A17802

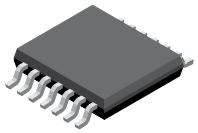
Advanced Inductive Position Sensor IC with Sine/Cosine Output

FEATURES AND BENEFITS

- Measures angle with <0.5°elec accuracy at speeds up to 250k eRPM
- Front-end gain automatic optimization at each power-up
- Dynamic autocalibration for continuous error reduction
- Harmonic compensation for enhanced linearization with simpler coil design
- Synchronization compensation perfects commutation timing for efficient motor control
- Programmable zero angle enables arbitrary target alignment
- Programmable via SPI or Manchester protocol
- Qualified to AEC-Q100 grade 0
- ASIL-Compliant: ASIL C(D) safety element out of context (SEooC) developed in accordance with ISO26262, when used as specified in the safety manual

PACKAGE

Not to scale



14-pin TSSOP (Single Die, Suffix LE)

DESCRIPTION

The A17802 IC is an advanced inductive position sensor designed to measure the rotational angle of a metallic target and output the information over a differential sine and cosine analog interface. The IC features digital processing that optimizes the inductive front-end and applies compensations that maximize system-level angle accuracy.

The A17802 operates by applying a megahertz oscillating signal onto a transmit coil connected to an LC tank circuit and demodulating the voltage envelopes present on two receiver coils. Typical systems integrate all three coils on a standard printed circuit board (PCB) and mount the rotating target millimeters above. Electromagnetic induction causes the transmit signal to generate eddy currents in the metallic target, and the currents generate a signal onto the receiver coils that is dependent on rotational angle.

The A17802 provides a high-speed absolute-angle sensor that is suitable for advanced synchronous motor control, including automotive electric motor systems.

The A17802 was developed in accordance with ISO 26262 as a hardware safety element out of context with ASIL C capability for use in automotive safety-related systems up to ASIL D when integrated and used in the manner prescribed in the applicable safety manual and this datasheet. The A17802 is automotive qualified to AEC-Q100 Grade 0 and is packaged in a surface-mount lead (Pb) free 14-pin TSSOP.

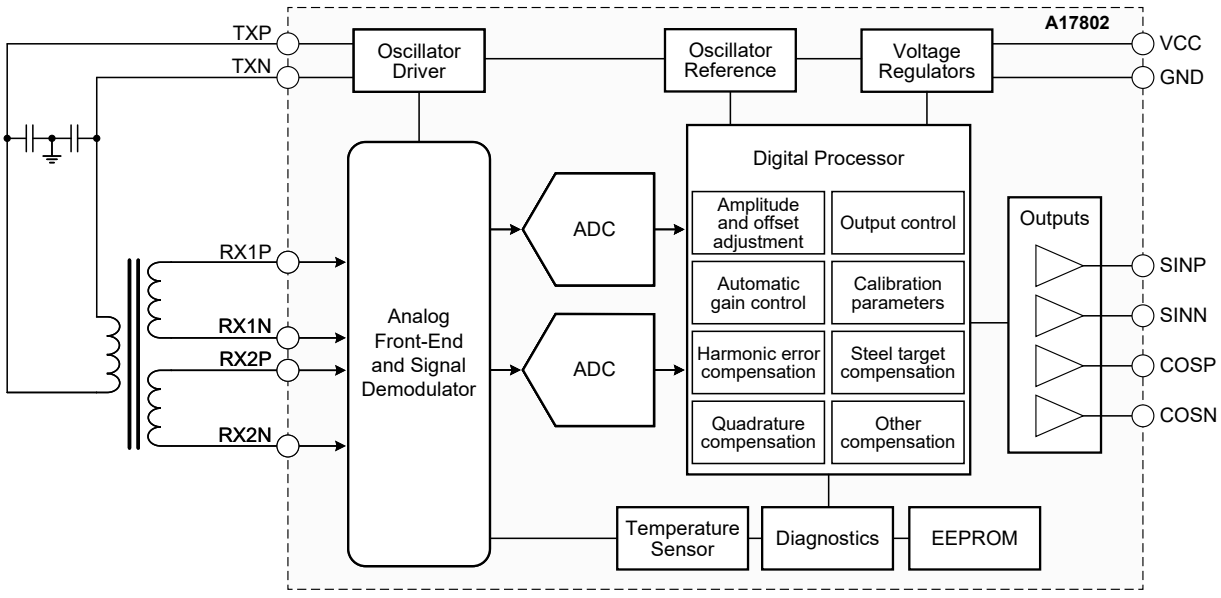


Figure 1: Functional Block Diagram

SELECTION GUIDE

Part Number	Package	Packing
A17802PLEATR	14-pin TSSOP	4000 pieces per 13-in reel

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

NOTE: This is a short-form datasheet for preview purposes. Pages 3-44 have been removed. Contact Allegro MicroSystems to request complete datasheet.

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PACKAGE OUTLINE DRAWING

For Reference Only – Not for Tooling Use

(Reference Allegro DWG-0000381, Rev. 1 and JEDEC MO-153 AB-1)
Dimensions in millimeters – NOT TO SCALE
Dimensions exclusive of mold flash, gate burrs, and dambar protrusions
Exact case and lead configuration at supplier discretion within limits shown

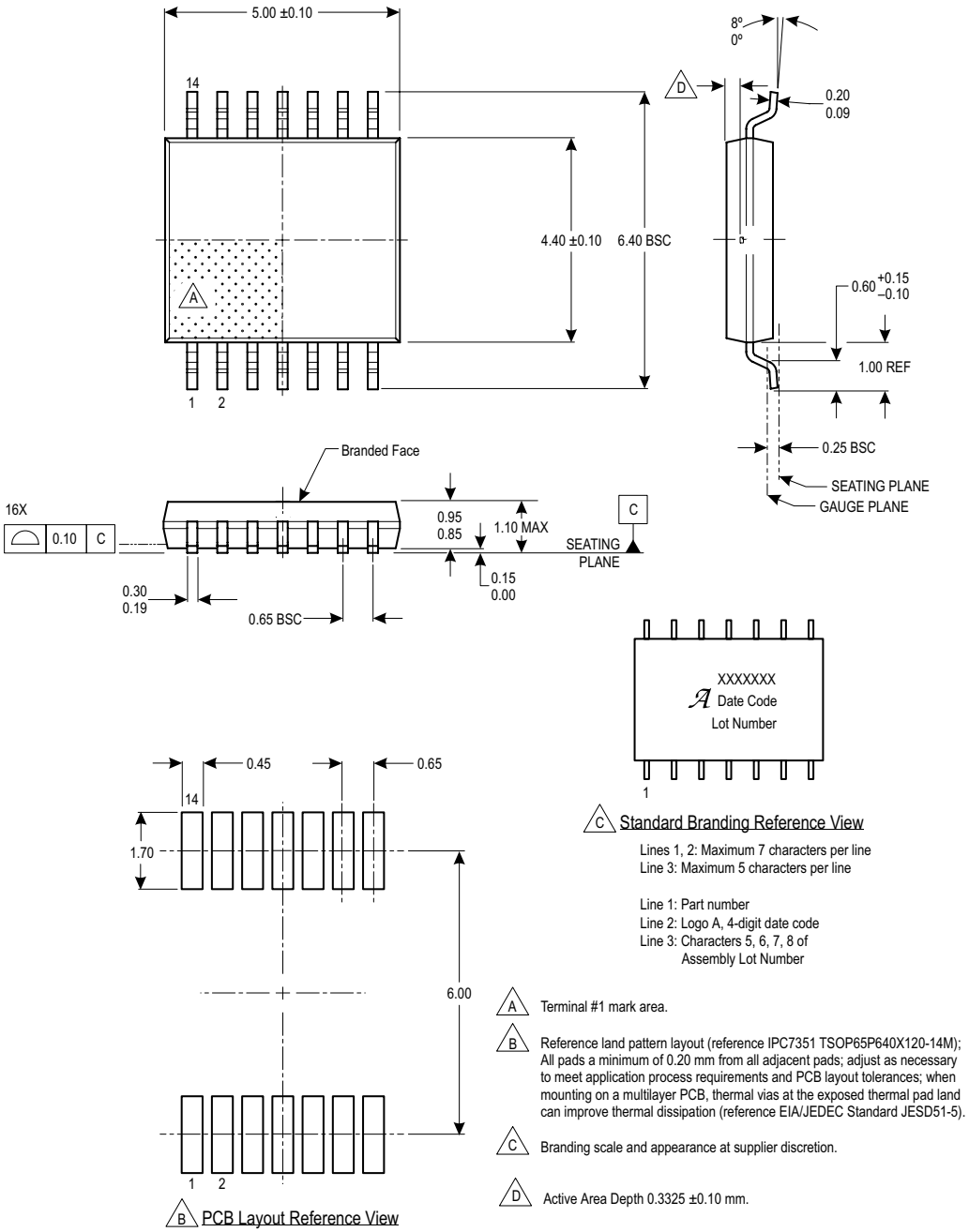

Figure 2: 14-Pin TSSOP Package

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REVISION HISTORY

Number	Date	Description
–	March 13, 2025	Initial release

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