

MH281 is an unipolar Hall effect sensor IC. It incorporates advanced chopper stabilization technology to provide accurate and stable magnetic switch points. The design, specifications and performance have been optimized for applications of solid state switches.

The output transistor will be switched on (B_{OP}) in the presence of a sufficiently strong South pole magnetic field facing the marked side of the package. Similarly, the output will be switched off (B_{RP}) in the presence of a weaker South field and remain off with “0” field.

The package type is in a Halogen Free version was verified by third party organization. Halogen Free package is available by customer’s option.


Features and Benefits

- CMOS Hall IC Technology
- Solid-State Reliability
- Chopper stabilized amplifier stage
- Unipolar, output switches with absolute value of South pole from magnet
- Operation down to 3.0V
- High Sensitivity for direct reed switch replacement applications
- 100% tested at 125°C for K Spec.
- Custom sensitivity / Temperature selection are available.
- RoHS compliant 2011/65/EU and Halogen Free

Applications

- Solid state switch
- Limit switch
- Current limit
- Interrupter
- Current sensing
- Magnet proximity sensor for reed switch replacement

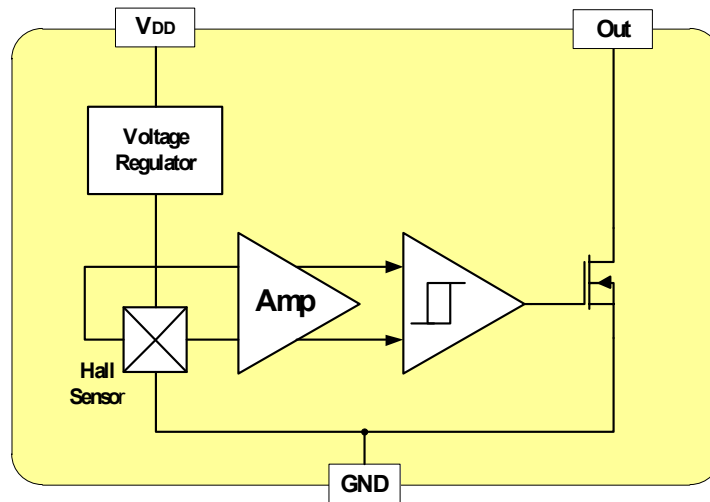
Ordering Information

 <p>XXXXXX-XX-X</p> <p>Company Name and product Category</p> <p>Part number</p> <p>Temperature Code</p> <p>Package type</p> <p>Sorting Code</p>	<p>Company Name and Product Category MH:MST Hall Effect/MP:MST Power IC</p> <p>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.</p> <p>Temperature range E: 85 °C, I: 105 °C, K: 125 °C, L: 150 °C</p> <p>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</p> <p>Sorting α,β,Blank.....</p>
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Part No.	Temperature Suffix	Package Type
MH281KUA	K (-40°C to + 125°C)	UA (TO-92S)
MH281KSO	K (-40°C to + 125°C)	SO (SOT-23)
MH281EUA	E (-40°C to + 85°C)	UA (TO-92S)
MH281ESO	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°C)

Characteristics		Values	Unit
Supply voltage, (V_{DD})		27	V
Output Voltage, (V_O)		27	V
Reverse Voltage, (V_{DD}) (V_{OUT})		-0.3	V
Magnetic flux density		Unlimited	Gauss
Output current, (I_{OUT})		50	mA
Operating Temperature Range, (T_a)	“E” version	-40 to +85	°C
	“K” version	-40 to +125	°C
Storage temperature range, (T_s)		-55 to +150	°C
Maximum Junction Temp, (T_j)		150	°C
Thermal Resistance	(θ_{ja}) UA / SO	206 / 543	°C/W
	(θ_{jc}) UA / SO	148 / 410	°C/W
Package Power Dissipation, (P_D) UA / SO		606 / 230	mW

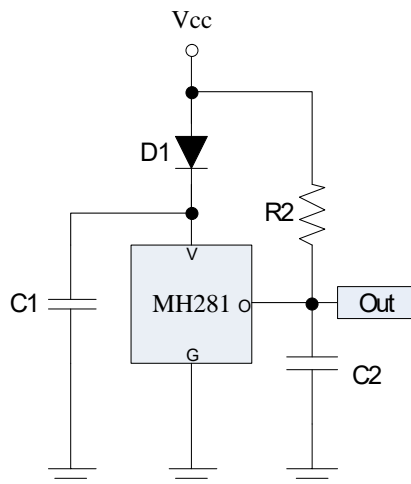
Note: Do not apply reverse voltage to V_{DD} and V_{OUT} Pin, It may be caused for Miss function or damaged device.

Electrical Specifications

DC Operating Parameters : $T_A = +25^\circ\text{C}$, $V_{DD} = 12\text{V}$

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{DD})	Operating	3.0		24.0	V
Supply Current, (I_{DD})	$B < B_{OP}$		2.5	5.0	mA
Output Saturation Voltage, (V_{Sat})	$I_{OUT} = 20\text{ mA}$, $B > B_{OP}$			500.0	mV
Output Leakage Current, (I_{off})	I_{OFF} $B < B_{RP}$, $V_{OUT} = 20\text{V}$			10.0	μA
Output Rise Time, (TR)	$R_L = 1\text{k}\Omega$, $C_L = 20\text{pF}$		0.04		μs
Output Fall Time, (TF)	$R_L = 1\text{k}\Omega$; $C_L = 20\text{pF}$		0.18		μs
Operate Point, (B_{OP})			175	200	Gauss
Release Point, (B_{RP})		95			Gauss
Hysteresis, (B_{HYS})			45		Gauss

Typical application circuit

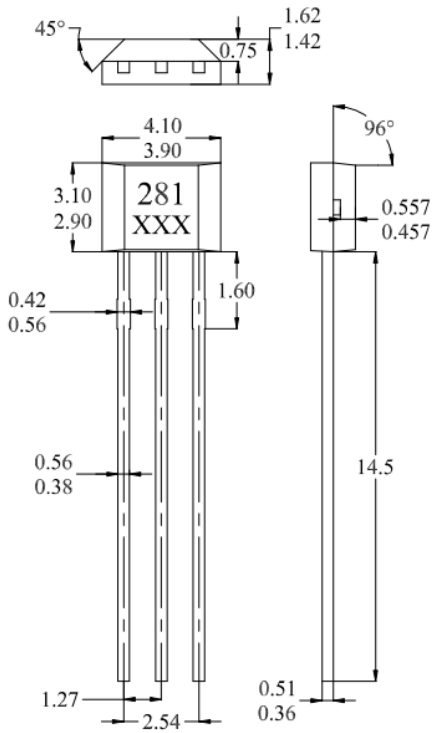


D1 : 1N4148 or 100 Ω

C1 : 1000PF

Sensor Location, Package Dimension and Marking

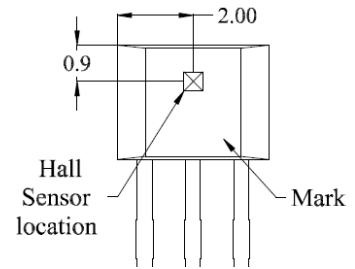
UA Package



NOTES:

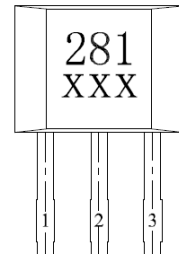
1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. Do not bend leads within 1 mm of lead to package interface.
4. PINOUT:
 Pin 1 VDD
 Pin 2 GND
 Pin 3 Output
5. XXX; 1st X=Year;
 2nd and 3rd XX=Week

Hall Chip location



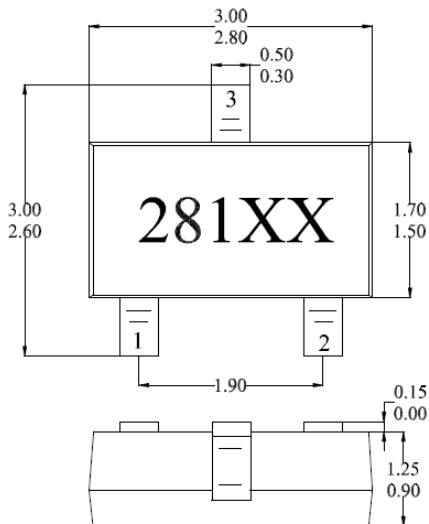
Output Pin Assignment

(Top view)



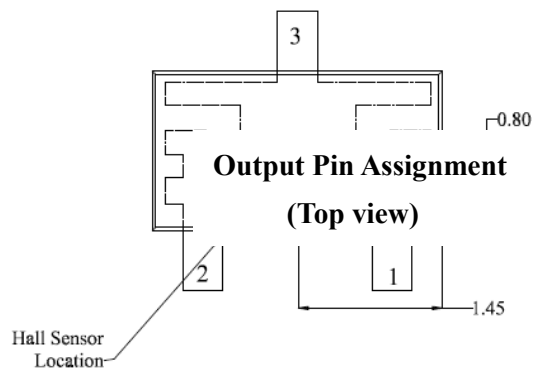
SO Package

(Top View)

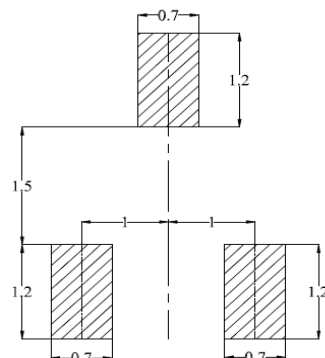


Hall Plate Chip Location

(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