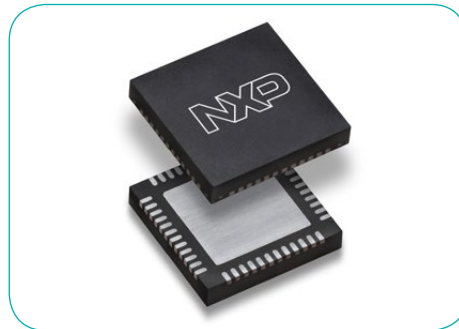
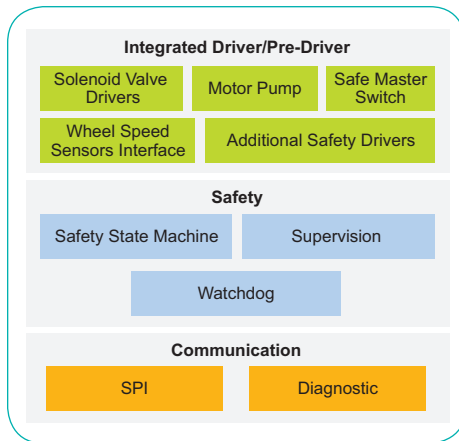
Functional safety. Simplified.

Our SafeAssure functional safety program is designed to help system manufacturers more easily achieve system compliance with International Standards Organization (ISO) 26262 and International Electrotechnical Commission (IEC) 61508 functional safety standards. The program highlights NXP solutions—and software—that are optimally designed to support functional safety implementations and come with a rich set of enablement collateral.

For more information, visit [www.nxp.com/SafeAssure](http://www.nxp.com/SafeAssure).



## SB0400/SB0401 BLOCK DIAGRAM



## SB0400/SB0401 FEATURES AND BENEFITS

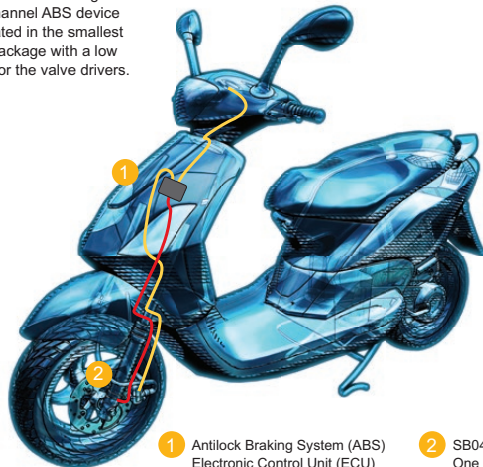
	Features	Benefits
Cost/Space	Low $R_{DS(on)}$ LS	Allows heatsink removal; gain on weight and cost important for motorcycle (saving 10 cts)
	Integrating PWM valve drivers	Capable up to 56 mJ allowing recirculation without external free wheel diode (saving 40 cts)
	Small package	PCB space saving
	One-wheel application solution	Easy to implement without external components; functions are on one chip (saving space and money)
Safety	Safe master switch turns off all the valves in case of any issues	No external circuitry is needed to achieve full safe valve operation
	Analog diagnostics	SafeAssure
	Supervision	All faults are managed for high-level safety purposes
Easiness	Scalable solution between one-wheel and two-wheel ICs	Ease the ECU hardware design
	SPI interface	Allow faster implementations

## SB0400/SB0401 DOCUMENTATION

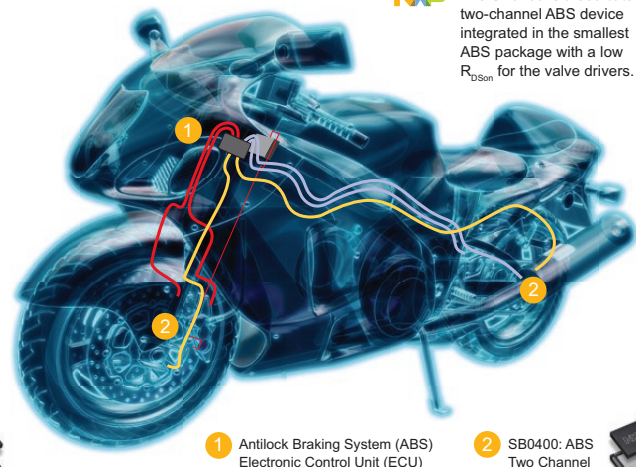
Document Number	Title	Selector Guide
MC33SB0400	Two-wheel ABS IC	Data sheet
MC33SB0401	One-wheel ABS IC	Data sheet
SG1002	Analog Product Selector Guide	Selector guide
SG187	Automotive Selector Guide	Selector guide

## SCOOTER AND MOTORCYCLE ABS SYSTEMS

**NXP** The SB0401 is a single one-channel ABS device integrated in the smallest ABS package with a low  $R_{DS(on)}$  for the valve drivers.



**NXP** The SB0400 is a dedicated two-channel ABS device integrated in the smallest ABS package with a low  $R_{DS(on)}$  for the valve drivers.



■ Electronic Connection   
 ■ Hydraulic Connection   
 ■ Hydraulic Connection

[www.nxp.com/SB0400](http://www.nxp.com/SB0400) and [www.nxp.com/SB0401](http://www.nxp.com/SB0401)

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