



BIPOLAR LATCH TYPE HALL EFFECT FOR HIGH-TEMPERATURE OPERATION

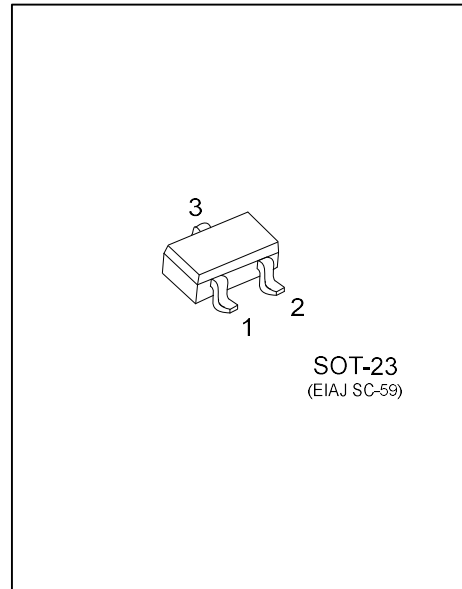
DESCRIPTION

The UTC **USS30A** 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



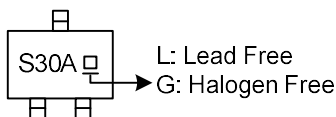
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USS30AL-AE3-R	USS30AG-AE3-R	SOT-23	I	O	G	Tape Reel

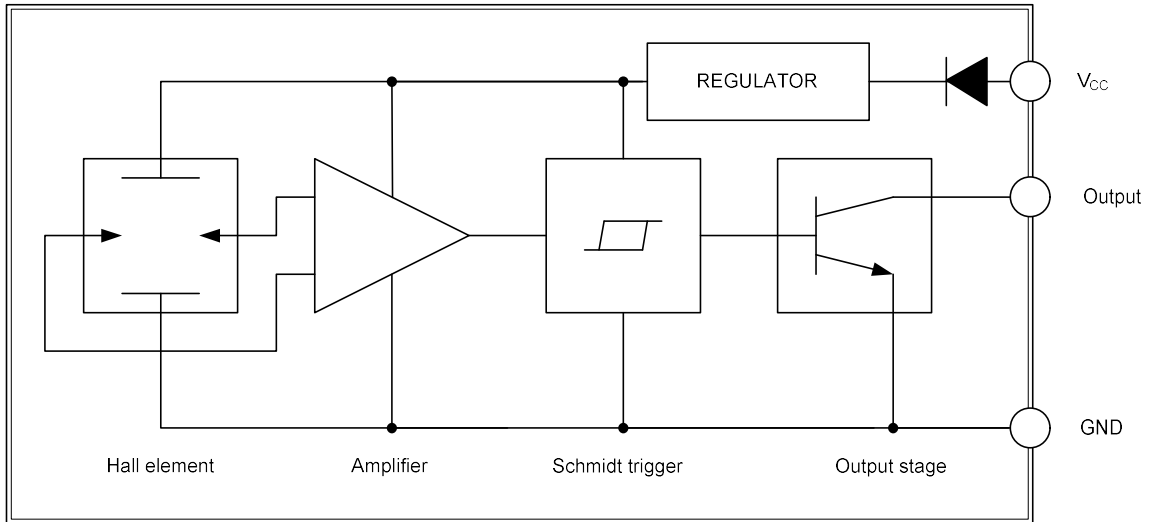
Note: Pin Assignment: I: V_{CC} O: V_{OUT} G: GND

USS30AG-AE3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE3: SOT-23
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



■ BLOCK DIAGRAM



■ **ABSOLUTE MAXIMUM RATINGS** ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	28	V
Supply Current	I_{CC}	10	mA
Circuit Current	I_O	20	mA
Power Dissipation	P_D	250	mW
Operating Temperature	T_{OPR}	-30 ~ +125	$^\circ\text{C}$
Storage Temperature	T_{STG}	-40 ~ +150	$^\circ\text{C}$

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** ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	V_{DD}	Operating	4.5		28	V
Low-Level Output Voltage	V_{OL}	$V_{CC} = 16\text{V}$, $I_{OUT}=12\text{mA}$, $B > 110$ Gauss		0.2	0.4	V
		$V_{CC} = 4.5\text{V}$, $I_{OUT}=12\text{mA}$, $B > 110$ Gauss		0.3	0.4	V
Output Leakage Current	I_{LEAK}	$V_{CC} = 16\text{V}$, $B = < -110$ Gauss		1	10	μA
Supply Current	I_{CC}	$V_{CC} = 16\text{V}$		6	10	mA
		$V_{CC} = 4.5\text{V}$		5.5	10	mA
Output Switching Time	T_R	$V_{CC} = 16\text{V}$, $R_L = 10\text{K}\Omega$, $C_L = 10\text{pF}$			5	μS
	T_F	$V_{CC} = 16\text{V}$, $R_L = 10\text{K}\Omega$, $C_L = 10\text{pF}$			1	μS
MAGNETIC CHARACTERISTICS						
Operate Point	B_{OP}	At $T_A=25^\circ\text{C}$		45	110	Gauss
Release Point	B_{RP}	At $T_A=25^\circ\text{C}$	-110	-45		Gauss
Hysteresis	B_{HYS}	At $T_A=25^\circ\text{C}$	50	90	220	Gauss

Notes: 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 $T_A=25^\circ\text{C}$ and $V_{CC} = 12\text{V}$.

2. $1\text{mT} = 10$ gauss.

■ PACKAGE INFORMATION

SOT-23

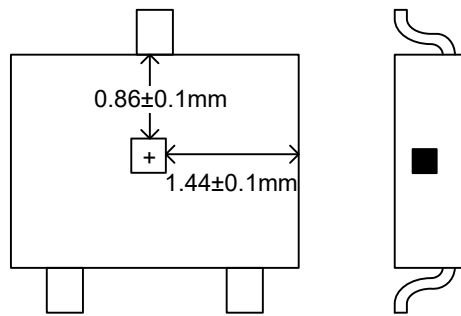


Fig. 1 SENSOR LOCATIONS

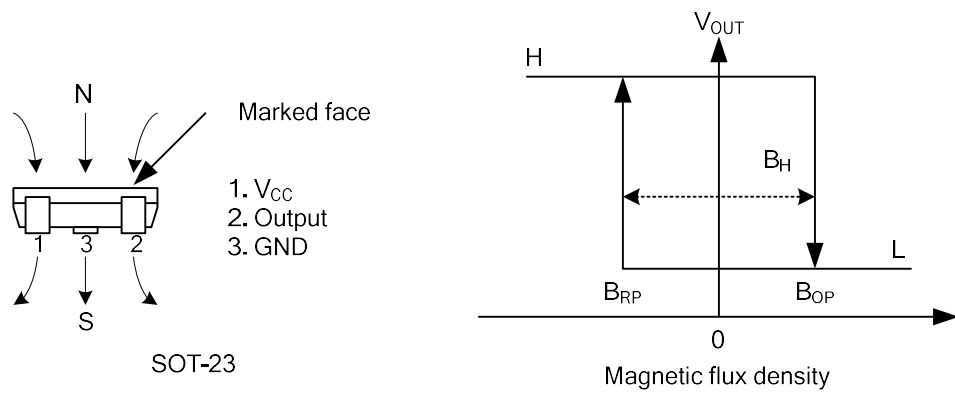
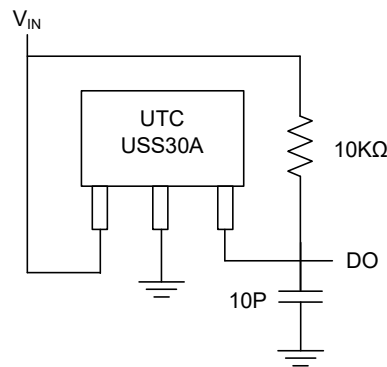
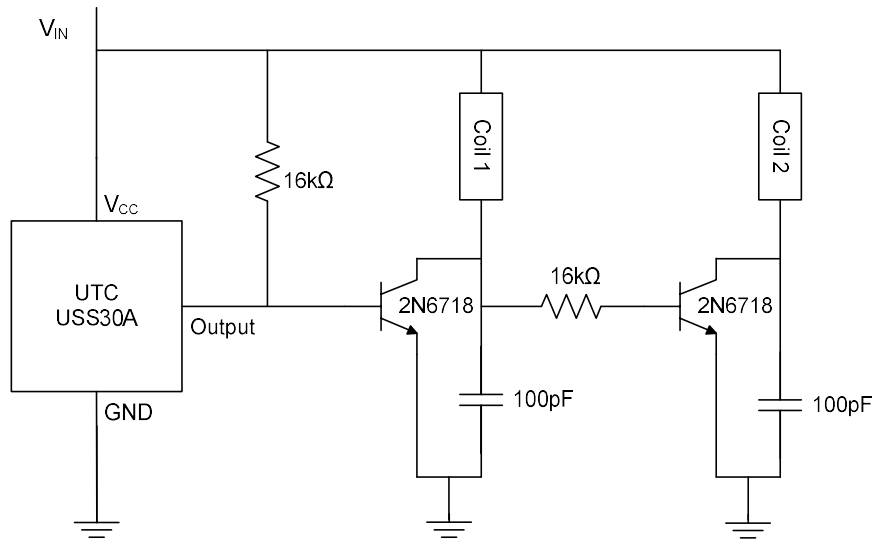


Fig. 2 APPLYING DIRECTION OF MAGNETIC FLUX

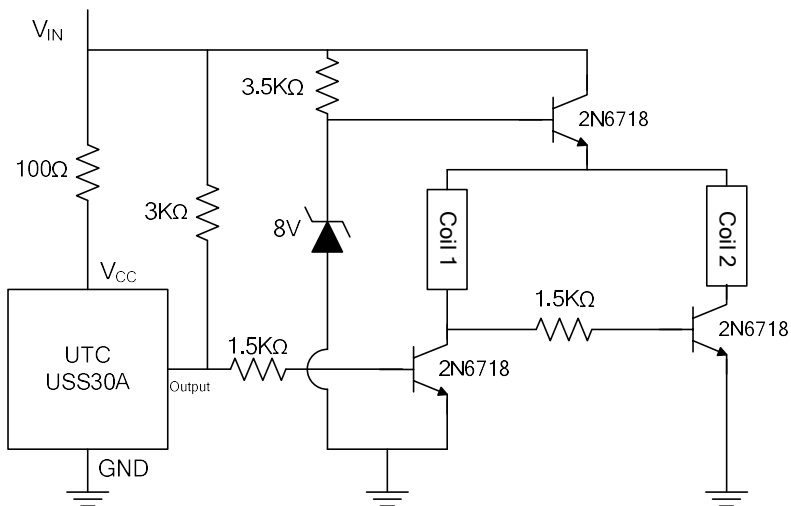
■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



FOR DC FAN 1



FOR DC FAN 2

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