PS25014A2, PS25014B2
Application Boards for EPIC sensor PS25402

Features

- Ultra high effective input impedance, typically 20GΩ.
- Wide operating voltage from 4.0 to 8.0V.
- Operating temperature range 0 to 50°C.
- 200pF load drive capability.
- Ground referenced output.
- DC signal rejection.
- Dual sensor board allows differential operation.

Applications

- Movement sensing due to electric field disturbance
- Electric field and potential sensing.

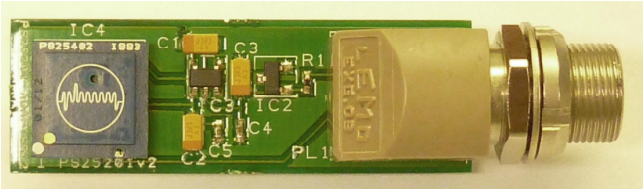


Figure 1: PS25014A2 single channel board carrying a single PS25402 sensor

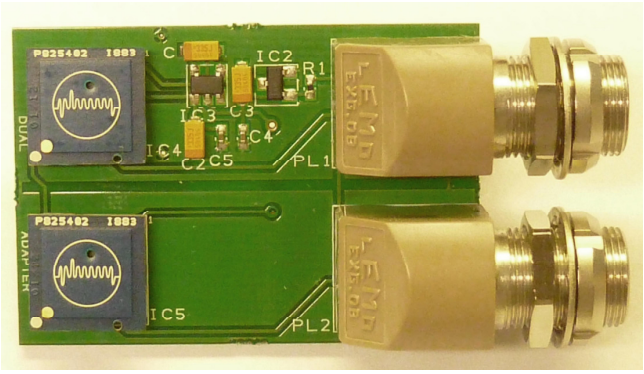


Figure 2: PS25014B2 dual channel board carrying two PS25402 sensors

Description

The PS25014A2 and PS25014B2 are single and dual channel application boards for the demonstration of the Plessey PS25402 electric potential sensor.

The PS25402 electric potential sensors on these boards allow the measurement of a wide range of electric potential sources. Two sensors may be used differentially to determine electric field. The sensors incorporate a DC block feature that allows the DC component of an applied signal to be rejected while maintaining good low frequency response. The electrode surface of the detector is passivated with an inert dielectric that provides environmental protection. These sensors are not intended for direct coupling to the surface of the skin. In the case of electrophysiological sensing the following sensors should be used:

ECG Sensor	-3dB bandwidth mHz	Voltage gain	Application Boards Single/Dual
PS25201	200	50	PS25012A PS25012B
PS25201A	200	50	PS25012A1 PS25012B1
PS25202	50	50	PS25012A2 PS25012B2
PS25203	200	10	PS25012A3 PS25012B3
PS25204	50	10	PS25012A4 PS25012B4

The PS25402 sensor demonstrated on these boards is an integrated assembly designed for surface mount assembly on a motherboard.

The application boards provide a regulated +2.5V and generated -2.5V supplies that are used to operate the sensor. This allows the boards to demonstrate the sensors from a wide, single sided, power supply voltage while the output of the sensor can cover the range ±2.1V. The boards are connected by a high reliability five pin connector.

Data Sheet 291515 issue 1

Plessey Semiconductors Ltd.
Design & Technology Centre, Delta 500, Delta Business Park, Great Western Way, Swindon, UK SN5 7XE
Tel: +44 1793 518000 Fax: +44 1793 518030 Web: www.plesseysemi.com

Electrical Characteristics

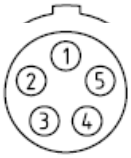
These electrical characteristics apply to the PS25014A2 and PS25014B2 application boards that carry the PS25402 sensors. The electrical characteristics (@25°C) are guaranteed by either production test or by design and characterisation. They apply within the specified supply voltage unless otherwise stated.

Characteristics	Value			Units	Conditions/Notes
	Min.	Typ.	Max.		
Supply voltage	4.0		8.0	V	
Supply current; PS25014A2	2.7		10.0	mA	Each PS25402 sensor consumes 2.0mA (typ). The additional current is consumed by the app'n board.
Supply current; PS25014B2	5.4		20.0	mA	
Effective input resistance		20	tbd	GΩ	
Effective input capacitance		15		pF	
Voltage Gain (Av)		10			
Noise		tbd			

Electrical Connector

The PS25014A2 and PS25014B2 application boards are fitted with one or two five pin sockets. The connectivity of these sockets is shown below:

Pin 1 Output
Pin 2 Gnd
Pin 3 Supply
Pin 4 Gnd
Pin 5 Not used



The supply and ground connections of the two sockets on the dual channel PS25014B2 board are connected in parallel so that the board will be active with either one or both connectors in use. However, when both sockets are powered the supplied voltages must be identical.

Auxiliary Components

PS25000A — Control and Interface Box; 50Hz.
This box provides power for one or two sensors. It incorporates switchable low pass and 50Hz notch filters. The box contains an amplifier with switchable gain of either x1 or x10. The box also generates a differential signal from two sensors. The box incorporates a data acquisition card that provides the data from the sensors via a USB cable to a computer. The box is powered by the USB connection. A soft scope is provided with this box for display of the signals on a computer.

PS25001A — Control and Interface Box; 60Hz.
This box is identical to the PS25000A except that the switchable notch filter is preset to reject 60Hz.

PS25013 — Adapter cable.
This 1.5m long cable connects the sockets of the EPIC application boards to the PS25000A or PS25001A Control and Interface Box.

Plessey Semiconductors Ltd.
Design & Technology Centre, Delta 500, Delta Business Park, Great Western Way, Swindon, UK SN5 7XE
Tel: +44 1793 518000 Fax: +44 1793 518030 Web: www.plesseysemi.com

For further information about this and other products, please visit:
www.plesseysemiconductors.com

Legal Notice

Product information provided by Plessey Semiconductors Limited ("Plessey") in this document is believed to be correct and accurate. Plessey reserves the right to change/correct the specifications and other data or information relating to products without notice but Plessey accepts no liability for errors that may appear in this document, howsoever occurring, or liability arising from the use or application of any information or data provided herein. Neither the supply of such information, nor the purchase or use of products conveys any licence or permission under patent, copyright, trademark or other intellectual property right of Plessey or third parties.

Products sold by Plessey are subject to its standard Terms and Conditions of Sale that are available on request. No warranty is given that products do not infringe the intellectual property rights of third parties, and furthermore, the use of products in certain ways or in combination with Plessey, or non-Plessey furnished equipments/components may infringe intellectual property rights of Plessey.

The purpose of this document is to provide information only and it may not be used, applied or reproduced (in whole or in part) for any purpose nor be taken as a representation relating to the products in question. No warranty or guarantee express or implied is made concerning the capability, performance or suitability of any product, and information concerning possible applications or methods of use is provided for guidance only and not as a recommendation. The user is solely responsible for determining the performance and suitability of the product in any application and checking that any specification or data it seeks to rely on has not been superseded.

Products are intended for normal commercial applications. For applications requiring unusual environmental requirements, extended temperature range, or high reliability capability (e.g. military, or medical applications), special processing/testing/conditions of sale may be available on application to Plessey.

Data Sheet 291515 Issue 1

Plessey Semiconductors Ltd.
Design & Technology Centre, Delta 500, Delta Business Park, Great Western Way, Swindon, UK SN5 7XE
Tel: +44 1793 518000 Fax: +44 1793 518030 Web: www.plesseysemi.com