

MH284 is an unipolar Hall effect switch IC. It includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, Schmitt trigger and open-collector output. This design, specifications and performance have been optimized for applications of solid state switches.

The output transistor will be switched on (BOP) 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 (BRP) in the presence of a weaker South field or removing the magnetic field.

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

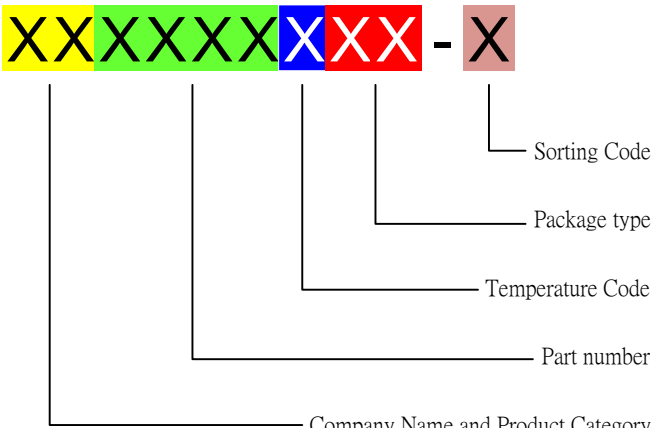
Features and Benefits

- Solid-State Reliability.
- Excellent Temperature Stability.
- Reverse bias protection on power supply pin.
- Unipolar, output switches with absolute value of South pole from magnet.
- Wide operating voltage from 4.5V to 30V.
- High Peak Voltage of 65V.
- 100% tested at 125°C for K Spec.
- Custom sensitivity / Temperature selection are available.

Applications

- Solid-State switch.
- Interrupter.
- High temperature Fan motor .
- 3 phase BLDC motor application.
- E-Bike.
- Speed sensing.
- Revolution counting.
- Replacement for reed switch.

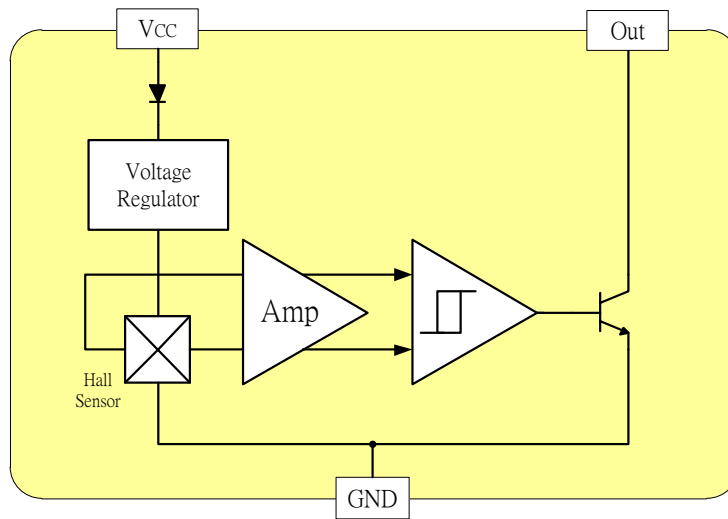
Ordering Information

	<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 fourth 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
MH284KUA	K (-40°C to + 125°C)	UA (TO-92S)
MH284KSO	K (-40°C to + 125°C)	SO (SOT-23)
MH284EUA	E (-40°C to + 85°C)	UA (TO-92S)
MH284ESO	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 ($T_a=25^\circ\text{C}$)

Characteristics		Values	Unit
Supply voltage, (V_{CC})		65	V
Output Voltage, (V_{OUT})		65	V
Reverse Voltage, (V_{CC})		-32	V
Magnetic flux density		Unlimited	Gauss
Output current, (I_{OUT})		25	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

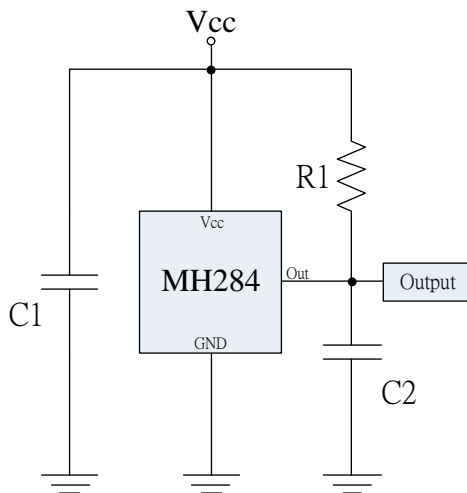
Note: Do not apply reverse voltage to V_{CC} and V_{OUT} Pin, It may be caused for Miss function or damaged device.

Electrical Specifications

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

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{CC})	Operating	4.5		30.0	V
Supply Current, (I_{CC})	$B < B_{OP}$		3.0	8.0	mA
Output Saturation Voltage, (V_{Sat})	$I_{OUT} = 10\text{ mA}$, $B > B_{OP}$			500.0	mV
Output Leakage Current, (I_{off})	I_{OFF} $B < B_{RP}$, $V_{OUT} = 20\text{V}$			10.0	μA
Output Rise Time, (T_R)	$R_L = 1\text{k}\Omega$, $C_L = 20\text{pF}$		1.5		μs
Output Fall Time, (T_F)	$R_L = 1\text{k}\Omega$; $C_L = 20\text{pF}$		1.5		μs
Operate Point, (B_{OP})				175	Gauss
Release Point, (B_{RP})		20			Gauss
Hysteresis, (B_{HYS})			30		Gauss

Typical application circuit

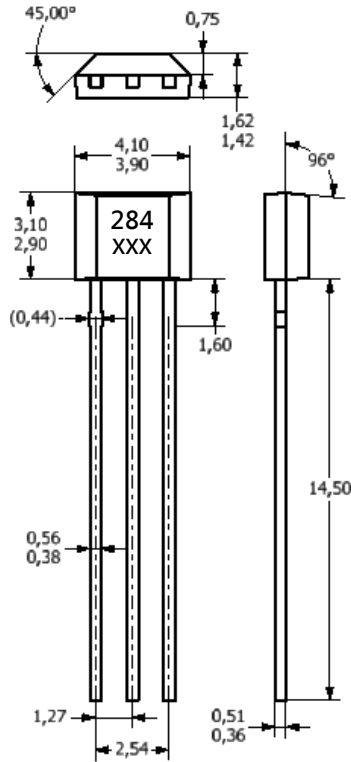


$C1 : 1000\text{PF}$
 $C2 : 15\text{PF}$
 $R2 : 10\text{K}\Omega$

Sensor Location, Package Dimension and Marking

MH284 Package

UA Package

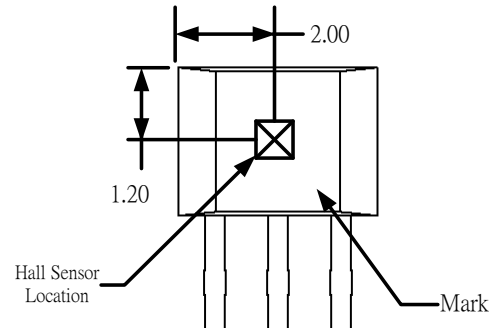


NOTES:

- 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:

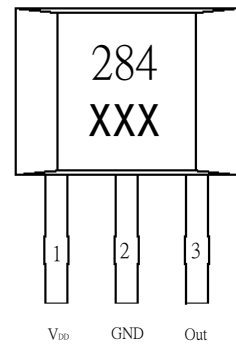
Pin 1	Vcc
Pin 2	GND
Pin 3	Output

Hall Chip location



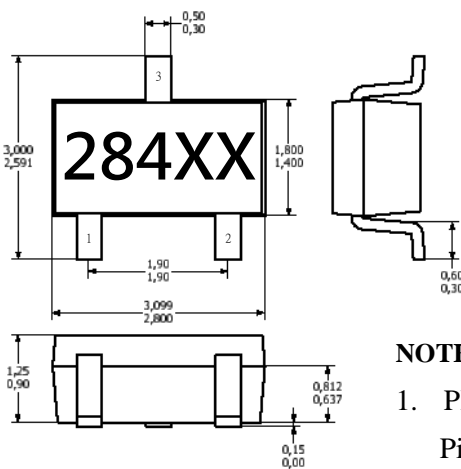
Output Pin Assignment

(Top view)



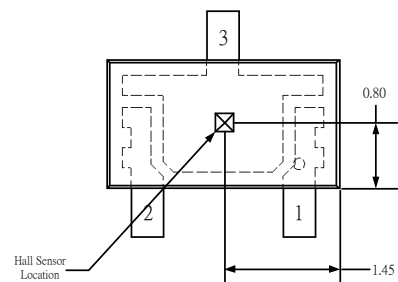
Package (SOT-23)

(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