



Micropower Hall-effect latch IC for tracker-ball and scroll-bar applications

The new A1174 from Allegro MicroSystems Europe is an ultrasensitive micropower Hall-effect latch IC with internally or externally controlled sample and sleep periods for use in portable devices that employ rotational speed and direction sensing systems such as tracker balls or scroll bars for PDAs, mobile phones or MP3 players.

The new device, which is designed for use in systems with a power supply voltage between 1.65 V and 3.5 V, has a single push-pull output structure and does not require an external pull-up resistor for reliable operation. When a sufficient positive magnetic field is present on the device, the device output switches to the low state, and is latched in this state until a negative field of sufficient strength latches the device output into the high state.

The A1174 is not just a simple micro-power latch. It has different clocking modes that can be used to control the average power consumption in portable applications while optimising it for a particular application. Average current consumption in dual or external clocking modes is more than ten times lower than the average micro-power latch, making the Allegro A1174 a leader in lower power for speed and direction sensing in portable devices.

The innovative clocking scheme allows the device to be set in various working modes by using the external clock and dual clock pins. In dual-clock mode, the device switches between predefined slow and fast sampling rates. When rotation is detected, the device will sample in fast mode, and will switch to slow sampling mode when the rotation stops.

In external clocking mode, the user clocks the device to achieve the desired on and off time to control average power. Manual clocking also helps to achieve synchronous clocking of multiple devices, allowing for a defined phase relationship between the output transitions of each device in direction-detection systems. By using either dual clocking mode or external clocking mode, the average current is dramatically reduced.

Improved magnetic switch-point stability is made possible through dynamic offset cancellation using chopper stabilisation, which reduces the residual offset voltage normally caused by device over-moulding, temperature dependencies and thermal stress.

The A1174 is available in a lead (Pb) free 6-pin MLP micro-lead-frame package measuring only 1.5 mm × 2 mm × 0.40 mm for surface mounting, with the lead frame plated in nickel-palladium and an exposed pad for enhanced thermal dissipation.

A1174

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- With internally or externally controlled sample and sleep periods for use in portable devices that employ rotational speed and direction sensing