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ICS & SEMICONDUCTORS

Plessey EPIC sensor samples now available

Published: 10 October, 2011



Plessey Semiconductors announced that commercial samples of its Electric Potential Integrated Circuit (EPIC) sensors are now available. The first products are optimised for use as an ECG sensor and provide a resolution as good as or better than conventional electrodes.

EPIC sensors offer several advantages that save money and speed up taking readings. First, they are dry contact so that no gels or similar fluids are required to make contact. Second, the sensors can be simply cleaned between uses - unlike conventional ECG sensors that have to be disposed of after every use. Third, only a pair of sensors are required that are held in each hand which is very quick to do unlike the current approach that requires seven or more leads to be carefully applied to specific locations on the body whilst the patient lies down.

This ease of detection even through clothes or at a distance means that new ways of taking ECG measurements are being investigated by customers. For example, the EPIC sensors could be built into stretchers for immediate monitoring of patients heart rate and respiratory action or built into clothing to monitor stress levels in emergency response personnel such as firemen. As the sensors are very compact and the detection circuitry requires very low power, the EPIC sensor opens up the opportunity for ECG monitoring over a long period of time so that abnormalities can be picked up during normal activities without the stress of being in a hospital or doctor's room.

"The first EPIC products are designed for ECG applications for health and patient monitoring as well as fitness and wellness applications," said Derek Rye, Plessey's Marketing Manager. "The next release products available later in this quarter will be optimised for movement sensing where applications range from security, to automotive, to safety through to gesture recognition applications. The gesture recognition capability has been picked up for controller-less gaming and the remote control of electronic consumer products like televisions, monitors and computers. We are working on end applications where the potential volumes are in millions per month. This is all very exciting for the company."

The EPIC sensor is being offered in two package formats. The PS25101 is supplied in the same custom engineered, metal or plastic disc style, probe assembly that was used for the first prototype sensors and demonstration systems. This comes complete with a connecting lead and DIN plug termination.

The PS25201 is an ultra-high impedance sensor supplied in a more compact custom package with four exposed balls for surface mount assembly onto the PCB of a customer's equipment design. It measures 10mm square and 3mm high. Because of the large coupling capacitance of the human body of around 250pF, the EPIC sensor can be used to obtain true ECG signals by detecting the potential at surface of the skin that is typically 1mV p-p. These sensors are designed for use in high reliability medical applications and, if required, can be built with an anodised titanium electrode.

The pricing for the sensors is completely dependent upon the end application and intended use. A design guide is available and quotation for volume can be provided upon request. Application boards with single and dual-channel PS25201 sensors are available from Plessey to assist with evaluating and prototyping. Plessey points out that the next family of EPIC sensors will be engineered for high volume automotive and consumer applications where prices of just a few dollars can be expected.

The EPIC sensor is a completely new area of sensor technology that measures changes in an electric field in a similar way to a magnetometer detecting changes in a magnetic field. The technology works at normal room temperatures and functions as an ultra-high, input impedance sensor that acts as a highly stable, extremely sensitive, contactless digital voltmeter to measure tiny changes in the electric field down to millivolts. Most places on Earth have a vertical electric field of about 100 Volts per metre. The human body is mostly water and this interacts with the electric field. EPIC technology is so sensitive that it can detect these changes at a distance and even through a solid wall.

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