



## Application Note: Magnetic Sensor Placement Guidelines

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This application note describes the guidelines for placement of magnetic sensors in real systems.

### 1. Component Types

Radio Frequency (GSM/GPRS/EDGE, WCDMA, Bluetooth, WLAN (802.11a/b/g/n), GPS)

- Transmitters
- Receivers
- SAW Filters (TX and RX)
- Power Amplifier Module (PAM)
- Oscillators (Crystals, PLL, TCXO, VXO)
- Antennas
- FM Radio Tuner
- SDRAM Subsystem

Power

- Batteries & Chargers
- Power Supplies
- Regulators (LDO, Charge Pumps),  
Switchers

- Power Transistors
- LED Drivers
- Audio Codec /Amplifiers
- Camera Flash Module

Magnetic

- Loud Speakers (Receiver, Ringer)
- Magnetic Switches
- Motors (Vibration, Hard Disk Drives, Auto Focus & Zoom)
- Inductors, Capacitors, Resistors and Ferrite Beads
- Microphones
- Connectors (SIM, SD, etc.)

### 2. Placement Guidelines

- When placing magnetic sensors be aware of the above components and that many components contain ferrous materials (Nickel, Iron, and Cobalt). Nickel plating is the most common and is present on lead frames of integrated circuits and solder end caps of surface mount components. Other components such as power transistors may have packages with large amounts of iron in the heat spreading elements. In all cases placing the components as far away as possible will reduce the effects on the sensor

A good rule of thumb to use is to keep adjacent components at least three (3) end cap lengths (pad size) away from the magnetic sensor components. This also applies to parts that may be placed on the opposite side of the printed circuit board.

For example, a 0603 capacitor with its 30mil (0.762mm) end caps should be at least 90mils (2.286mm) away from the magnetic sensors.

- When placing sensors be aware of the PCB traces that carry current of 100mA or greater. These traces should be kept a minimum of 590mils (15mm).

- c. Do not cover the magnetic sensor with any material that can block the magnetic field.

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## Revision History

Revision	Date	Comment
0.0	18-Jun-08	Initial Draft release
1.0	27-Jun-08	Initial release
1.1	17-Oct-08	Minor Update (Added SDRAM subsystem and Connectors)

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