A Lorentz force based fusion magnetometer-accelerometer with dual functions for the electronic compass

Cho J.-M., Lee S.-Y., Kim S.-W., Kim K.S., An S.

ASIC Design Lab., Department of Electronics and Computer Engineering, University of Korea, Seoul 136-701, South Korea; Navigation MEMS Laboratory, Samsung Electromechanics Co., Ltd., Suwon, Kyunggi-Do 442-743, South Korea

Abstract: The authors present a Lorentz force based fusion magnetometer- accelerometer, which can detect simultaneously both geomagnetic field and acceleration. The sensor is fabricated on a silicon-on-glass wafer and packaged by silicon-gold eutectic bonding. When 1 g and 0.35 G are applied to the sensor, the fabricated magnetometer-accelerometer has a sensitivity of 153 mVG in magnetic field sensing and a sensitivity of 400 mVg in acceleration sensing. The sensor performance is sufficient for resolving approximately 10° in the orientation angle and it can function as an electronic compass in portable navigators that must be small and have low cost, and low power.

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Authors with affiliations:

1. Cho, J.-M., ASIC Design Lab., Department of Electronics and Computer Engineering, University of Korea, Seoul 136-701, South Korea
2. Lee, S.-Y., ASIC Design Lab., Department of Electronics and Computer Engineering, University of Korea, Seoul 136-701, South Korea
3. Kim, S.-W., ASIC Design Lab., Department of Electronics and Computer Engineering, University of Korea, Seoul 136-701, South Korea
4. Kim, K.S., Navigation MEMS Laboratory, Samsung Electromechanics Co., Ltd., Suwon, Kyunggi-Do 442-743, South Korea
5. An, S., Navigation MEMS Laboratory, Samsung Electromechanics Co., Ltd., Suwon, Kyunggi-Do 442-743, South Korea