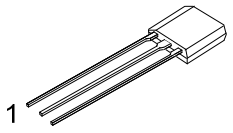
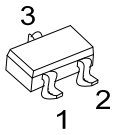
# SK1816A

**LINEAR INTEGRATED CIRCUIT**

# BIPOLAR LATCH TYPE HALL EFFECT FOR HIGH-TEMPERATURE OPERATION




SIP-3




SOT-23
(EIAJ SC-59)

## ■ DESCRIPTION

The UTC **SK1816A** is a semiconductor integrated circuit utilizing the Hall effect. It designed to operate in the alternating magnetic field especially at low supply voltage and operation over extended temperature ranges to +125°C.

This Hall IC is suitable for application to various kinds of sensors, contact-less switches, such as Speed sensor, Position sensor, Rotation sensor, Contact-less sensor, and Motor control.

## ■ FEATURES

* Wide Supply Voltage Range of 3.0V to 20V
* Wide Temperature Operation Range of -40°C ~ +125°C
* Alternating Magnetic Field Operation
* Built-in Protection Diode
* TTL and MOS IC are Directly Drivable by the Output
* The life is Semi Permanent because it Employs Contact-Less Parts

## ■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| SK1816AL-AE3-R | SK1816AG-AE3-R | SOT-23 | I | O | G | Tape Reel |
| SK1816AL-G03-B | SK1816AG-G03-B | SIP-3 | I | G | O | Tape Box |
| SK1816AL-G03-K | SK1816AG-G03-K | SIP-3 | I | G | O | Bulk |

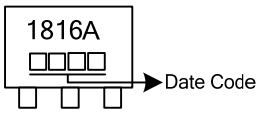
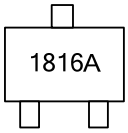
Note: Pin Assignment: O: $V_{OUT}$ I: $V_{CC}$ G: GND

SK1816AG-AE3-R

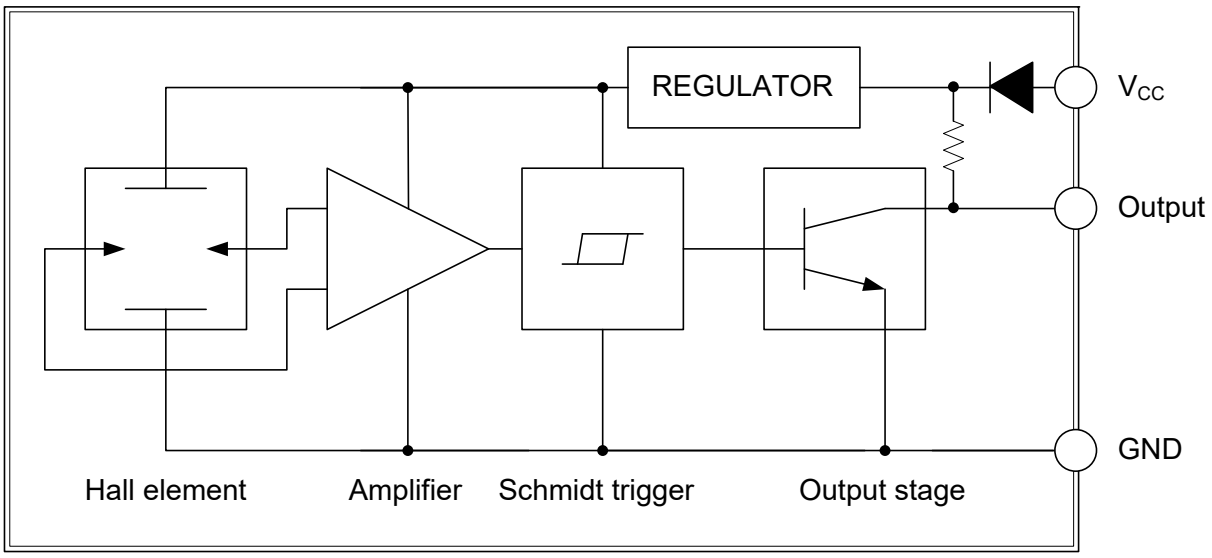
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AE3: SOT-23, G03: SIP-3
(3) G: Halogen Free and Lead Free, L: Lead Free

## ■ MARKING

| SIP-3 | SOT-23 |
|---|---|
|  |  |

■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATINGS ($T_A$=25°C, unless otherwise specified.)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Supply Voltage | | $V_{CC}$ | 3.0 ~ 20 | V |
| Supply Current | | $I_{CC}$ | 10 | mA |
| Circuit Current | | $I_O$ | 20 | mA |
| Power Dissipation | SOT-23 | $P_D$ | 200 | mW |
| | SIP-3 | | 400 | mW |
| Operating Temperature | | $T_{OPR}$ | -40 ~ +125 | °C |
| Storage Temperature | | $T_{STG}$ | -40 ~ +150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

## ■ ELECTRICAL CHARACTERISTICS ($T_A$=25°C, unless otherwise specified.)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Low-Level Output Voltage | $V_{OL}$ | $V_{CC}$ = 16V, $I_{OUT}$=12mA, B=30 mT | | 0.2 | 0.7 | V |
| | | $V_{CC}$ =3.6V, $I_{OUT}$=12mA, B=30 mT | | 0.3 | 0.7 | V |
| Output Leakage Current | $I_{LEAK}$ | $V_{CC}$ =16V, B=-30 mT | | 1.0 | 10 | μA |
| Supply Current | $I_{CC}$ | $V_{CC}$ =16V | | 6 | 10 | mA |
| | | $V_{CC}$ =3.6V | | 5.5 | 10 | mA |
| Output Switching Time | $T_R$ | $V_{CC}$ =16V, $R_L$=10KΩ, $C_L$=10pF | | | 5 | μS |
| | $T_F$ | $V_{CC}$ =16V, $R_L$=10KΩ, $C_L$=10pF | | | 1 | μS |
| **MAGNETIC CHARACTERISTICS** | | | | | | |
| Operate Point | $B_{OP}$ | At $T_A$=25°C | | | 5 | mT |
| Release Point | $B_{RP}$ | At $T_A$=25°C | | | -5 | mT |
| Hysteresis | $B_{HYS}$ | At $T_A$=25°C | | 5.5 | 10 | mT |

Note: 1. $B_{OP}$=operate point (output turns ON); $B_{RP}$ =release point (output turns OFF); $B_{HYS}$ =hysteresis($B_{OP}$ – $B_{RP}$). As used here, negative flux densities are defined as less than zero (algebraic convention). Typical values are at $T_A$=25°C and $V_{CC}$ =12V.

2. 1mT=10 gauss

## ■ PACKAGE INFORMATION

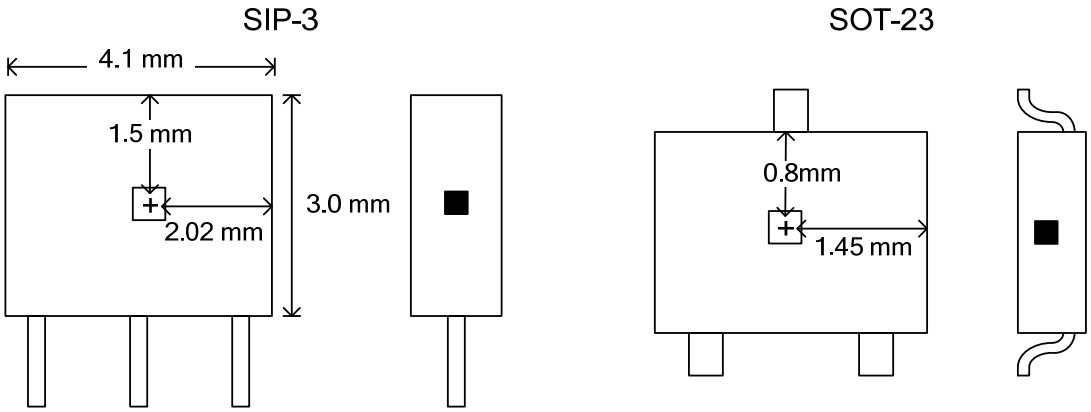
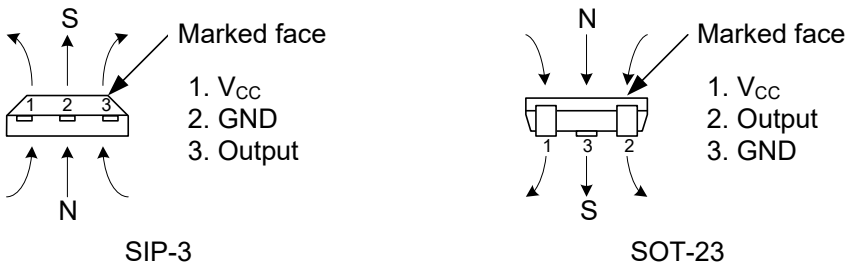



**Fig. 1 SENSOR LOCATIONS**



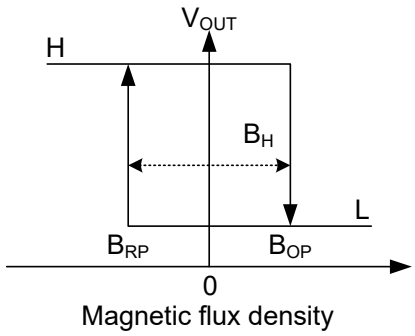
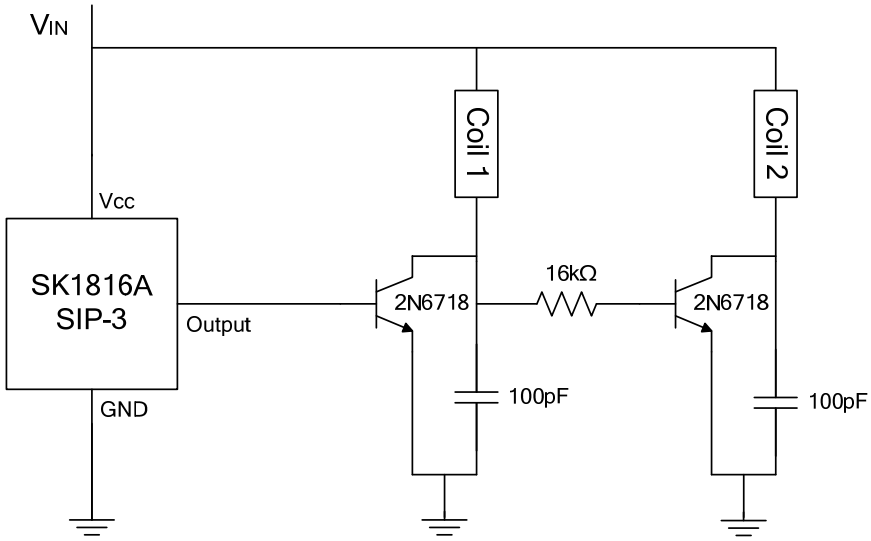




**Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX**

## ■ TYPICAL APPLICATION CIRCUIT




**FOR DC FAN 1**

## ■ TEST CIRCUIT