A3214 Micropower, Ultrasensitive Hall-Effect Switches

General Description:

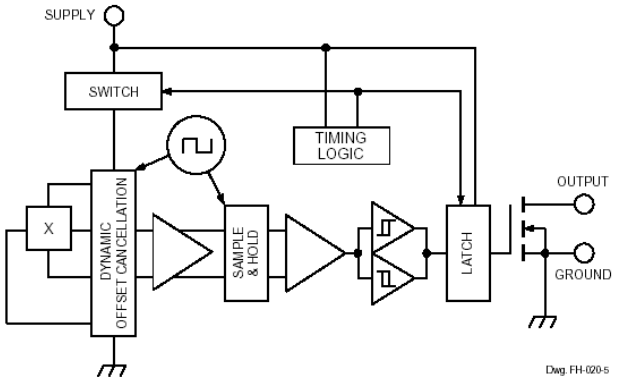
The A3213 and A3214 integrated circuits are ultra-sensitive, pole independent Hall-effect switches with a latched digital output. They are especially suited for operation in battery-operated, hand-held equipment such as cellular and cordless telephones, pagers, and palmtop computers. A 2.4 to 5.5 V operation and a unique clocking scheme reduce the average operating power requirements – the A3213 to 825 µW, the A3214 to 14 µW (typical, at 2.75 V)! Except for operating duty cycle and average operating current, the A3213 and A3214 are identical.

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 allows these devices to easily replace reed switches for superior reliability and ease of manufacturing, while eliminating the requirement for signal conditioning.

Improved stability is made possible through chopper stabilization (dynamic offset cancellation), which reduces the residual offset voltage normally caused by device overmolding, temperature dependencies, and thermal stress.

These devices include, on a single silicon chip, a Hall-voltage generator, small-signal amplifier, chopper stabilization, a latch, and a MOSFET output. Advanced BiCMOS processing is used to take advantage of low-voltage and low-power requirements, component matching, very low input-offset errors, and small component geometries.

Range 'E' devices are rated for operation over a temperature range of -40°C to 85°C; range 'L' devices are rated for operation over a temperature range of -40°C to 150°C. Two package styles provide a mag net i cal ly op ti mized pack age for most ap pli ca tions. ‘LH’ is a miniature low-profile surface-mount package, 'UA' is a three-lead SIP for through-hole mounting. For the A3213, a microleadless DFN/MLP package 'EL' also is available. Each package is available in a lead (Pb) free version (suffix, –T) , with a 100% matte tin plated leadframe.



Key Features:

- Micropower operation
- Operate with north or south pole
- 2.4 to 5.5 V battery operation
- Chopper stabilized
    - Superior temperature stability
    - Extremely low switch-point drift
    - Insensitive to physical stress
- High ESD protection
- Solid-state reliability
- Small size
- Easily manufacturable with magnet pole independence

Applications:

- Battery-operated devices
- Hand-held equipment such as cellular and cordless telephones,
- Pagers, and
- Palmtop computers

Related Products Information:

Mfr Part #	Farnell #	Newark #	Description
A3214ELHLT-T	1457138	87K3366	SWITCH, HALL EFFECT, SMD, SOT-23W
A3214LLHLT-T	1199666	65K5166	Hall Effect Switch IC, SOT-23
A3214LUA-T	1791389	67R6763	HALL EFFECT SWITCH, MICROPOWER, 3SIP
A3214EUA-T	1651972	65K5165	HALL EFFECT SWITCH, 3SIP