MH262 Hall-effect sensor is a temperature stable, stress-resistant, Low Tolerance of Sensitivity micro-power switch. 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.

MH262 is special made for low operation voltage, 1.65V, to active the chip which is includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, CMOS output driver. Advanced CMOS 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 omni-polar magnetic fields for operation.

The package type is in a Halogen Free version has been verified by third party Lab.

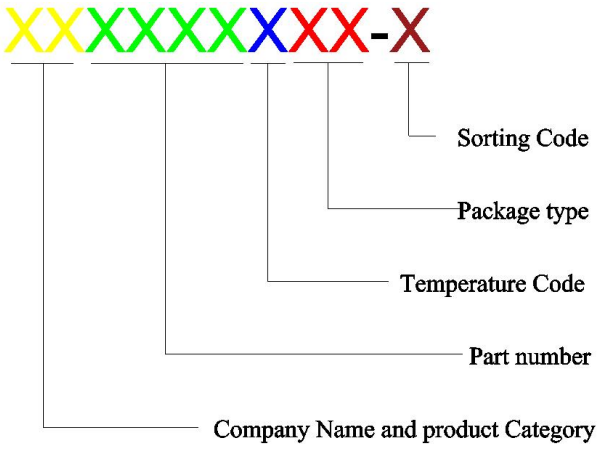
Features and Benefits

- CMOS Hall IC Technology
- Strong RF noise protection
- 1.65 to 3.5V for battery-powered applications
- Omni polar, output switches with absolute value of North or South pole from magnet
- Operation down to 1.65V, Micro power consumption
- High Sensitivity for reed switch replacement applications
- Multi Small Size option
- Low sensitivity drift in crossing of Temp. range
- Ultra Low power consumption at 5uA (Avg)
- High ESD Protection, HBM > ±4KV(min)
- Totem-pole output
- RoHS compliant 2011/65/EU and Halogen Free

Applications

- Solid state switch
- Handheld Wireless Handset Awake Switch
- Lid close sensor for battery powered devices
- Magnet proximity sensor for reed switch replacement in low duty cycle applications
- Water Meter
- Floating Meter
- PDVD
- NB

Ordering Information



Company Name and Product Category

MH:MST Hall Effect/MP:MST Power IC

Part number

181,D182,183,184,185,248,477,D381,D381F,381R,D382…..

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

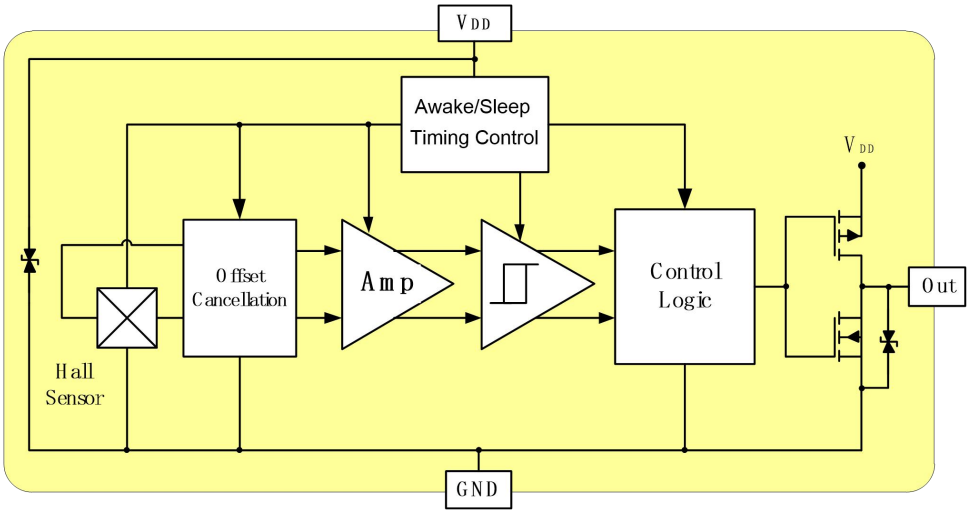
Sorting

α,β,Blank…..

Part No.	Temperature Suffix	Package Type
MH262EST	E (-40°C to + 85°C)	ST (TSOT-23)
MH262EUA	E (-40°C to + 85°C)	UA (TO-92S)
MH262ESS	E (-40°C to + 85°C)	SS (DFN1x1-4L)

Custom sensitivity selection is available by MST sorting technology

Functional Diagram



***Note**: Static sensitive device; please observe ESD precautions. Reverse V_{DD} protection is not included. For reverse voltage protection, a 100 Ω resistor in series with V_{DD} is recommended.*
MH 262, HBM > ±4KV which is verified by third party lab.

Absolute Maximum Ratings *At(Ta=25℃)*

Characteristics		Values	Unit
Supply voltage(V_{DD})		4.5	V
Output Voltage (V_{out})		4.5	V
Reverse Voltage (V_{DD}) (V_{OUT})		-0.3	V
Magnetic flux density		Unlimited	Gauss
Output current (I_{OUT})		1	mA
Operating temperature range(Ta)		-40 to +85	℃
Storage temperature range (Ts)		-65 to +150	℃
Maximum Junction Temp(Tj)		150	℃
Thermal Resistance	(θ_{JA}) ST / UA/ SS	310 / 206/ 300	℃/W
	(θ_{JC}) ST / UA/ SS	223 / 148/ 52	℃/W
Package Power Dissipation (P_D)	ST / UA/ SS	400 /606/ 416	mW

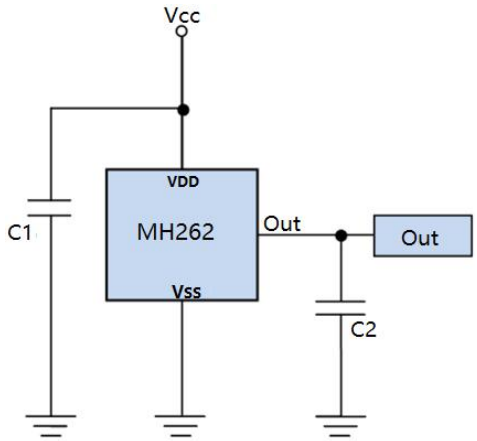
Note: *Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum-rated conditions for extended periods may affect device reliability.*

Electrical Specifications

DC Operating Parameters：Ta=25℃, V_{DD}=3.0V

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage (V_{DD})	Operating	1.65		3.5	V
Supply Current (I_{DD})	Awake State		1.4	3	mA
	Sleep State		3.6	7	μA
	Average		5	10	μA
Output Leakage Current (I_{off})	Output off			1	uA
Output High Voltage(V_{OH})	I_{OUT}=0.5mA(Source)	**V_{DD}-0.2**			V
Output Low Voltage(V_{OL})	I_{OUT}=0.5mA(Sink)			0.2	V
Awake mode time(Taw)	Operating		40	80	uS
Sleep mode time(T_{SL})	Operating		40	80	mS
Duty Cycle (D,C)			0.1		%
Electro-Static Discharge	HBM	4			KV

Typical Application circuit



C1：10nF

C2：100pF

MH262EST/ESS/EUA Magnetic Specifications

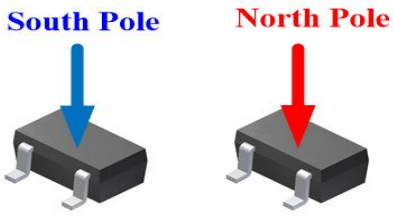
DC Operating Parameters：Ta=25℃, V_{DD}=3.0V

Parameter	*Symbol*	*Test Conditions*	*Min.*	*Typ.*	*Max.*	*Units*
Operating Point	B_{OPS}	N pole to branded side, B > BOP, Vout On	10		30	Gauss
	B_{OPN}	S pole to branded side, B > BOP, Vout On	-30		-10	Gauss
Release Point	B_{RPS}	N pole to branded side, B < BRP, Vout Off	5		25	Gauss
	B_{RPN}	S pole to branded side, B < BRP, Vout Off	-25		-5	Gauss
Hysteresis	B_{HYS}	|BOPx - BRPx|		10		Gauss

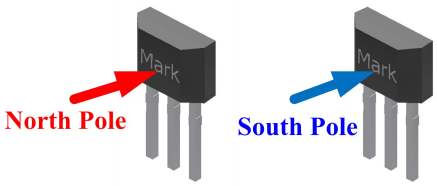
MH262EST/ESS/EUA Output Behavior versus Magnetic Polar

DC Operating Parameters ：Ta = -40 to 85℃, Vdd = 3V

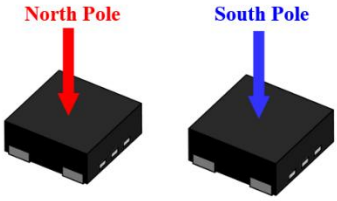
Parameter	*Test condition*	*OUT(ST)*	*Test condition*	*OUT(UA/SS)*
South pole	B<Bop[(-30)~(-10)]	Low	B>Bop(30~10)	Low
Null or weak magnetic field	B=0 or B < BRP	High	B=0 or B < BRP	High
North pole	B>Bop(10~30)	Low	B<Bop[(-30)~(-10)]	Low



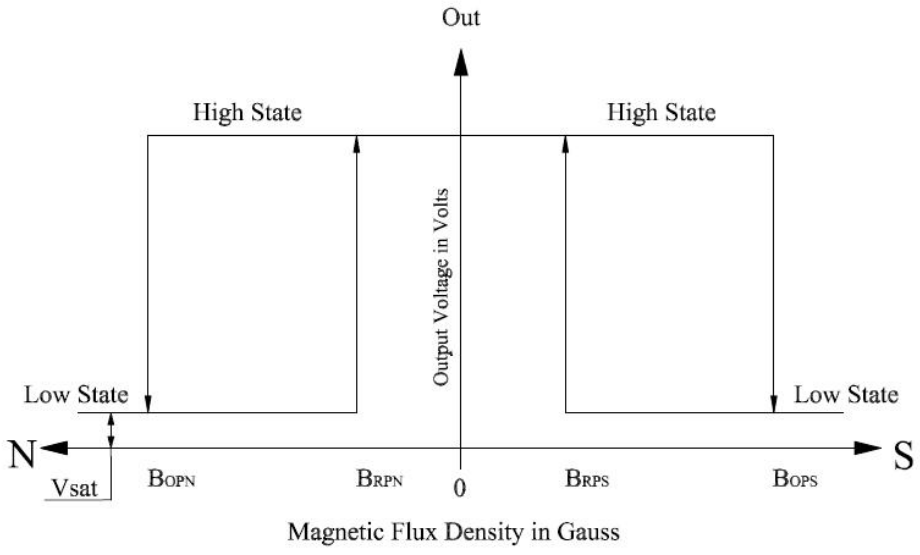
ST Package



UA Package



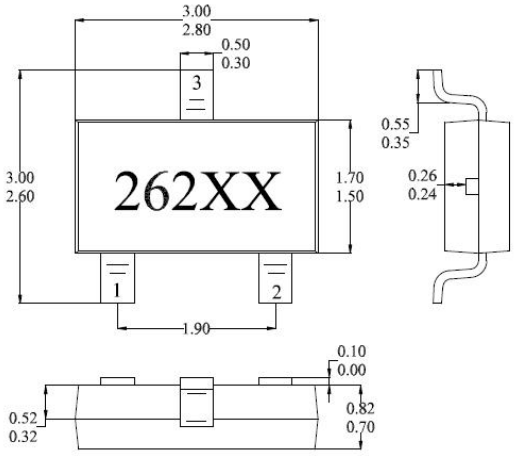
SS Package



Sensor Location, package dimension and marking

ST Package(TSOT-23)

(Top View)

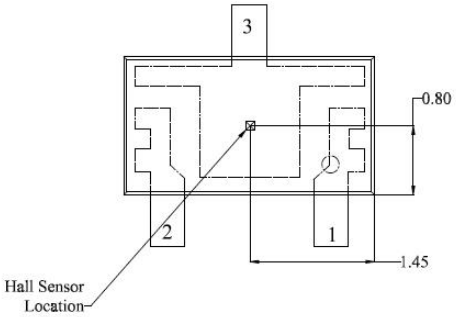


NOTES:

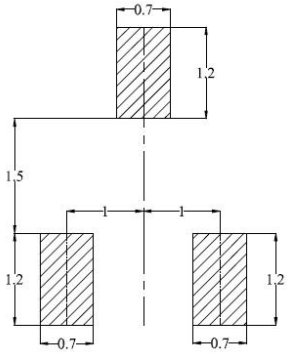
1. PINOUT (See Top View at left:)
   Pin 1 V_{DD} ； Pin 2 Output； Pin 3 GND
2. Controlling dimension: mm;
3. Lead thickness after solder plating will be 0.254mm maximum
4. XX: Date Code, Refer to DC table

Hall Plate Chip Location

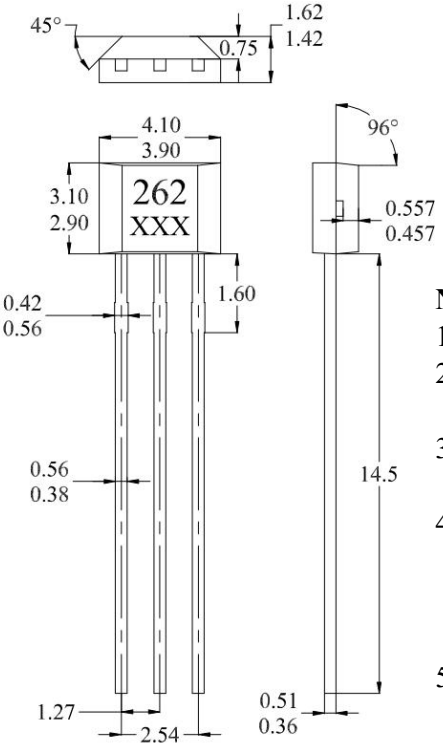
(Bottom view)



(For reference only) Land Pattern



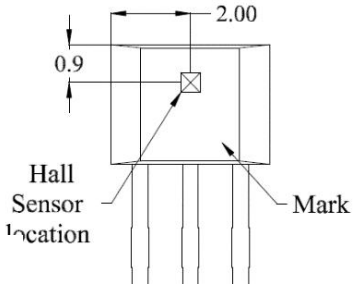
UA Package(TO-92S)



NOTES:

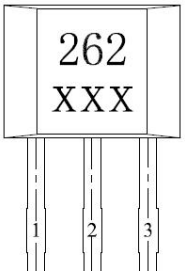
1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. Do not bend leads within 1 mm of lead to package interface.
4. PINOUT:
   Pin 1 V_{DD}
   Pin 2 GND
   Pin 3 Output
5. XXX； 1st X=Year； 2nd and 3rd XX=Week

Hall Chip location

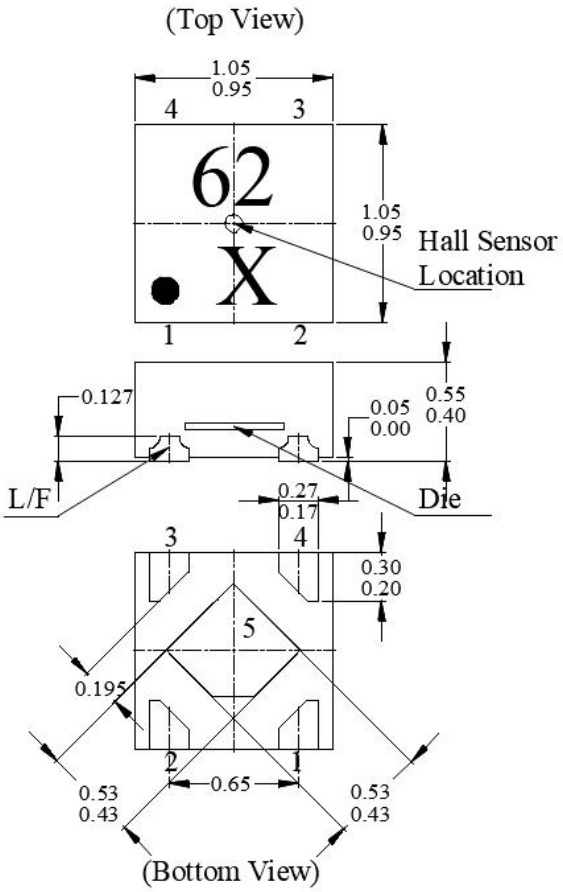


Output Pin Assignment

(Top view)



SS Package (DFN1x1-4L)



NOTES:

1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. X: Date Code
4. PINOUT:

Pin No.	Pin Name	Function
1	VDD	Power Supply
2/5	GND	Ground
3	NC	
4	VOUT	Output

5. (For reference only)Land Pattern

