

MH261 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.

MH261 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.

MH261 is rated for operation between the ambient temperatures -40°C and $+85^{\circ}\text{C}$ for the E temperature range. Package SS is a DFN 1*1*0.4, a miniature low-profile surface-mount package.

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

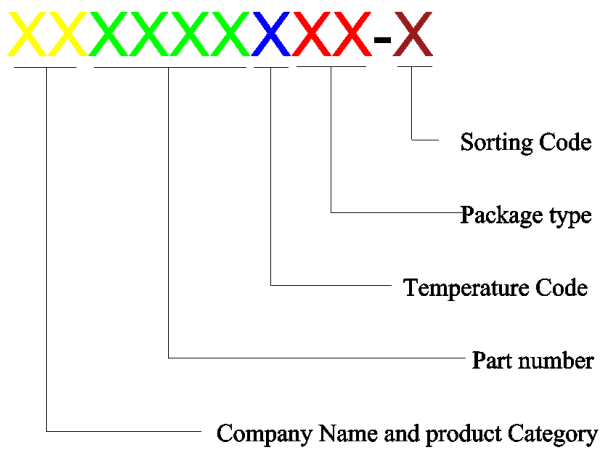
Features and Benefits

- CMOS Hall IC Technology
- Strong RF noise protection
- 1.70 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
- Ultralow power consumption at 5uA (Avg)
- High ESD Protection, HBM $> \pm 4\text{KV}$ (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

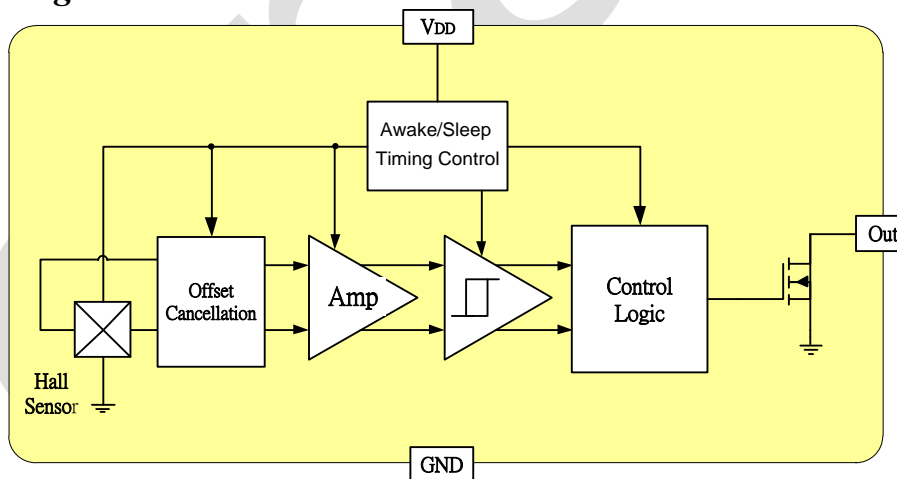
Ordering Information

	<p>Company Name and Product Category MH:MST Hall Effect/MP:MST Power IC</p> <p>Part number 181,182,183,184,185,261,249,276,477,381,381F,381R,382 If part # is just 3 digits, the forth digit will be omitted.</p> <p>Temperature range E: 85 °C, I: 105 °C, K: 125 °C, L: 150 °C</p> <p>Package type UA:TO-92S,VK:TO-92S(4pin),VF:TO-92S(5pin),SO:SO T-23, SQ:QFN-3,ST:TSOT-23,SN:SOT-553,SF:SOT-89(5pin),S S:QFN-4(1*1*0.4)</p> <p>Sorting α,β,Blank.....</p>
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Part No.	Temperature Suffix	Package Type
MH261ESS	E (-40°C to +85°C)	SS (QFN1*1-4L)

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.

Absolute Maximum Ratings At ($T_a=25^{\circ}\text{C}$)

Characteristics		Values	Unit
Supply voltage, (V_{DD})		6	V
Output Voltage, (V_{out})		6	V
Reverse voltage, (V_{DD}) (V_{OUT})		-0.3	V
Magnetic flux density		Unlimited	Gauss
Output current (I_{SINK})		1	mA
Operating temperature range, (T_a)		-40 to +85	$^{\circ}\text{C}$
Storage temperature range, (T_s)		-55 to +150	$^{\circ}\text{C}$
Maximum Junction Temp, (T_j)		150	$^{\circ}\text{C}$
Thermal Resistance	(θ_{JA}) UA / SS	206/540	$^{\circ}\text{C}/\text{W}$
	(θ_{JC}) UA / SS	148/390	$^{\circ}\text{C}/\text{W}$
Package Power Dissipation, (P_D) UA/SS		606/230	mW

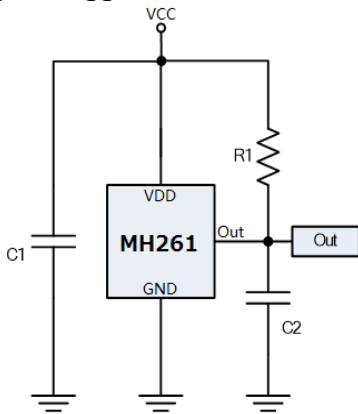
Note: Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum-rated conditions for extended periods may affect device reliability.

Electrical Specifications

DC Operating Parameters $T_A=+25^{\circ}\text{C}$, $V_{DD}=3\text{V}$

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	μA
Output Leakage Current, (I_{off})		$B < BRP_x$, $V_{OUT} = 5.5\text{V}$			1.0	μA
Output Saturation Voltage, (V_{DSON})		$I_{out}=5\text{mA}$, $B > BOP$			200	mV
Awake mode time, (T_{aw})		Operating		40	80	μs
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	B_{OPS}	S pole to branded side, B	20		60	Gauss
	B_{OPN}	N pole to branded side, $B >$	-60		-20	Gauss
Release Point	B_{RPS}	S pole to branded side, $B <$	10		50	Gauss
	B_{RPN}	N pole to branded side, $B <$	-50		-10	Gauss
Hysteresis	B_{HYS}	$ BOP_x - BRP_x $		10		Gauss

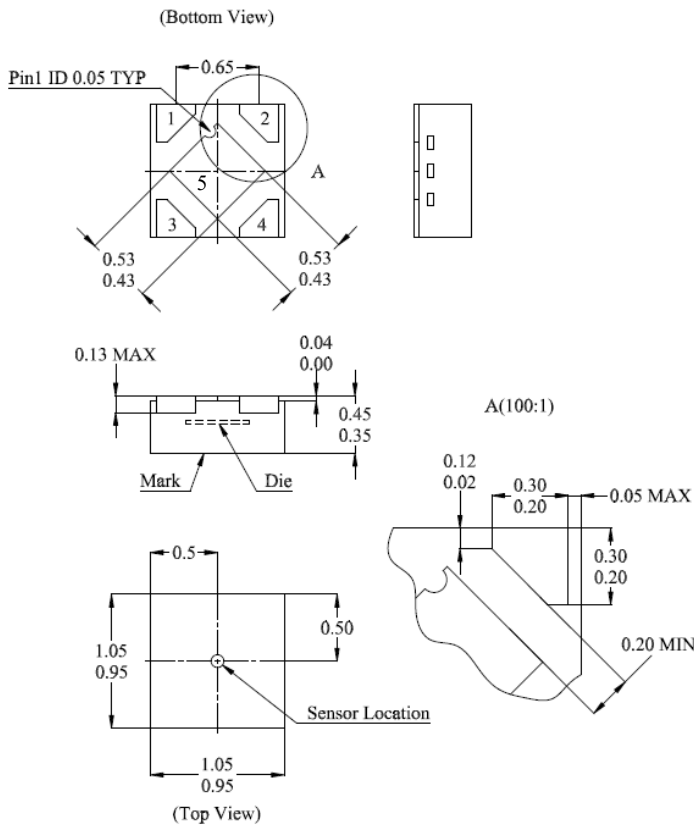
Typical Application circuit



C1 : 10nF
 C2 : 100pF
 R1 : 100KΩ

Sensor Location, Package Dimension and Marking

SS Package (DFN 1.0*1.0-4L)



NOTES:

Controlling dimension: mm

1. Leads must be free of flash and plating voids
2. Lead thickness after solder plating will be 0.254mm maximum
3. PINOUT:

Pin No.	Pin Name	Function
1	V _{DD}	Power Supply
2/5	V _{SS}	Ground
3	NC	
4	V _{OUT}	Output

4. (For reference only) Land pattern

