MH181, Hall-Effect sensor, designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall Voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open collector output. An internal band gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range. The device is identical except for magnetic switch points.

The device includes on a single silicon chip a voltage regulator, Hall-voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, open-collector output to sink up to 25mA. A south pole of sufficient strength will turn the output on. The North Pole is necessary to turn the output off. An on-board regulator permits operation with supply voltages of 3.5V to 20 V.

The package type is in a lead Halogen Free version was verified by third party organization.

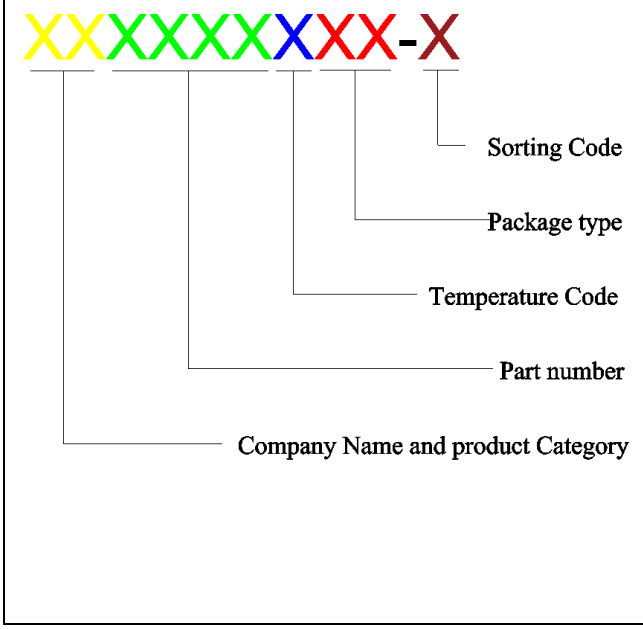
Features and Benefits

- Temperature compensation.
- Wide operating voltage range.
- Open-Collector pre-driver.
- Reverse bias protection on power supply pin.
- 100% at 125℃ “Hot Test” in MH181KUA
- RoHS compliant 2011/65/EU and Halogen Free

Applications

- High temperature Hall IC application
- Fan motor application
- BLDC motor application
- 3 phase BLDC motor in “K” Spec

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

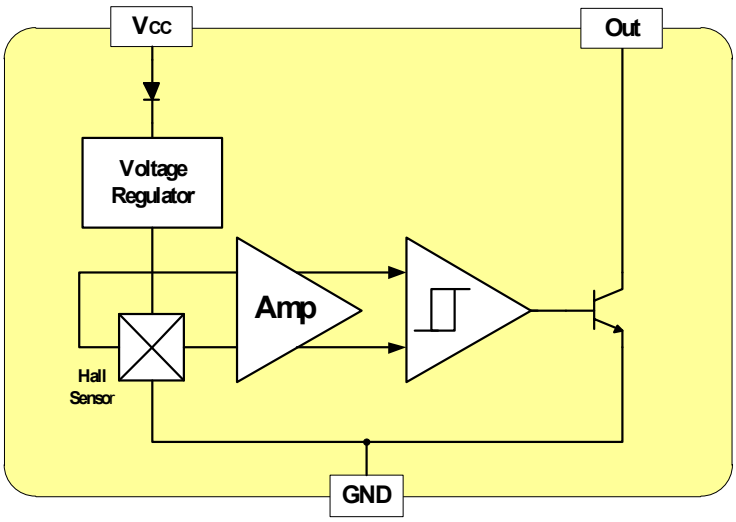
α,β,Blank…..

Part No.	Temperature Suffix	Package Type
MH181KUA	K (-40℃ to + 125℃)	UA (TO-92S)
MH181EUA	E (-40℃ to + 85℃)	UA (TO-92S)
MH181ESO	E (-40℃ to + 85℃)	SO (SOT-23)

MH 181KUA is developed as "125 degree C Temperature Version" by MST technology. Major application is industrial and automotive.

Functional Diagram

.



Absolute Maximum Ratings *At (Ta=25℃)*

Characteristics		Values	Unit
Supply voltage, (V_{CC})		20	V
Output Voltage,(V_{out})		30	V
Reverse voltage, (V_{CC}) (V_{OUT})		-20	V
Magnetic flux density		Unlimited	Gauss
Output current, (I_{SINK})		25	mA
Operating Temperature Range, (Ta)	"E" version	-20 to +85	℃
	"K" version	-40 to +125	℃
Storage temperature range, (Ts)		-55 to +150	℃
Maximum Junction Temp, (Tj)		150	℃
Thermal Resistance	(θ_{ja}) UA / SO	206 / 543	℃/W
	(θ_{jc}) UA / SO	148 / 410	℃/W
Package Power Dissipation, (P_D) UA / SO		606 / 230	mW

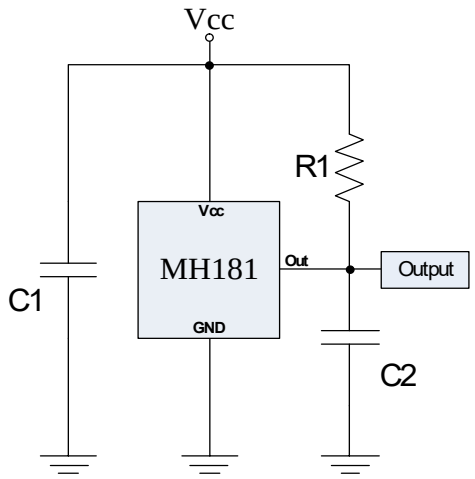
***Note**: Do not apply reverse voltage to V_{CC} and V_{OUT} Pin, It may be caused for Miss function or damaged device.*

Electrical Specifications

DC Operating Parameters ： Ta=+25℃, V_{CC}=12V

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{CC})	Operating	3.5		20.0	V
Supply Current, (I_{CC})	B<B_{OP}		4.0	8.0	mA
Output Saturation Voltage, (V_{Sat})	I_{OUT} = 10 mA, B>B_{OP}			700.0	mV
Output Leakage Current, (*Ioff*)	I_{OFF} B<B_{RP}, V_{OUT} = 12V			10.0	uA
Output Rise Time, (*TR*)	R_L=820Ω, C_L =20pF			1.5	uS
Output Fall Time, (*TF*)	R_L=820Ω; C_L =20pF			1.5	uS
Operate Point, (B_{OP})	UA(SO)	5(-90)		90(-5)	Gauss
Release Point, (B_{RP})	UA(SO)	-90 (5)		-5 (90)	Gauss
Hysteresis, (B_{HYS})			100		Gauss

Typical application circuit

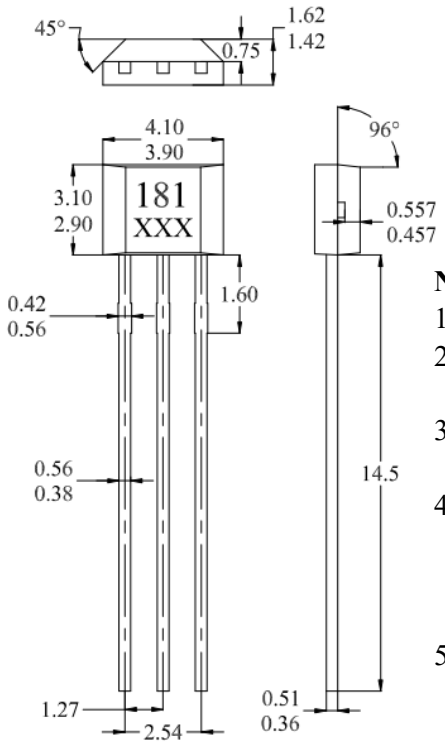


C1：1000PF

C2：15PF

Sensor Location, Package Dimension and Marking

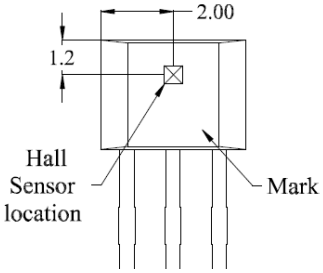
UA Package



NOTES:

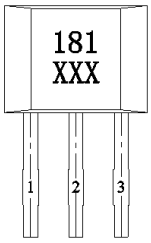
1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. Do not bend leads within 1 mm of lead to package interface.
4. PINOUT:
   Pin 1 VDD
   Pin 2 GND
   Pin 3 Output
5. XXX; 1st X=Year;
   2nd and 3rd XX=Week

Hall Chip location



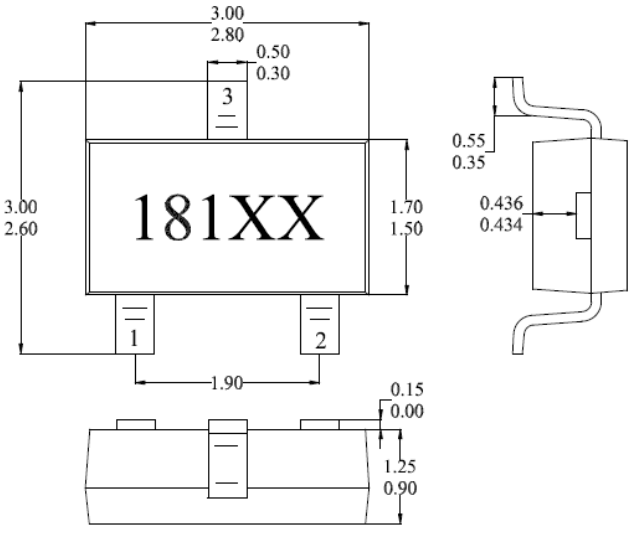
Output Pin Assignment

(Top view)



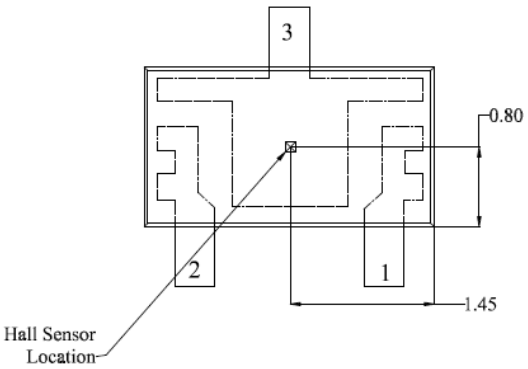
SO Package

(Top View)

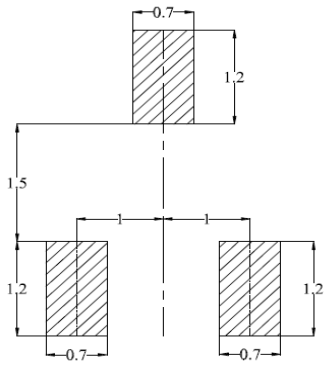


Hall Plate Chip Location

(Bottom view)



(For reference only) Land Pattern



NOTES:

1. PINOUT (See Top View at left :)
   Pin 1 V_{DD}; Pin 2 Output; Pin 3 GND
2. Controlling dimension: mm
3. Lead thickness after solder plating will be 0.254mm maximum
4. XX: Date Code, Refer to DC table