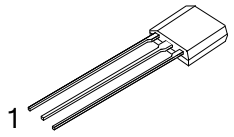
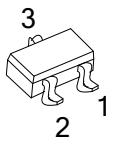
SK1816 *LINEAR INTEGRATED CIRCUIT*

BIPOLAR LATCH TYPE HALL EFFECT FOR HIGH-TEMPERATURE OPERATION



SIP-3



SOT-23
(EIAJ SC-59)

■ 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

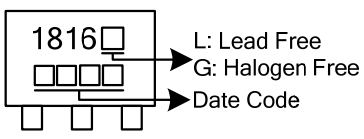
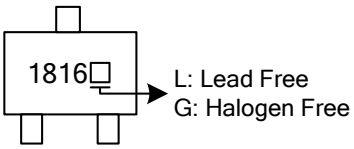
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
SK1816L-AE3-R	SK1816G-AE3-R	SOT-23	O	I	G	Tape Reel
SK1816L-G03-B	SK1816G-G03-B	SIP-3	I	G	O	Tape Box
SK1816L-G03-K	SK1816G-G03-K	SIP-3	I	G	O	Bulk

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

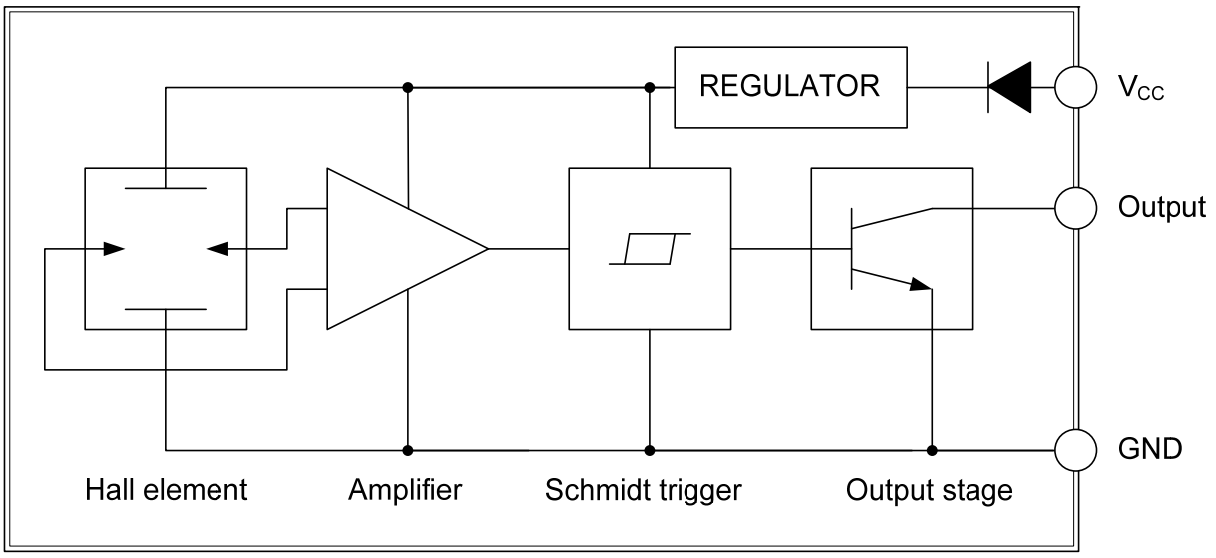
SK1816L-AE3-R
(1)Packing Type
(2)Package Type
(3)Lead Free

(1) B: Tape Box, K: Bulk, R: Tape Reel
(2) AE3: SOT-23, G03: SIP-3
(3) G: Halogen Free, L: Lead Free

■ MARKING

SIP-3	SOT-23
	

■ 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

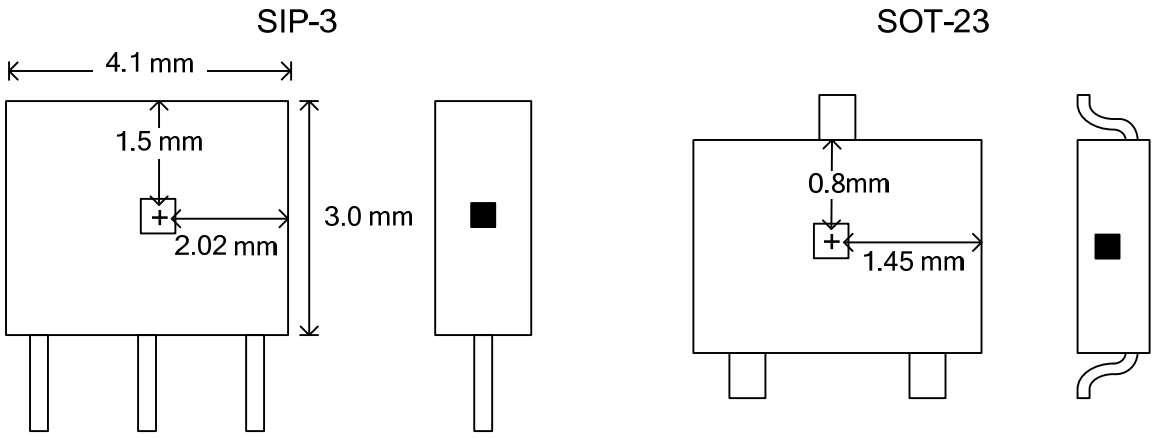


Fig. 1 SENSOR LOCATIONS

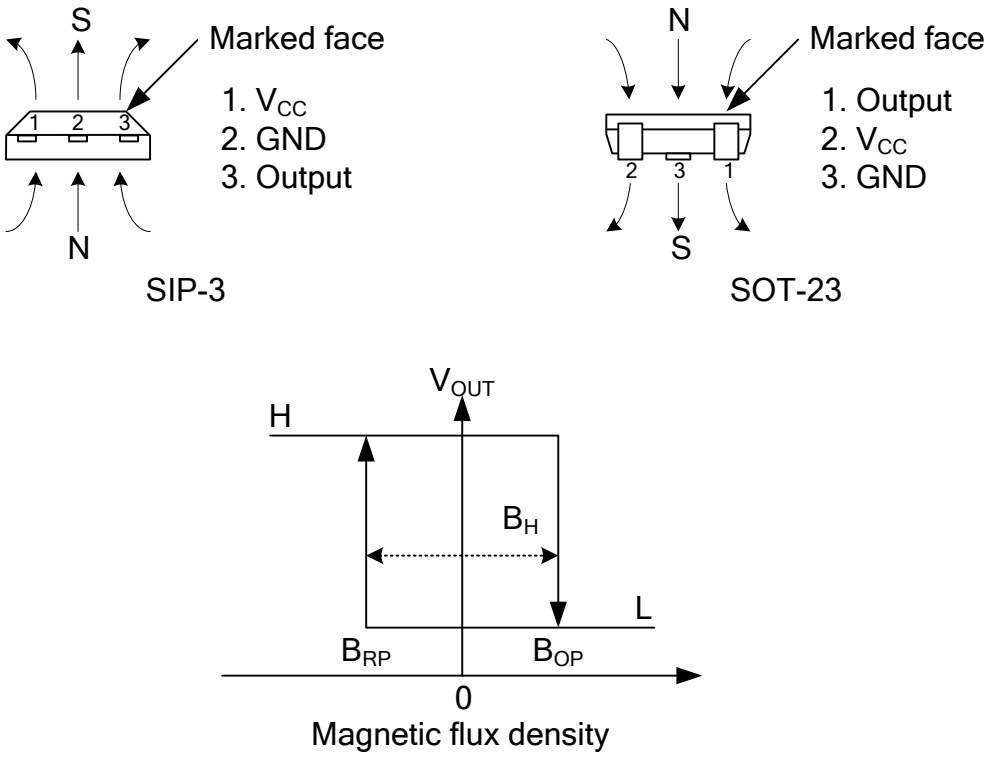
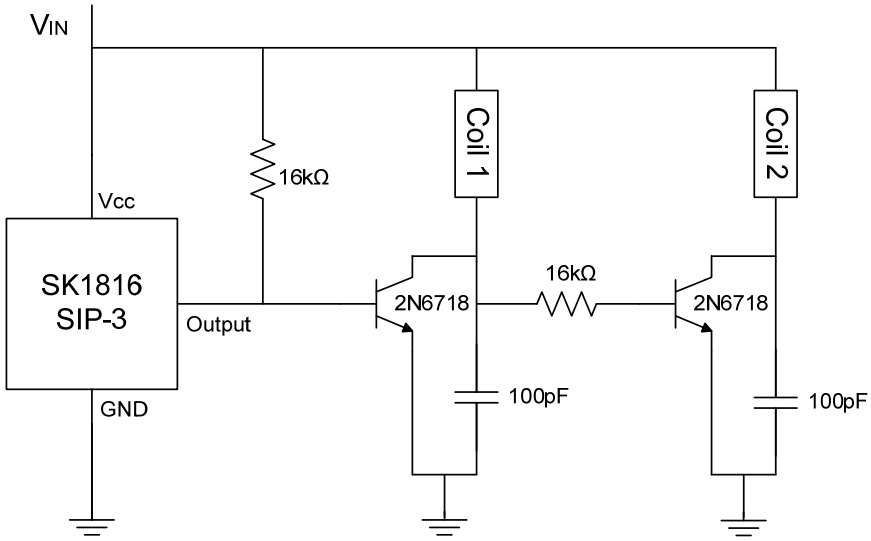
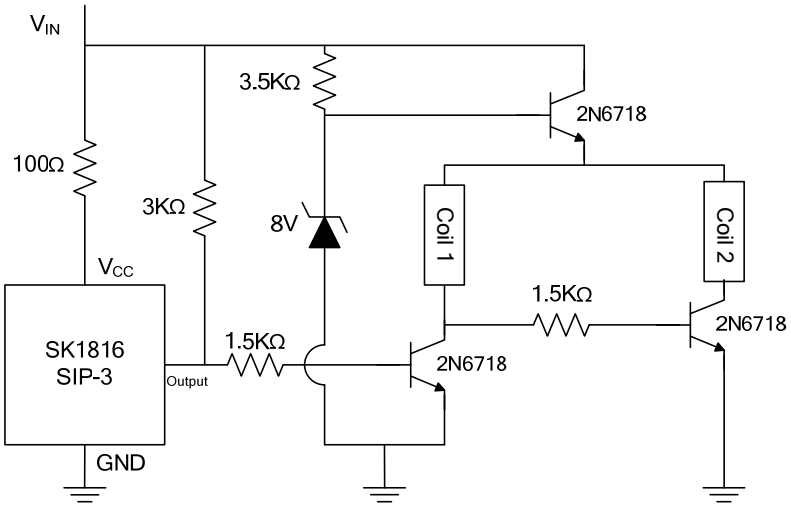


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

■ TYPICAL APPLICATION CIRCUIT

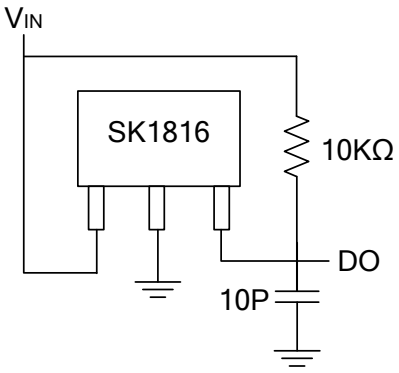


FOR DC FAN 1



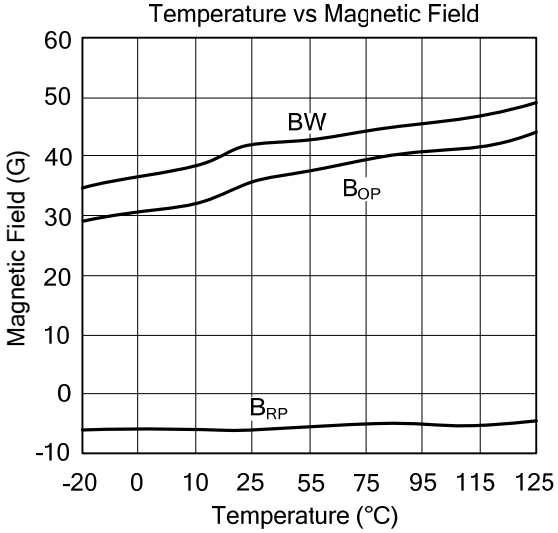
FOR DC FAN 2

■ TEST CIRCUIT

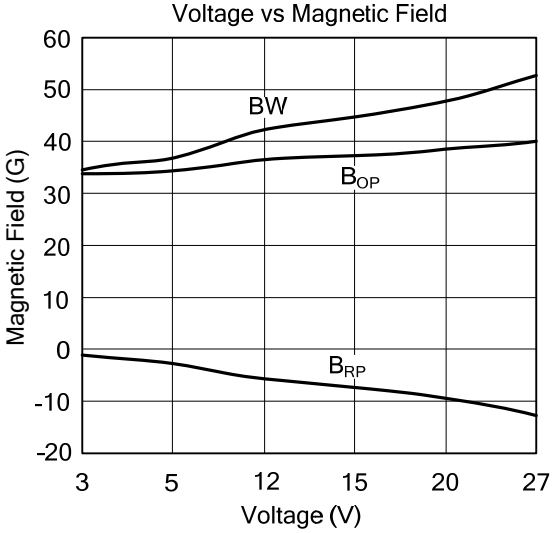


■ TYPICAL CHARACTERISTICS

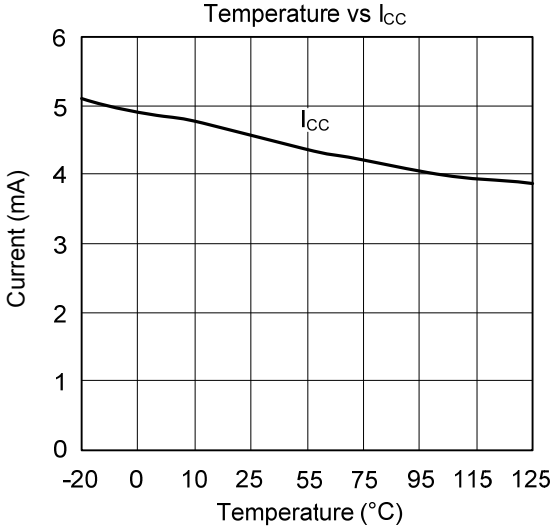
Temperature vs Magnetic Field



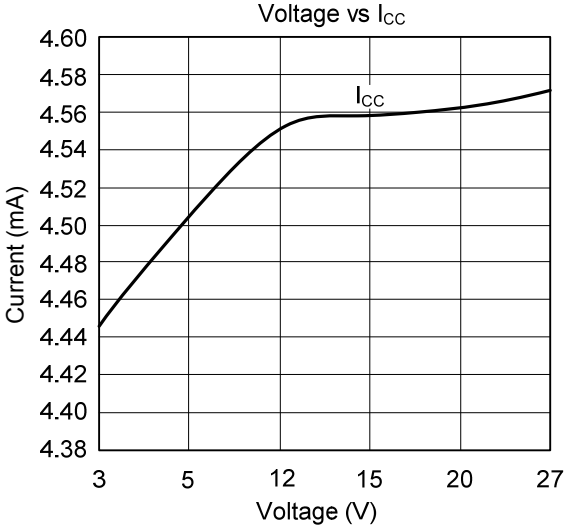
Voltage vs Magnetic Field



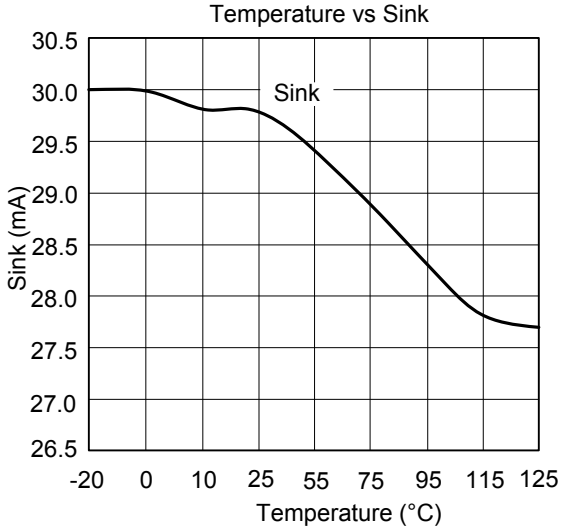
Temperature vs I_{CC}



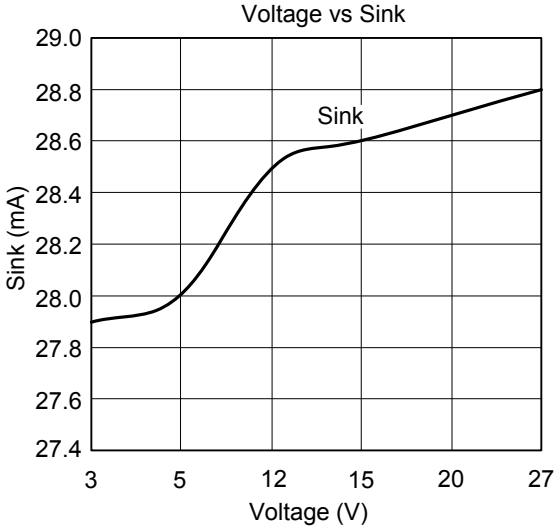
Voltage vs I_{CC}



Temperature vs Sink



Voltage vs Sink



■ TYPICAL CHARACTERISTICS(Cont.)