MH189 Hall-effect sensor is a temperature stable, stress-resistant sensor. Superior high-temperature performance is made possible through a dynamic offset cancellation that utilizes chopper-stabilization. This method reduces the offset voltage normally caused by device over molding, temperature dependencies, and thermal stress.

MH189 includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, Pull-up resistor output. Advanced CMOS wafer fabrication processing is used to take advantage of low-voltage requirements, component matching, very low input-offset errors, and small component geometries.

This device requires the presence of both south and north polarity magnetic fields for operation. In the presence of a south polarity field of sufficient strength, the device output sensor on, and only switches off when a north polarity field of sufficient strength is present.

MH189 is rated for operation between the ambient temperatures –40℃ and 85℃ for the E temperature range, and –40℃ to 125℃ for the K temperature range. The two package styles available provide magnetically optimized solutions for most applications. Package SO is an SOT-23, a miniature low-profile surface-mount package, while package UA is a three-lead ultra mini SIP for through-hole mounting.

Packages is Halogen Free standard and which have been verified by third party lab.

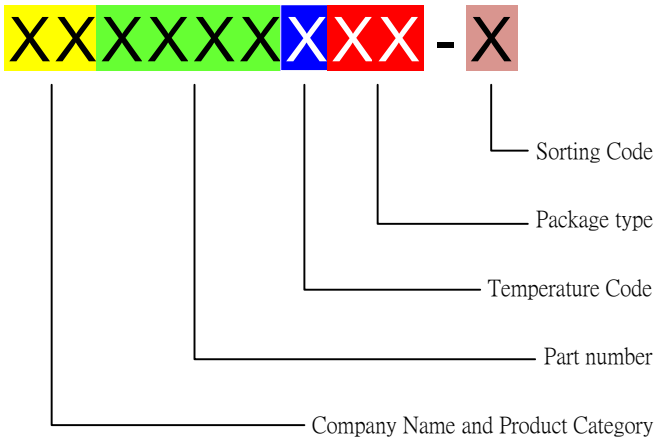
Features and Benefits

- Chopper stabilized amplifier stage
- Optimized for BLDC motor applications
- Reliable and low shifting on high Temp condition
- Pull-up resistor output
- Good ESD Protection
- 100% tested at 125 ℃ for K.
- Custom sensitivity / Temperature selection are available.

Applications

- High temperature Fan motor
- 3 phase BLDC motor application
- Speed sensing
- Position sensing
- Current sensing
- Revolution counting
- Solid-State Switch
- Linear Position Detection
- Angular Position Detection
- Proximity Detection
- High ESD Capability

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)

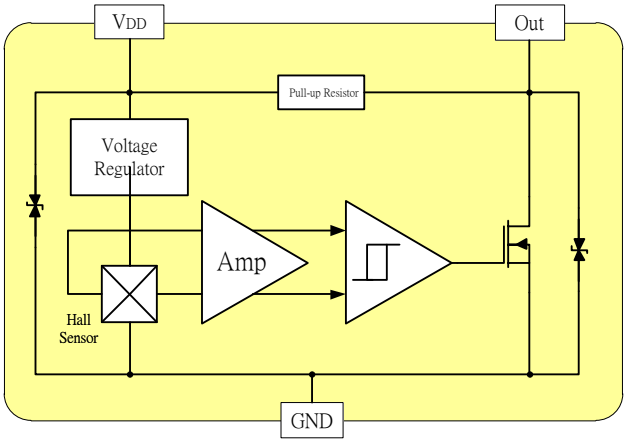
Sorting

α,β,Blank…..

Part No.	Temperature Suffix	Package Type
MH189KUA	K (-40℃ to + 125℃)	UA (TO-92S)
MH189KSO	K (-40℃ to + 125℃)	SO (SOT-23)
MH189EUA	E (-40℃ to + 85℃)	UA (TO-92S)
MH189ESO	E (-40℃ to + 85℃)	SO (SOT-23)

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

Functional Diagram



.

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

Characteristics		Values	Unit
Supply voltage, (V_{DD})		28	V
Output Voltage,(*Vout*)		28	V
Reverse voltage, (V_{DD}) (V_{OUT})		-0.3	V
Pull-up Resisto, (R_L)		20	KΩ
Magnetic flux density		Unlimited	Gauss
Output current, (I_{SINK})		12	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

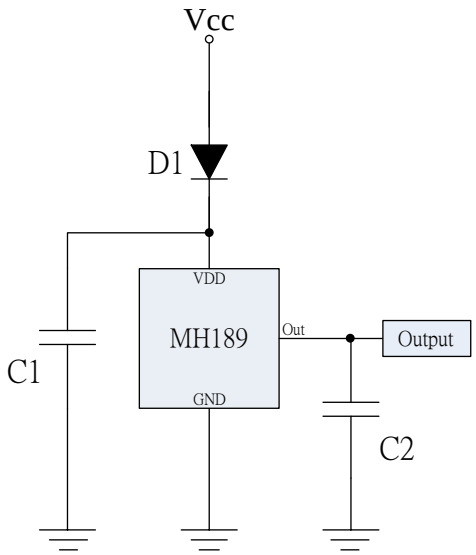
***Note**: Do not apply reverse voltage to* V_{DD} *and* V_{OUT} *Pin, It may be caused for Miss function or damaged device.*

Electrical Specifications

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

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage,(V_{DD})	Operating	3.0		26.0	V
Supply Current,(I_{DD})	B<B_{OP}			5.0	mA
Output Saturation Voltage, (V_{sat})	I_{OUT} = 10 mA, B>B_{OP}			400.0	mV
Output Leakage Current, (I_{off})	I_{OFF} B<B_{RP}, V_{OUT} = 12V			15.0	uA
Output Rise Time, (T_R)	R_L=820Ω, CL =20pF			0.45	uS
Output Fall Time, (T_F)	R_L=820Ω; CL =20pF			0.45	uS
Electro-Static Discharge	HBM	4			KV
Pull-up Resistor, (*Ra*)			6.0		KΩ
Operate Point,(B_{OP})		5		40	Gauss
Release Point,(B_{RP})		-40		-5	Gauss
Hysteresis,(B_{HYS})			50		Gauss

Typical application circuit

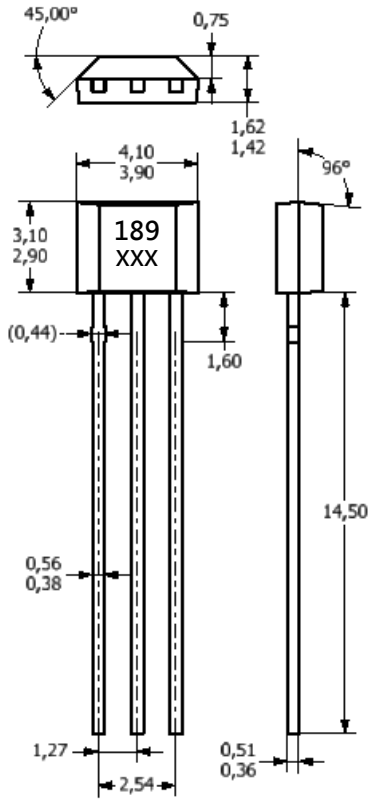


D1：1N4148 or 100Ω
C1：1000PF
C2：15PF

Sensor Location, Package Dimension and Marking

MH189 Package

UA Package

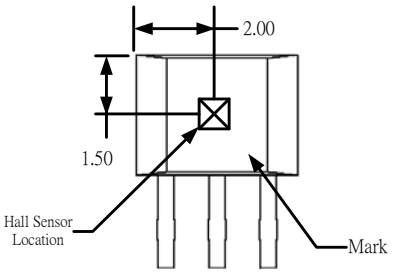


NOTES:

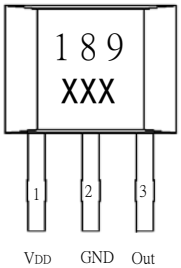
1).Controlling dimension: mm
2).Leads must be free of flash and plating voids
3).Do not bend leads within 1 mm of lead to package interface.
4).PINOUT:

Pin 1	VDD
Pin 2	GND
Pin 3	Output

Hall Chip location

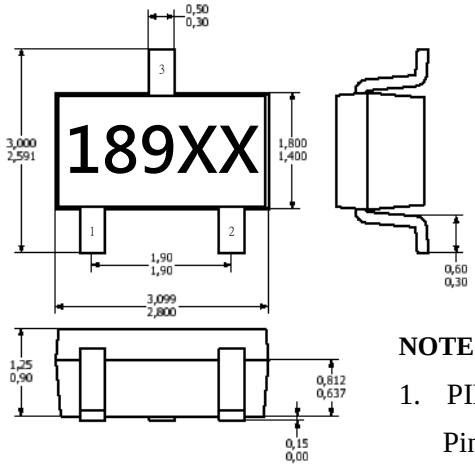


Output Pin Assignment
(Top view)



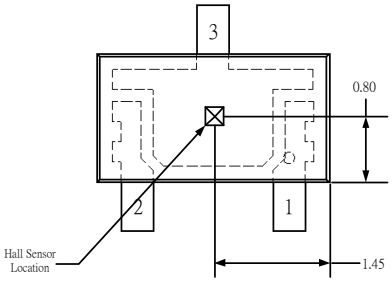
SO Package

(Top View)



Hall Plate Chip Location

(Bottom view)



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