



## 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.

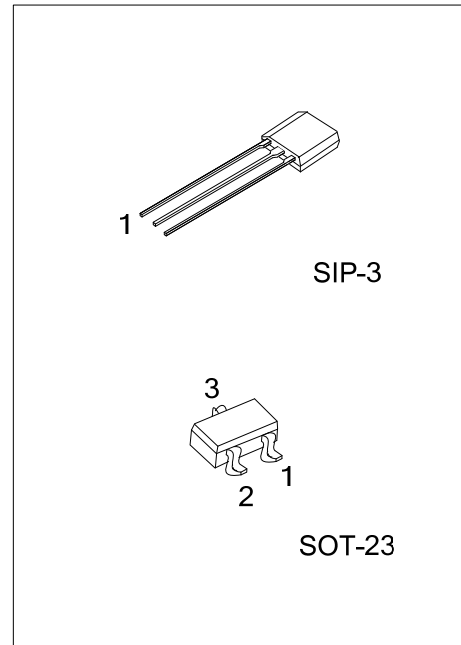
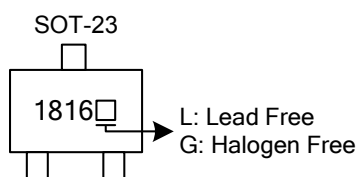
### ORDERING INFORMATION

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

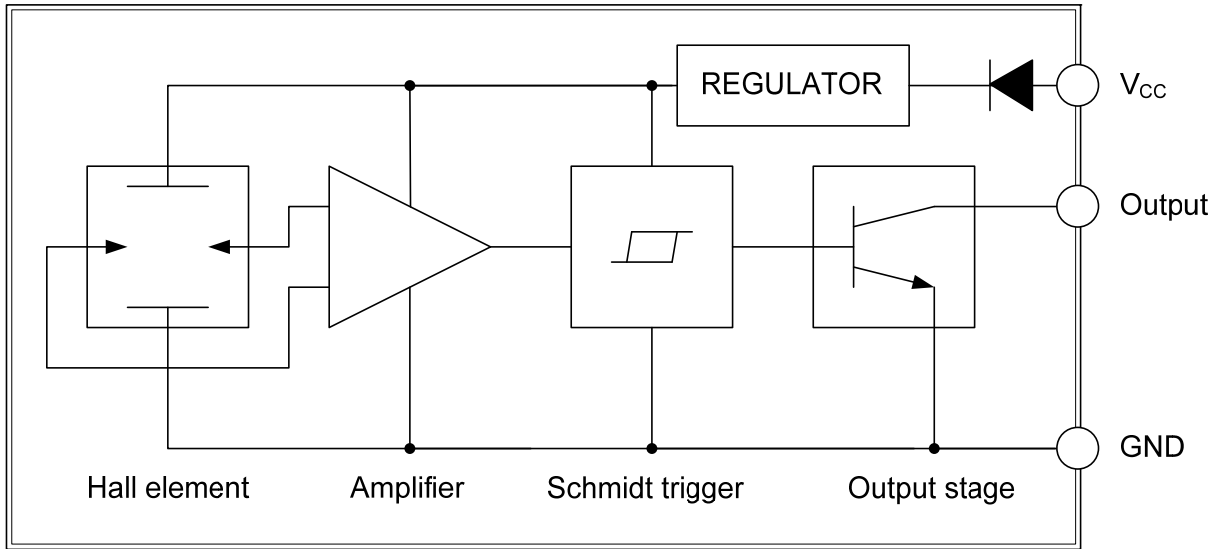
Note: Pin Assignment: I: V<sub>CC</sub> O:V<sub>OUT</sub> G:GND

<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>
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### MARKING



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ )

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	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

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 ( $T_A=25^\circ\text{C}$ , unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Low-Level Output Voltage	$V_{OL}$	$V_{CC} = 16\text{V}$ , $I_{OUT}=12\text{mA}$ , $B=30\text{ mT}$		0.2	0.7	V
		$V_{CC} = 3.6\text{V}$ , $I_{OUT}=12\text{mA}$ , $B=30\text{ mT}$		0.3	0.7	V
Output Leakage Current	$I_{LEAK}$	$V_{CC} = 16\text{V}$ , $B=-30\text{ mT}$		1	10	$\mu\text{A}$
Supply Current	$I_{CC}$	$V_{CC} = 16\text{V}$		6	10	mA
		$V_{CC} = 3.6\text{V}$		5.5	10	mA
Output Switching Time	$T_R$	$V_{CC} = 16\text{V}$ , $R_L=10\text{K}\Omega$ , $C_L=10\text{pF}$			5	$\mu\text{S}$
	$T_F$	$V_{CC} = 16\text{V}$ , $R_L=10\text{K}\Omega$ , $C_L=10\text{pF}$			1	$\mu\text{S}$
<b>MAGNETIC CHARACTERISTICS</b>						
Operate Point	$B_{OP}$	At $T_A=25^\circ\text{C}$			5	mT
Release Point	$B_{RP}$	At $T_A=25^\circ\text{C}$			-5	mT
Hysteresis	$B_{HYS}$	At $T_A=25^\circ\text{C}$		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  $T_A=25^\circ\text{C}$  and  $V_{CC} = 12\text{V}$ .

2. 1mT=10 gauss

## ■ PACKAGE INFORMATION

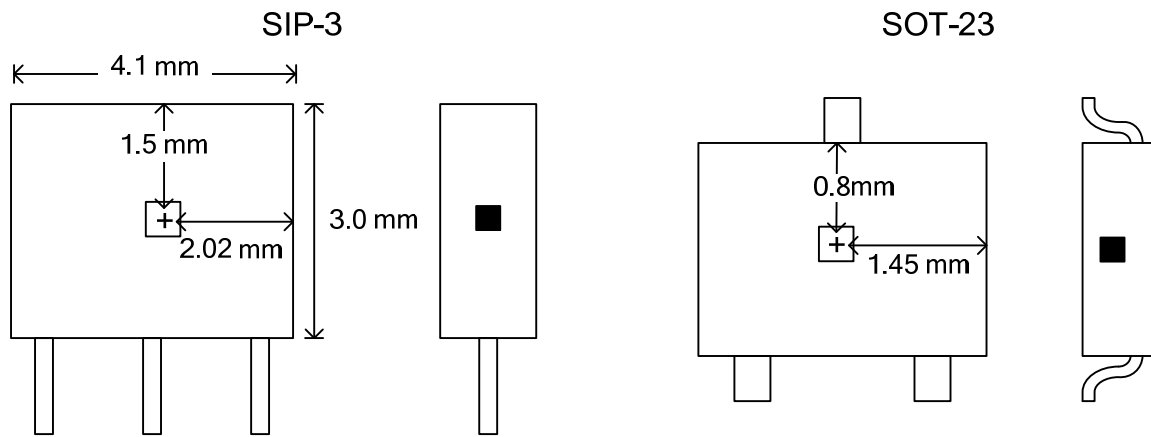


Fig. 1 SENSOR LOCATIONS

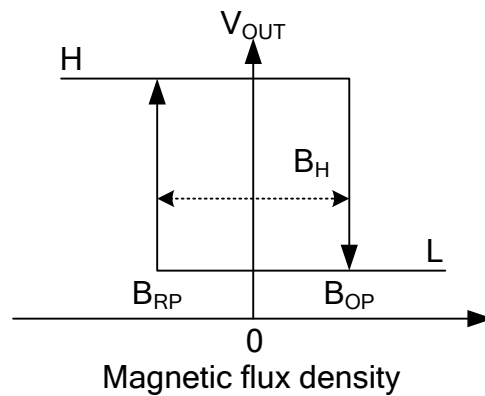
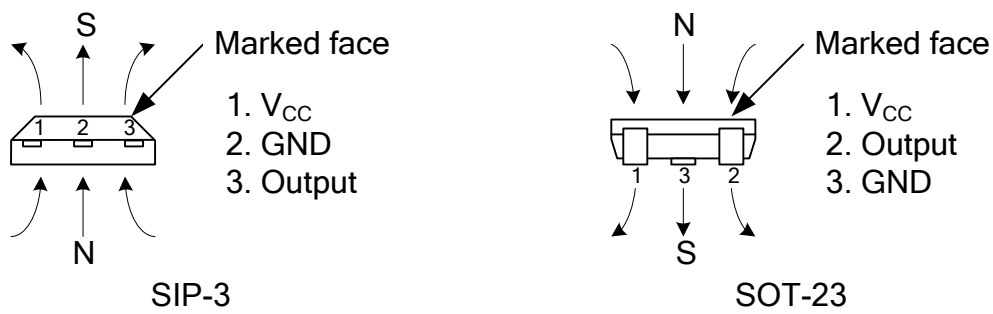
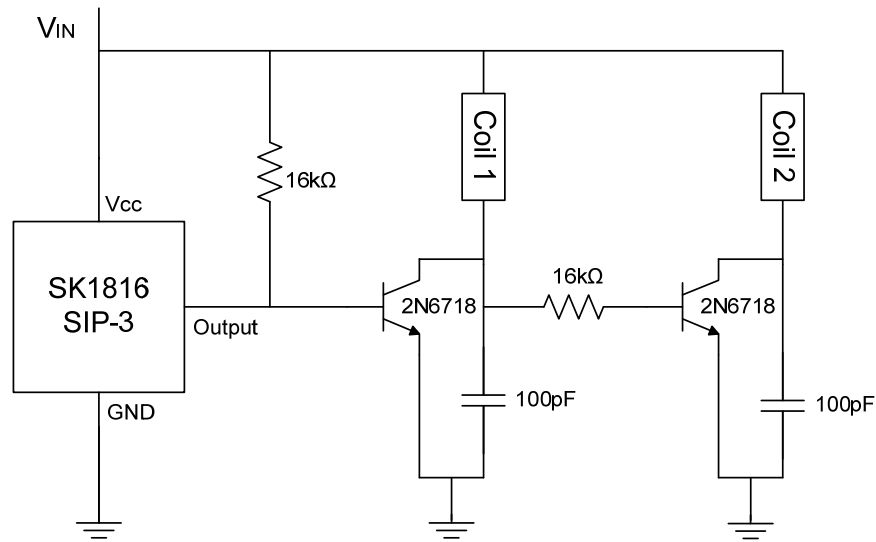
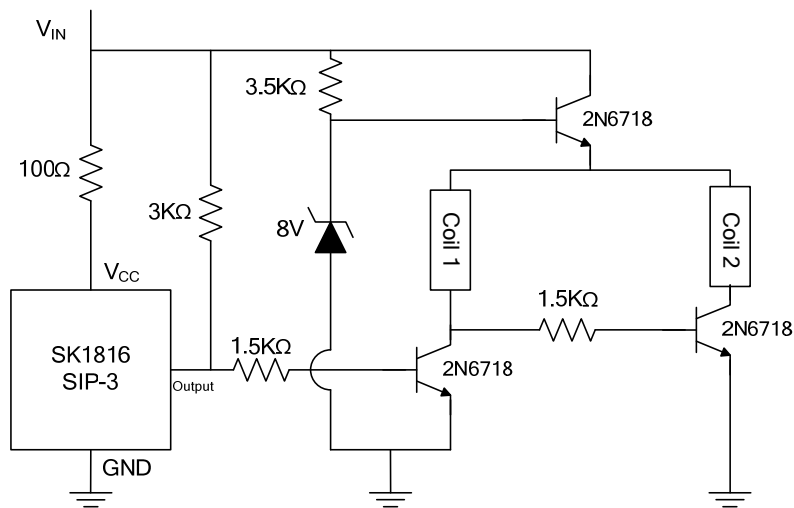


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

### ■ TYPICAL APPLICATION CIRCUIT

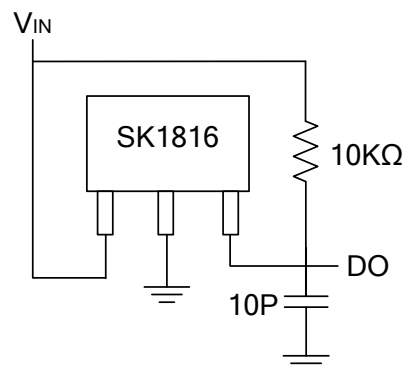


FOR DC FAN 1

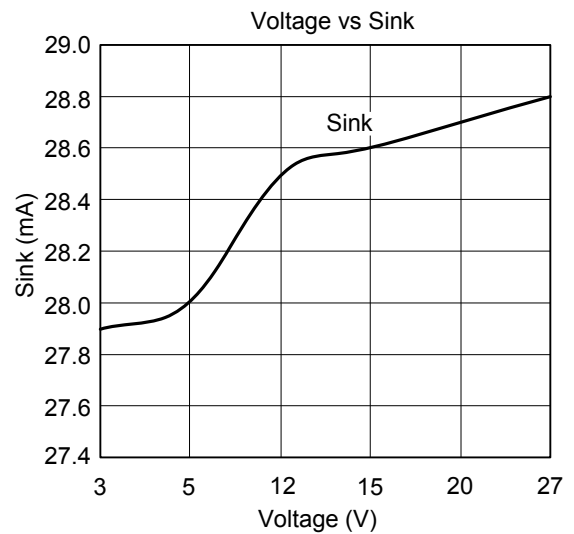
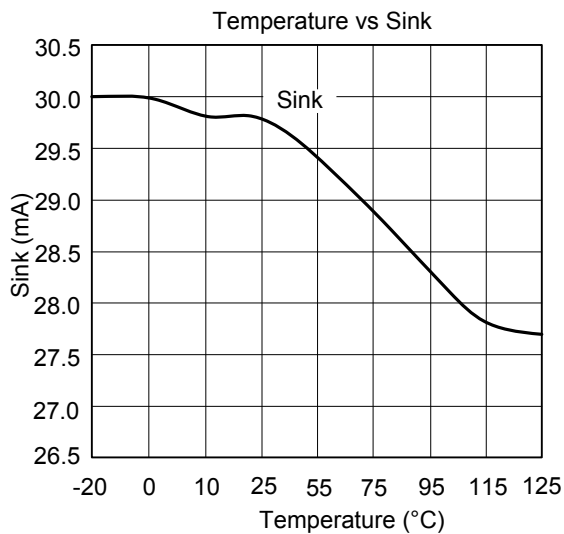
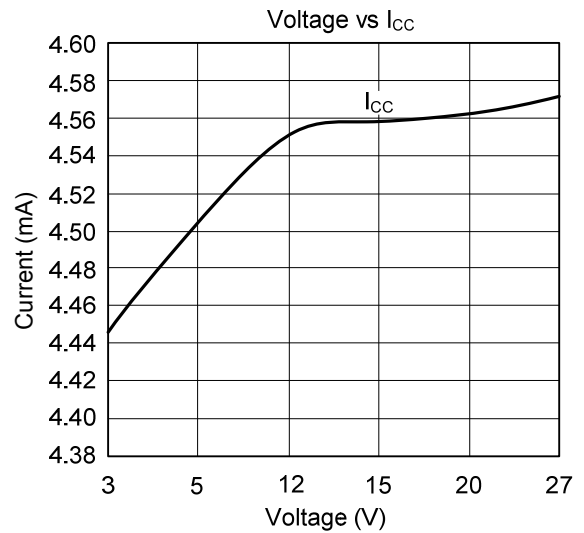
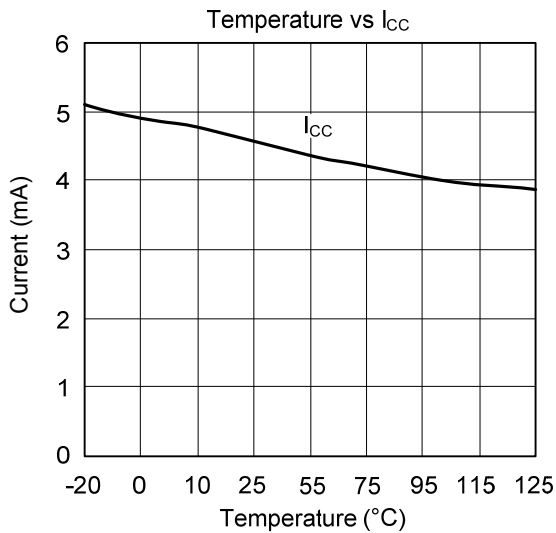
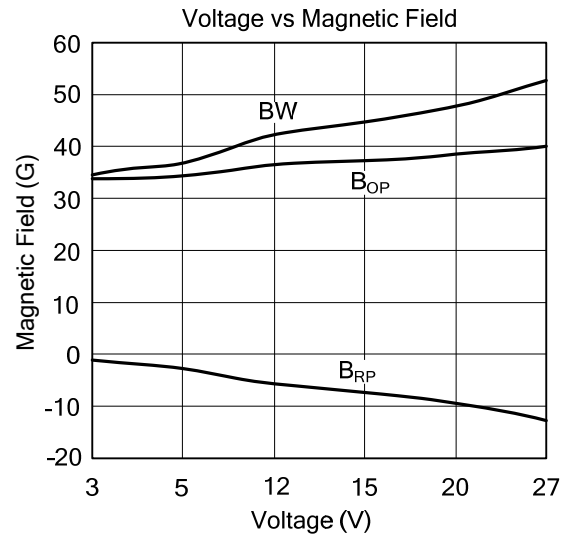
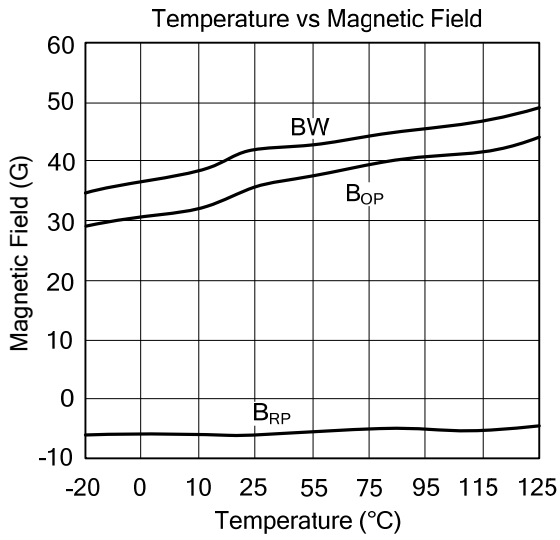


FOR DC FAN 2

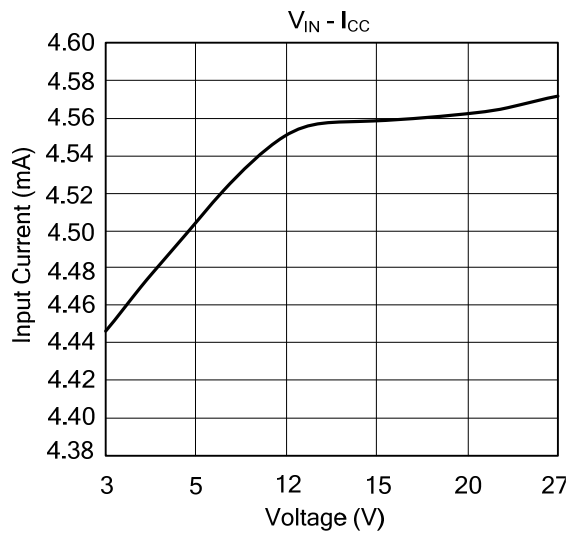
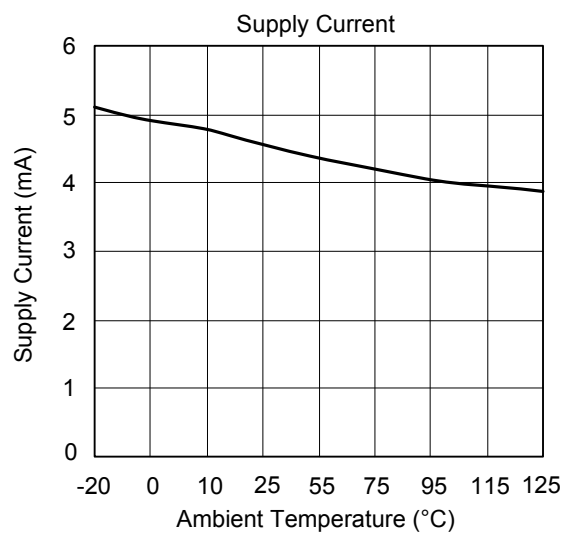
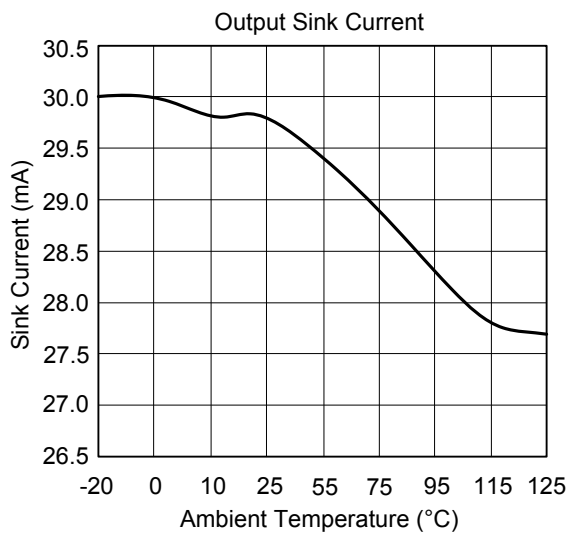
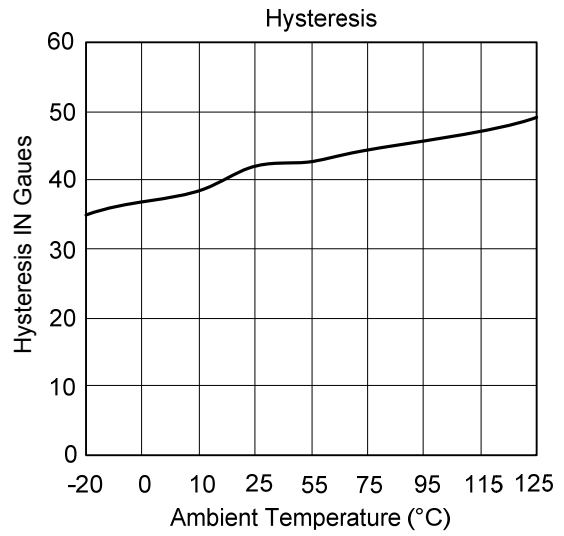
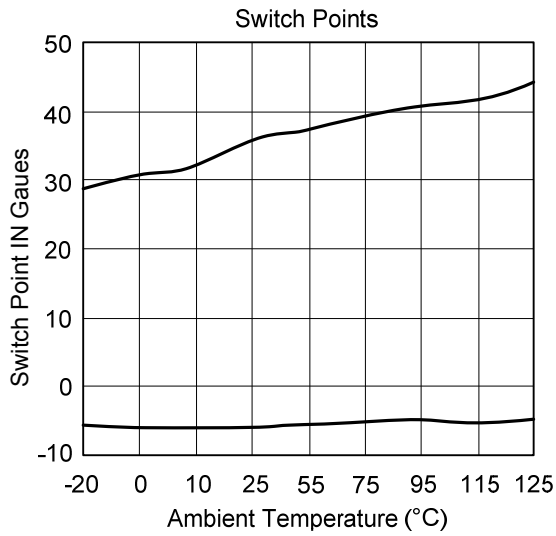
### ■ TEST CIRCUIT



### TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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