



SK1816

LINEAR INTEGRATED CIRCUIT

BIPOLAR LATCH TYPE HALL EFFECT FOR HIGH-TEMPERATURE OPERATION

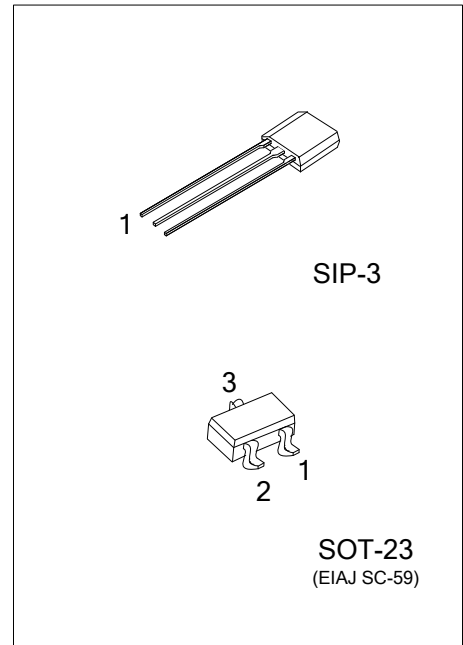
DESCRIPTION

The UTC **SK1816** 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 2.5V to 20V
- * Wide Temperature Operation Range of -30°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
- * SIP-3 and SOT-23 Package are Available.



ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|---------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| SK1816L-AE3-R | SK1816G-AE3-R | SOT-23 | O | I | G | Tape Reel |
| SK1816L-G03-B | SK1816G-G03-B | SIP-3 | I | G | O | Tape Box |
| SK1816L-G03-K | SK1816G-G03-K | SIP-3 | I | G | O | Bulk |

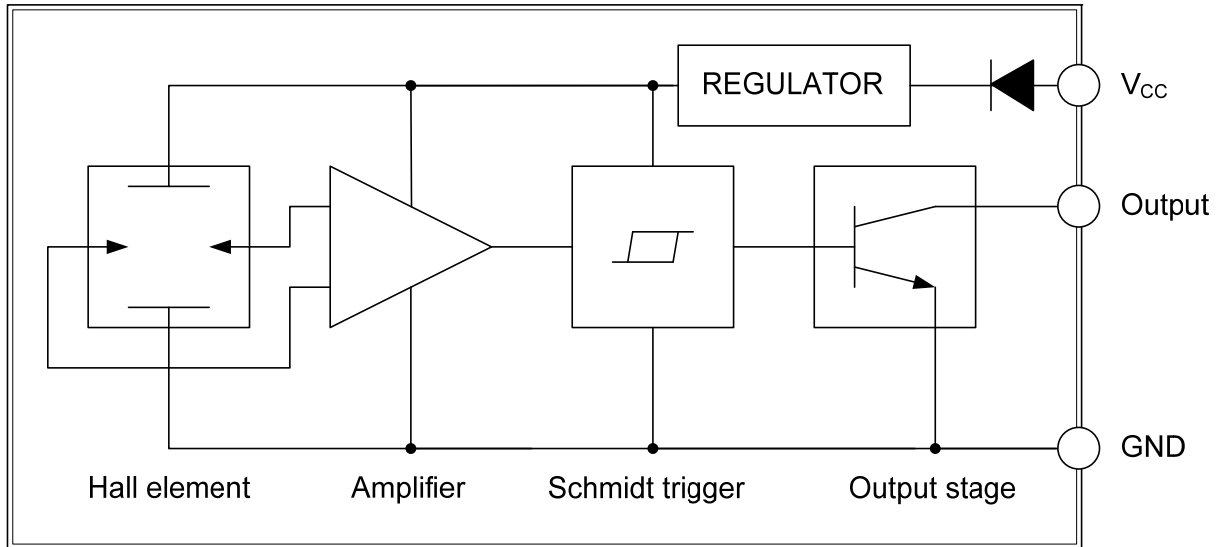
Note: Pin Assignment: I: V_{CC} O:V_{OUT} G:GND

| | |
|---|---|
| <p>SK1816L-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p> | <p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AE3: SOT-23, G03: SIP-3 (3) G: Halogen Free, L: Lead Free</p> |
|---|---|

MARKING

| SIP-3 | SOT-23 |
|---|---|
| <p>L: Lead Free G: Halogen Free Date Code</p> | <p>L: Lead Free G: Halogen Free</p> |

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|-----------------------|--------|------------------|------------|------|
| Supply Voltage | | V _{CC} | 2.5~20 | V |
| Supply Current | | I _{CC} | 10 | mA |
| Circuit Current | | I _O | 20 | mA |
| Power Dissipation | SIP-3 | P _D | 400 | mW |
| | SOT-23 | | 200 | mW |
| Operating Temperature | | T _{OPR} | -30 ~ +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 | 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

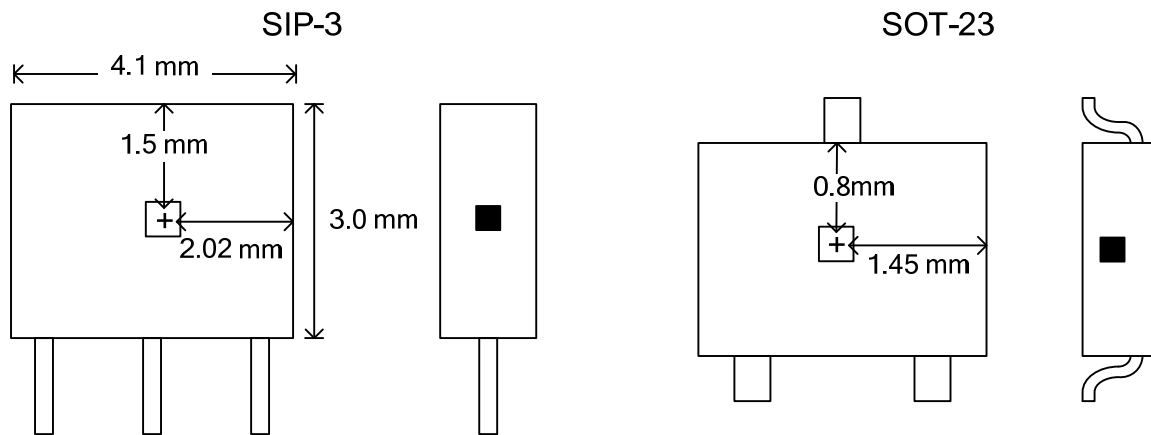


Fig. 1 SENSOR LOCATIONS

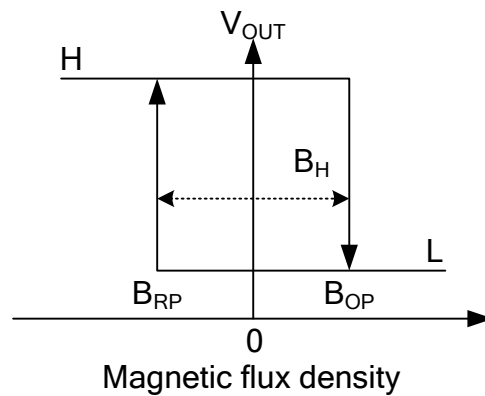
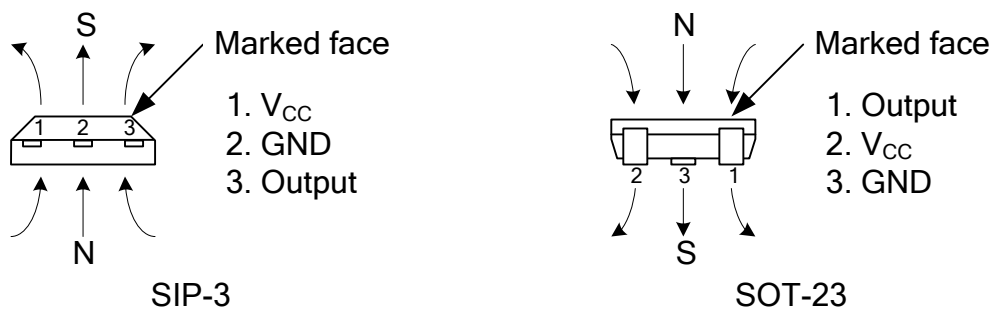
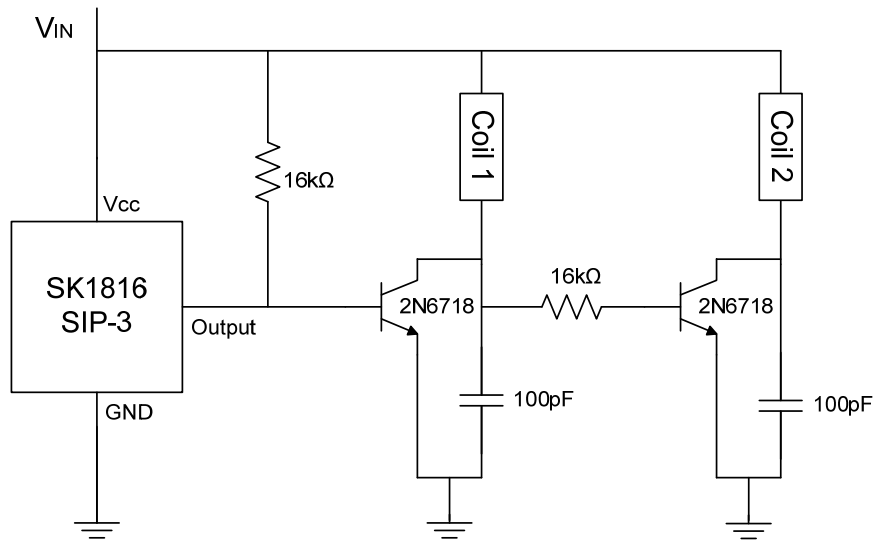
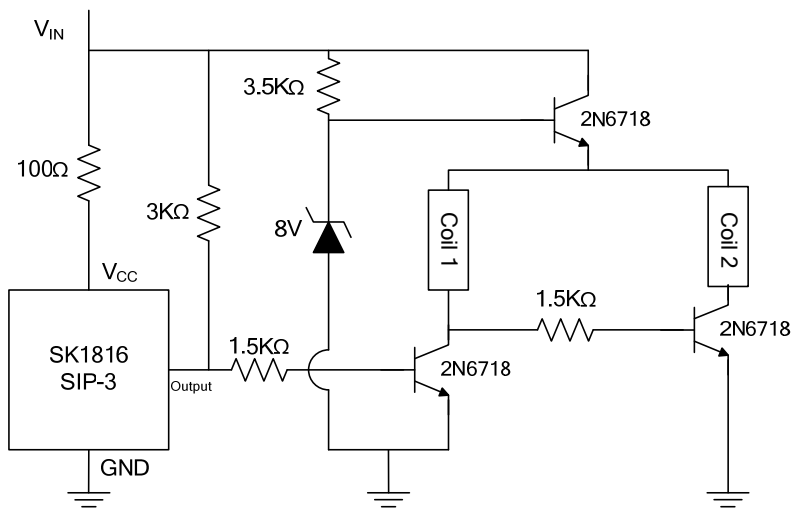


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

■ TYPICAL APPLICATION CIRCUIT

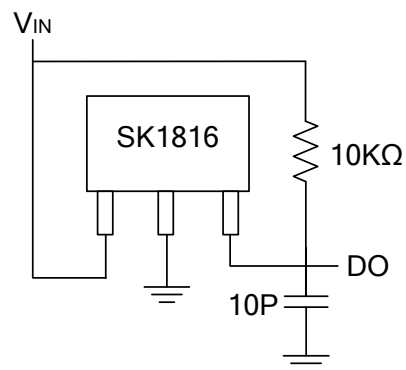


FOR DC FAN 1

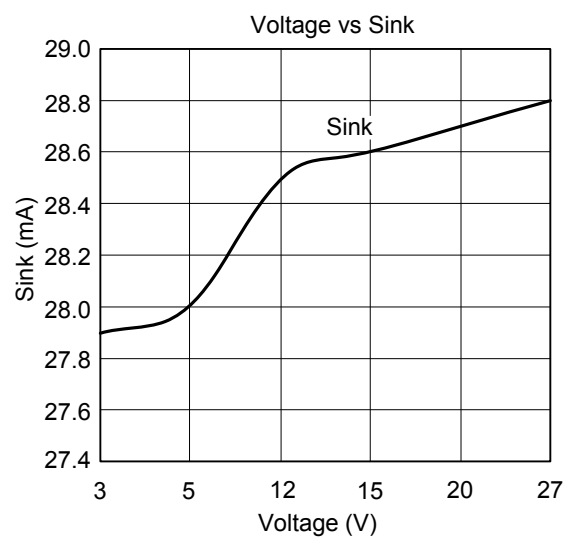
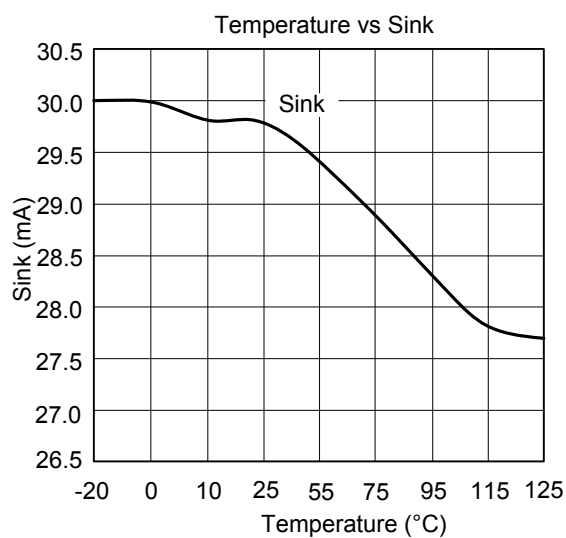
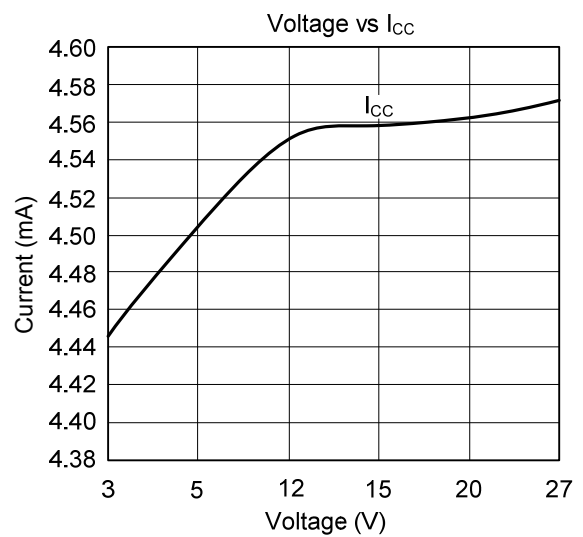
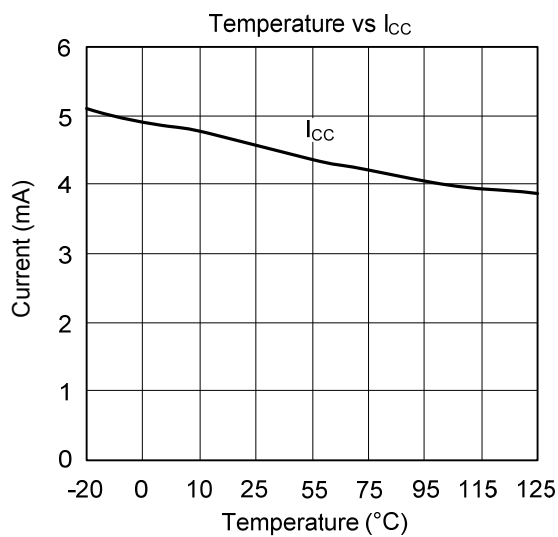
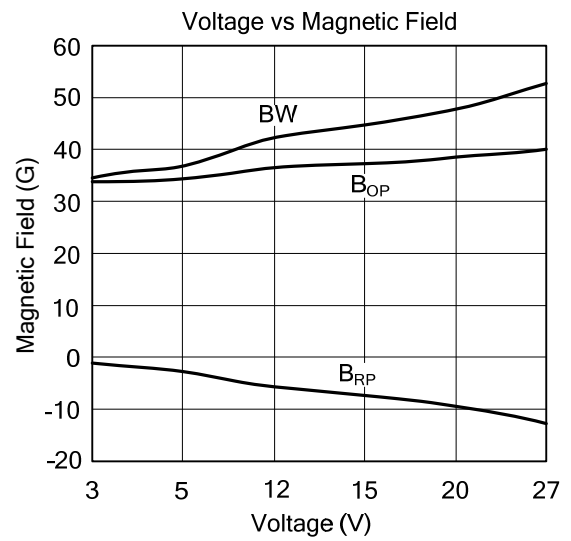
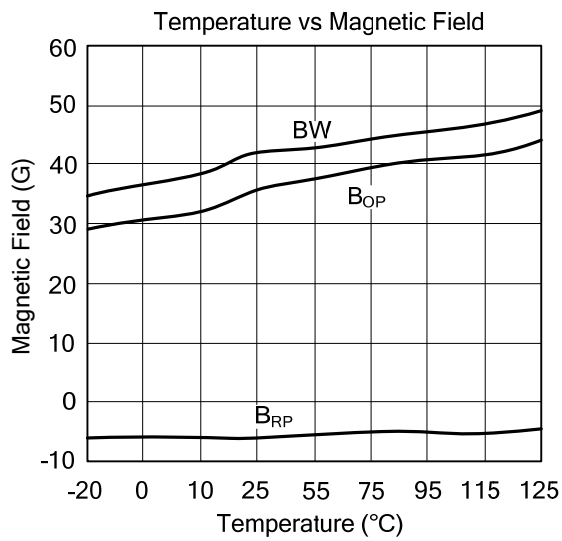


FOR DC FAN 2

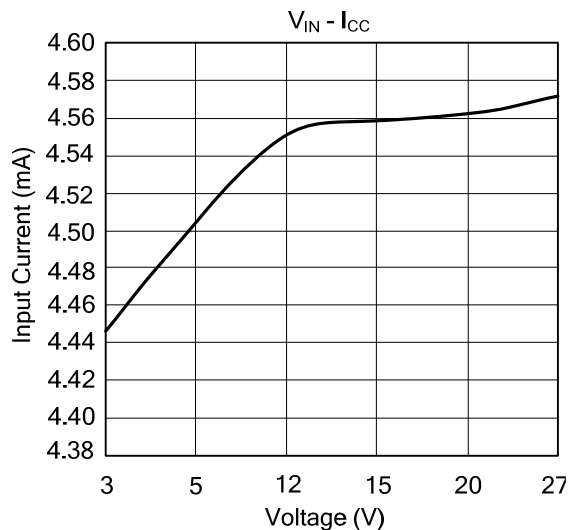
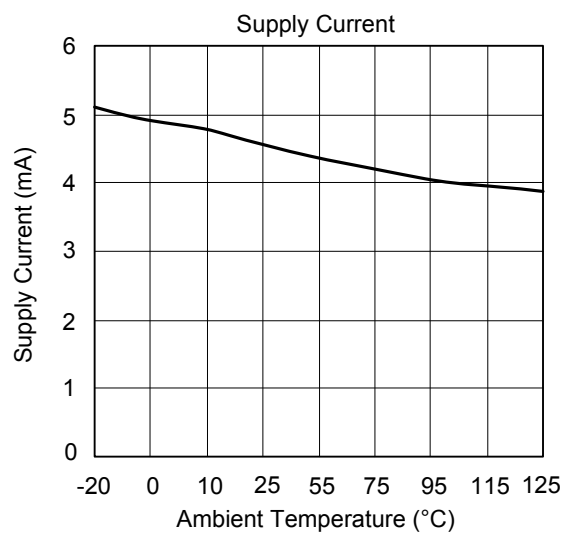
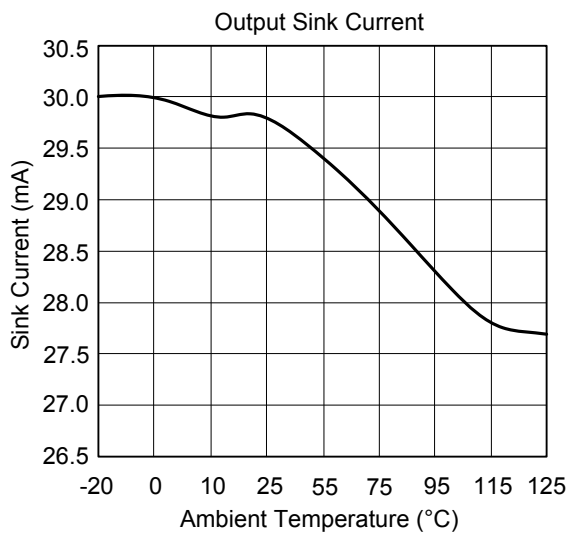
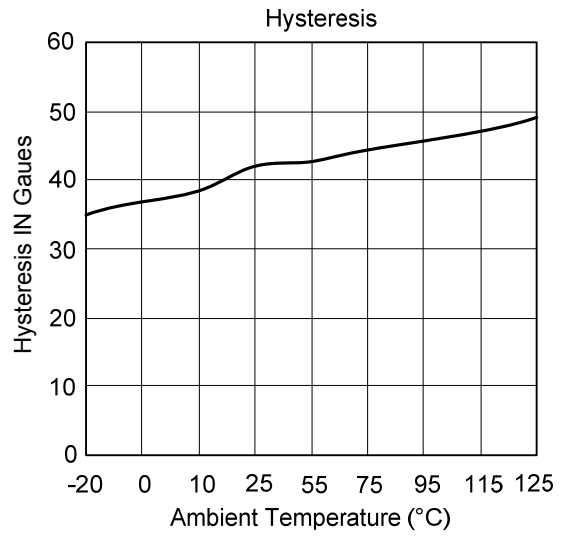
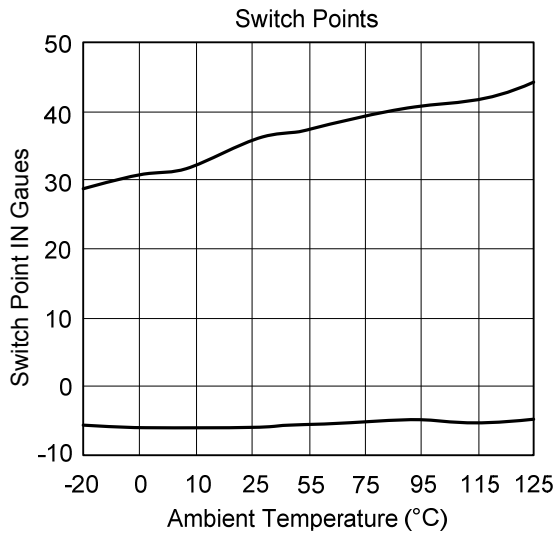
■ TEST CIRCUIT



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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