MH256 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.

MH256 is special made for low operation voltage, 2.5V, 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.

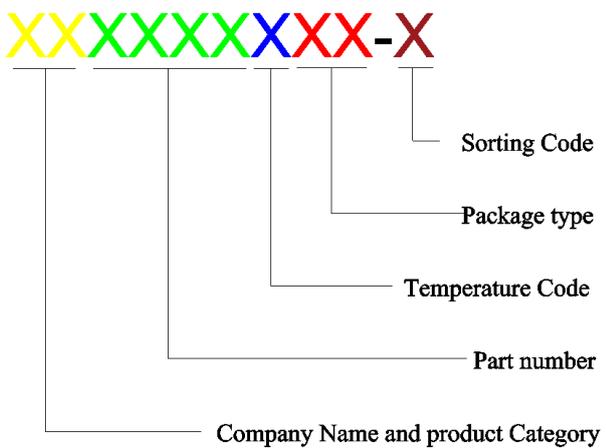The package type is in a Halogen Free version has been verified by third party Lab.

Features and Benefits
- CMOS Hall IC Technology
- Strong RF noise protection
- 2.5V to 6.0V for battery-powered applications
- Omni polar, output switches with absolute value of North or South pole from magnet
- Operation down to 2.5V, Micro power consumption
- High Sensitivity for reed switch replacement applications
- Multi Small Size option
- Low sensitivity drift in crossing of Temp range
- 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 (Flip Cell/PHS Phone/ Note Book/Flip Video Set)
- 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

XXXXXXXXX-X

— Sorting Code

— Package type

— Temperature Code

— Part number

— Company Name and product Category

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
MH256ESO	E (-40℃ to +85℃)	SO (SOT-23)
MH256EUA	E (-40℃ to +85℃)	UA (TO-92S)
MH256ESO-β	E (-40℃ to +85℃)	SO (SOT-23)

Custom sensitivity selection is available by MST sorting technology

Functional Diagram
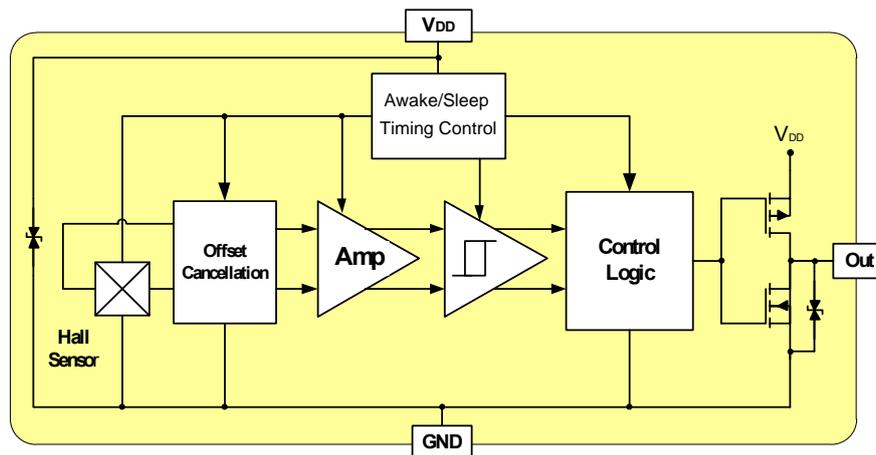
Note: Static sensitive device; please observe ESD precautions. Reverse V$_{DD}$ protection is not included. For reverse voltage protection, a 100Ω resistor in series with V$_{DD}$ is recommended.
MH 256, HBM>±4KV which is verified by third party lab.

Absolute Maximum Ratings *At(Ta=25℃)*

| Characteristics		Values	Unit
Supply voltage,(V_{DD})		6.5	V
Output Voltage,($Vout$)		6.5	V
Reverse Voltage , (V_{DD}) (V_{OUT})		-0.3	V
Magnetic flux density		Unlimited	Gauss
Output current,(I_{OUT})		5	mA
Operating temperature range, (Ta)		-40 to +85	°C
Storage temperature range, (Ts)		-65 to +150	°C
Maximum Junction Temp,(Tj)		150	°C
Thermal Resistance	(θ_{JA})SO / UA	543 / 206	°C/W
	(θ_{JC})SO / UA	410 / 148	°C/W
Package Power Dissipation, (P_D)SO / UA		230 / 606	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	2.5		6.0	V
Supply Current,(I_{DD})	Awake State		1.5	3	mA
	Sleep State		3.5	7	μA
	Average		350	600	μA
Output High Voltage, (V_{OH})	I_{OUT}=1.0mA(Source)	V_{DD}-0.2			V
Output Low Voltage, (V_{OL})	I_{OUT}=1.0mA(Sink)			0.2	V
Awake mode time,(T_{aw})	Operating		40	80	uS
Sleep mode time,(T_{SL})	Operating		160	320	uS
Duty Cycle,(D,C)			25		%
Response Time,(T_{RES})				2000	Hz
Electro-Static Discharge	HBM	4			KV
Operate Point, BOPS(BOPN)	B>BOPS(B<BOPN), VOUT On	20(-55)		55(-20	Gauss
Release Point, BRPS(BRPN)	B<BRPS(B>BRPN), VOUT Off	10(-45)		45(-10	Gauss
Hysteresis,(BHYS)	|BOPX - BRPX|		10		Gauss

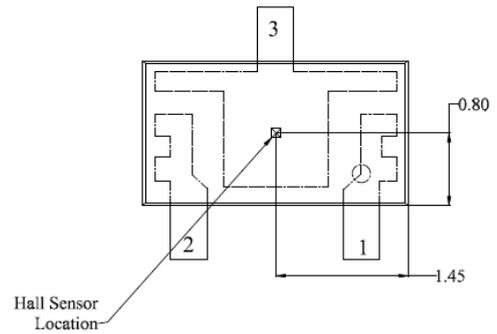## Typical Application circuit
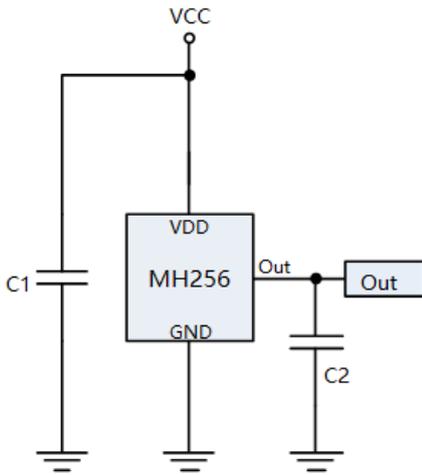
C1：10nF

C2：100pF

Sensor Location, package dimension and marking
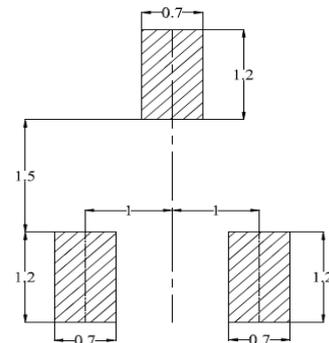
SO Package (SOT-23)
(Top View)
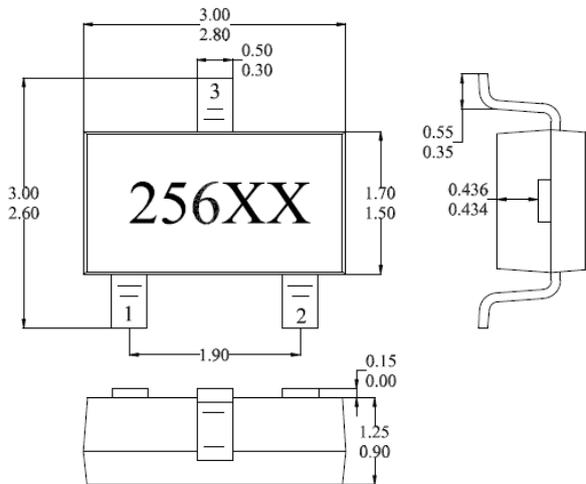
Hall Plate Chip Location
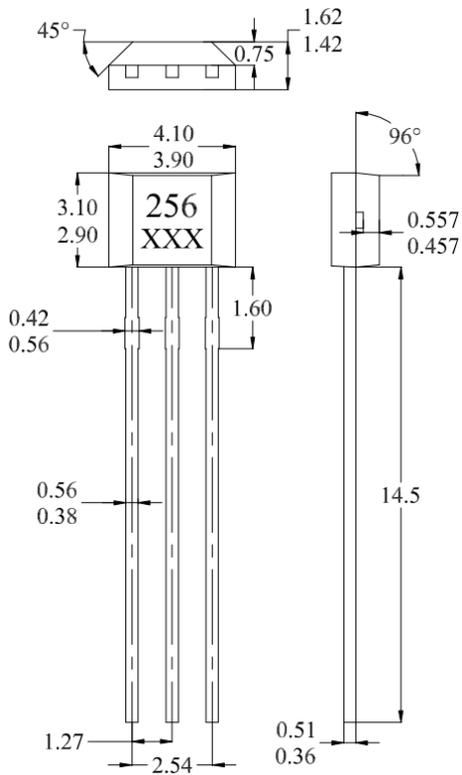### (Bottom view)

(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
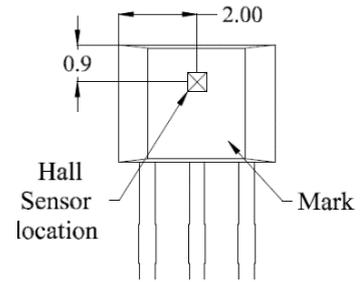4. XX: Date Code, Refer to DC table

UA Package

Hall Chip Location

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

Output Pin Assignment

(Top view)