MH188 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.

MH188 includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, Advanced DMOS 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.

MH188 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.

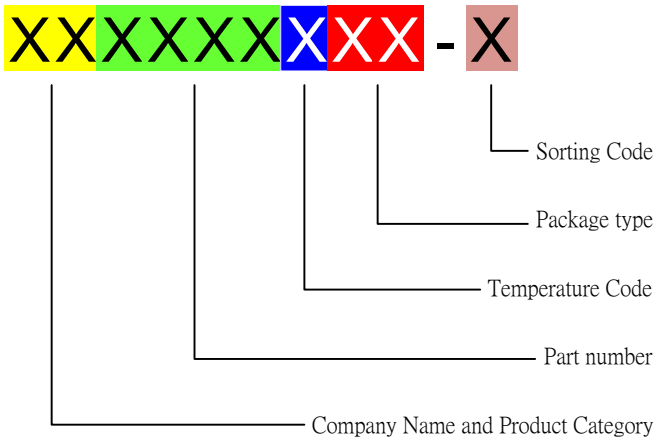
Features and Benefits

- DMOS Hall IC Technology.
- Reverse bias protection on power supply pin.
- Chopper stabilized amplifier stage.
- Optimized for BLDC motor applications.
- Reliable and low shifting on high Temp condition.
- 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 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

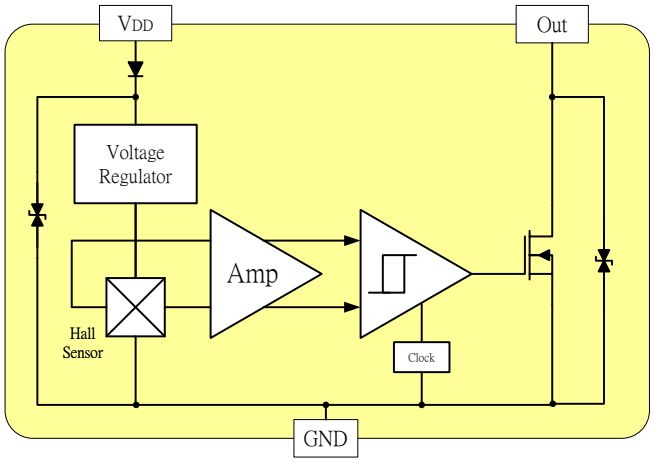
Sorting

α, β,Blank…..

Part No.	Temperature Suffix	Package Type
MH188KUA	K (-40℃ to + 125℃)	UA (TO-92S)
MH188KSO	K (-40℃ to + 125℃)	SO (SOT-23)
MH188EUA	E (-40℃ to + 85℃)	UA (TO-92S)
MH188ESO	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})		-28	V
Magnetic flux density		Unlimited	Gauss
Output current, (*Iout*)		50	mA
Operating Temperature Range, (*Ta*)	"E" version	-40 to +85	℃
	"K" version	-40 to +125	℃
Storage temperature range, (*Ts*)		-65 to +150	°C
Maximum Junction Temp,(*Tj*)		150	°C
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

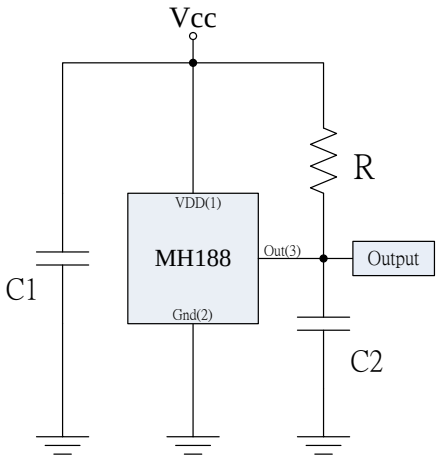
***Note**: Do not apply reverse voltage to* V_{DD} and V_{OUT} *Pin, It may be caused for Miss function or damaged device.*

Electrical Specifications

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

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage,(V_{DD})	Operating	2.5		24.0	V
Supply Current,(I_{DD})	B<BOP			5.0	mA
Output Saturation Voltage, (V_{sat})	Iout=20mA,B>BOP			400.0	mV
Output Leakage Current, (I_{off})	IOFF B<BRP, VOUT = 12V			10.0	uA
Internal Oscillator Chopper Frequency,(f_{osc})			69		kHz
Output Rise Time, (T_R)	R_L=1.1KΩ, CL =20pF		0.04	0.45	uS
Output Fall Time, (T_F)	R_L=820Ω; CL =20pF		0.18	0.45	uS
Electro-Static Discharge	HBM	4			KV
Operate Point,(B_{OP})	UA(SO)	5(-25)		25(-5)	Gauss
Release Point,(B_{RP})	UA(SO)	-25(5)		-5(25)	Gauss
Hysteresis,(B_{HYS})			30		Gauss

Typical application circuit

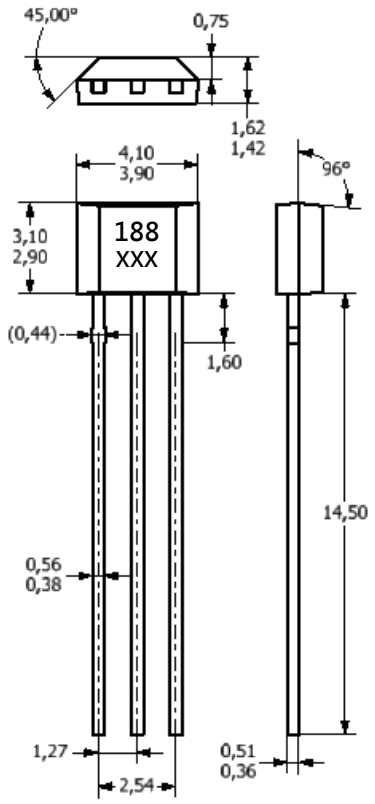


R：1KΩ
C1：10nF
C2：1nF

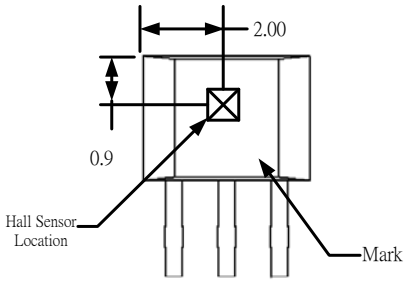
Sensor Location, Package Dimension and Marking

MH188 Package

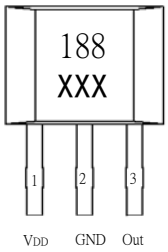
UA Package



Hall Chip location



Output Pin Assignment
(Top view)



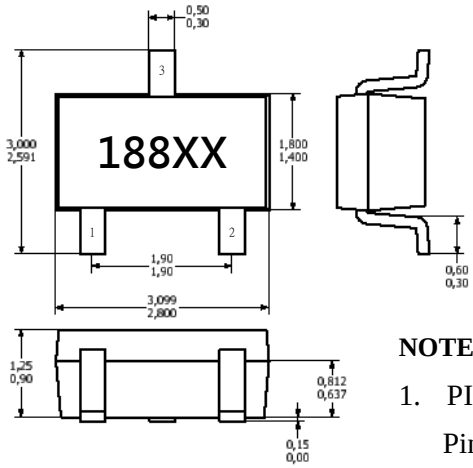
NOTES:

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_{DD}
Pin 2	GND
Pin 3	Output

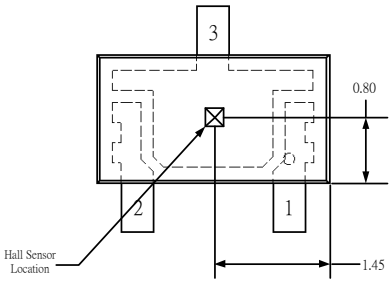
SO Package

(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