

RAA788000

Rogowski Coil Based Power-Line Current Sensor with Amplifier

The RAA788000 is a low-power, power-line current sensor for contactless AC current measurements in the range of 2A to 5000A. The device consists of an on-chip Rogowski coil, a buffer amplifier, and a signal amplifier.

From an alternating power-line current, the magnetic flux flows through the on-chip coil, generating an electromotive force (EMF) that is amplified and filtered by a signal amplifier.

The amplifier output is typically fed into an analog-to-digital converter with a subsequent signal processor that calculates the current magnitude.

The RAA788000 operates from a single 2.7V to 3.6V supply. The device is available in a small 16 Ld TSSOP package and has an operation specified for the temperature range from -40°C to +105°C.

The RAA788000 is available in a 16 Ld thin shrink small outline package (TSSOP).

Features

- On-chip coil sensor
- Low noise density: $E_n = 50\text{nV}/\sqrt{\text{Hz}}$ at 10Hz
- Low supply voltage: $V_S = 2.7\text{V}$ to 3.6V
- Temperature range: -40°C to $+105^\circ\text{C}$
- Small 16 Ld TSSOP package

Applications

- Power-line current measurements
- Watt meters

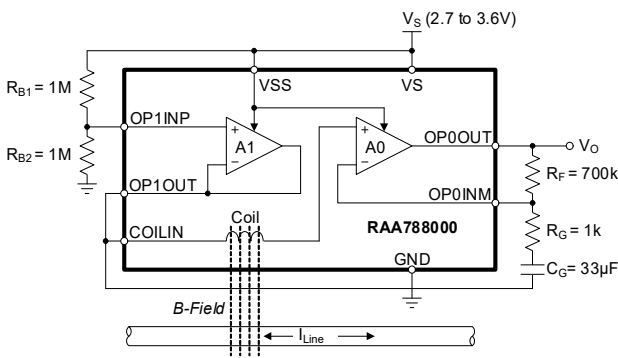


Figure 1. Typical Single-Current Sensor Application

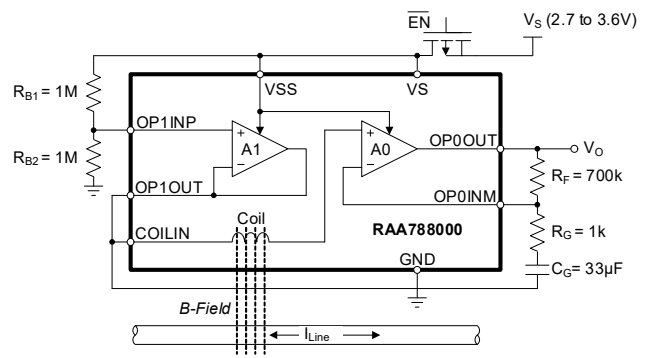


Figure 2. Typical Single-Current Sensor Application with Enable Function

Ordering Information

Part Number ^{[1][2]}	Part Marking	Package Description (RoHS Compliant)	Pkg. Dwg #	Carrier Type ^[3]	Temp. Range
RAA788000GSP#HA0	788000	16 Ld TSSOP	M16.173	Reel, 2.5k	-40 to +105°C
RTKA788000DE0000BU	Opposite Sensor Topology Evaluation Board				
RTKA788000DE0010BU	Stacked Sensor Topology Evaluation Board				

1. These Pb-free plastic packaged products employ special Pb-free material sets, molding compounds/die attach materials, and 100% matte tin plate plus anneal (e3 termination finish, which is RoHS compliant and compatible with both SnPb and Pb-free soldering operations). Pb-free products are MSL classified at Pb-free peak reflow temperatures that meet or exceed the Pb-free requirements of IPC/JEDEC J-STD-020.
2. For the Moisture Sensitivity Level (MSL), see the [RAA788000](#) product page. For more information about MSL, see [TB363](#).
3. See [TB347](#) for details about reel specifications.

IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES (“RENESAS”) PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01 Jan 2024)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit www.renesas.com/contact-us/.