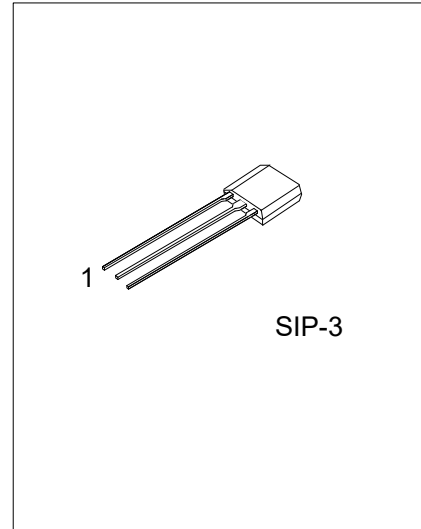




### BIPOLAR LATCH TYPE HALL EFFECT FOR HIGH-TEMPERATURE OPERATION



#### DESCRIPTION

The UTC **USS40A** 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 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

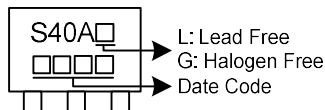
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USS40AL-G03-B	USS40AG-G03-B	SIP-3	I	G	O	Tape Box
USS40AL-G03-K	USS40AG-G03-K	SIP-3	I	G	O	Bulk

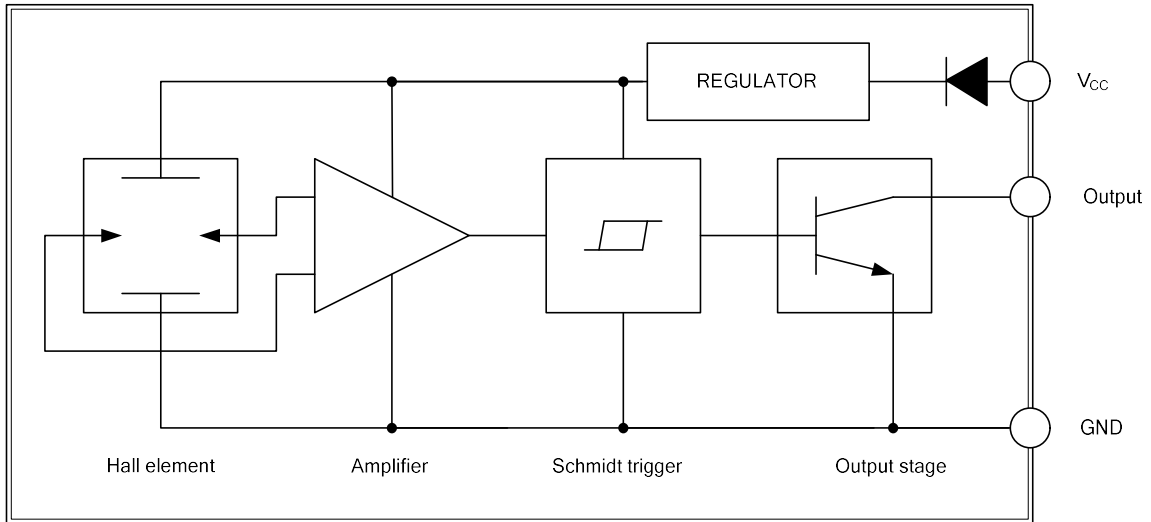
Note: Pin Assignment: I: V<sub>CC</sub> O: V<sub>OUT</sub> G: GND

USS40AG-G03-R	(1)Packing Type	(1) B: Tape Box, K: Bulk
	(2)Package Type	(2) G03: SIP-3
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

#### MARKING



■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	28	V
Supply Current	I <sub>CC</sub>	10	mA
Circuit Current	I <sub>O</sub>	20	mA
Power Dissipation	P <sub>D</sub>	400	mW
Operating Temperature	T <sub>OPR</sub>	-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
Supply Voltage Range	V <sub>DD</sub>	Operating	4.5		28	V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> = 16V, I <sub>OUT</sub> =12mA, B > 110 Gauss		0.2	0.4	V
		V <sub>CC</sub> =4.5V, I <sub>OUT</sub> =12mA, B > 110 Gauss		0.3	0.4	V
Output Leakage Current	I <sub>LEAK</sub>	V <sub>CC</sub> =16V, B=<-110Gauss		1	10	μA
Supply Current	I <sub>CC</sub>	V <sub>CC</sub> =16V		6	10	mA
		V <sub>CC</sub> =4.5V		5.5	10	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
<b>MAGNETIC CHARACTERISTICS</b>						
Operate Point	B <sub>OP</sub>	At T <sub>A</sub> =25°C		45	110	Gauss
Release Point	B <sub>RP</sub>	At T <sub>A</sub> =25°C	-110	-45		Gauss
Hysteresis	B <sub>HYS</sub>	At T <sub>A</sub> =25°C	50	90	220	Gauss

Notes: 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 T<sub>A</sub>=25°C and V<sub>CC</sub> =12V.

2. 1mT=10 gauss.

■ PACKAGE INFORMATION

SIP-3

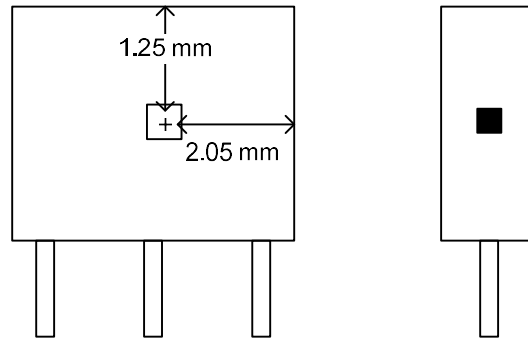


Fig. 1 SENSOR LOCATIONS

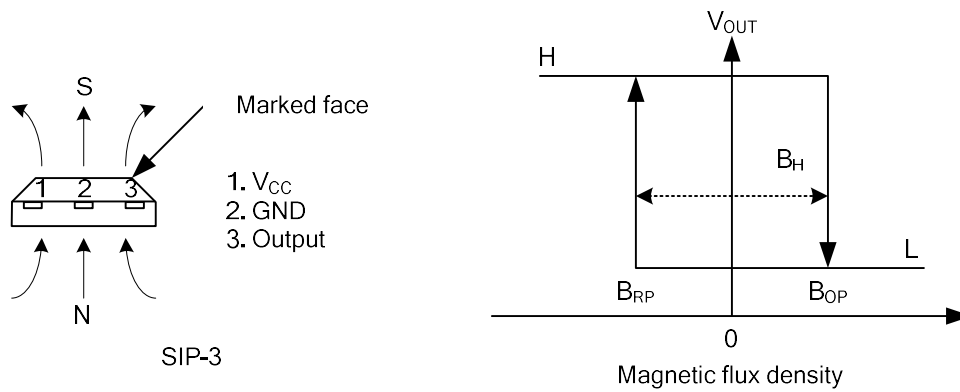
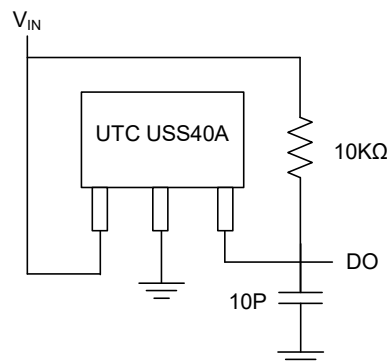
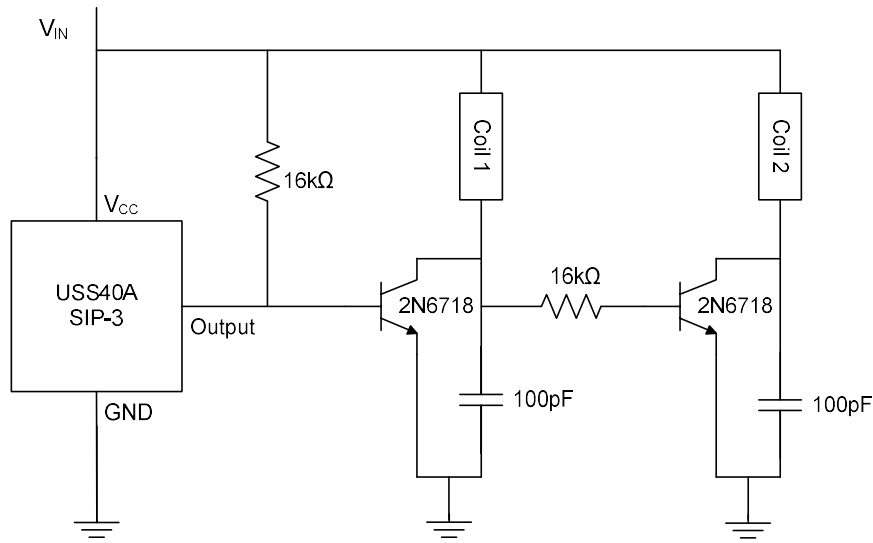


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

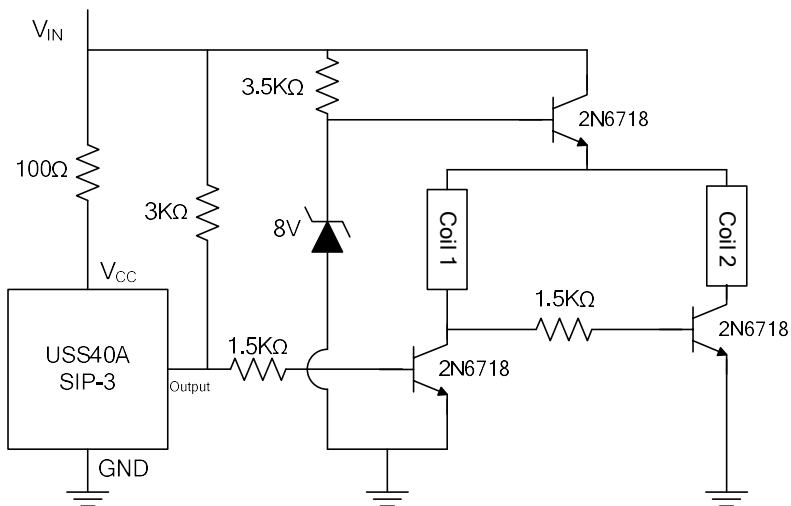
■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



FOR DC FAN 1



FOR DC FAN 2

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