



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.

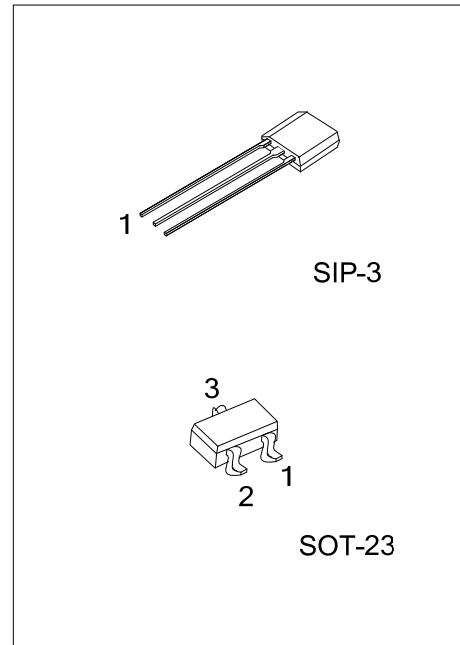
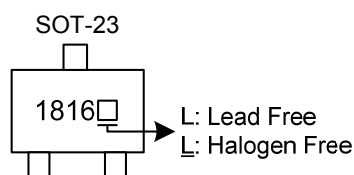
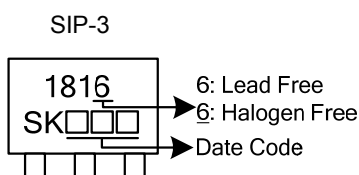
ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free	Halogen Free		1	2	3	
SK1816-AE3-R	SK1816L-AE3-R	SK1816G-AE3-R	SOT-23	O	I	G	Tape Reel
SK1816-G03-B	SK1816L-G03-B	SK1816G-G03-B	SIP-3	I	G	O	Tape Box
SK1816-G03-K	SK1816L-G03-K	SK1816G-G03-K	SIP-3	I	G	O	Bulk

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

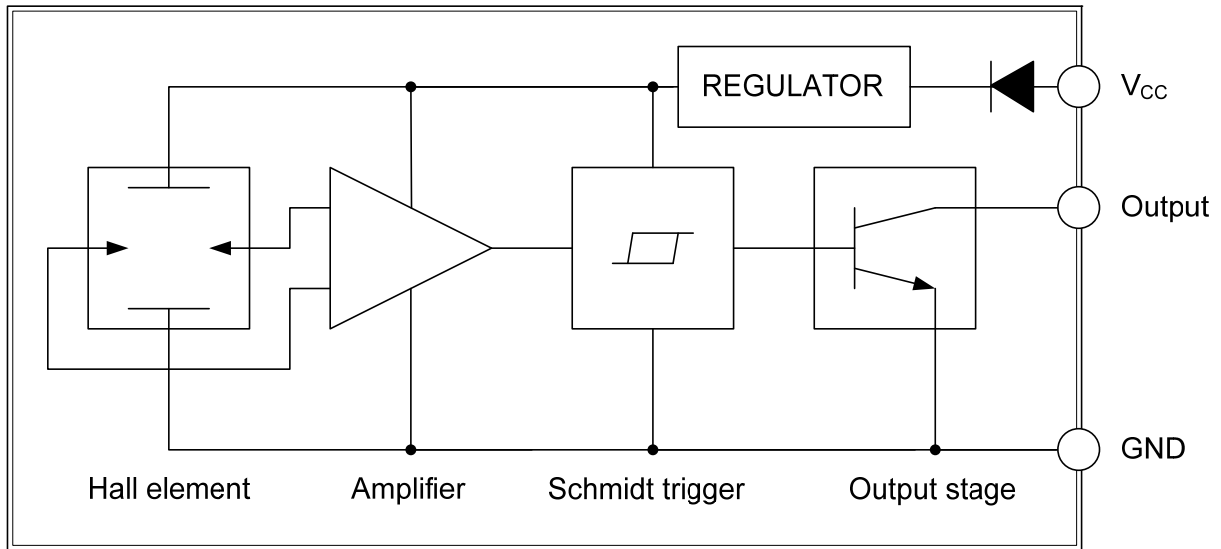
<p>SK1816L-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AE3: SOT-23, G03: SIP-3 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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MARKING



Lead-free: SK1816L
Halogen-free: SK1816G

■ 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	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	μA
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	μS
	T_F	$V_{CC} = 16\text{V}$, $R_L=10\text{K}\Omega$, $C_L=10\text{pF}$			1	μS
MAGNETIC CHARACTERISTICS						
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

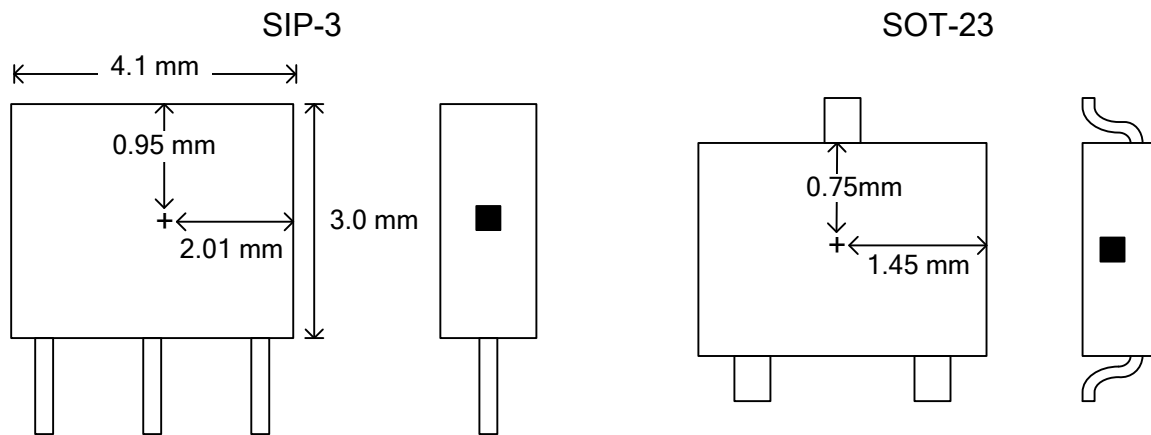


Fig. 1 SENSOR LOCATIONS

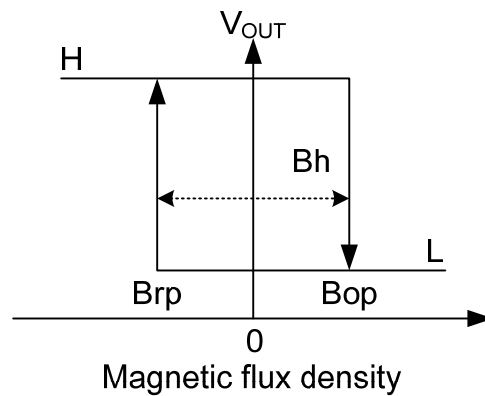
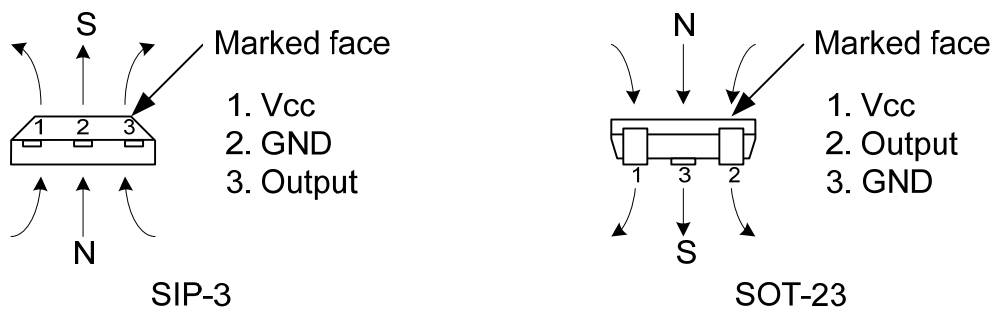
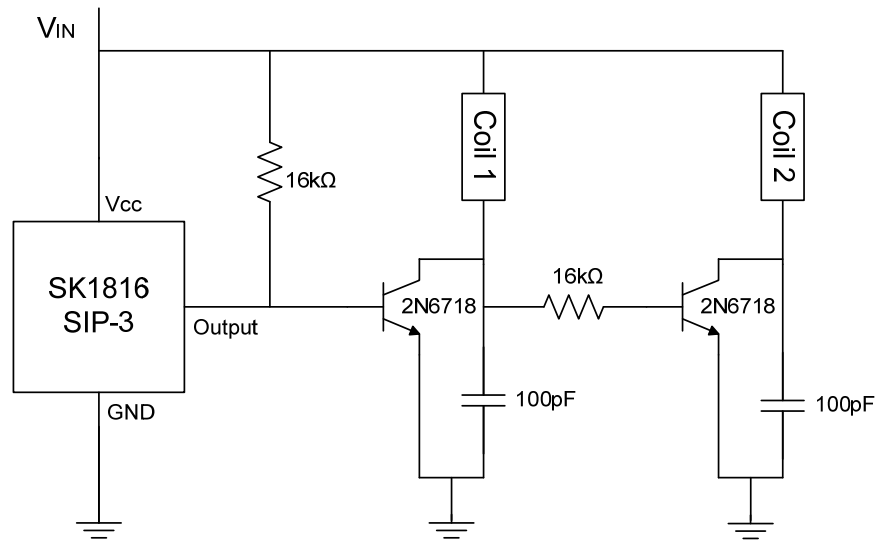
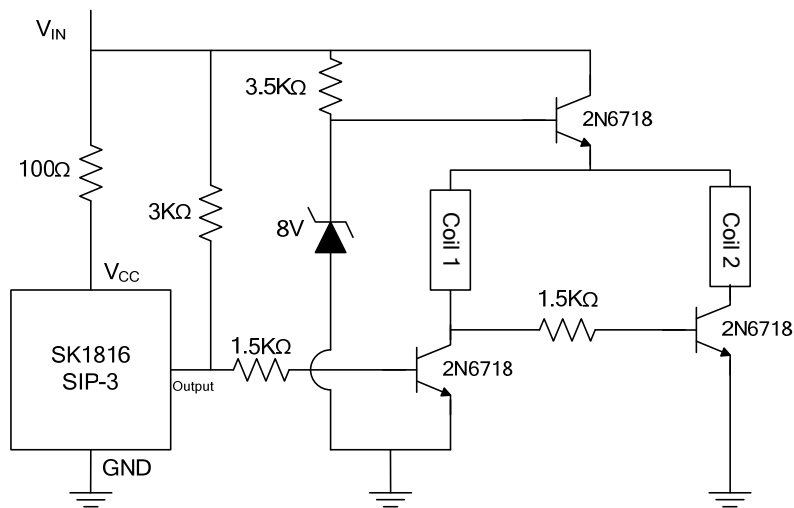


Fig.2 APPLYING DIRECTION OF MAGNETIC FLUX

■ TYPICAL APPLICATION CIRCUIT

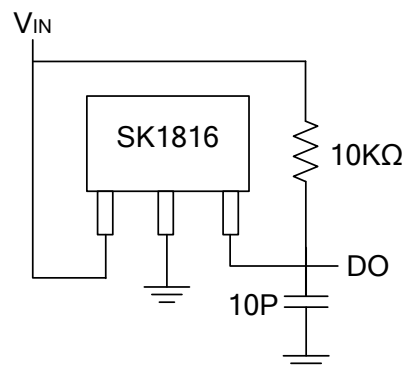


FOR DC FAN 1

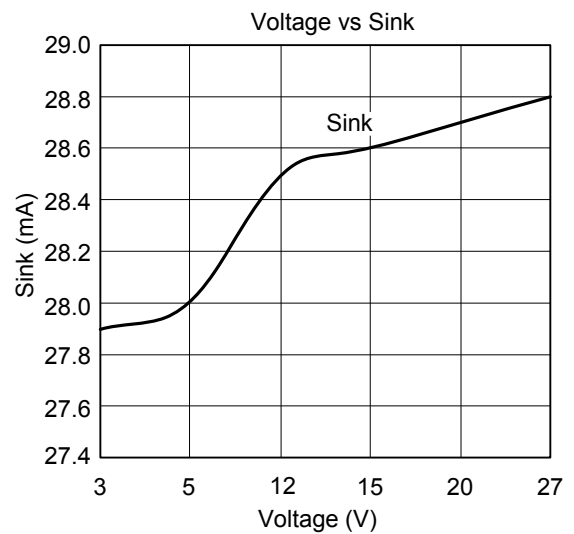
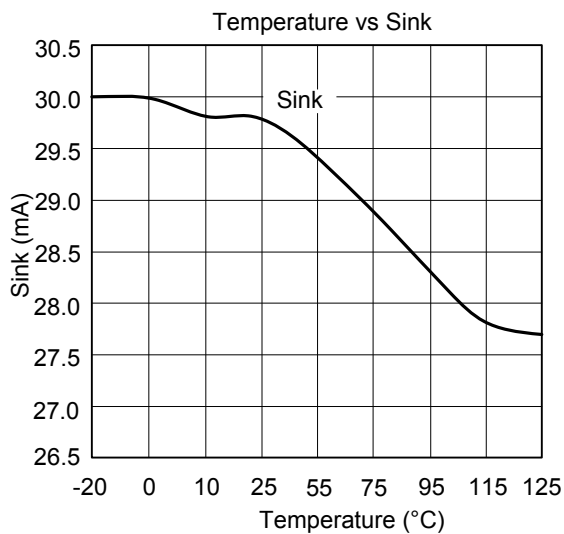
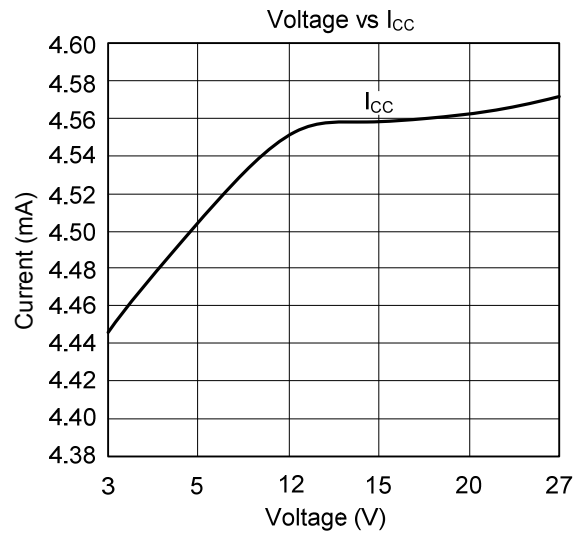
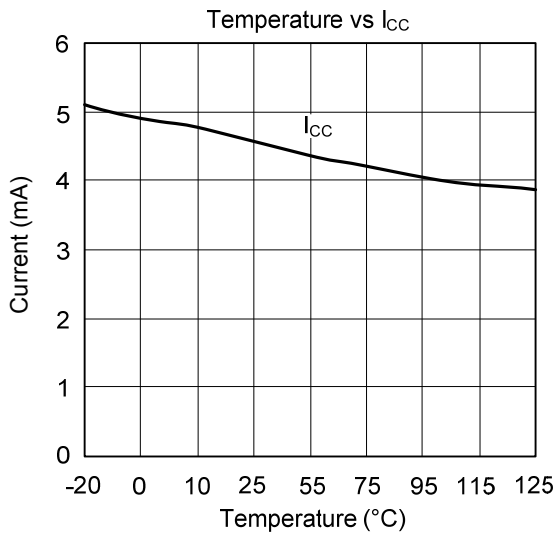
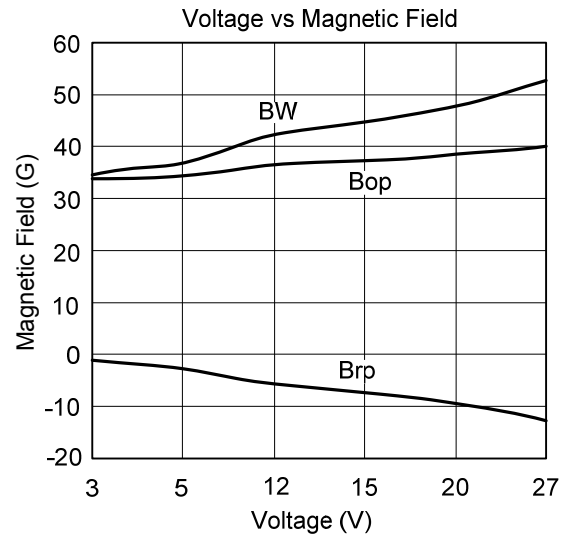
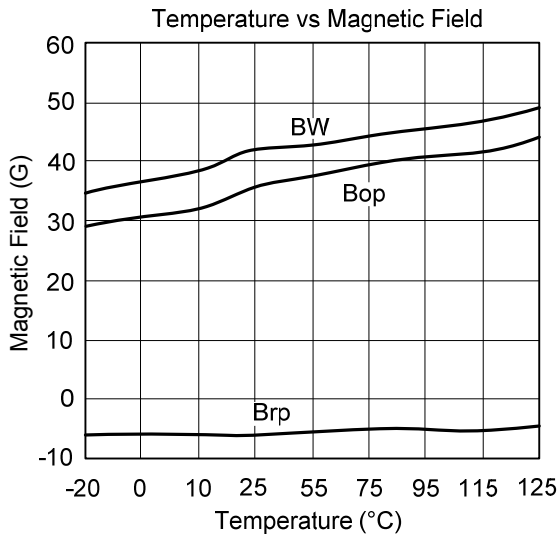


FOR DC FAN 2

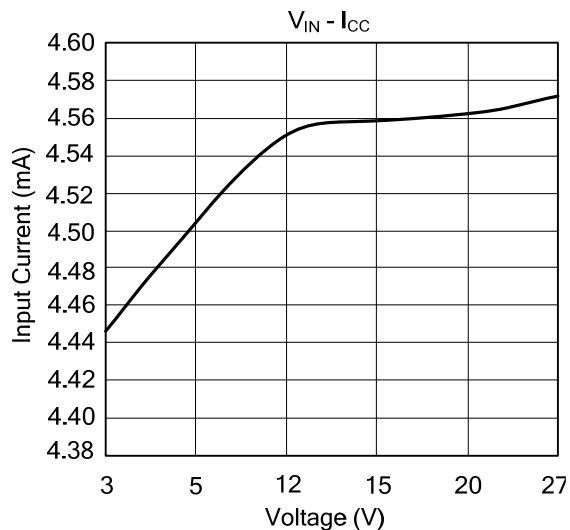
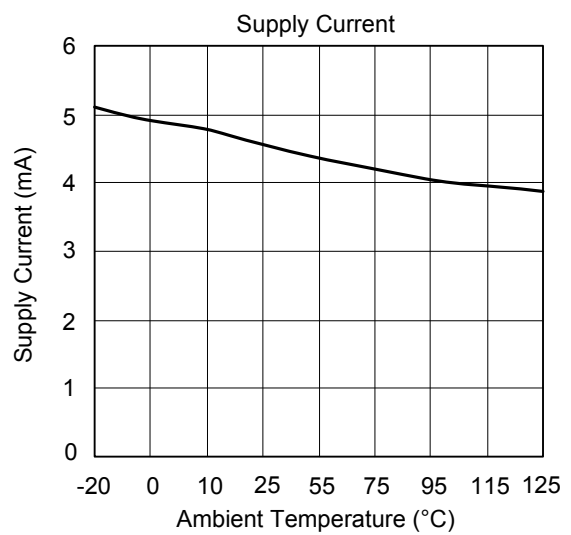
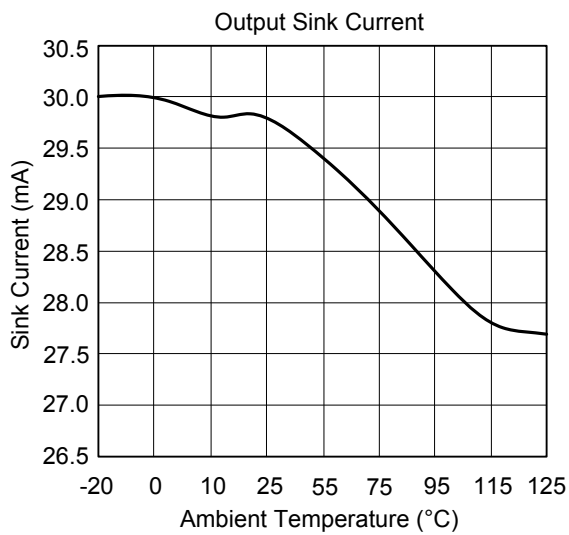
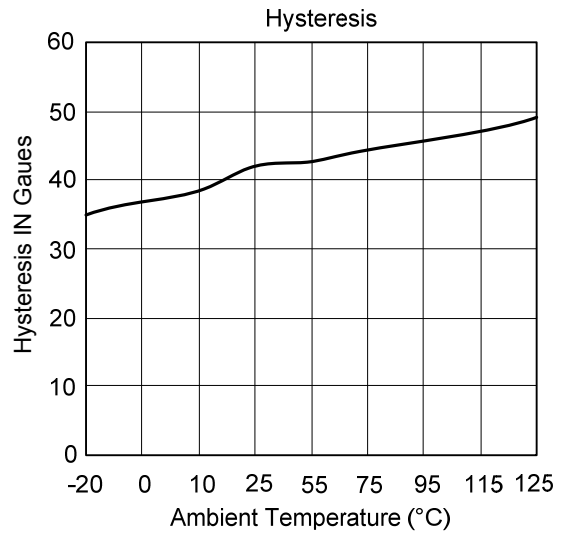
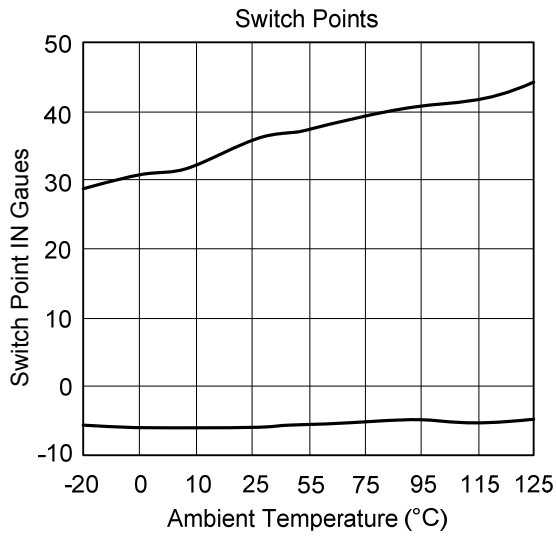
■ TEST CIRCUIT



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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