MH190, 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, 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.

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 4V to 30 V.

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

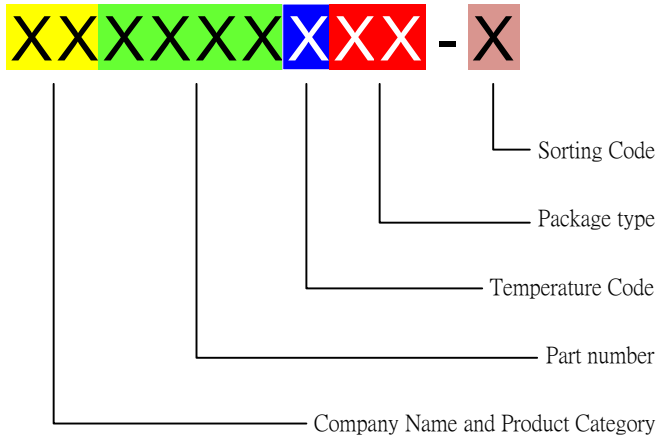
Features and Benefits

- Optimized for BLDC motor applications
- High Peak Voltage of 65V
- 100% tested at 125 ℃ for K.
- Temperature compensation function

Applications

- High temperature Fan motor
- 3 phase BLDC motor application
- Fan motor application
- Speed sensing
- Revolution counting
- E-Bike

Ordering Information



Company Name and Product Category

MH:MST Hall Effect/MP:MST Power MOSFET

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)

Sorting

α, β,Blank…..

Part No.	Temperature Suffix	Package Type
MH190KUA	K (-40℃ to + 125℃)	UA (TO-92S)
MH190KSO	K (-40℃ to + 125℃)	SO (SOT-23)
MH190EUA	E (-40℃ to + 85℃)	UA (TO-92S)
MH190ESO	E (-40℃ to + 85℃)	SO (SOT-23)

KUA spec is using in industrial and automotive application. Special Hot Testing is utilized.

Functional Diagram

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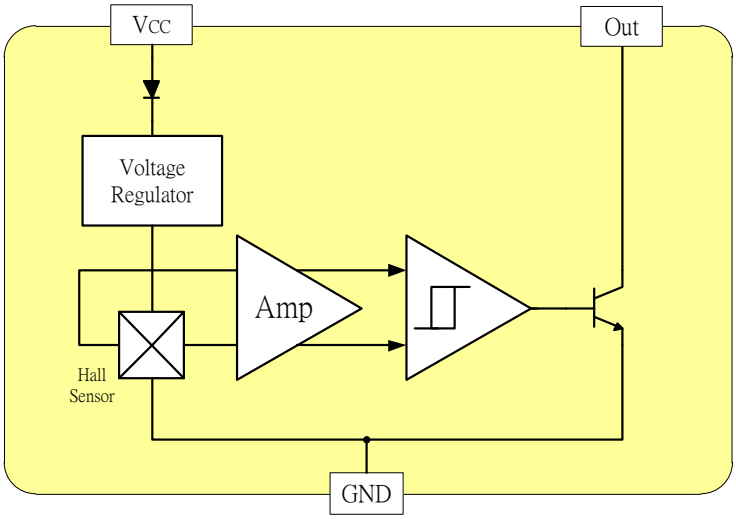


Absolute Maximum Ratings *At (Ta=25℃)*

Characteristics		Values	Unit
Supply voltage, (V_{CC})		65	V
Out voltage, (V_{OUT})		65	V
Reverse voltage, (V_{CC}) (V_{OUT})		-32	V
Magnetic flux density		Unlimited	Gauss
Output current, (I_{OUT})		25	mA
Operating Temperature Range, (Ta)	"E" version	-40 to +85	℃
	"K" version	-40 to +125	℃
Storage temperature range, (Ts)		-65 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

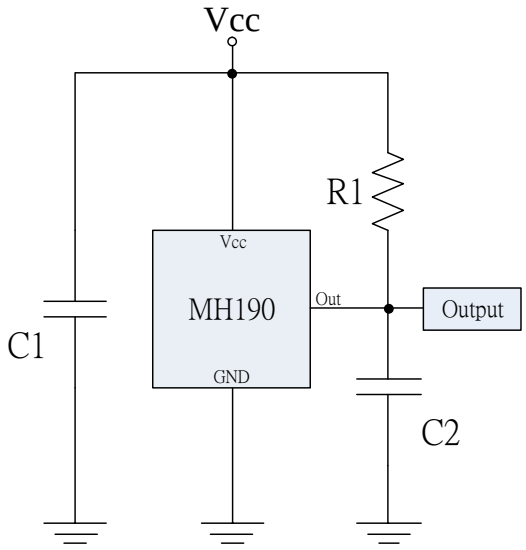
***Note**: Do not apply reverse voltage to V_{cc} and V_{OUT} Pin, It may be caused for Miss function or damaged device.*

Electrical Specifications

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

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage,(V_{CC})	Operating	4.0		30.0	V
Supply Current,(I_{CC})	B<Bop		3.0	8.0	mA
Output Saturation Voltage, (V_{sat})	I_{OUT} = 5 mA, B>B_{OP}			500.0	mV
Output Leakage Current, (I_{off})	I_{OFF} B<B_{RP}, V_{OUT} = 24V			10.0	uA
Output Rise Time, (T_R)	R_L=820Ω, CL =20pF		1.5		uS
Output Fall Time, (T_F)	R_L=820Ω; CL =20pF		1.5		uS
Operate Point,(B_{OP})		10		110	Gauss
Release Point,(B_{RP})		-110		-10	Gauss
Hysteresis,(B_{HYS})			100		Gauss

Typical application circuit

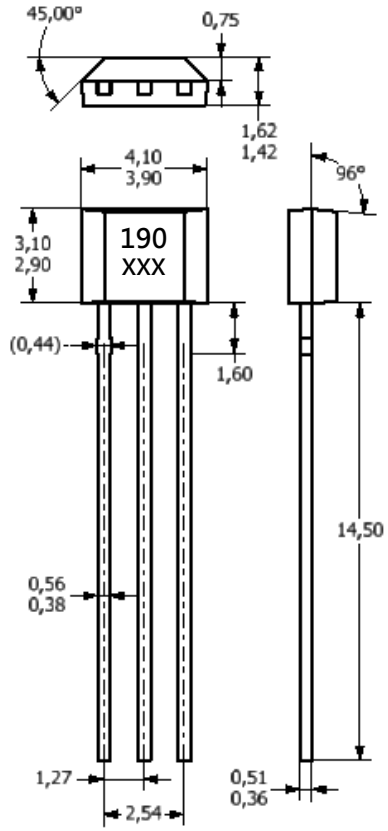


C1：1000PF
C2：15PF
R1：10KΩ

Sensor Location, Package Dimension and Marking

MH190 Package

UA Package



NOTES:

1).Controlling dimension: mm

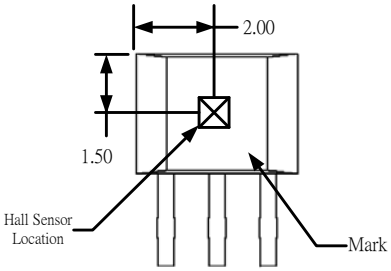
2).Leads must be free of flash and plating voids

3).Do not bend leads within 1 mm of lead to package interface.

4).PINOUT:

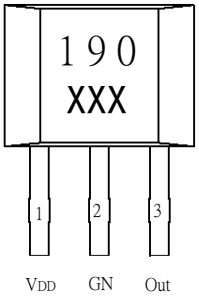
Pin 1	V_{CC}
Pin 2	GND
Pin 3	Output

Hall Chip location



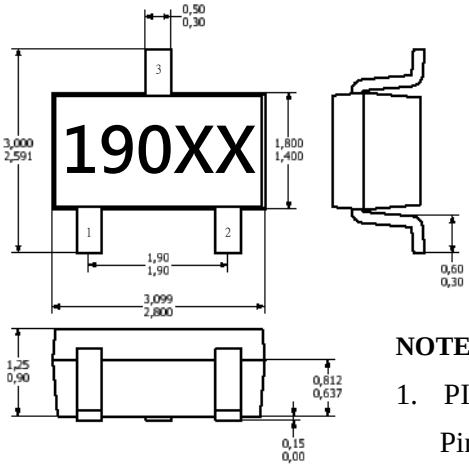
Output Pin Assignment

(Top view)



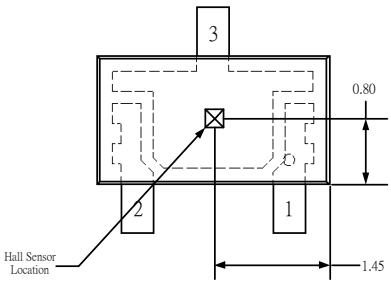
Package (SOT-23)

(Top View)



Hall Plate Chip Location

(Bottom view)



NOTES:

1. PINOUT (See Top View at left :)

   Pin 1 V_{CC}

   Pin 2 Output

   Pin 3 GND

2. Controlling dimension: mm
3. Lead thickness after solder plating will be 0.254mm maximum