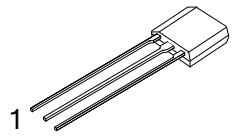
USS40 **Preliminary** ***LINEAR INTEGRATED CIRCUIT***

BIPOLAR LATCH TYPE HALL EFFECT FOR HIGH-TEMPERATURE OPERATION



SIP-3

■ 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_{CC} O: V_{OUT} G: GND

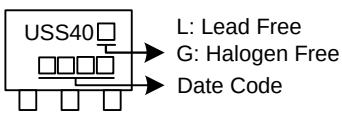
USS40G-G03-B

(1)Packing Type — (1) B: Tape Box, K: Bulk

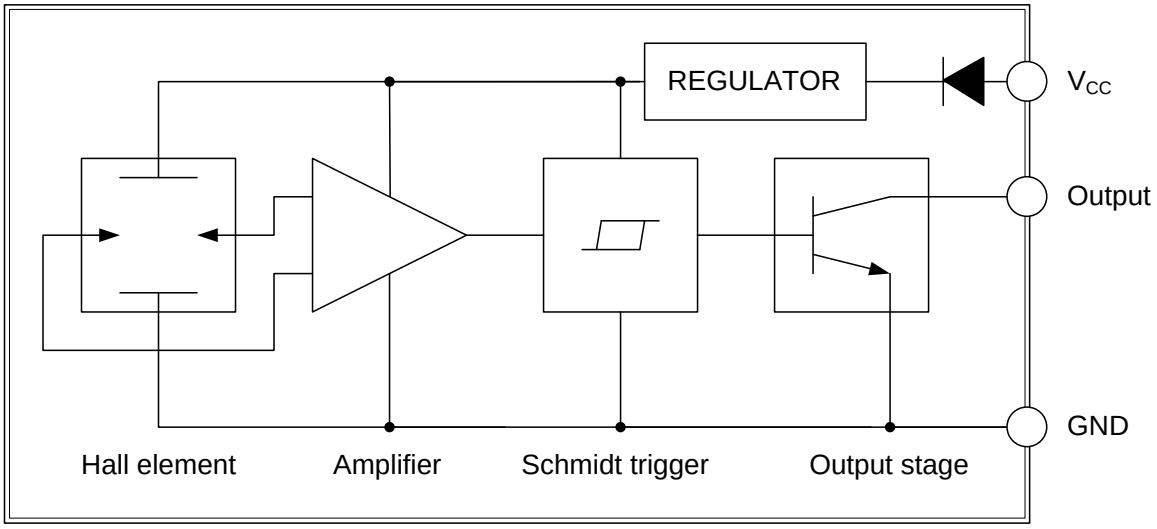
(2)Package Type — (2) G03: SIP-3

(3)Green Package — (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	24	V
Circuit Current	I_O	50	mA
Power Dissipation	P_D	500	mW
Operating Temperature	T_{OPR}	-40 ~ +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
Supply Voltage Range	V_{DD}	Operating	4.5		24	V
Output Leakage Current	I_{LEAK}	V_{CC}=12V, B<B_{RP}		2.5	10	μA
Supply Current	I_{CC}	V_{CC}=12V		5	10	mA
Saturation Voltage	$V_{DS(ON)}$	V_{CC}=12V, B > B_{OP}, I_{OUT}=20mA		0.45	0.60	V
Output Switching Time	T_R	V_{CC}=12V, R_L=1.1KΩ, C_L=20pF		0.2	1.5	μS
	T_F	V_{CC}=12V, R_L=1.1KΩ, C_L=20pF		0.2	1	μS
MAGNETIC CHARACTERISTICS						
Operate Point	B_{OP}	At T_A=25°C	5	35	70	G
Release Point	B_{RP}	At T_A=25°C	-70	-35	-5	G
Hysteresis	B_{HYS}	At T_A=25°C	10	70	130	G

Note: 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.

■ PACKAGE INFORMATION

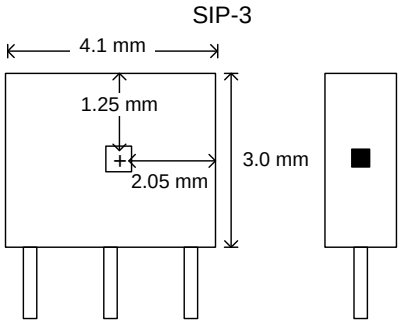


Fig. 1 SENSOR LOCATIONS

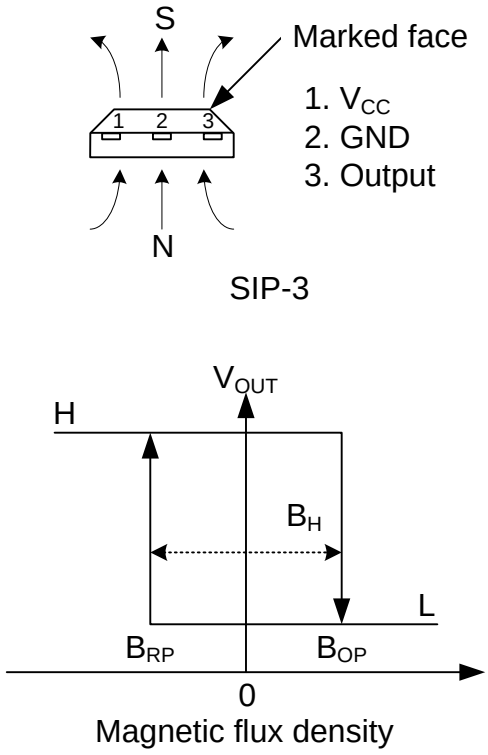
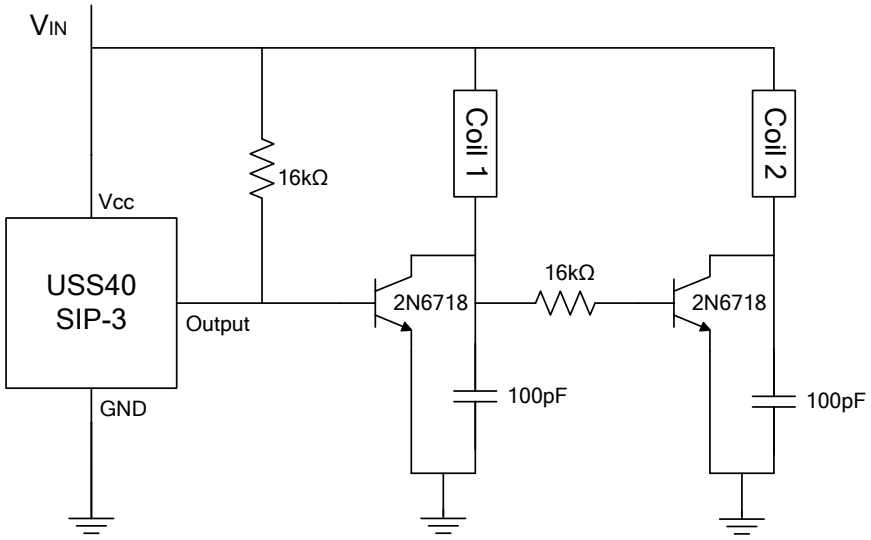
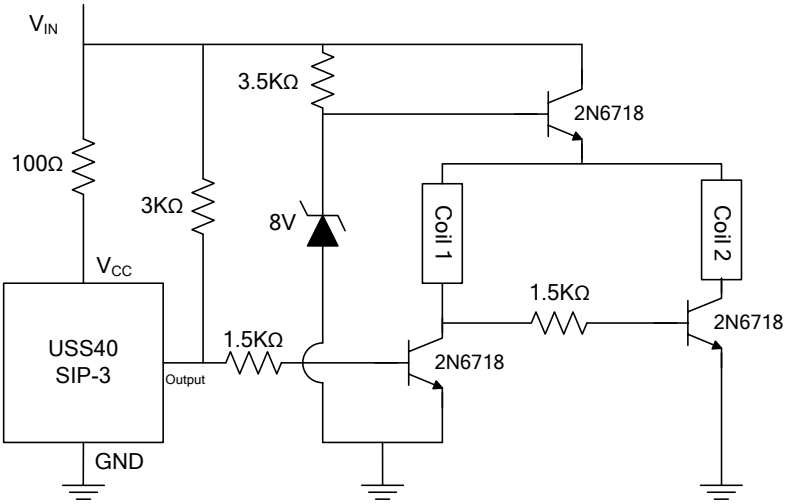


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

■ TYPICAL APPLICATION CIRCUIT



FOR DC FAN 1



FOR DC FAN 2

■ TEST CIRCUIT