



## SK1812

## LINEAR INTEGRATED CIRCUIT

### BIPOLAR LATCH TYPE HALL - EFFECT FOR HIGH-TEMPERATURE OPERATION

#### DESCRIPTION

SK1812 is a semiconductor integrated circuit utilizing the Hall effect. It has been so designed as 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, contactless switches, and the like.

#### FEATURES

- \* Wide supply voltage range of 2.5V to 20V
- \* Wide temperature operation range of -20°C ~ +125°C
- \* Alternating magnetic field operation
- \* TTL and MOS IC are directly drivable by the output
- \* The life is semipermanent because it employs contactless parts
- \* SIP-3 and SOT-23 package

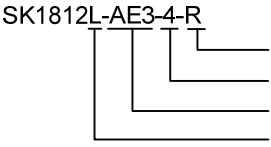
#### APPLICATIONS

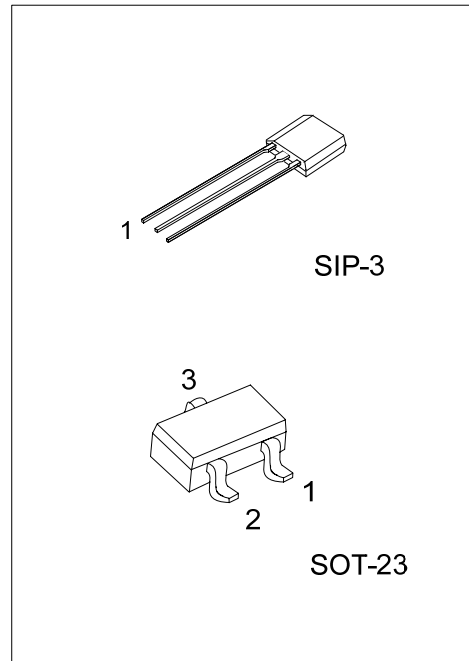
- \* Speed sensor
- \* Position sensor
- \* Rotation sensor
- \* Contact-less sensor
- \* Motor control

#### ORDERING INFORMATION

| Order Number   |                   | Package | Pin Assignment |   |   | Packing   |
|----------------|-------------------|---------|----------------|---|---|-----------|
| Normal         | Lead Free Plating |         | 1              | 2 | 3 |           |
| SK1812-AE3-4-R | SK1812L-AE3-4-R   | SOT-23  | O              | I | G | Tape Reel |
| SK1812-G03-D-K | SK1812L-G03-D-K   | SIP-3   | I              | G | O | Bulk      |

Note: Pin Assignment: I:V<sub>CC</sub> O:V<sub>OUT</sub> G:GND

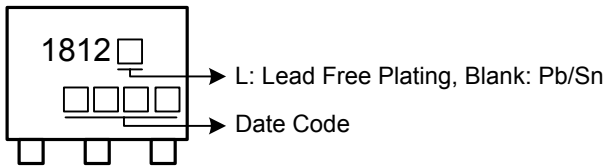
|  |  |   |
|--|--|---|
|  <p>SK1812L-AE3-4-R</p> | <p>(1)Packing Type<br/>(2)Pin Assignment<br/>(3)Package Type<br/>(4)Lead Plating</p> | <p>(1) K: Bulk, R: Tape Reel<br/>(2) refer to Pin Assignment<br/>(3) AE3: SOT-23, G03: SIP-3<br/>(4) L: Lead Free Plating, Blank: Pb/Sn</p> |
|--|--|---|



\*Pb-free plating product number: SK1812L

### MARKING INFORMATION

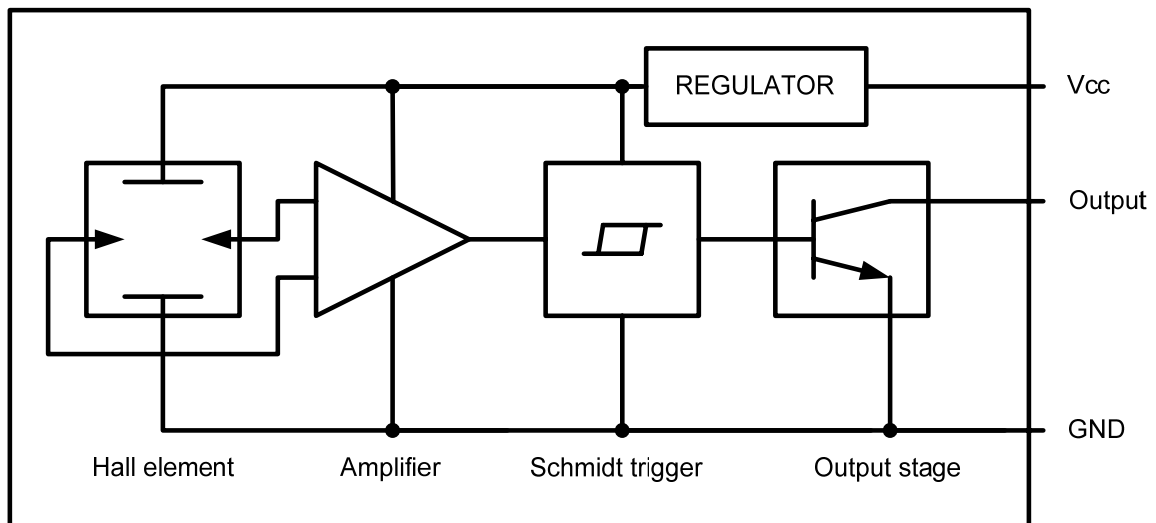
#### SIP-3



#### SOT-23



### BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| PARAMETER             | SYMBOL           | RATINGS    | UNIT |
|-----------------------|------------------|------------|------|
| Supply Voltage        | V <sub>CC</sub>  | 2.5~20     | V    |
| Supply Current        | I <sub>CC</sub>  | 10         | mA   |
| Circuit Current       | I <sub>o</sub>   | 20         | mA   |
| Power Dissipation     | SIP-3            | 400        | mW   |
|                       | SOT-23           | 200        |      |
| Operating Temperature | T <sub>OPR</sub> | -20 ~ +125 | °C   |
| Storage Temperature   | T <sub>STG</sub> | -55 ~ +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 (Ta=25°C, unless otherwise specified.)

| PARAMETER                       | SYMBOL            | TEST CONDITIONS                                       | MIN | TYP | MAX | UNIT |
|---------------------------------|-------------------|---|-----|-----|-----|------|
| Low-Level Output Voltage        | V <sub>OL</sub>   | V <sub>CC</sub> =16V, I <sub>OUT</sub> =12mA, B=30mT  |     |     | 0.7 | V    |
|                                 |                   | V <sub>CC</sub> =3.6V, I <sub>OUT</sub> =12mA, B=30mT |     |     | 0.7 | V    |
| Output Leakage Current          | I <sub>LEAK</sub> | V <sub>CC</sub> =16V, B=-30mT                         |     | 1   | 10  | μA   |
| Output Short Circuit Current    | -I <sub>OS</sub>  | V <sub>CC</sub> =16V, V <sub>OUT</sub> =0V, B=-30mT   |     | 0.8 |     | mA   |
| Supply Current                  | I <sub>CC</sub>   | V <sub>CC</sub> =16V                                  |     |     | 6   | mA   |
|                                 |                   | V <sub>CC</sub> =3.6V                                 |     |     | 5.5 | mA   |
| <b>MAGNETIC CHARACTERISTICS</b> |                   |   |     |     |     |      |
| Operate Point                   | B <sub>OP</sub>   | Ta = +25°C  |     |     | 5   | mT   |
| Release Point                   | B <sub>RP</sub>   | Ta = +25°C  |     |     | -5  | mT   |
| Hysteresis                      | B <sub>HYS</sub>  | Ta = +25°C  |     |     | 10  | mT   |

NOTE: 1. B<sub>OP</sub> =operate point (output turns ON); B<sub>RP</sub> =release point (output turns OFF); B<sub>HYS</sub> =hysteresis(B<sub>OP</sub> – B<sub>RP</sub>).

As used here, negative flux densities are defined as less than zero (algebraic convention).

Typical values are at Ta = +25°C and V<sub>CC</sub> = 12V.

2. 1mT=10 gauss

## ■ PACKAGE INFORMATION

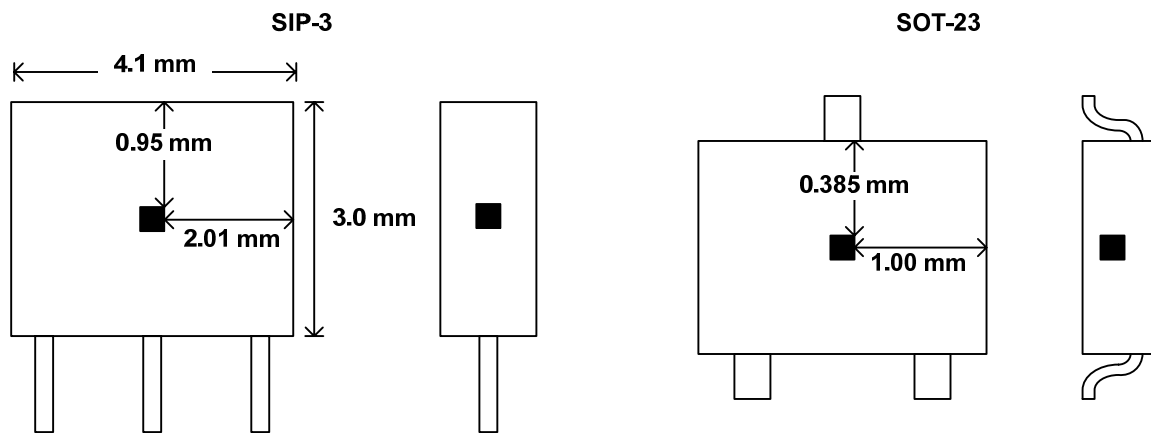


Fig. 1 SENSOR LOCATIONS

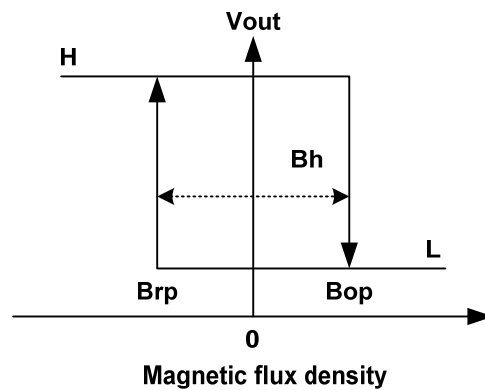
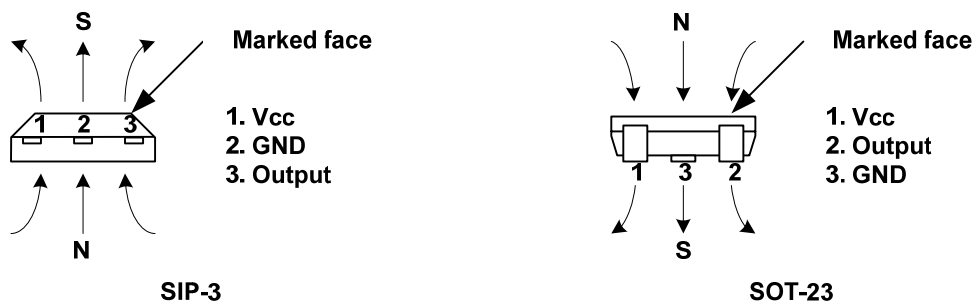
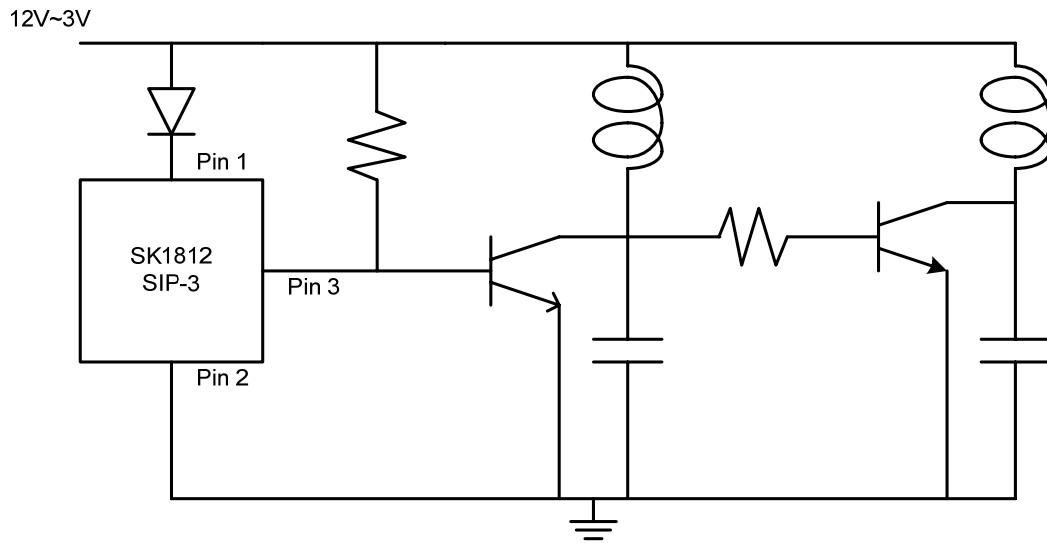
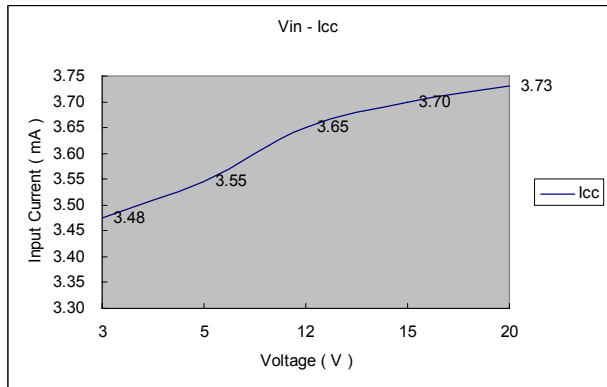
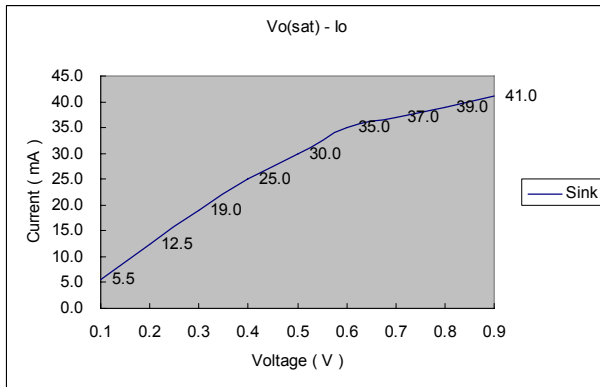
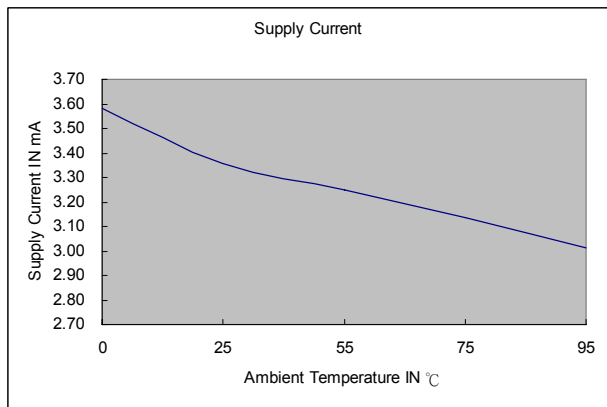
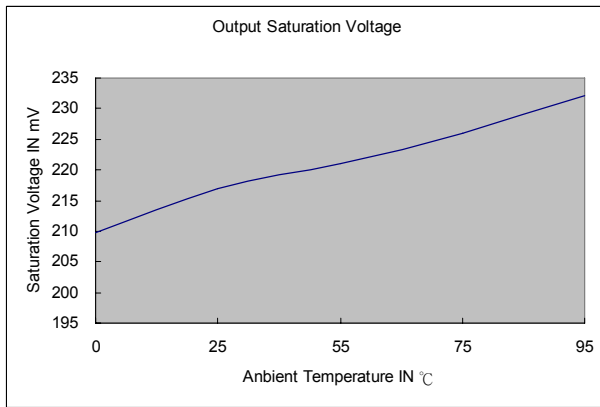
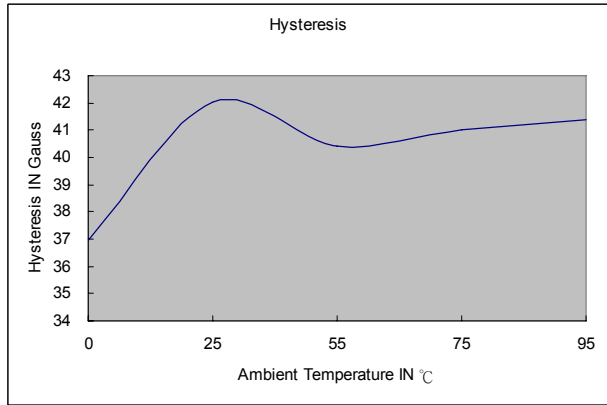
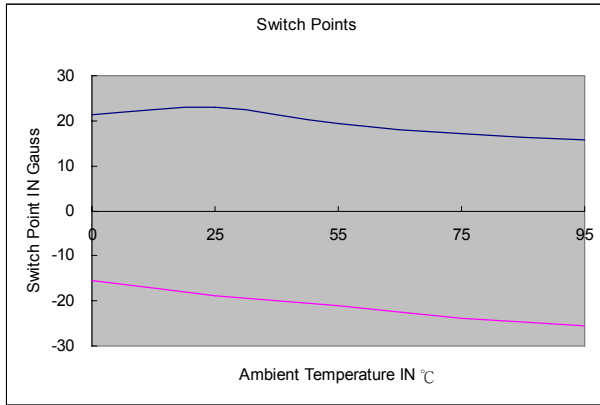


Fig.2 APPLYING DIRECTION OF MAGNETIC FLUX

### ■ TYPICAL APPLICATION CIRCUIT



## TYPICAL CHARACTERISTICS



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