

MH179 Hall-effect latch is a temperature stable, stress-resistant, mini-power IC. 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.

MH179 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 both south and north polarity magnetic fields for operation. In the presence of a south polarity field of sufficient strength, the device output sensor on, and only switches off when a north polarity field of sufficient strength is present.

MH179 is rated for operation between the ambient temperatures -40°C and $+85^{\circ}\text{C}$, and -40°C to 125°C for the K temperature range. for the E temperature range. The two package styles available provide magnetically optimized solutions for most applications. Package SO is an SOT-23, a miniature low-profile surface-mount package, while package UA is a three-lead ultra mini SIP-3 for through-hole mounting.

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

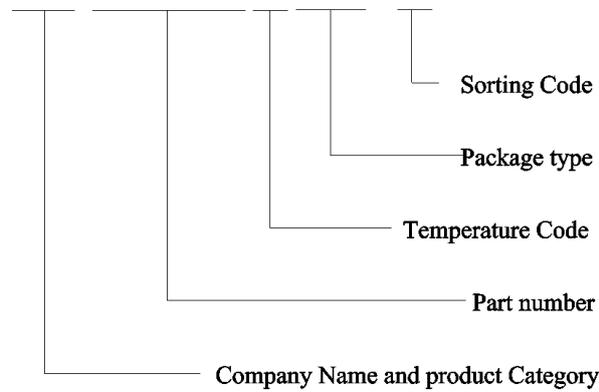
Features and Benefits

- CMOS Hall IC Technology
- Strong RF noise protection
- 2.0 to 5.5V for battery-powered applications
- Operation down to 2.0V, Micro power consumption
- 100% tested at 125°C for K
- Low sensitivity drift in crossing of Temp range
- Ultra Low power consumption at 600uA (Avg)
- High ESD Protection, HBM $> \pm 4\text{KV}$ (min)
- Open Drain output
- RoHS compliant 2011/65/EU and Halogen Free

Applications

- Speed sensing
- Position sensing
- Revolution counting
- Solid-State Switch
- Current sensing
- Revolution counting
- Solid-State Switch

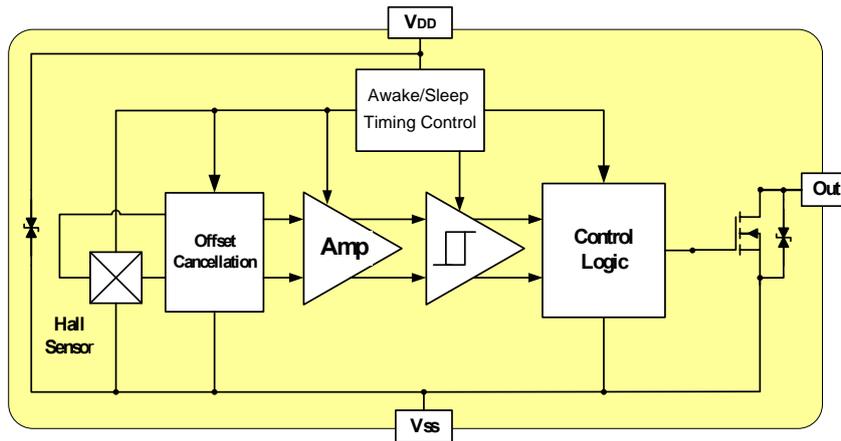
Ordering Information

<p style="font-size: 1.2em; font-weight: bold; color: yellow;">XXXXXX</p> <p style="font-size: 1.2em; font-weight: bold; color: green;">XXXX</p> <p style="font-size: 1.2em; font-weight: bold; color: blue;">XX</p> <p style="font-size: 1.2em; font-weight: bold; color: red;">XX-X</p> 	<p>Company Name and Product Category</p> <p>MH:MST Hall Effect/MP:MST Power IC</p> <p>Part number</p> <p>181,182,183,184,185,248,249,276,477,381,381F,381R,382.....</p> <p>If part # is just 3 digits, the forth digit will be omitted.</p> <p>Temperature range</p> <p>E: 85 °C, I: 105 °C, K: 125 °C, L: 150 °C</p> <p>Package type</p> <p>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,SG:SOT-89(3pin)</p> <p>Sorting</p> <p>α,β,Blank.....</p>
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Part No.	Temperature Suffix	Package Type
MH179KUA	K (-40°C to + 125°C)	UA (TO-92S)
MH179EUA	E (-40°C to + 85°C)	UA (TO-92S)
MH179ESO	E (-40°C to + 85°C)	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.

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_{out})		10	mA
Operating Temperature Range, (T_a)	“E” version	-40 to +85	$^{\circ}\text{C}$
	“K” version	-40 to +125	$^{\circ}\text{C}$
Storage temperature range, (T_s)		-65 to +150	$^{\circ}\text{C}$
Maximum Junction Temp, (T_j)		150	$^{\circ}\text{C}$
Thermal Resistance	(θ_{JA}) UA / SO	206 / 543	$^{\circ}\text{C}/\text{W}$
	(θ_{JC}) UA / SO	148 / 410	$^{\circ}\text{C}/\text{W}$
Package Power Dissipation, (P_D) UA / SO		606 / 230	mW

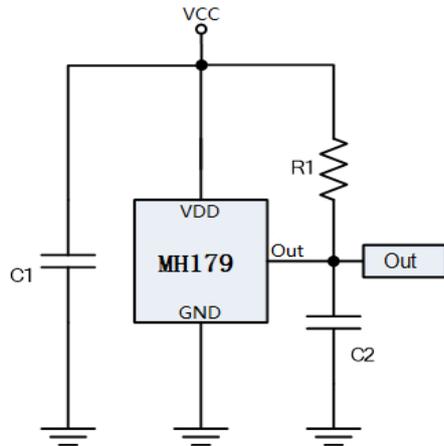
Note: Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum-rated conditions for extended periods may affect device reliability.

Electrical Specifications

DC Operating Parameters $T_A=+25^{\circ}\text{C}$, $V_{DD}=3.0\text{V}$

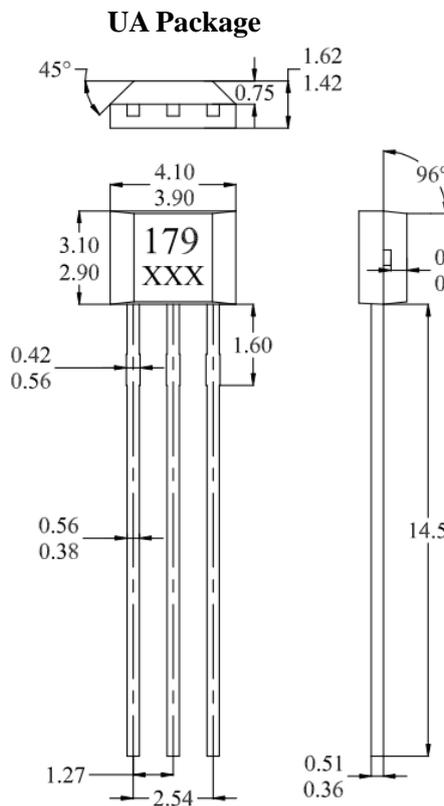
Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{DD})	Operating	2.0		5.5	V
Supply Current, (I_{DD})	Awake State		2.0	5.0	mA
	Sleep State		7.0	10.0	μA
	Average		600	1000	μA
Output Saturation Voltage,	$I_{out}=5\text{mA}, B > \text{BOP}$			200	mV
Output Leakage Current, (I_{off})	$I_{OFF} \quad B < \text{BRP}, V_{OUT} = 5.5\text{V}$			1.0	μA
Awake mode time, (T_{aw})	Operating		40	80	μs
Sleep mode time, (T_{SL})	Operating		160	320	μs
Duty Cycle, (D, C)			20		%
Response Time, (T_{RES})				2000	Hz
Output Rise Time, (T_R)	$R_L=1\text{K}\Omega, C_L=20\text{pF}$		0.18	0.45	μs
Output Fall Time, (T_F)	$R_L=1\text{K}\Omega; C_L=20\text{pF}$		0.18	0.45	μs
Electro-Static Discharge	HBM	4			KV
Operating Point (BOP)	S pole to branded side, $B > \text{BOP}$, V_{out} On	5		40	Gauss
Release Point (BRP)	N pole to branded side, $B < \text{BRP}$, V_{out}	-40		-5	Gauss
Hysteresis (BHYS)	$ \text{BOP} - \text{BRP} $		40		Gauss

Typical Application circuit

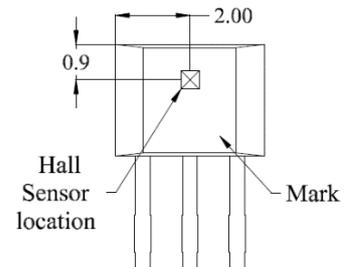


$C1 : 10nF$
 $C2 : 100pF$
 $R1 : 100k\Omega$

Sensor Location, Package Dimension and Marking



Hall Chip location

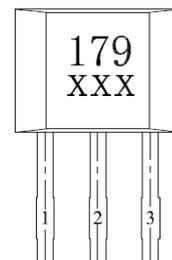


NOTES:

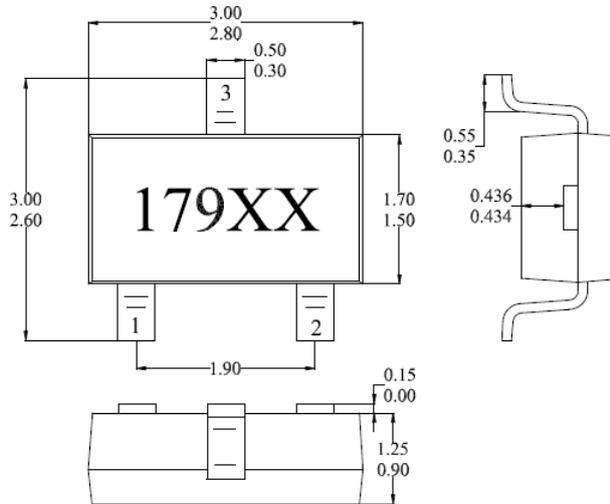
- Controlling dimension: mm
- Leads must be free of flash and plating voids
- Do not bend leads within 1 mm of lead to package interface.
- PINOUT:

Pin 1	VDD
Pin 2	GND
Pin 3	Output

Output Pin Assignment (Top view)



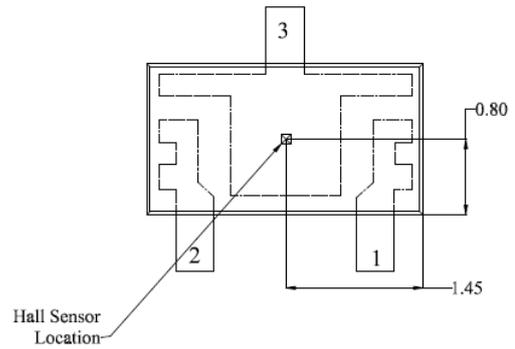
SO Package (Top View)



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

Hall Plate Chip Location (Bottom view)



(For reference only) Land Pattern

