

MH477S is the integrated Hall sensor with output drivers designed for electrical commutation of brush-less DC motor application. The devices are included as follows: on-chip Hall voltage generator for magnetic sensing; the amplifier that amplifies the Hall voltage; a comparator is to provide switching hysteresis for noise rejection; the bi-direction drivers for sinking and driving large current load. Internal band gap regulator is used to provide temperature compensated bias for internal circuits and allows a wide operating supply voltage range.

If a magnetic flux density larger than threshold  $B_{op}$ , DO is turned to sink and DOB is turned to drive. The output state is held until a magnetic flux density reversal falls below  $B_{rp}$  causing DO to be turned to drive and DOB turned to sink.

MH477S is rated for operation over-temperature range from  $-20\text{ }^{\circ}\text{C}$  to  $85\text{ }^{\circ}\text{C}$ , and voltage range from 3.5V to 20V. The device is packaged by SIP-4.

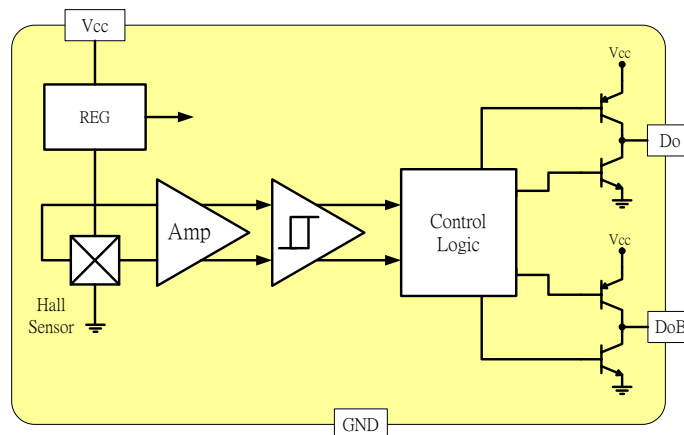
### ***Features and Benefits***

- On-chip Hall sensor with two different sensitivity and hysteresis settings
- Bi-direction H type output drivers for single coil
- Internal band gap regulator allows temperature compensated operations
- 3.5V to 20V operating voltage
- 200mA (avg.) output sink current
- $-20^{\circ}$  to  $+85^{\circ}\text{C}$  operating temperature
- Low cost and high sensitivity Fan Driver

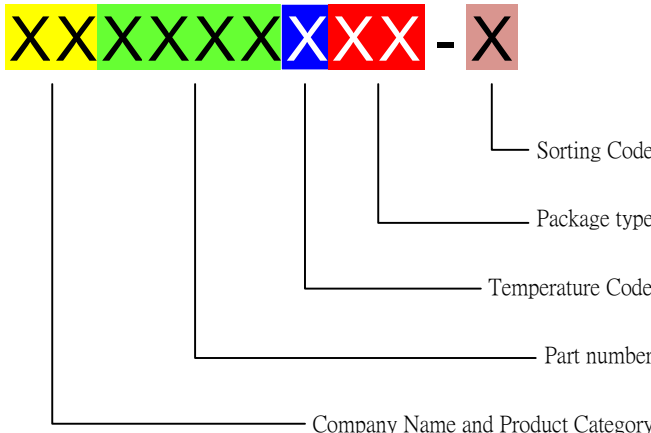
### ***Applications***

- Single-coil Brush-less DC Motor
- Single -coil Brush-less DC Fan

### ***Functional Diagram***



**Ordering Information**

	<p><b>Company Name and Product Category</b> MH:MST Hall Effect/MP:MST Power IC</p> <p><b>Part number</b> 181,182,183,184,185,248,249,276,477,381,381F,381R,382..... If part # is just 3 digits, the forth digit will be omitted.</p> <p><b>Temperature range</b> E: 85 °C, I: 105 °C, K: 125 °C, L: 150 °C</p> <p><b>Package type</b> UA:TO-92S,VK:TO-92S(4pin),VF:TO-92S(5pin),SO:SOT-23, SQ:QFN-3,ST:TSOT-23,SN:SOT-553,SF:SOT-89(5pin), SS:TSOT-26,SD:DFN-6</p> <p><b>Sorting</b> <math>\alpha, \beta</math>, Blank.....</p>
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Part No.	Temperature Suffix	Package Type
MH477SEVK-A	E (-20°C to + 85°C)	VK (4-pin TO-92S)
MH477SEVK-B	E (-20°C to + 85°C)	VK (4-pin TO-92S)
MH477SEVK-C	E (-20°C to + 85°C)	VK (4-pin TO-92S)

**Absolute Maximum Ratings At( $T_a=25^\circ\text{C}$ )**

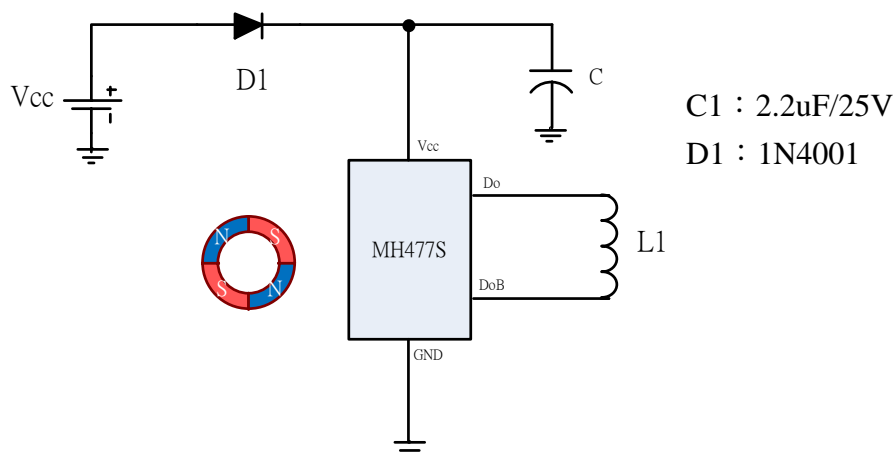
Characteristics	Values	Unit
Supply voltage, ( $V_{cc}$ )	20	V
Magnetic flux density	Unlimited	Gauss
Output “on” current, ( $I_{out}$ )	Continuous	200
	Hold	300
	Peak (Start Up)	600
Operating temperature range, ( $T_a$ )	-20 to +85	°C
Storage temperature range, ( $T_s$ )	-65 to +150	°C
Maximum Junction Temp, ( $T_j$ )	150	°C
Thermal Resistance	( $\theta_{JA}$ )	227
	( $\theta_{JC}$ )	49
Package Power Dissipation, ( $P_D$ )	550	mW

**Electrical Specifications**

DC Operating Parameters :  $T_a = +25^\circ\text{C}$ ,  $V_{CC} = 12\text{V}$

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, ( $V_{CC}$ )	Operating	3.5		20.0	V
Supply Current, ( $I_{CC}$ )	$B < Brp$		12	25.0	mA
Output Saturation Voltage ( $V_{sat}$ )	(Sink)		200	400	mV
	(Drive)	$V_{CC} = 14\text{V}$ , $I_C = 100\text{mA}$	$V_{CC} - 1.3$	$V_{CC}$	V
Output Rise Time, ( $T_R$ )	$R_L = 820\Omega$ , $C_L = 20\text{PF}$		1.0	5.0	$\mu\text{s}$
Output Falling Time, ( $T_F$ )	$R_L = 820\Omega$ , $C_L = 20\text{PF}$		0.3	1.5	$\mu\text{s}$
Switch Time Differential, ( $T_S$ )	$R_L = 820\Omega$ , $C_L = 20\text{PF}$		1.0	5.0	$\mu\text{s}$
Operate Point, ( $B_{OP}$ )	“A” Grade	5		70	Gauss
	“B” Grade	0		100	Gauss
	“C” Grade			130	Gauss
Release Point, ( $B_{RP}$ )	“A” Grade	-70		-5	Gauss
	“B” Grade	-100		0	Gauss
	“C” Grade	-130			Gauss
Hysteresis, ( $B_{HYS}$ )	“A” “B” “C” Grade		70		Gauss

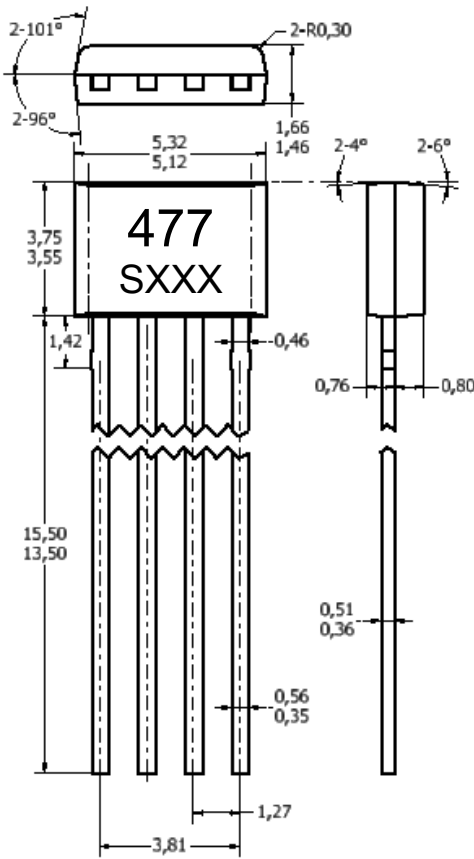
**Typical application circuit**



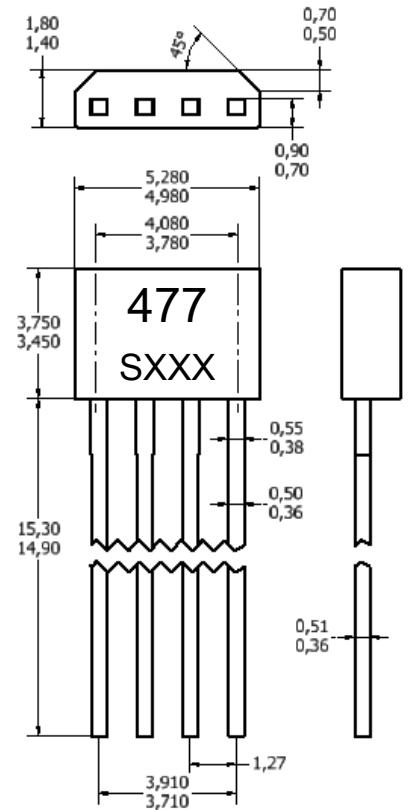
Sensor Location with Pin out and Package dimension

VK Package (To-92 4 pins)

For Halogen Free



For PB free

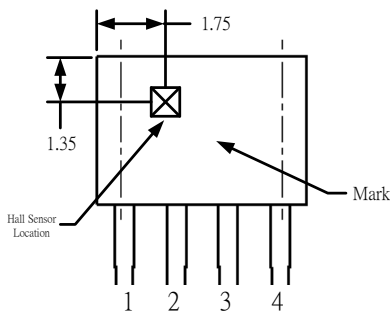


NOTES:

- 1).Controlling dimension: mm
- 2).Leads must be free of flash and plating voids
- 3).Do not bend leads within 1 mm of lead to package interface.
- 4).PINOUT:

Pin 1	Vcc
Pin 2	Do
Pin 3	DoB
Pin 4	GND

Hall Chip location



Output Pin Assignment

