# UTC UNISONIC TECHNOLOGIES CO., LTD

# SK1816

#### LINEAR INTEGRATED CIRCUIT

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

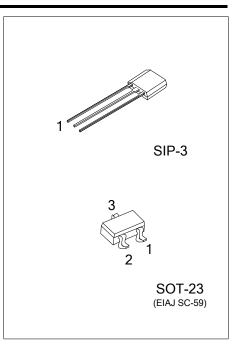
#### DESCRIPTION

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**

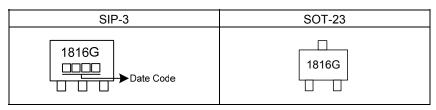
Pin Assignment: I: V<sub>CC</sub>

Ordering Number	Package	Pin Assignment			Dooking	
		1	2	3	Packing	
SK1816G-AE3-R	SOT-23	0	I	G	Tape Reel	
SK1816G-G03-B	SIP-3	I	G	0	Tape Box	
SK1816G-G03-K	SIP-3	I	G	0	Bulk	

SK1816G-AE3-R (1) B: Tape Box, K: Bulk, R: Tape Reel (1)Packing Type (2)Package Type (2) AE3: SOT-23, G03: SIP-3 (3)Green Package (3) G: Halogen Free and Lead Free

#### **MARKING**

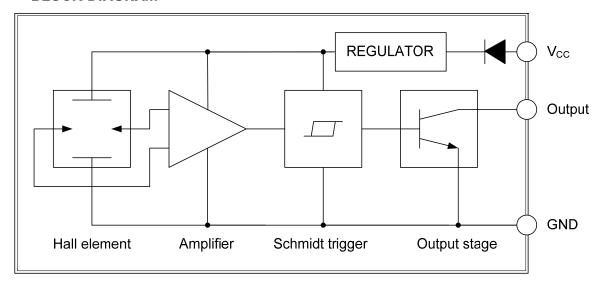
Note:



O:Vout G:GND

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## **■ BLOCK DIAGRAM**



## ■ **ABSOLUTE MAXIMUM RATINGS** (T<sub>A</sub>=25°C)

PARAMETER	}	SYMBOL	RATINGS	UNIT
Supply Voltage		$V_{CC}$	2.5~20	V
Supply Current		Icc	10	mA
Circuit Current		Ιο	20	mA
Power Dissipation	SIP-3	- P <sub>D</sub>	400	mW
	SOT-23		200	mW
Operating Temperature		$T_OPR$	-30 ~ +125	°C
Storage Temperature		T <sub>STG</sub>	-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<sub>A</sub>=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		0.2	0.7	V		
		V <sub>CC</sub> =3.6V, I <sub>OUT</sub> =12mA, B=30 mT		0.3	0.7	V		
Output Leakage Current	I <sub>LEAK</sub>	V <sub>CC</sub> =16V, B=-30 mT		1	10	μA		
Supply Current	Icc	V <sub>CC</sub> =16V		6	10	mA		
		V <sub>CC</sub> =3.6V		5.5	10	mA		
Output Switching Time	$T_R$	$V_{CC}$ =16V, $R_L$ =10K $\Omega$ , $C_L$ =10pF			5	μS		
	$T_F$	$V_{CC}$ =16V, $R_L$ =10K $\Omega$ , $C_L$ =10pF			1	μS		
MAGNETIC CHARACTERISTICS								
Operate Point	B <sub>OP</sub>	At T <sub>A</sub> =25°C			5	mT		
Release Point	$B_RP$	At T <sub>A</sub> =25°C			-5	mT		
Hysteresis	B <sub>HYS</sub>	At T <sub>A</sub> =25°C		5.5	10	mT		

Note: 1. Bop=operate point (output turns ON); BRP =release point (output turns OFF); BHYS =hysteresis(Bop - BRP). As used here, negative flux densities are defined as less than zero (algebraic convention). Typical values are at T<sub>A</sub>=25°C and Vcc=12V.

2. 1mT=10 gauss

#### **■ PACKAGE INFORMATION**

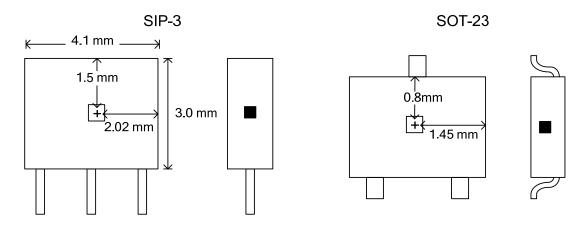


Fig. 1 SENSOR LOCATIONS

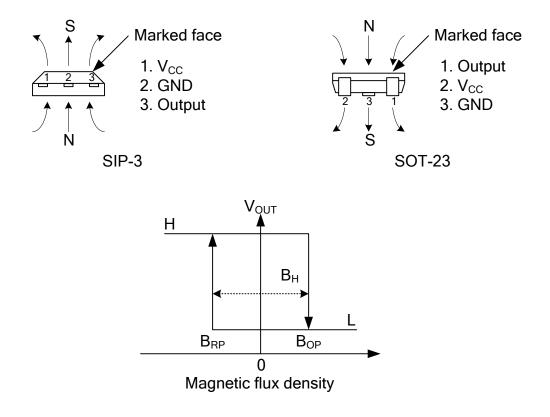
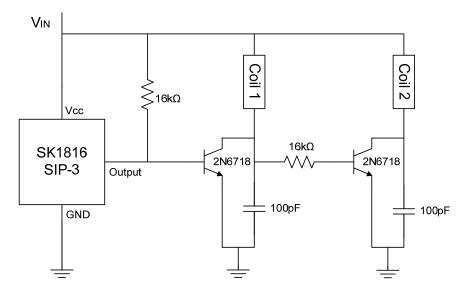
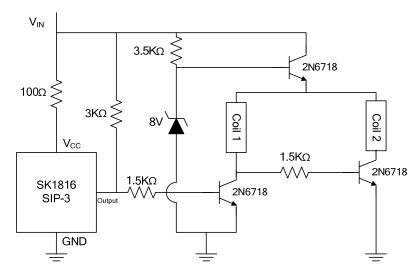


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

#### **■ TYPICAL APPLICATION CIRCUIT**

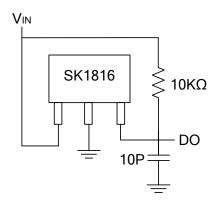


FOR DC FAN 1

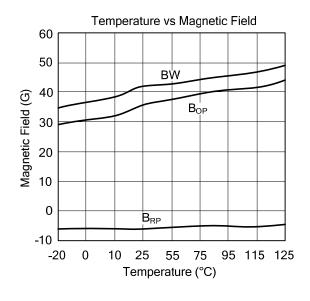


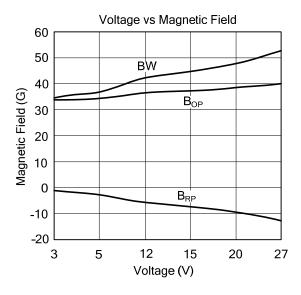
FOR DC FAN 2

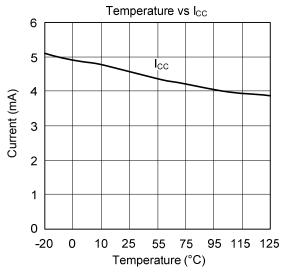
#### **■ TEST CIRCUIT**

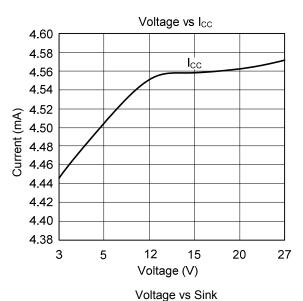


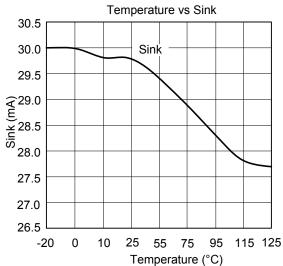
#### **■ TYPICAL CHARACTERISTICS**

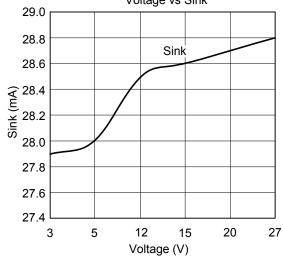




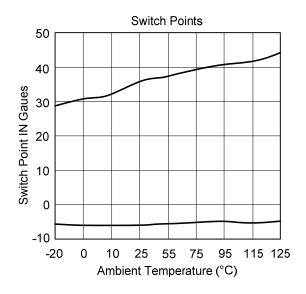


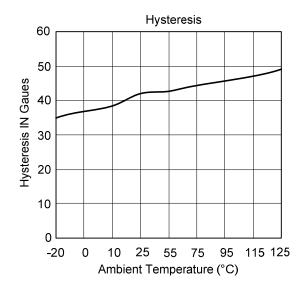


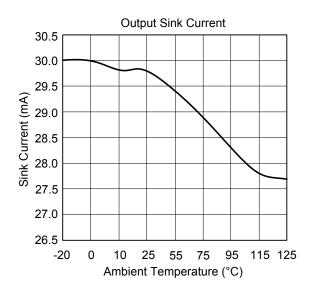


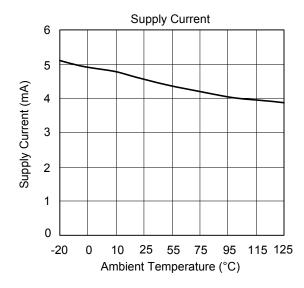


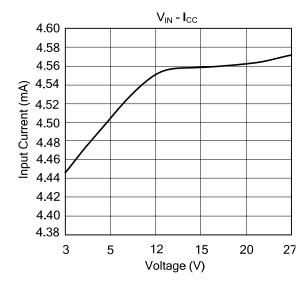
## **■ TYPICAL CHARACTERISTICS(Cont.)**











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