



## SK1816

## LINEAR INTEGRATED CIRCUIT

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

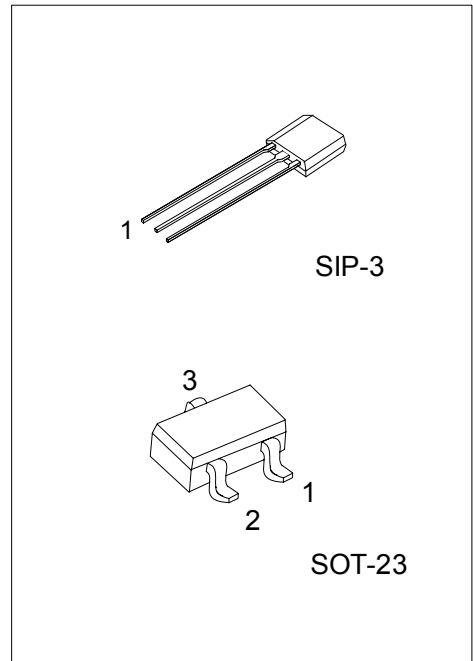
#### DESCRIPTION

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 -20°C ~ +125°C
- \* Alternating magnetic field operation
- \* Built-in protection diode
- \* TTL and MOS IC are directly drivable by the output
- \* The life is semipermanent because it employs contact-less parts
- \* SIP-3 and SOT-23 package are available.



\*Pb-free plating product number: SK1816L

#### ORDERING INFORMATION

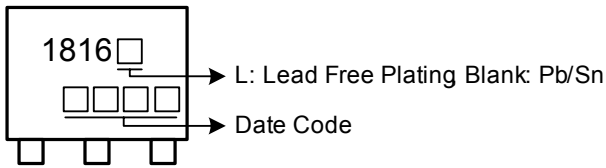
Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
SK1816-AE3-4-R	SK1816L-AE3-4-R	SOT-23	O	I	G	Tape Reel
SK1816-G03-D-K	SK1816L-G03-D-K	SIP-3	I	G	O	Bulk

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

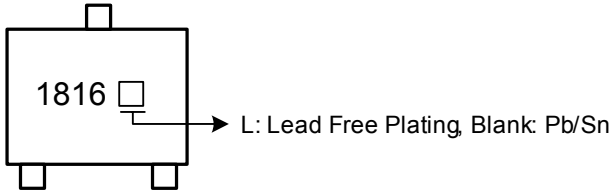
<p>SK1816L-AE3-4-R</p>	<p>(1) Packing Type (2) Pin Assignment (3) Package Type (4) Lead Plating</p>	<p>(1) K: Bulk, R: Tape Reel (2) refer to Pin Assignment (3) AE3: SOT-23, G03: SIP-3 (4) L: Lead Free Plating, Blank: Pb/Sn</p>
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## MARKING INFORMATION

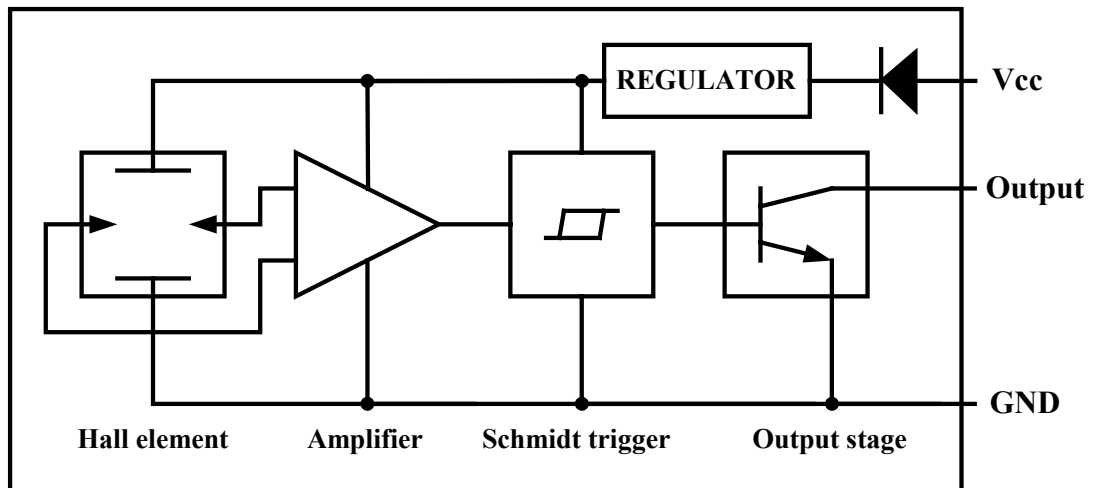
SIP-3



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>	-40 ~ +150	°C

Note 1. 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.

2. The device is guaranteed to meet performance specification within 0°C~+70°C operating temperature range and assured by design from -20°C~+125°C.

### ■ 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 = 30 mT			0.7	V
		V <sub>CC</sub> = 3.6V, I <sub>OUT</sub> = 12mA, B = 30 mT			0.7	V
Output Leakage Current	I <sub>LEAK</sub>	V <sub>CC</sub> = 16V, B = -30 mT		1	10	μA
Output Short Circuit Current	-I <sub>OS</sub>	V <sub>CC</sub> = 16V, V <sub>OUT</sub> = 0V, B = -30 mT		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
Output Switching Time	T <sub>R</sub>	V <sub>CC</sub> = 16V, R <sub>L</sub> = 10KΩ, C <sub>L</sub> = 10PF			5	μS
	T <sub>F</sub>	V <sub>CC</sub> = 16V, R <sub>L</sub> = 10KΩ, C <sub>L</sub> = 10PF			1	μS

#### MAGNETIC CHARACTERISTICS

Operate Point	B <sub>OP</sub>	At Ta = +25°C			5	mT
Release Point	B <sub>RP</sub>	At Ta = +25°C			-5	mT
Hysteresis	B <sub>HYS</sub>	At Ta = +25°C			5.5	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

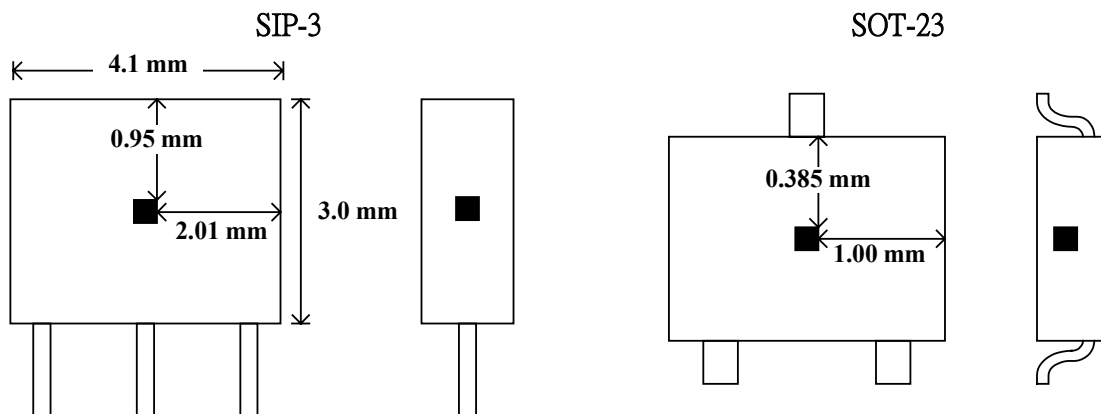


Fig. 1 SENSOR LOCATIONS

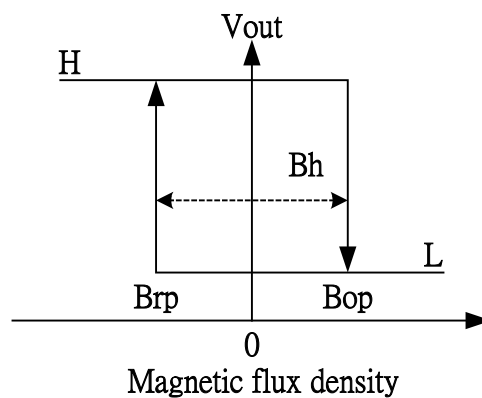
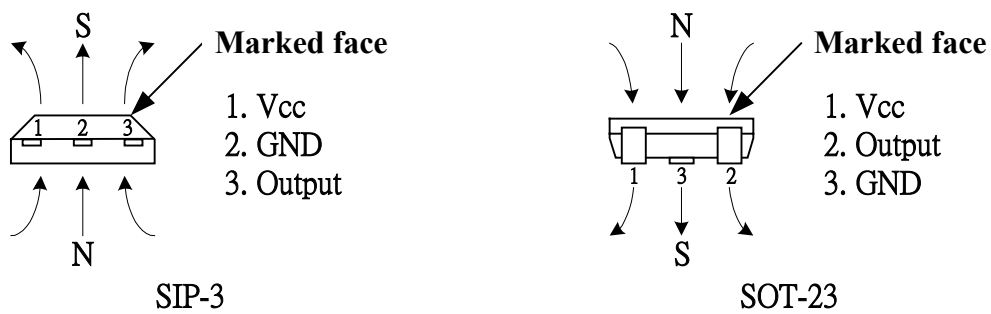
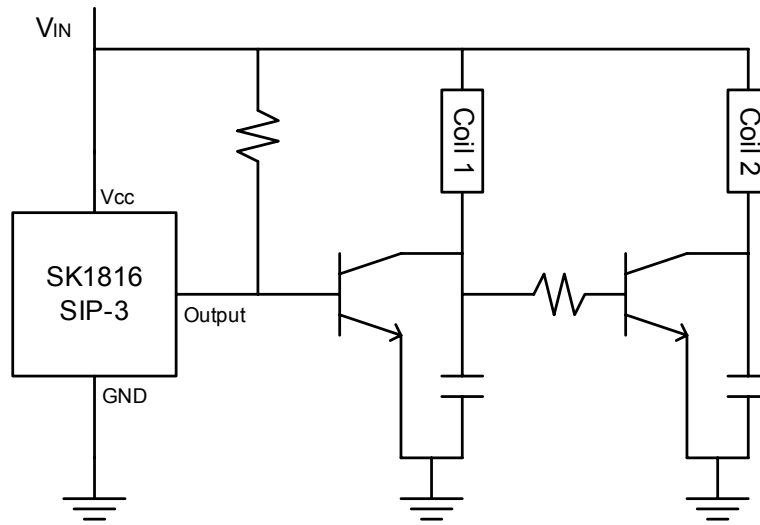
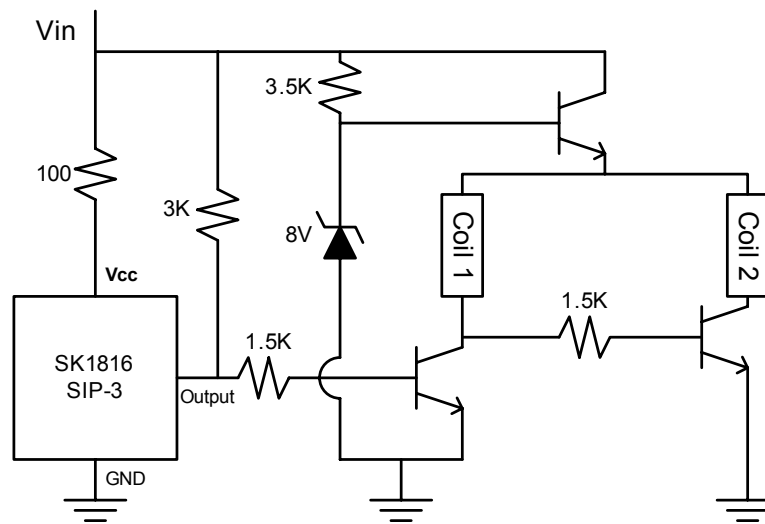


Fig.2 APPLYING DIRECTION OF MAGNETIC FLUX

### ■ TYPICAL APPLICATION CIRCUIT

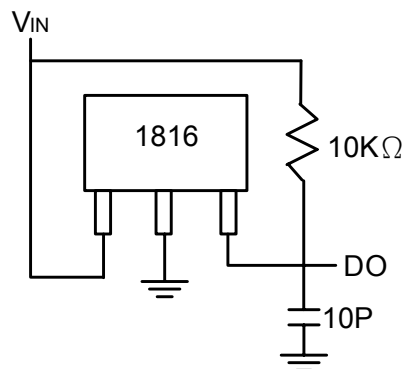


FOR DC FAN 1

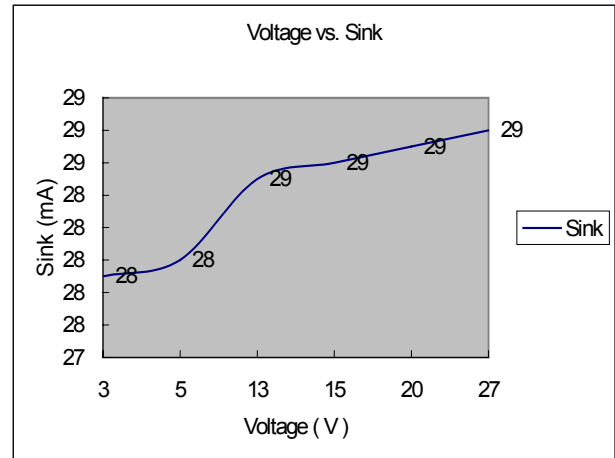
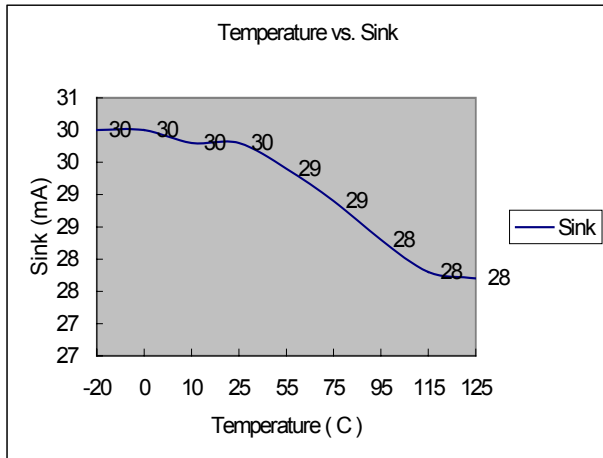
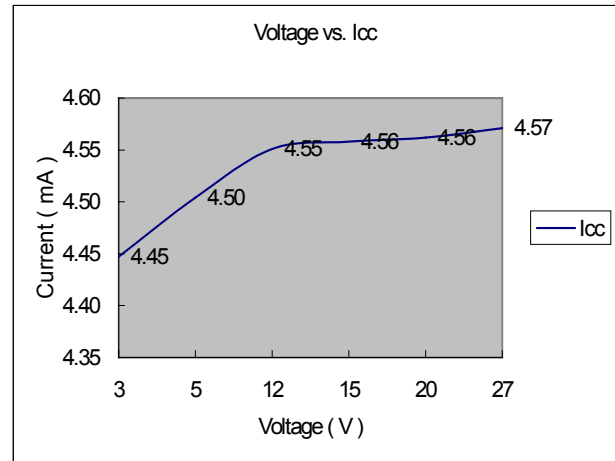
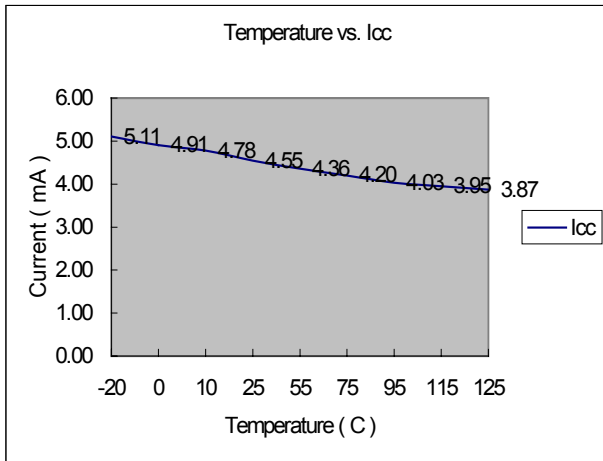
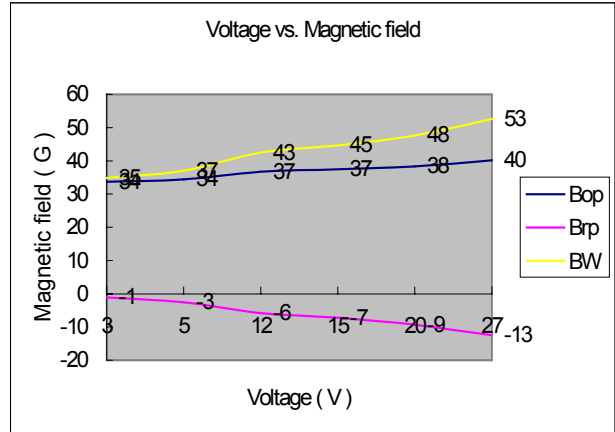
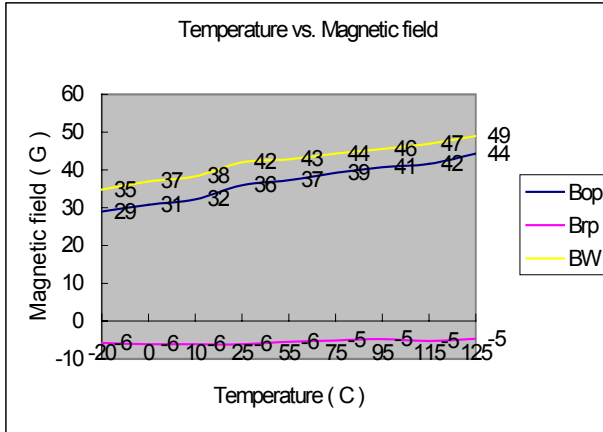


FOR DC FAN 2

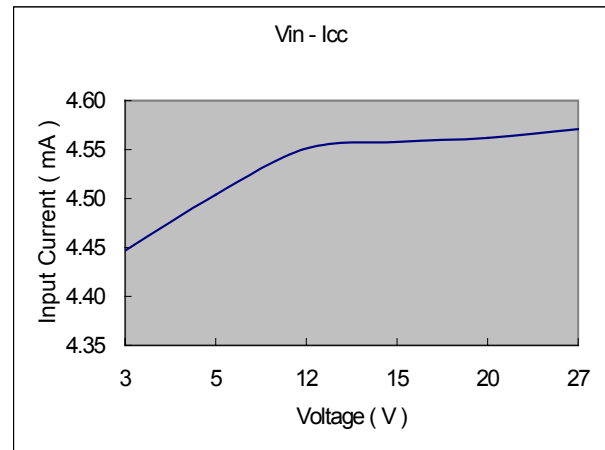
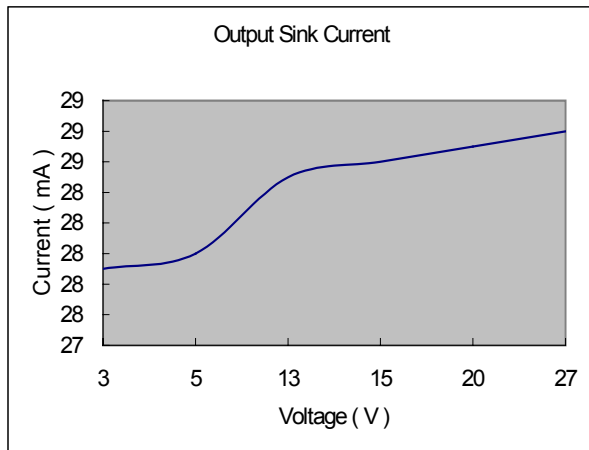
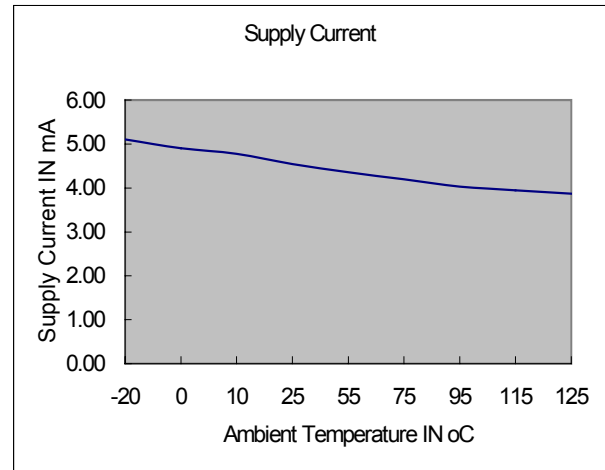
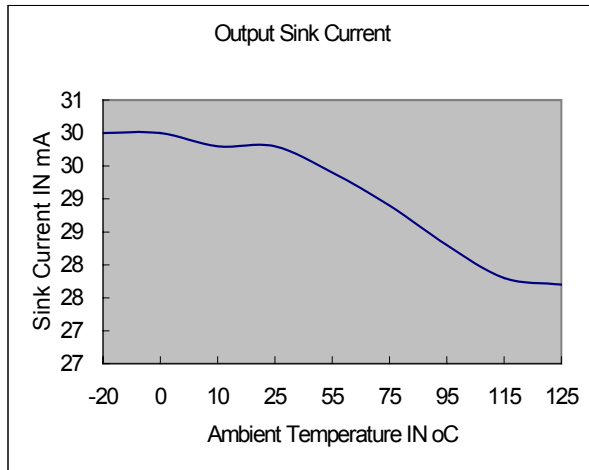
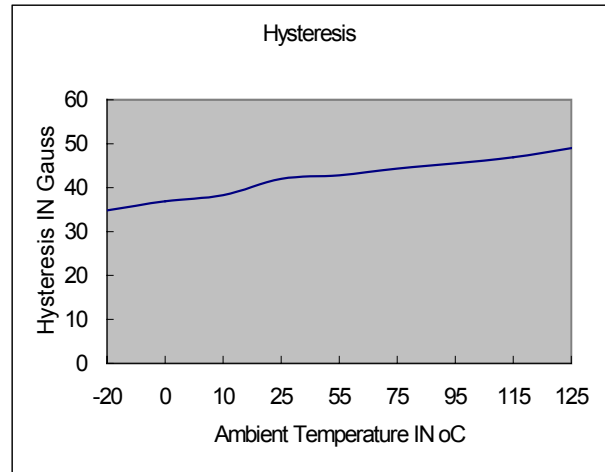
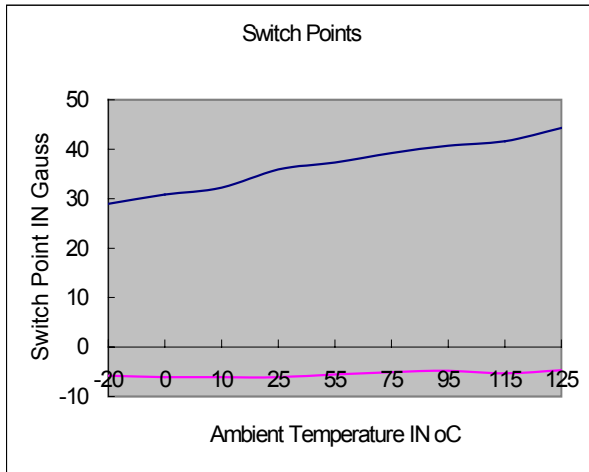
### ■ TEST CIRCUIT



## TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS(Cont.)



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