MH258 Hall-effect sensor is a temperature stable, stress-resistant , 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.

MH258 includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, open-drain output. 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.

MH258 is rated for operation between the ambient temperatures –40℃ and + 85℃ for the E temperature range. The four package styles available provide magnetically optimized solutions for most applications. Package types SO is an SOT-23(1.1 mm nominal height), SP is an PSOT-23(1.1 mm nominal height),ST is an TSOT-23 (0.7 mm nominal height) ,a miniature low-profile surface-mount package, while package UA is a three-lead ultra-mini SIP for through-hole mounting.

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

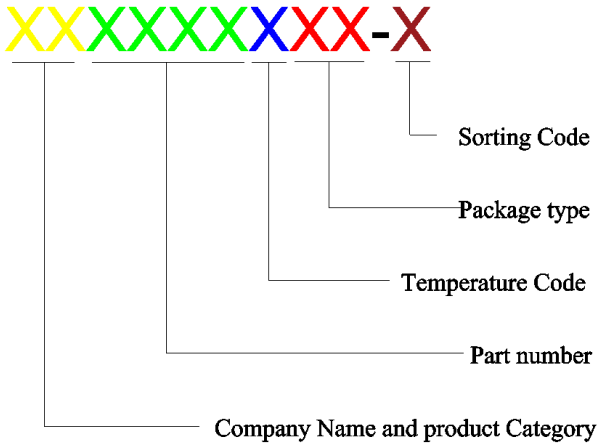
Features and Benefits

- CMOS Hall IC Technology
- Strong RF noise protection
- 1.70 to 5.5V for battery-powered applications
- Omni polar, output switches with absolute value of North or South pole from magnet
- Operation down to 1.70V, 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)
- Open Drain 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



Company Name and Product Category

MH:MST Hall Effect/MP:MST Power IC

Part number

181,182,183,184,185,258,249,276,477,381,381F,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

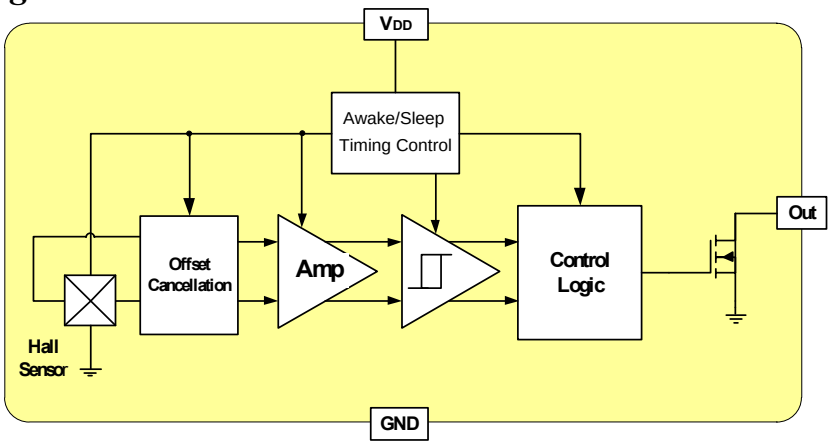
Sorting

α,β,Blank…..

Part No.	Temperature Suffix	Package Type
MH258EUA	E (-40°C to + 85°C)	UA (TO-92S)
MH258ESO	E (-40°C to + 85°C)	SO (SOT-23)
MH258EST	E (-40°C to + 85°C)	ST (TSOT-23)
MH258ESP	E (-40°C to + 85°C)	SP (PSOT-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.*

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_{SINK})		10	mA
Operating temperature range, (*Ta*)		-40 to +85	℃
Storage temperature range, (*Ts*)		-55 to +150	℃
Maximum Junction Temp, (*Tj*)		150	℃
Thermal Resistance	(θJA) UA / SO / ST / SP	206 / 543 / 310 / 625	℃/W
	(θJC) UA / SO / ST /SP	148 / 410 / 223 / 116	℃/W
Package Power Dissipation, (*PD*) UA / SO / ST / SP		606 / 230 / 400 / 200	mW

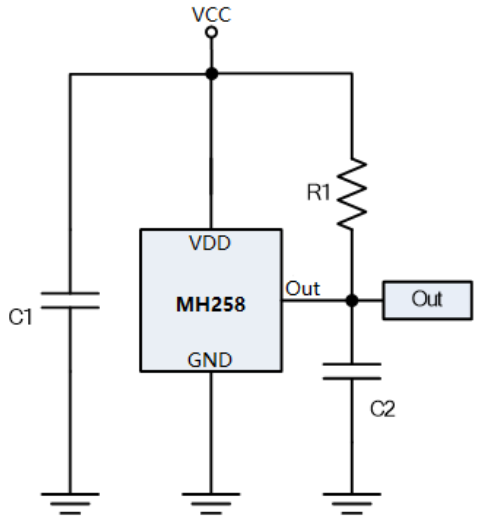
Note: *Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum-rated conditions for extended periods may affect device reliability.*

Electrical Specifications

DC Operating Parameters TA=+25℃, VDD=3V

Parameters		Test Conditions	Min	Typ	Max	Units
Supply Voltage,(V_{DD})		Operating	1.7		5.5	V
Supply Current,(I_{DD})		Awake State		1.5	3.0	mA
		Sleep State		3.5	7.0	μA
		Average		5.0	10	uA
Output Leakage Current, (*Ioff*)		B<BRPx, VOUT = 5.5V			1.0	uA
Output Saturation Voltage,		Iout=5mA,B>BOP			200	mV
Awake mode time,(*Taw*)		Operating		40	80	uS
Sleep mode time,(T_{SL})		Operating		40	80	mS
Duty Cycle,(*D,C*)				0.1		%
Response Time,(T_{RES})					10	Hz
ESD		HBM	4			KV
Operating Point	BOPS	S pole to branded side, B > BOP, Vout On	20		55	Gauss
	BOPN	N pole to branded side, B > BOP, Vout On	-55		-20	Gauss
Release Point	BRPS	S pole to branded side, B < BRP, Vout Off	10		45	Gauss
	BRPN	N pole to branded side, B < BRP, Vout Off	-45		-10	Gauss
Hysteresis	BHYS	|BOPx - BRPx|		10		Gauss

Typical Application circuit



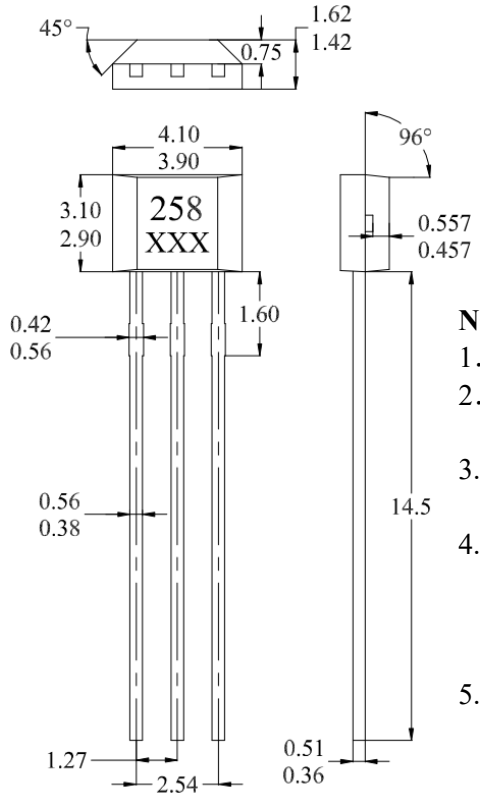
C1 : 10nF

C2 : 100pF

R1 : 100KΩ

Sensor Location, package dimension and marking

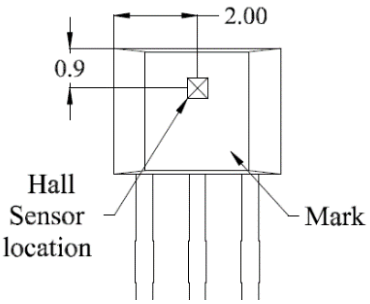
UA Package



NOTES:

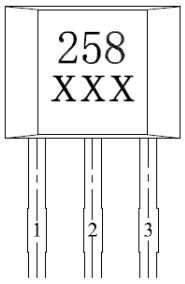
1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. Do not bend leads within 1 mm of lead to package interface.
4. PINOUT:
   Pin 1 VDD
   Pin 2 GND
   Pin 3 Output
5. XXX; 1st X=Year;
   2nd and 3rd XX=Week

Hall Chip location



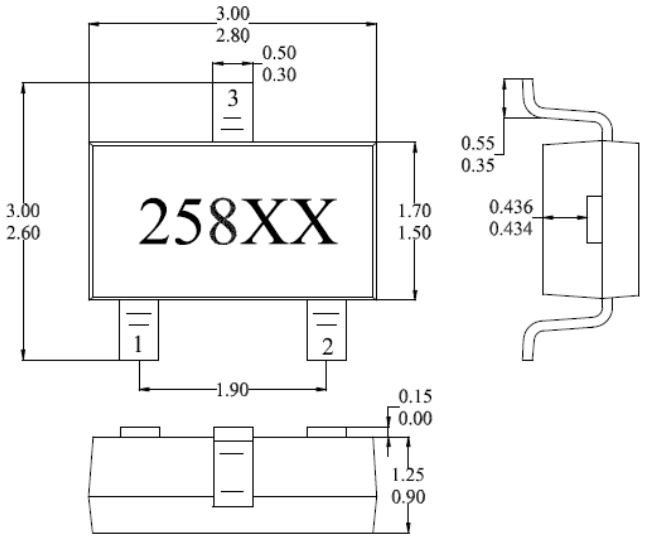
Output Pin Assignment

(Top view)



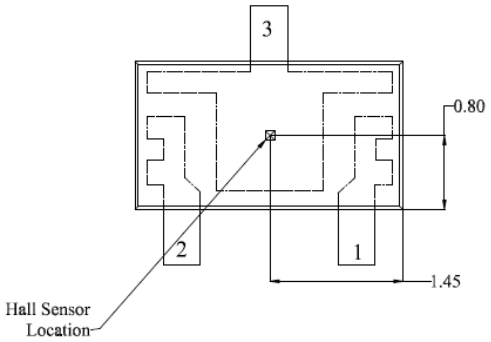
Package (SOT-23)

(Top View)

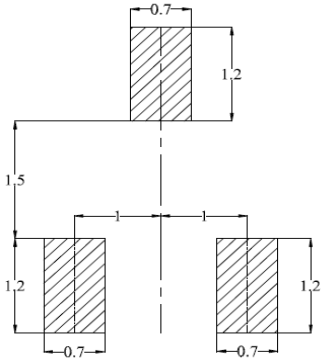


Hall Plate Chip Location

(Bottom view)



(For reference only)Land Pattern

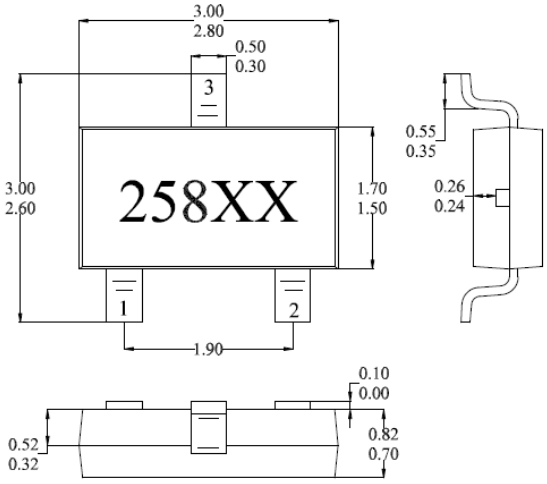


NOTES:

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

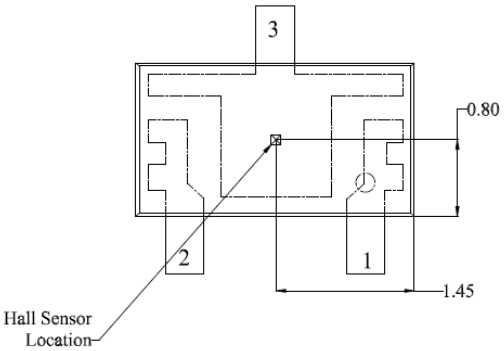
Package (TSOT-23)

(Top View)

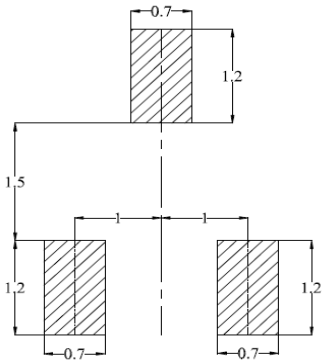


Hall Plate Chip Location

(Bottom view)



(For reference only)Land Pattern

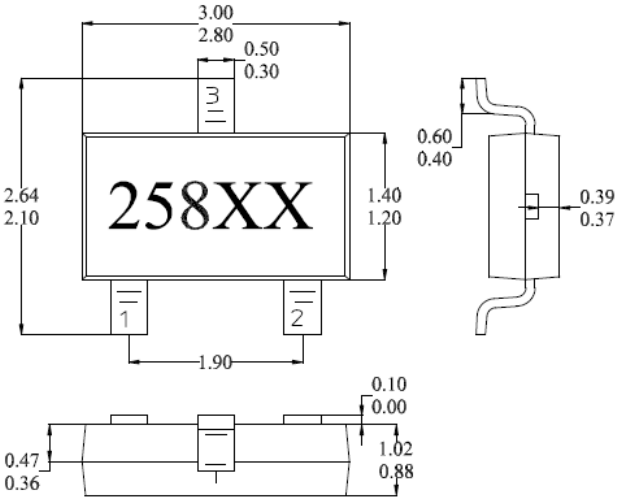


NOTES:

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

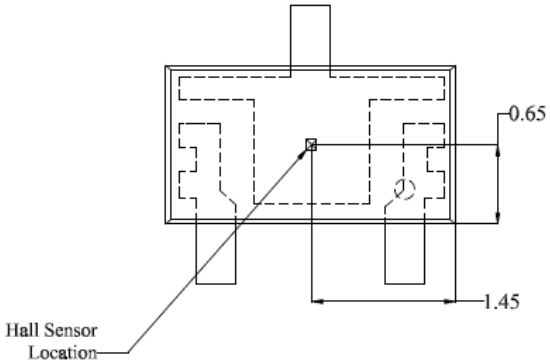
Package (PSOT-23)

(Top View)

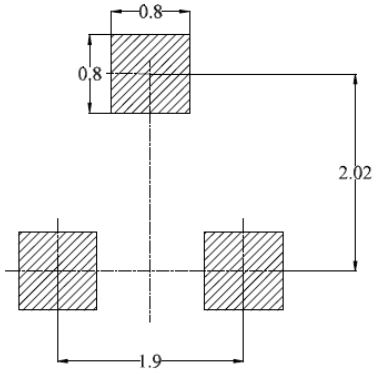


Hall Plate Chip Location

(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