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analog solutions

# Alternator Regulators with LIN

Integrated circuits to regulate the output voltage of automotive alternators.

## TARGET APPLICATIONS

- ▶ Automotive applications with 12 V battery
- ▶ Light vehicle
- ▶ Motorcycle
- ▶ System in a die alternator

## OVERVIEW

Automotive Alternator regulators supply current via a high-side MOSFET to the excitation coil of the alternator, providing an internal freewheeling diode. They keep the battery at its nominal charge and deliver current to electrical devices within the vehicle.

The IC also provides a load response control mechanism (LRC), and has an interface for the industry standard LIN protocol (Revision 1.3 or 2.1) to allow an engine control unit (ECU) to control the regulated voltage and the LRC rate among other parameters. The ECU also can read back information about the status of the regulator and the alternator via LIN.

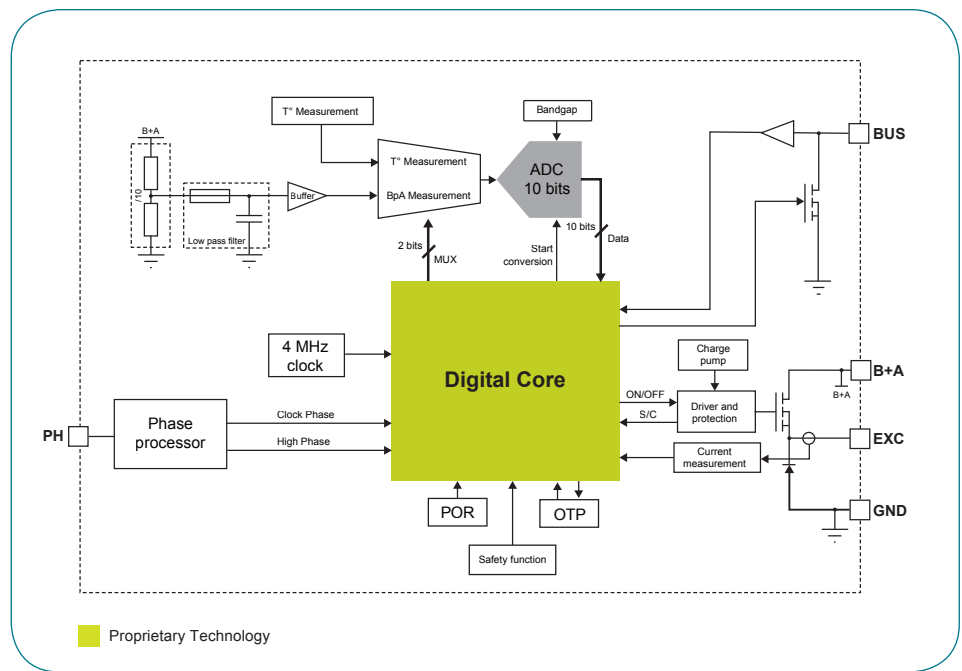
It can be programmed for most functions using OPT via fuses and fit a large number of alternators and applications.



## FEATURES AND BENEFITS

- ▶ High-side field driver
- ▶ Internal freewheeling diode
- ▶ Up to 12.0 A excitation current for low resistance rotors
- ▶ Load response control (LRC) and return LRC
- ▶ Current limitation, overcurrent protection and low current stand-by
- ▶ Advanced thermal protection and thermal compensation means regulation is maintained at a set point voltage that helps avoid thermal shutdown
- ▶ Set point voltage selectable from 10.6 to 16 V
- ▶ Accurate rotor current measurement, die temperature, alternator speed and battery voltage reported by LIN means optimized fuel savings, reduced pollution and limited impact of battery voltage drops
- ▶ Regulators address a large number of applications, since they include a large set of parameters programmable by fuses
- ▶ End-of-line programming means customers can order one reference and program on the assembly line according to specific needs
- ▶ 12 sets of LIN frames are selectable, with LIN 1.3 or 2.1 protocol

## SIMPLIFIED APPLICATION BLOCK DIAGRAM



Part #	Temp. Range (T <sub>j</sub> )	Package
TC80310 AR6000	-40°C ≤ T <sub>j</sub> ≤ +150°C	TO220-5

## A LEADER IN ANALOG SOLUTIONS:

Expanding on more than 30 years of innovation, NXP is a leading provider of high-performance products that use SMARTMOS technology, combining digital, power and standard analog functions. We supply analog and power management ICs that are advancing the automotive, consumer, industrial and networking markets. Analog solutions interface with real world signals to control and drive for complete embedded systems.

Please contact your local NXP sales representative to learn about programming options.