TLE8880

Alternator Regulator with LIN Interface

The alternator control IC TLE8880 is a monolithic full featured regulator specifically designed for closed loop voltage control. It can be used in 12V automotive multi phase alternators with a rotating field winding. This regulator is able to communicate with an Engine-Management or Energy-Management ECU through a standard LIN interface. The battery voltage is regulated at a precise value between 10.6V and 16V. By using free-adjustable parameters, the regulator is able to operate even without any communication interface.

The TLE8880 is compliant to the VDA LIN Alternator Regulator specification.

The output driver stage consists of a High-Side DMOS with a typical $R_{DS(on)}$ of 60mΩ for up to 12A excitation current to the field winding. The chip has 8kV ESD protection for alternator lines. The chip contains an EEPROM with adjustable parameters that can be programmed in order to customize the alternator for the specific OEM or application needs.

Applications

- 12V automotive alternators with LIN interface
- 12V truck alternators with LIN interface
- Aftermarket alternators
- Industrial generators with 12V voltage

www.infineon.com/alternator

Key Features

- EEPROM for customer specific adjustments
- Full digital and fast PI regulation
- High-Side DMOS with $R_{DS(on)}$ of 60mΩ @ 25°C
- LIN 1.3 (Datalink layer)
- LIN 2.1 (Physical layer)
- Stand-by current 60µA typical
- Reverse battery protected up to -2.5V
- 8kV ESD protection for alternator lines
- Duty cycle driven excitation current to the field winding in range from 0 to 100%
- Temperature range -40°C to 175°C
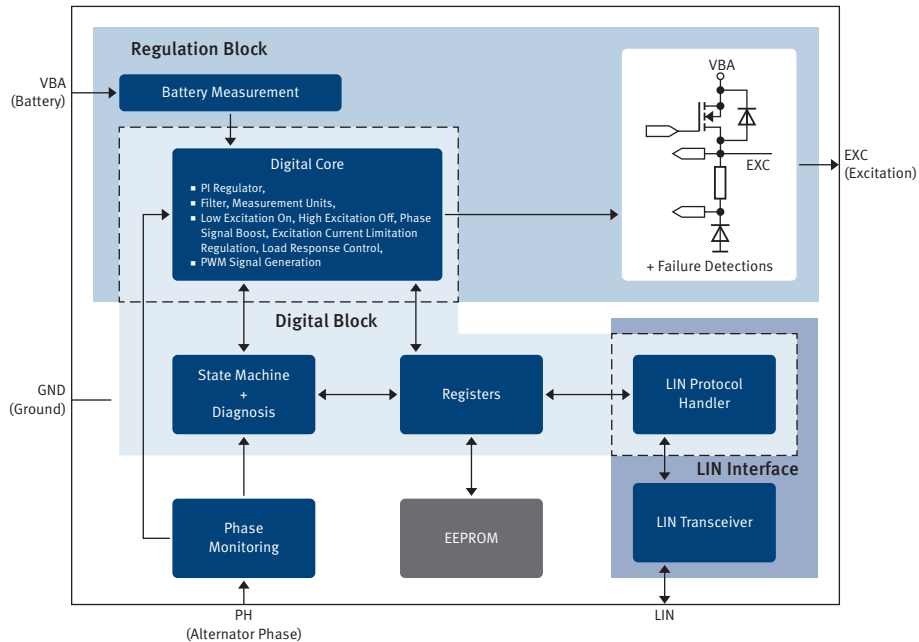- Digital temperature compensation

Key Benefits

- Available in PG-TO-220-5-12 with straight leads, in 2 versions:
  - with nickel plating on the leads (soldering)
  - without nickel on the leads ends (welding)
- Qualified and Released by the VDA and further leading OEMs

TLE8880

Alternator Regulator with LIN Interface

Block Diagram TLE8880

Block Diagram TLE8880 showing Regulation Block with Battery Measurement, Digital Core (PI Regulator; Filter, Measurement Units; Low Excitation On, High Excitation Off, Phase Signal Boost, Excitation Current Limitation Regulation, Load Response Control; PWM Signal Generation), Digital Block with State Machine + Diagnosis, Registers, LIN Protocol Handler, Phase Monitoring, EEPROM, LIN Transceiver, and LIN Interface. Inputs/outputs: VBA (Battery), GND (Ground), PH (Alternator Phase), EXC (Excitation), LIN, and + Failure Detections.

Infineon is also providing support in offering an interface board with interface software

- Reliable and simple for fast design-ins
- Easy EEPROM Programming
- LIN communication evaluation
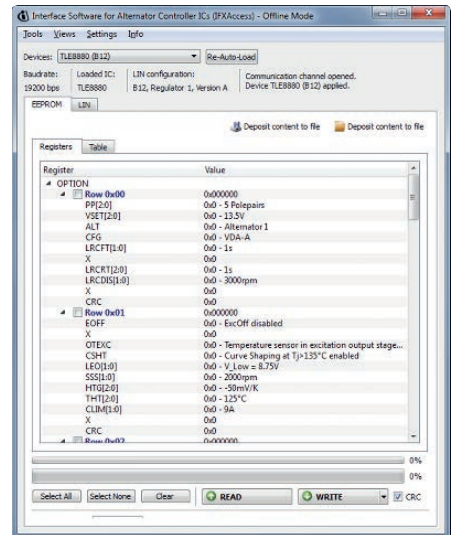
Attention please!
The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie"). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

Information
For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office (www.infineon.com).

Warnings
Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office. Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.