

A3213 and 3214

Micropower omnipolar digital Hall-effect switches are ultra-sensitive

The A3213 and A3214 from Allegro MicroSystems Europe are micropower omnipolar digital switches based on ultra-sensitive, pole-independent Hall-effect switches with latched digital outputs.

Each device includes, on a single silicon chip, a Hall-voltage generator, small-signal amplifier, chopper stabilisation circuitry, a latch and a MOSFET output. Advanced BiCMOS processing is used to achieve low-voltage and low-power operation, and also results in excellent component matching, very low input-offset errors, and small component geometries.

The nominal current consumption is only 300 μA for the A3213 and 5 μA for the A3214. A 2.4-5.5 V operating voltage range combined with a unique clocking scheme reduces the average operating power requirements to 825 μW for the A3213 and 14 μW for the A3214.

Unlike other Hall-effect switches, either a north or south pole of sufficient strength will turn the output on; in the absence of a magnetic field, the output is off. The polarity independence and minimal power requirement allow these devices to easily replace reed switches to provide superior reliability as well as eliminating any need for signal conditioning.

Improved stability is made possible through chopper stabilisation to provide dynamic offset cancellation, which reduces the residual offset voltage normally caused by device overmoulding, temperature dependencies and thermal stresses. The result is extremely low switch-point drift and a high degree of resistance to mechanical and temperature effects. The devices are also protected against electrostatic discharge up to 5 kV.

The low power consumption, small geometry and omnipolar characteristics make the A3213 and A3214 ideally suited to the detection of open/closed positions in battery-operated equipment such as mobile telephones, pagers and laptop computers.

The devices are offered in a single-inline package (suffix UA) or the SOT23W surface-mount package (suffix LH).
