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MH284 Specifications

Low Sensitivity Unipolar Hall Effect Switch

MH284 is an unipolar Hall effect switch IC. It is 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 (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 or removing the magnetic field.

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

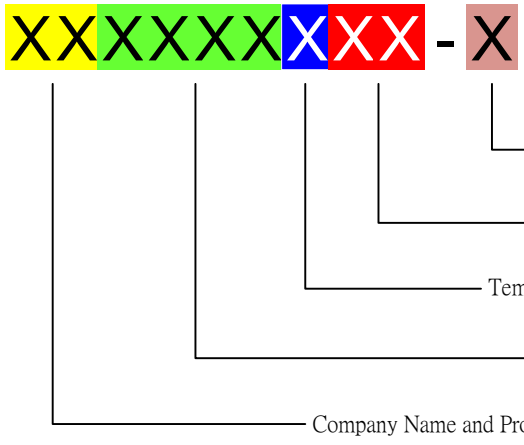
Features and Benefits

- 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℃ 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



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

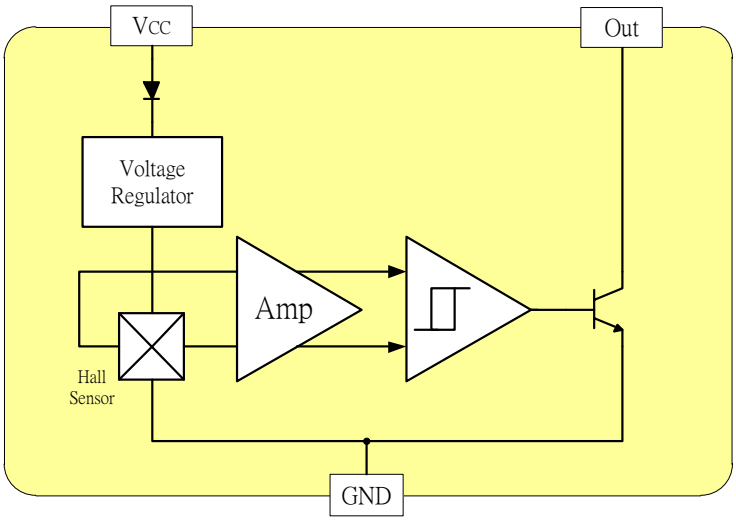
Sorting

α,β,Blank…..

Part No.	Temperature Suffix	Package Type
MH284KUA	K (-40℃ to + 125℃)	UA (TO-92S)
MH284KSO	K (-40℃ to + 125℃)	SO (SOT-23)
MH284EUA	E (-40℃ to + 85℃)	UA (TO-92S)
MH284ESO	E (-40℃ to + 85℃)	SO (SOT-23)

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

Functional Diagram



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

Characteristics		Values	Unit
Supply voltage,(*Vcc*)		65	V
Output Voltage,(*Vout*)		65	V
Reverse Voltage , (*Vcc*)		-32	V
Magnetic flux density		Unlimited	Gauss
Output current , (*Iout*)		25	mA
Operating Temperature Range, (*Ta*)	"E" version	-40 to +85	℃
	"K" version	-40 to +125	℃
Storage temperature range, (*Ts*)		-55 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

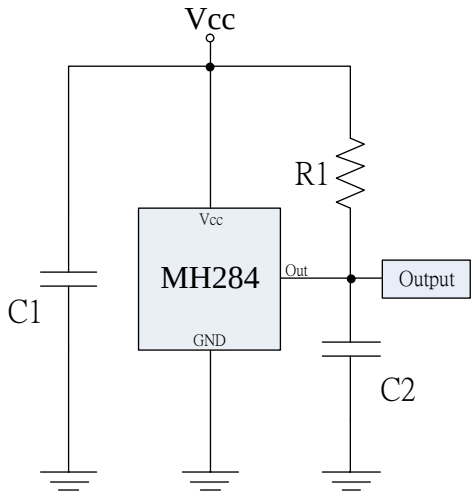
***Note**: Do not apply reverse voltage to* V_{CC} *and* V_{OUT} *Pin, It may be caused for Miss function or damaged device.*

Electrical Specifications

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

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 mA, B>B_{OP}			500.0	mV
Output Leakage Current, (I_{off})	I_{OFF} B<B_{RP}, V_{OUT} = 20V			10.0	uA
Output Rise Time, (T_R)	R_L=1kΩ, CL =20pF		1.5		uS
Output Fall Time, (T_F)	R_L=1kΩ; CL =20pF		1.5		uS
Operate Point,(B_{OP})				175	Gauss
Release Point,(B_{RP})		20			Gauss
Hysteresis,(B_{HYS})			30		Gauss

Typical application circuit

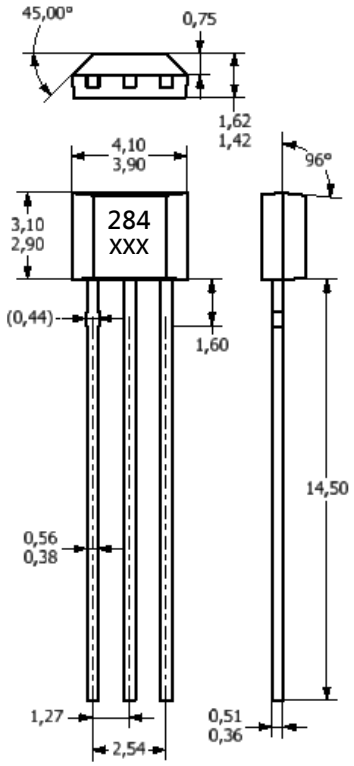


C1：1000PF
C2：15PF
R2：10KΩ

Sensor Location, Package Dimension and Marking

MH284 Package

UA Package



NOTES:

1).Controlling dimension: mm

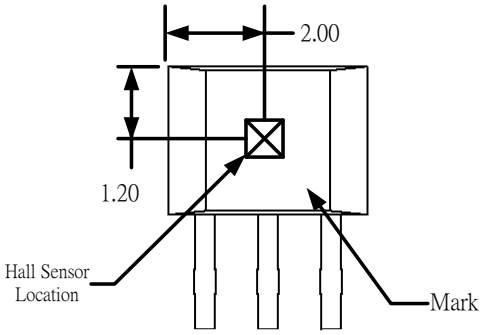
2).Leads must be free of flash and plating voids

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

4).PINOUT:

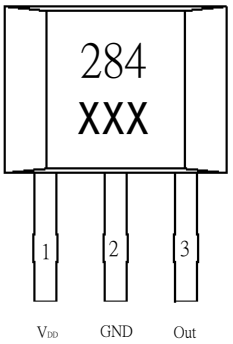
Pin 1	V_{CC}
Pin 2	GND
Pin 3	Output

Hall Chip location



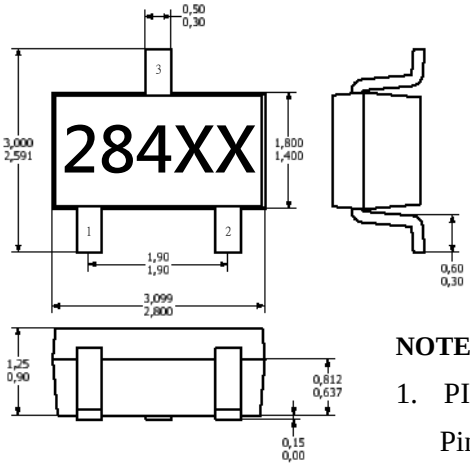
Output Pin Assignment

(Top view)



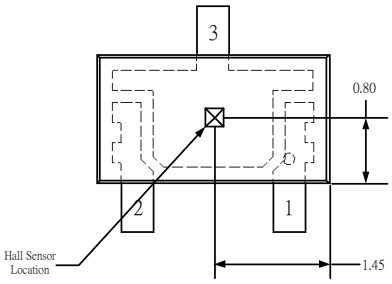
Package (SOT-23)

(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