MH257 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.

MH257 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 unipolar magnetic fields for operation.

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

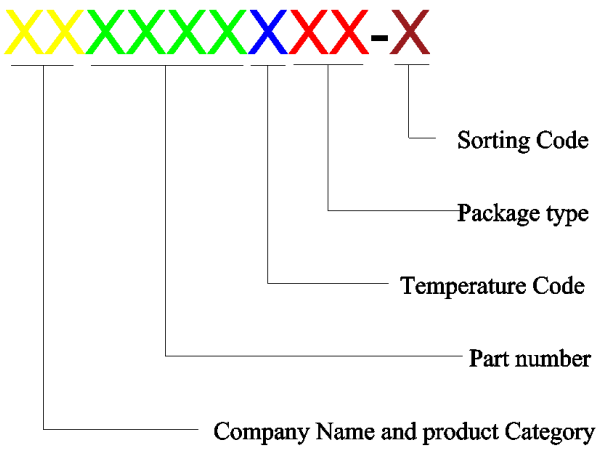
Features and Benefits

- CMOS Hall IC Technology
- 1.70 to 5.5V for battery-powered applications
- Omni polar, output switches with absolute value of South pole from magnet
- Operation down to 1.70V, Micro power consumption
- High Sensitivity for reed switch replacement applications
- Two Small Size option
- Low sensitivity drift in crossing of Temp range
- 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 (Flip Cell/PHS Phone/Note Book/Flip Video Set)
- Magnet proximity sensor for reed switch replacement in low duty cycle applications
- Water Meter
- PDA
- PDVD
- NB
- Pad PC

Ordering Information



Company Name and Product Category

MH:MST Hall Effect/MP:MST Power MOSFET

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)

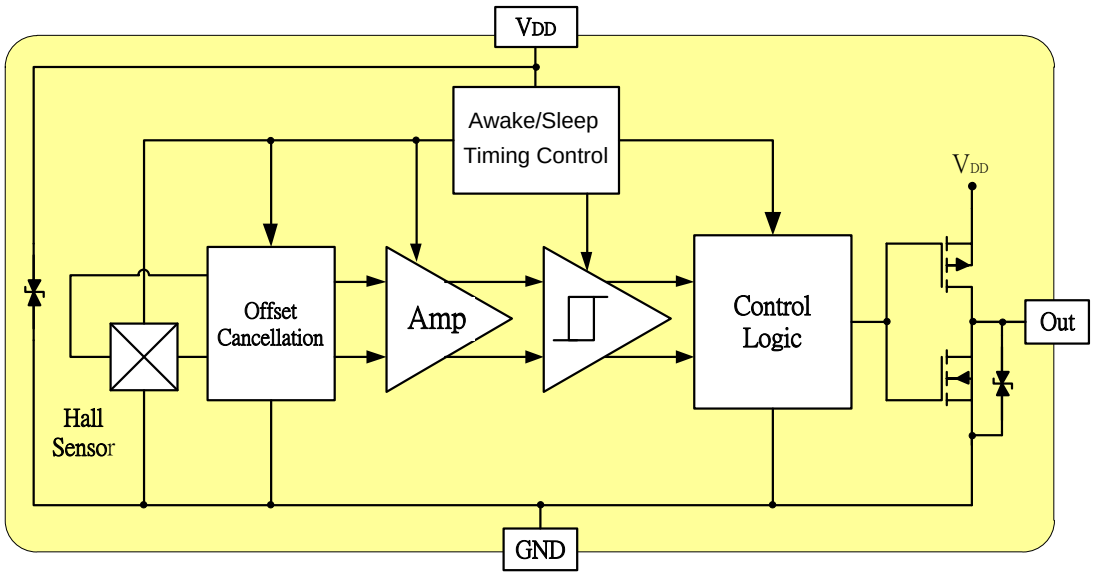
Sorting

α,β,Blank…..

Part No.	Temperature Suffix	Package Type
MH257EST	E (-40°C to + 85°C)	ST (TSOT-23)
MH257ESQ	E (-40°C to + 85°C)	SQ (QFN2020-3)
MH257EUA	E (-40°C to + 85°C)	UA (TO-92S)

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.*

MH257, HBM > ±4KV which is verified by third party lab.

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

Characteristics		Values	Unit
Supply voltage,(V_{DD})		6	V
Output Voltage,(*Vout*)		6	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/SQ/UA	310/540/206	℃/W
	(θ_{JC}) ST/SQ/UA	223/390/148	℃/W
Package Power Dissipation, (P_D) ST/SQ/UA		400/230 /606	mW

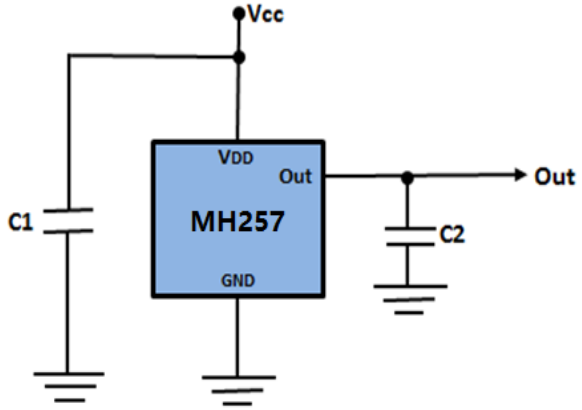
Note: *Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum-rated conditions for extended periods may affect device reliability.*

Electrical Specifications

DC Operating Parameters ：Ta=25℃, V_{DD}=2.0V

Parameters		Test Conditions	Min	Typ	Max	Units
Supply Voltage,(V_{DD})		Operating	1.7		5.5	Volts
Supply Current,(I_{DD})		Awake State		1.5	3	mA
		Sleep State		3.5	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,(T_{aw})		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
Operating Point	B_{OP}	S pole to branded side, B > BOP, Vout On		30	50	Gauss
Release Point	B_{RP}	S pole to branded side, B < BRP, Vout Off	10	20		Gauss
Hysteresis	B_{HY}	|BOPx - BRPx|		10		Gauss

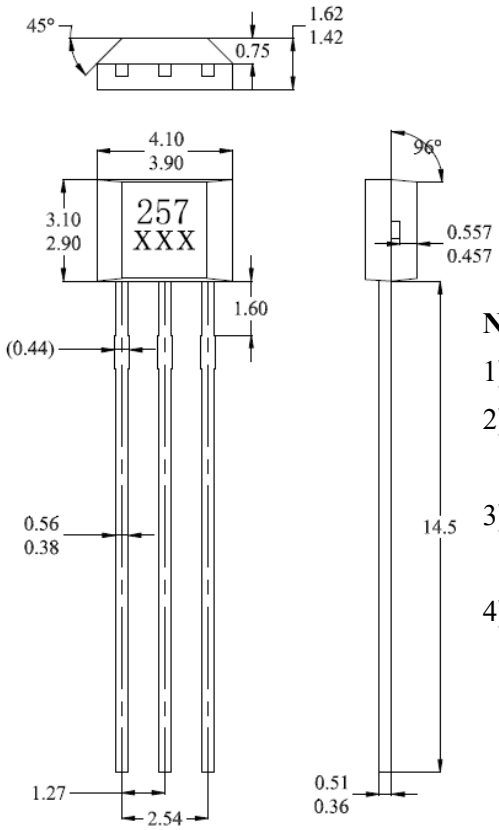
Typical application circuit



C1：10nF
C2：100pF

Sensor Location, package dimension and marking

UA Package (TO-92S)



NOTES:

1).Controlling dimension: mm

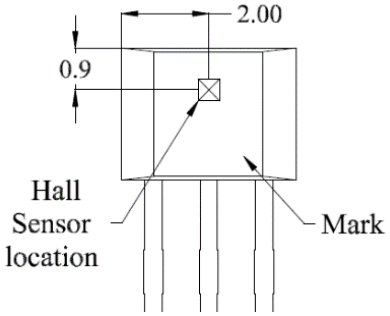
2).Leads must be free of flash and plating voids

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

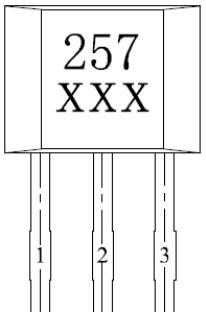
4).PINOUT:

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

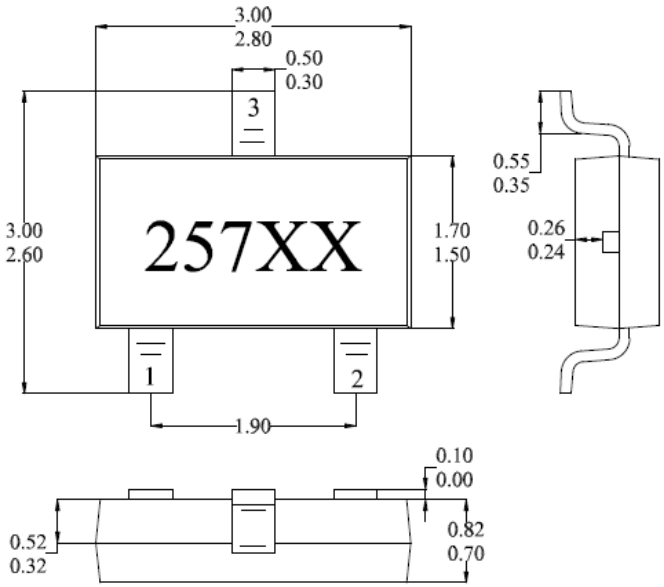
Hall Chip location



Output Pin Assignment (Top view)



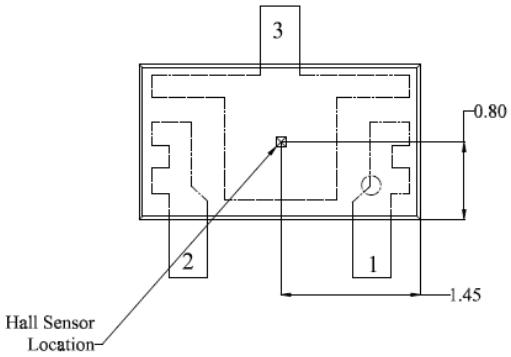
ST Package (TSOT-23) (Top View)



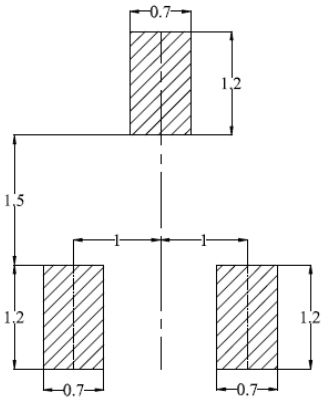
NOTES:

1. PINOUT (See Top View at left:)
   - Pin 1 V_{DD}
   - Pin 2 Output
   - Pin 3 GND
2. Controlling dimension: mm;

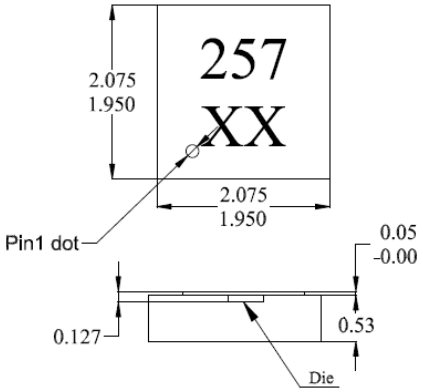
Hall Plate Chip Location (Bottom view)

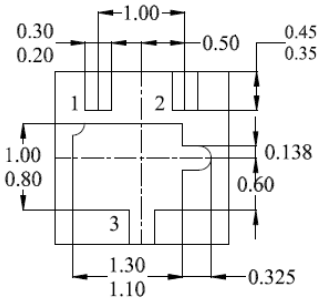


(For reference only)Land Pattern



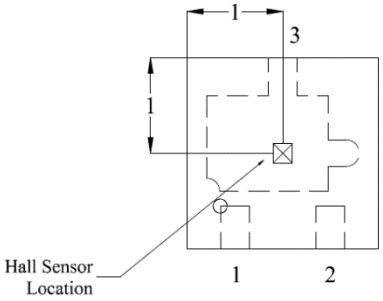
SQ Package
（Top View）



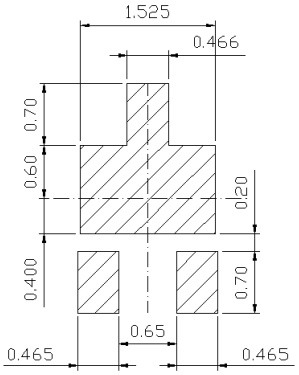


Bottom View

Hall Plate Chip Location
(Top view)



(For reference only)Land Pattern



NOTES:

1. PINOUT (See Top View at left)
   Pin 1 VDD
   Pin 2 Output
   Pin 3 GND
2. Controlling dimension: mm;
3. Chip rubbing will be 10mil maximum;
4. Chip must be in PKG. center.