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.

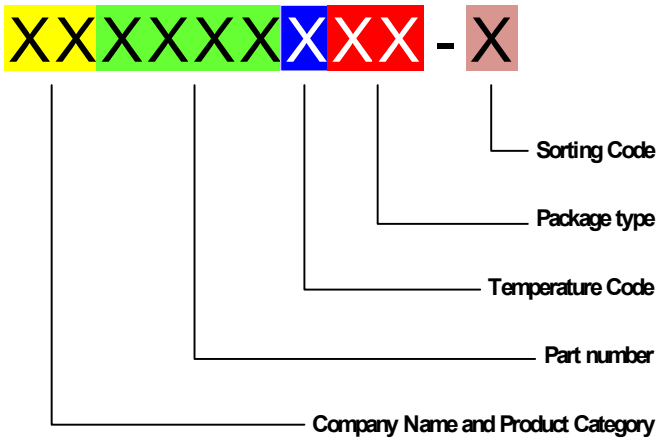
## *Features and Benefits*

- 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**

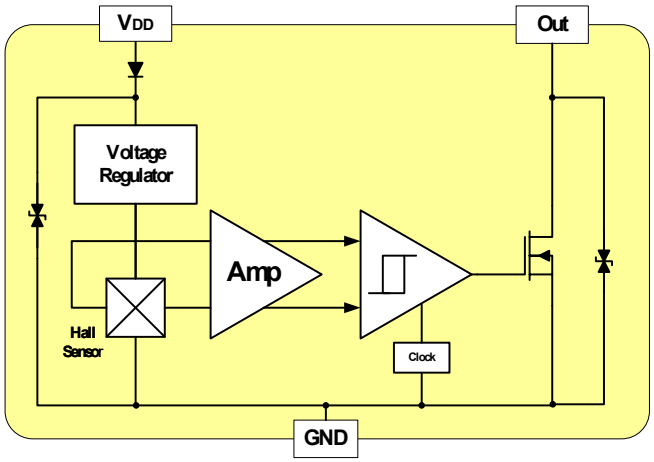
**Sorting**

**α,β,Blank…..**

| Part No. | Temperature Suffix | Package Type |
|---|---|---|
| MH188KUA | K (-40°C to + 125°C) | UA (TO-92S) |
| MH188KSO | K (-40°C to + 125°C) | SO (SOT-23) |
| MH188EUA | E (-40°C to + 85°C) | UA (TO-92S) |
| MH188ESO | E (-40°C to + 85°C) | 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/-0.3 | V |
| 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 | ℃ |
| Maximum Junction Temp,(*Tj*) | | 150 | ℃ |
| Thermal Resistance | ($\theta_{ja}$) UA / SO | 206 / 543 | ℃/W |
| | ($\theta_{jc}$) UA / SO | 148 / 410 | ℃/W |
| Package Power Dissipation, ($P_D$) UA / SO | | 606 / 230 | mW |

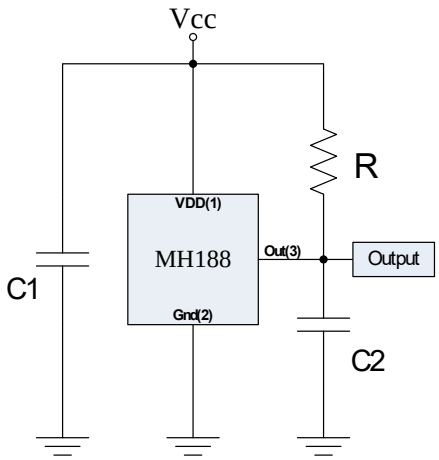
***Note**: Do not apply reverse voltage to* $V_{DD}$ and $V_{OUT}$ *Pin, It may be caused for Miss function or damaged device.*

## *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 | | 26.0 | 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

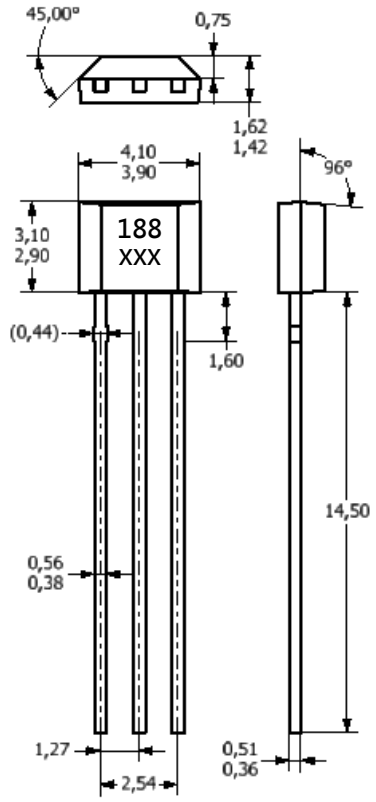
C1：10nF

C2：1nF

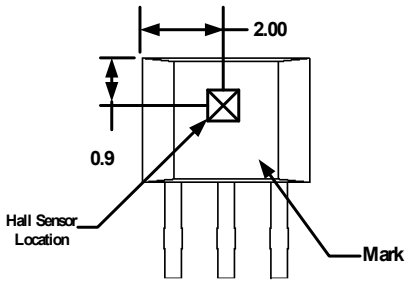
## *Sensor Location, Package Dimension and Marking*

### MH188 Package

**UA Package**




**Hall Chip location**




**NOTES:**

1).Controlling dimension: mm

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

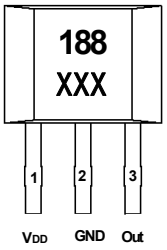
3).Do not bend leads within 1 mm of lead to package interface.

4).PINOUT:

| | |
|---|---|
| Pin 1 | $V_{DD}$ |
| Pin 2 | GND |
| Pin 3 | Output |

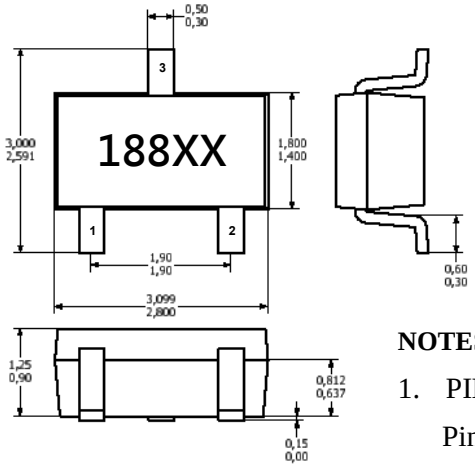
**Output Pin Assignment**

**(Top view)**



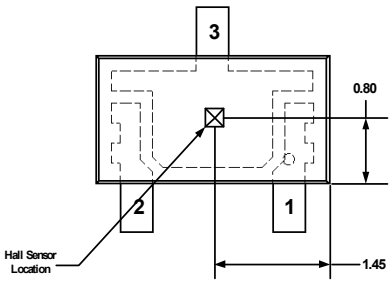

**SO Package**

**(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

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** Industrial Hall Effect/Magnetic Sensors ***category:***

***Click to view products by*** Magnesensor ***manufacturer:***

Other Similar products are found below :

GT-14114 GT-14123 GTN2C15C GT-12076 GT-14049 GT-14067 GT-14132 GT-18030 MZ07A108 PST360G2-1S-C0000-ERA360-05K MZC1-2V2PS-KP0 PSC360G2-F1P-C0000-ERA360-05K-200 115L 9E 502 W06017 115L 5,2E 502 W06017 115L 14E 502 W06017 103SR14A-1 55100-3H-04-A MZT7-03VPS-KW0 MZT8-03VPS-KW0 A1326LLHLT-T 55505-00-02-B GN 55.2-ND-15-3 GN 55.2-ND-18-3 GN 55.2-ND-4-3 GN 55.2-ND-8-3 GN 55.2-SC-10-3 GN 55.4-ND-10-7,5-2 GN 55.4-ND-12-9,5-2,5 GN 55.4-ND-26-20,3-5 GN 55.4-ND-7,5-4-1,5 101MG7-BP 103SR18-1 A1324LUA-T MXM1120KIT MXM1120SOKIT A3212EUA-T AA006-02E 55140-3H-03-A 55100-2M-02-A MM12-60APS-ZUK ACX04-F99-I-V15 GN 55.1-SC-24-11.5-4 MZA70155 MZR40158 PW520000 ADH025-00E MZT7-03VPS-KP0 MZT8-03VPS-KR0 MZT8-03VPS-KP0 RZT7-03ZRS-KP0