

Interface Electronics for Integrated Magnetic Sensors

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This paper is a review of the interface electronics for silicon magnetic sensors. There are many reports which deal with silicon magnetic sensors, and recently, related review papers can be found. However, literature on the interface principle seems to be scarce. In this review, silicon magnetic sensors are classified by their output forms, e.g., differential voltage output, differential current output, low output resistance, and high output resistance. For the overall category of magnetic sensors, the characteristics and suitable interface circuitry with examples of the integrated magnetic sensor are presented and discussed.

1. Introduction

Recently, many silicon magnetic sensors have been developed because well-established IC fabrication technologies can be employed, and they have the ability to integrate a signal processing circuit on the same chip.⁽¹⁻⁴⁾ Examples of such devices will be discussed in this special issue of *Sensors and Materials*.

Their structures are varied, such as Hall-type sensors, transistor-type sensors, and combined-type sensors. Thus, their output forms are manifold: e.g., differential voltage signals, current signals, and low-impedance or high-impedance output signals. In the integrated magnetic sensors reported hitherto, electrical interfaces were adopted according to the sensors and circuitry. To date, although some integrated magnetic sensors have been reported and some reviews on them have also been published,⁽⁵⁻⁷⁾ reviews on interface electronics between silicon magnetic sensors