MH477 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 Bop, DO is turned to sink and DOB is turned to drive. The output state is held until a magnetic flux density reversal falls below Brp causing DO to be turned to drive and DOB turned to sink.

MH477 is rated for operation over-temperature range from -20 ℃ to 85 ℃, also the thermal shut-down function is included, and voltage range from 3.5V to 20V. The device is packaged by SIP-4.

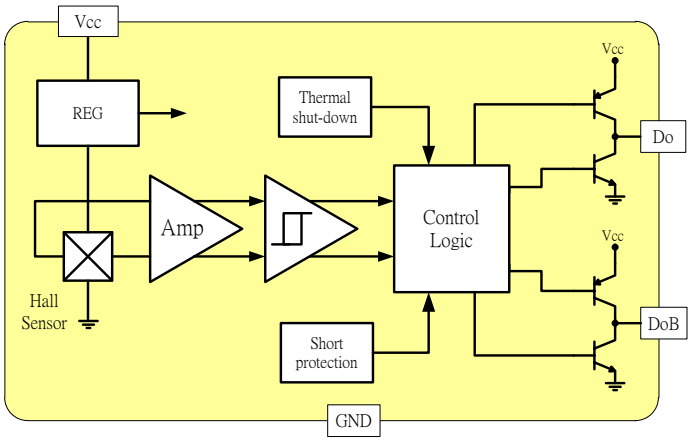
Features and Benefits

- 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
- 350mA (avg.) output sink current
- -20° to +85°C operating temperature
- Thermal Shut-Down Function
- Short Protection Function(For 3.5V to 14V)
- Low cost and high sensitivity Fan Driver

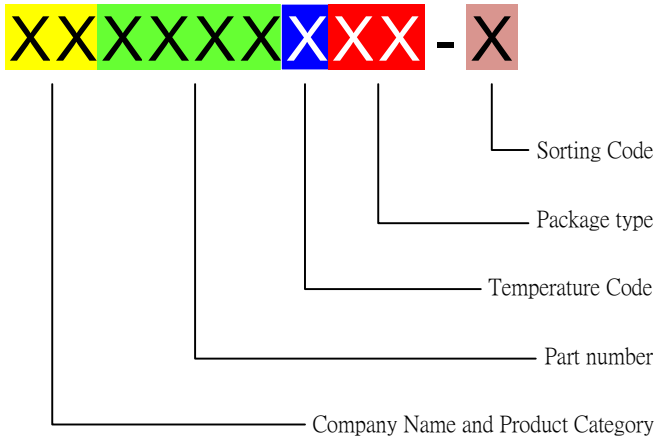
Applications

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

Functional Diagram



Ordering Information



Company Name and Product Category

MH:MST Hall Effect/MP:MST Power IC

Part number

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.

Temperature range

E: 85 ℃, I: 105 ℃, K: 125 ℃, L: 150 ℃

Package type

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

Sorting

α, β,Blank…..

Part No.	Temperature Suffix	Package Type
MH477EVK-A	E (-20℃ to + 85℃)	VK (4-pin TO-92S)
MH477EVK-B	E (-20℃ to + 85℃)	VK (4-pin TO-92S)
MH477EVK-C	E (-20℃ to + 85℃)	VK (4-pin TO-92S)

Absolute Maximum Ratings *At(Ta=25℃)*

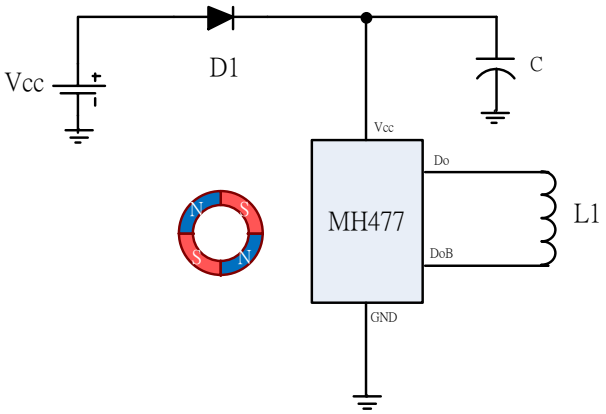
Characteristics		Values	Unit
Supply voltage,(*Vcc*)		20	V
Magnetic flux density		Unlimited	Gauss
Output "on" current,(I_{OUT})	Continuous	350	mA
	Hold	400	
	Peak (Start Up)	700	
Operating temperature range, (*Ta*)		-20 to +85	℃
Storage temperature range, (*Ts*)		-65 to +150	℃
Maximum Junction Temp,(*Tj*)		150	℃
Thermal Resistance	(θ_{JA})	227	℃/W
	(θ_{JC})	49	℃/W
Package Power Dissipation, (P_D)		550	mW

Electrical Specifications

DC Operating Parameters ： Ta=+25℃, VCC=12V

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage,(*Vcc*)	Operating	3.5		20.0	V
Supply Current,(*Icc*)	B<Brp		12	25.0	mA
Output Saturation Voltage(*Vsat*) (Sink)	V_{CC}=14V, IC=200mA		280	650	mV
Output Saturation Voltage(*Vsat*) (Drive)	V_{CC}=14V, IC=200mA	Vcc-1.3	Vcc-1	Vcc	V
Output Rise Time,(T_R)	RL=820Ω,CL=20PF		1.0	5.0	μs
Output Falling Time,(T_F)	RL=820Ω,CL=20PF		0.3	1.5	μs
Switch Time Differential,(T_S)	RL=820Ω,CL=20PF		1.0	5.0	μs
Thermal shut-down Temp			130		℃
Thermal shut-down Hysteresis			40		℃
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

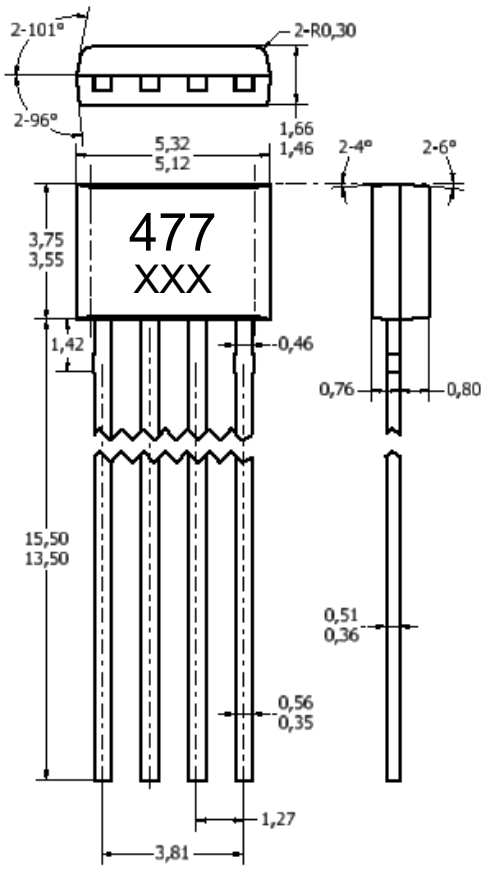
Typical application circuit



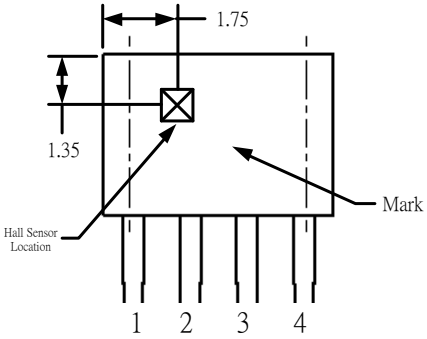
C1：2.2uF/25V
D1：1N4001

Sensor Location with Pin out and Package dimension

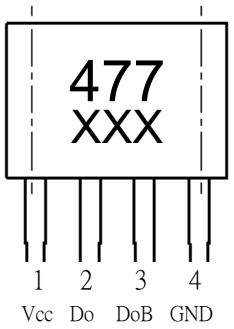
VK Package (To-92 4 pins)



Hall Chip location



Output Pin Assignment



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