



## USS40

Preliminary

LINEAR INTEGRATED CIRCUIT

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

### DESCRIPTION

The UTC **USS40** 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 -40°C~+125°C
- \* Alternating Magnetic Field Operation
- \* Built-in Protection Diode
- \* Withstand Voltage 50V
- \* TTL and MOS IC are Directly Drivable by the Output
- \* The life is Semi Permanent because it Employs Contact-Less Parts

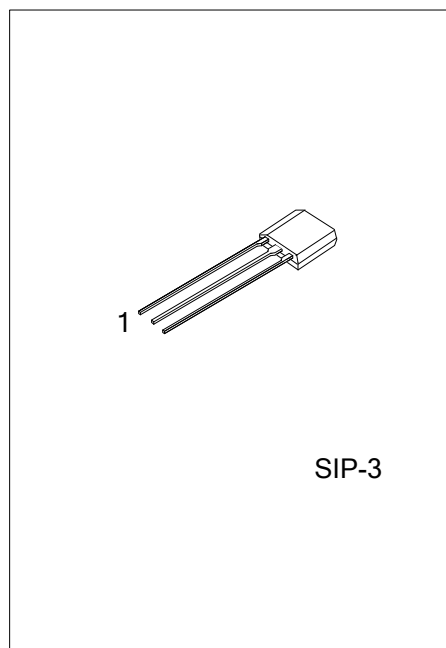
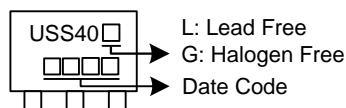
### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USS40L-G03-B	USS40G-G03-B	SIP-3	I	G	O	Tape Box
USS40L-G03-K	USS40G-G03-K	SIP-3	I	G	O	Bulk

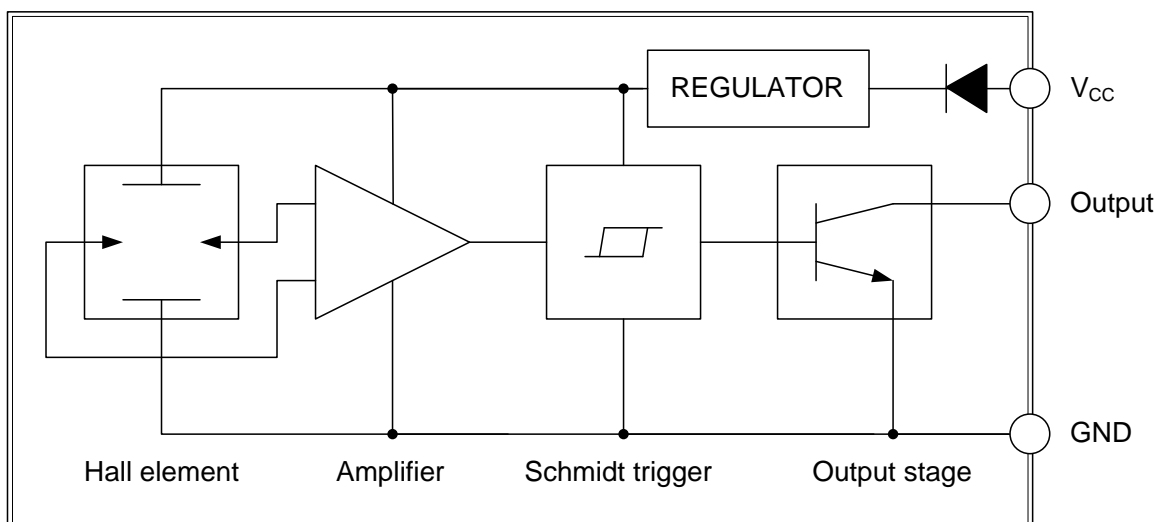
Note: Pin Assignment: I: V<sub>CC</sub> O: V<sub>OUT</sub> G: GND

USS40G-G03-B	(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>	24	V
Circuit Current	I <sub>O</sub>	50	mA
Power Dissipation	P <sub>D</sub>	500	mW
Operating Temperature	T <sub>OPR</sub>	-40 ~ +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		24	V
Output Leakage Current	I <sub>LEAK</sub>	V <sub>CC</sub> =12V, B<B <sub>RP</sub>		2.5	10	μA
Supply Current	I <sub>CC</sub>	V <sub>CC</sub> =12V		5	10	mA
Saturation Voltage	V <sub>DS(ON)</sub>	V <sub>CC</sub> =12V, B > B <sub>OP</sub> , I <sub>OUT</sub> =20mA		0.45	0.60	V
Output Switching Time	T <sub>R</sub>	V <sub>CC</sub> =12V, R <sub>L</sub> =1.1KΩ, C <sub>L</sub> =20pF		0.2	1.5	μS
	T <sub>F</sub>	V <sub>CC</sub> =12V, R <sub>L</sub> =1.1KΩ, C <sub>L</sub> =20pF		0.2	1	μS
<b>MAGNETIC CHARACTERISTICS</b>						
Operate Point	B <sub>OP</sub>	At T <sub>A</sub> =25°C	5	35	70	G
Release Point	B <sub>RP</sub>	At T <sub>A</sub> =25°C	-70	-35	-5	G
Hysteresis	B <sub>HYS</sub>	At T <sub>A</sub> =25°C	10	70	130	G

Note: 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.

## ■ PACKAGE INFORMATION

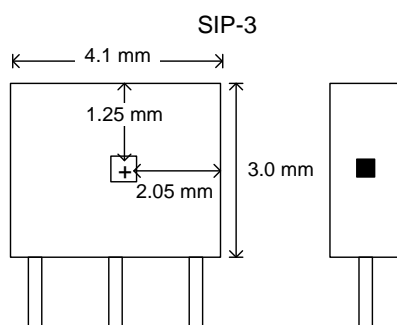


Fig. 1 SENSOR LOCATIONS

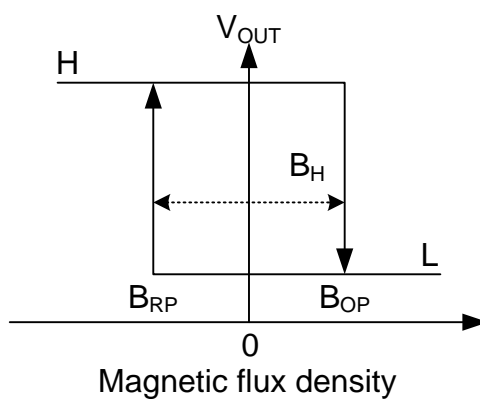
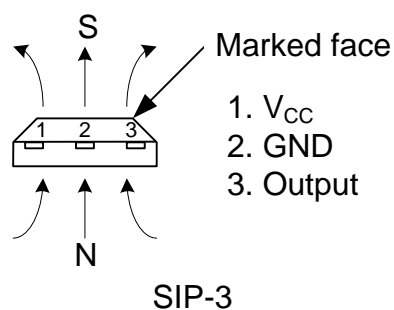
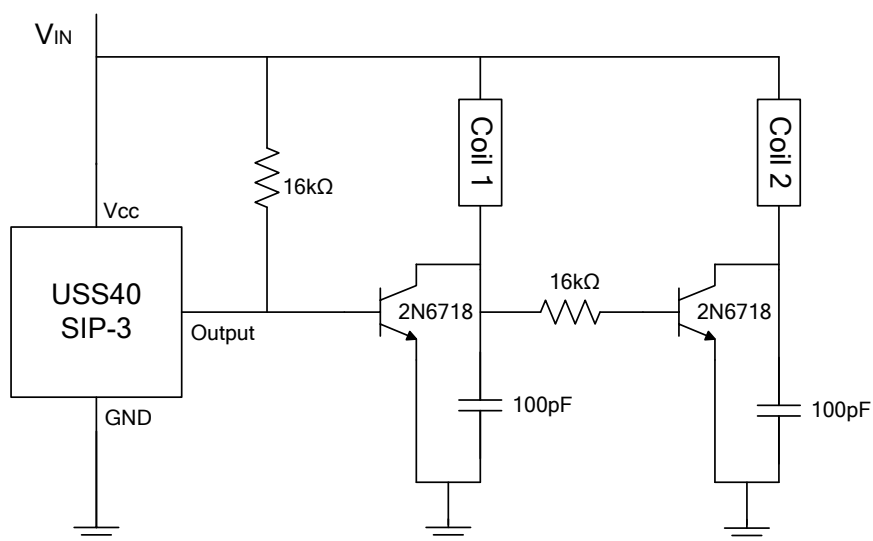
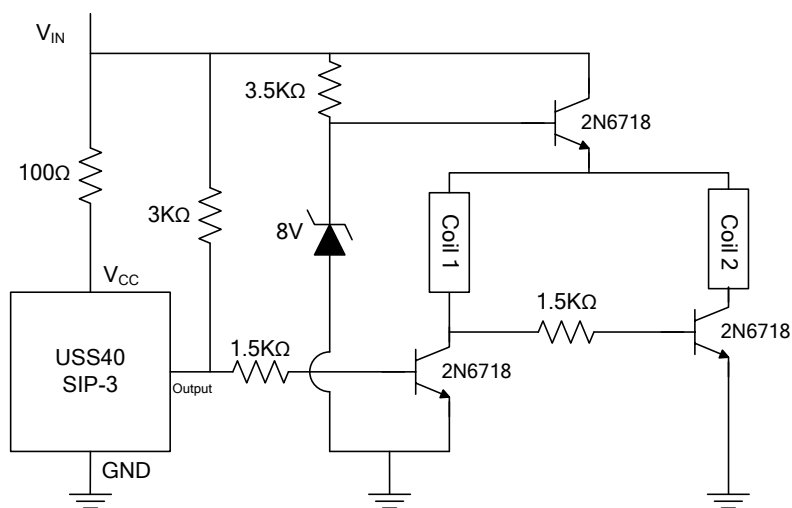


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

## ■ TYPICAL APPLICATION CIRCUIT

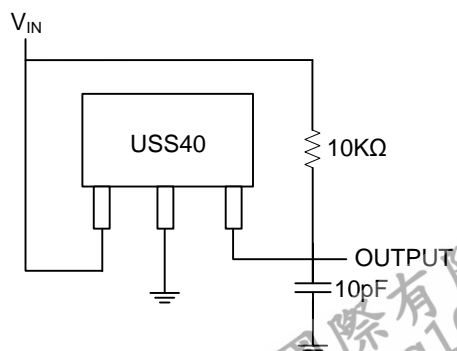


FOR DC FAN 1



FOR DC FAN 2

## ■ TEST CIRCUIT



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