The MH452 is a dual channel switch hall sensor with two hall sensing elements, it output two digital signal for speed and direction processing.

The MH452 internally include two hall sensing elements， VK Package two hall sensing elements located 1.84 apart， SD Package two hall sensing elements located 1.40 apart, an on-chip hall voltage generator, voltage regulator for operation with supply voltage 2.5 to 24V, temperature compensation circuitry, small-signal amplifier. Hall sensor with dynamic offset cancellation system, Schmitt trigger and open-drain output. It is easy processing of speed and direction signals.

The MH452 family provides a variety of packages to customers: TO-94 (SIP4) for through-hole mount. Package types SD is an DFN2020-6 (0.6 mm nominal height) a miniature low-profile surface-mount package.

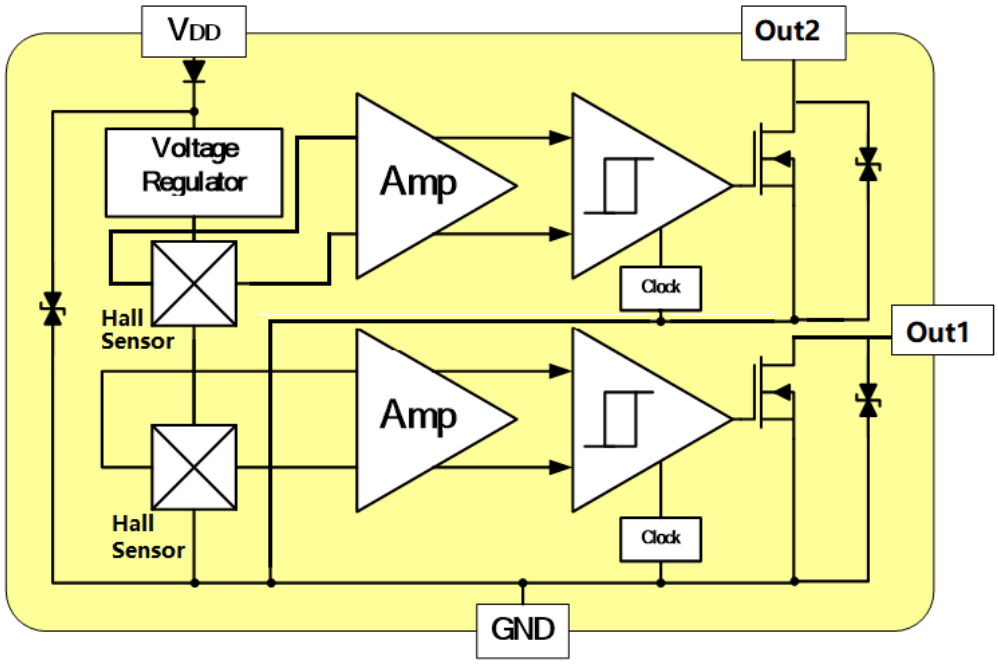
Features and Benefits

- 1.48mm Hall Element Spacing
- Magnetic Type: Bipolar switch
- Operating Voltage Range: Supply Voltage 2.5~24V
- Specified Operating Temperature Range: From -40℃~125℃
- High Magnetic Sensitivity: Bop=18Gauss, Brp=-18Gauss(Typical)
- High ESD Rating
- RoHS compliant 2011/65/EU and Halogen Free

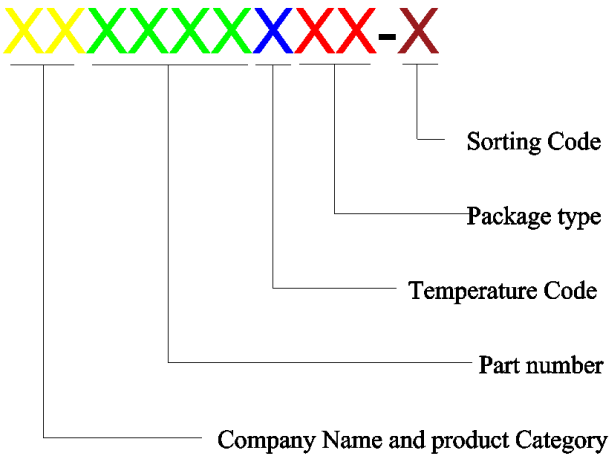
Applications

- Magnetic encoder
- Speed detection
- Direction detection

Functional Diagram



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
MH452KVK	K (-40℃ to + 125℃)	VK (TO-92S-4L)
MH452KSD	K (-40℃ to + 125℃)	SD (DFN2020-6)

Absolute Maximum Ratings At(Ta=25℃)

Absolute maximum ratings are limiting values to be applied individually, and beyond which the serviceability of the circuit may be impaired. Functional operability is not necessarily implied. Exposure to absolute maximum rating conditions for an extended period of time may affect device reliability.

Absolute maximum ratings: all voltages listed are referenced to GND.

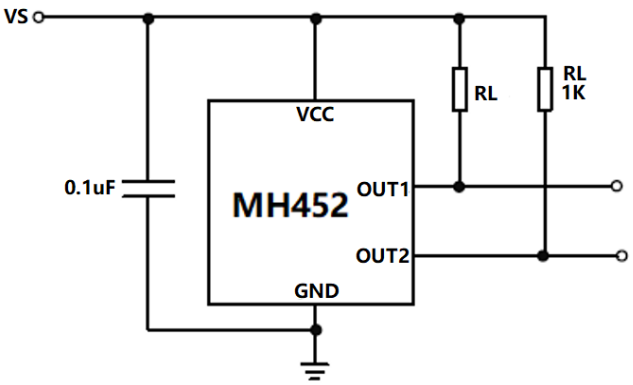
Symbol	Parameters	Min	Max	Unit
VS	Supply Voltage	-	26	V
VRCC	Reverse Battery Voltage	-	-0.5	V
VOUT	Output Voltage	-	26	V
IOUT	Continuous output current	-	50	mA
TA	Operating Ambient Temperature	-40	125	℃
TS	Storage temperature	-50	150	℃
TJ	Junction temperature	-	150	℃
B	Magnetic flux	No Limit		Gauss

Electrical Specifications

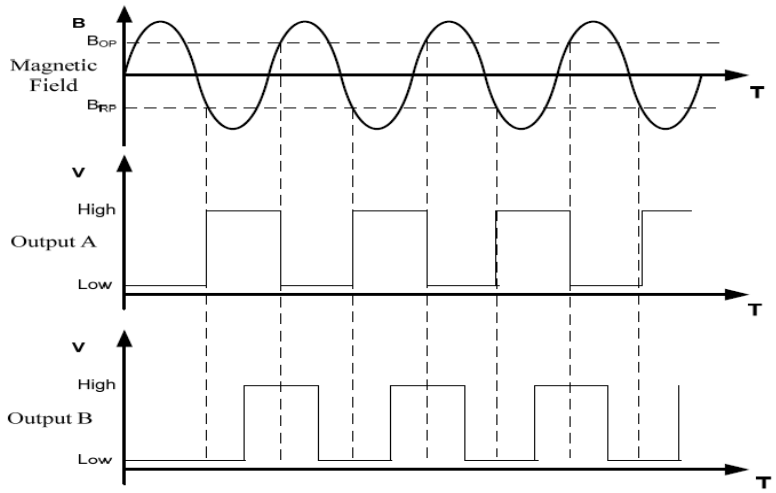
DC Operating Parameters T_A=+25℃, V_{DD}=12V

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units
VDD	Supply Voltage	Operating	2.5	5	24	V
IDD	Supply Current	B< BRP	-	4	6	mA
VDSON	Output Saturation Voltage	IOUT =10mA, B> BOP	-	0.25	0.5	V
IOFF	Output Leakage Current	B< BRP, VOUT 26V	-	0.1	1.0	μA
TR	Output Rise Time	RL=10kohm,CL=20pF	-	-	1.0	μS
TF	Output Fall Time	RL=10kohm,CL=20pF	-	-	1.0	μS
TD	Delay Time	Operating	2.8	5	18	V
BOP	Magnetic Operating Point	At TA=25℃	5		25	Gauss
BRP	Magnetic Release Point	At TA=25℃	-25		-5	Gauss
BHYST	Hysteresis Window	At TA=25℃,| B_{OP} - B_{RP} |		30		Gauss
BSYMOP	Operate Symmetry	B_{OPA}- B_{OPB}	-5	0	5	Gauss
BSYMRP	Release Symmetry	B_{PRA}- B_{PRB}	-5	0	5	Gauss
DIS	Distance of Hall elements	VK		1.84		mm
		SD		1.40		mm

Typical application circuit



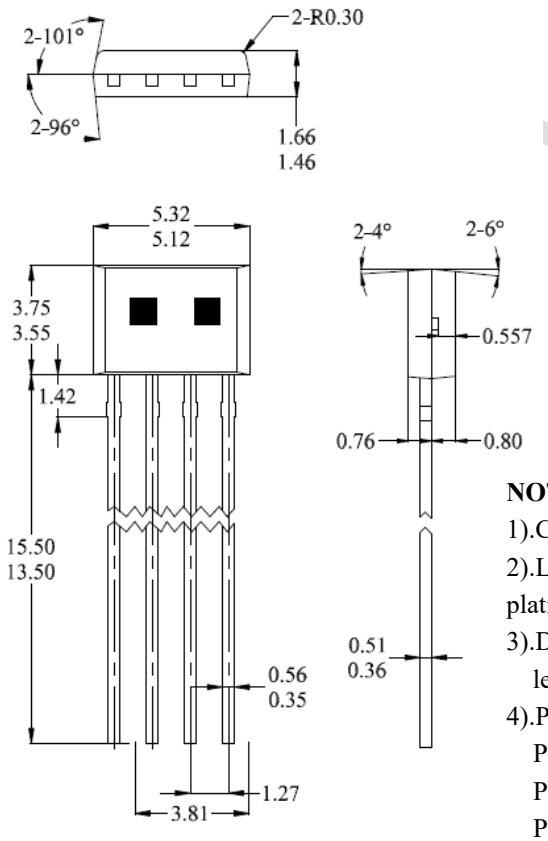
Typical output Waveform



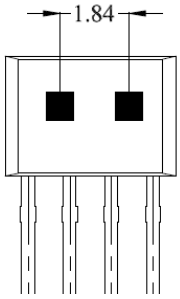
Sensor Location with Pin out and Package dimension

VK Package (To-92 4 pins)

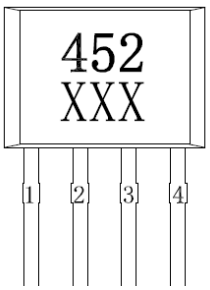
(Top View)



Hall Plate Chip Location



Output Pin Assignment



NOTES:

1).Controlling dimension: mm

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

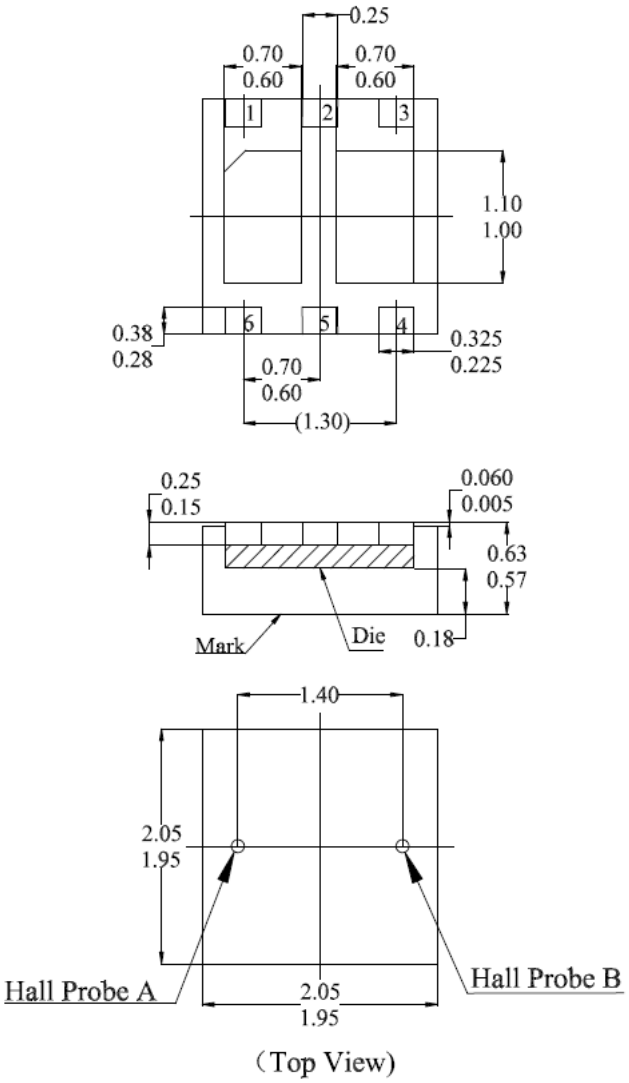
3).Do not bend leads within 1 mm of lead to package interface.

4).PINOUT:

Pin 1	VDD
Pin 2	OUTA
Pin 3	OUTB
Pin 4	GND

SD Package (DFN2020-6)

(Bottom View)



（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 No.	Pin Name	Function
1	V_{DD1}	Power Supply
2	Out A	Output 1
3	V_{SS}	Ground
4	V_{DD2}	Power Supply
5	Out B	Output 2
6	V_{SS}	Ground
7/8	N/C	N/C

5. （For reference only）Land pattern