

MH 183 is a unipolar Hall effect sensor IC. It incorporates advanced chopper stabilization technology to provide accurate and stable magnetic switch points. The design, specifications and performance have been optimized for applications of solid state switches.

The output transistor will be switched on (BOP) in the presence of a sufficiently strong South pole magnetic field facing the marked side of the package. Similarly, the output will be switched off (BRP) in the presence of a weaker South field and remain off with "0" field.

The package type is in a lead (Pb)-free version was verified by third party organization.

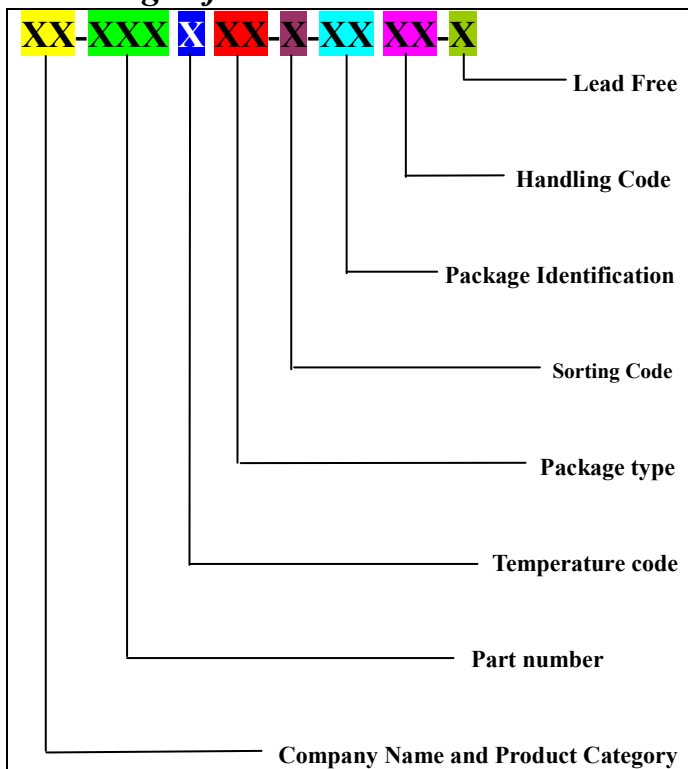
Features and Benefits

- CMOS Hall IC Technology
- Solid-State Reliability
- Chopper stabilized amplifier stage
- Unipolar, output switches with absolute value of South pole from magnet
- Operation down to 2.5V
- High Sensitivity for direct reed switch replacement applications
- Small Size in To 92S or Sot 23 package.
- 100% tested at 125°C for K Spec.
- Custom sensitivity / Temperature selection are available.

Applications

- Solid state switch
- Limit switch
- Current limit
- Interrupter
- Current sensing
- Magnet proximity sensor for reed switch replacement in low duty cycle applications

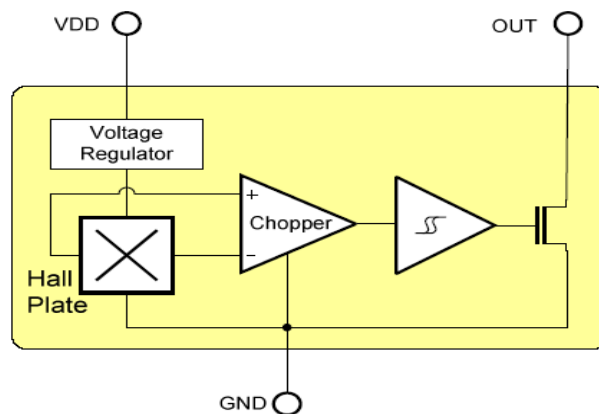
Ordering Information

	<p>Company Name and Product Category MH:MST Hall Effect/MP:MST Power MOSFET</p> <p>Part number 181,182,183,184,185,248,249...</p> <p>Temperature range E: 85 Degree C, K: 125 Degree C, L: 150 Degree C</p> <p>Package type UA:TO-92S,SO:SOT-23,ST:Tsot-25,SU:USON</p> <p>Sorting α, β, Blank,....</p> <p>Package Identification Code 01,02,03,....</p> <p>Handling Code BLANK: ESD bag, TR: Tape & Reel</p> <p>Lead Free Code BLANK: Lead Free Device ,G: Green</p>
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Part No.	Temperature Suffix	Package Type	Package Identification
183	K (-40°C to +125°C)	UA (TO-92S)	01
	K (-40°C to +125°C)	SO (SOT-23)	05
	E (-40°C to +85°C)	UA (TO-92S)	01
	E (-40°C to +85°C)	SO (SOT-23)	05

K spec is using in industrial and automotive application. Special Hot Testing is utilized.

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

Supply Voltage (Operating), V_{DD}	28V
Supply Voltage (Reverse) V_{DD}	-0.3V
Supply Current (Fault), I_{DD}	50mA
Output Voltage, V_{OUT}	24V
Output reverse Voltage, V_{OUT}	-0.3V
Output Current (Fault), I_{OUT}	50mA
Operating Temperature Range "K", T_A	-40°C to +125°C
Operating Temperature Range "E", T_A	-40°C to +85°C
Storage Temperature Range, T_S	-55°C to +150°C

Note: Do not apply reverse voltage to V_{DD} and V_{OUT} Pin, It may be caused for Missfunction or damaged device.

MH-183 Electrical Specifications

DC operating parameters: $T_A = 25^\circ\text{C}$, $V_{DD}=12V_{DC}$ (unless otherwise specified).

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Supply Voltage	V_{DD}	Operating	2.5		27	V
Supply Current	I_{DD}	Average		2.5	5.0	mA
Output Leakage	I_{OFF}	$B < B_{rp}$, $V_{out}=20V$			10.0	μA
Saturation Voltage	V_{SAT}	$I_{out}=20mA$, $B > B_{op}$			0.5	V
Output Rise Time	T_r	$V_{dd}=12V$, $R_L=1.1K\Omega$, $C_L=20pF$.04		μS
Output Fall Time	T_f	$V_{dd}=12V$, $R_L=1.1K\Omega$, $C_L=20pF$.18	70.0	μS

Magnetic Specifications

DC operating parameters: $T_A = 25^\circ\text{C}$, $V_{DD}=12V_{DC}$ (unless otherwise specified).

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Operating Point	B_{OP}				25	mT
Release Point	B_{RP}		5			mT
Hysteresis	B_{HYS}			4.5		mT

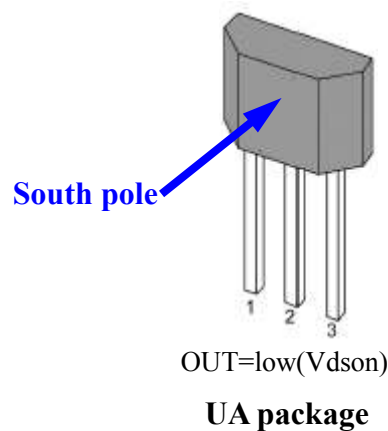
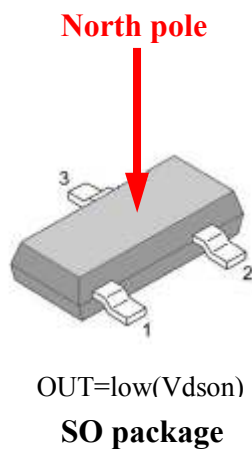
Note: 1 mT = 10 Gauss.

Custom sensitivity selection is available.

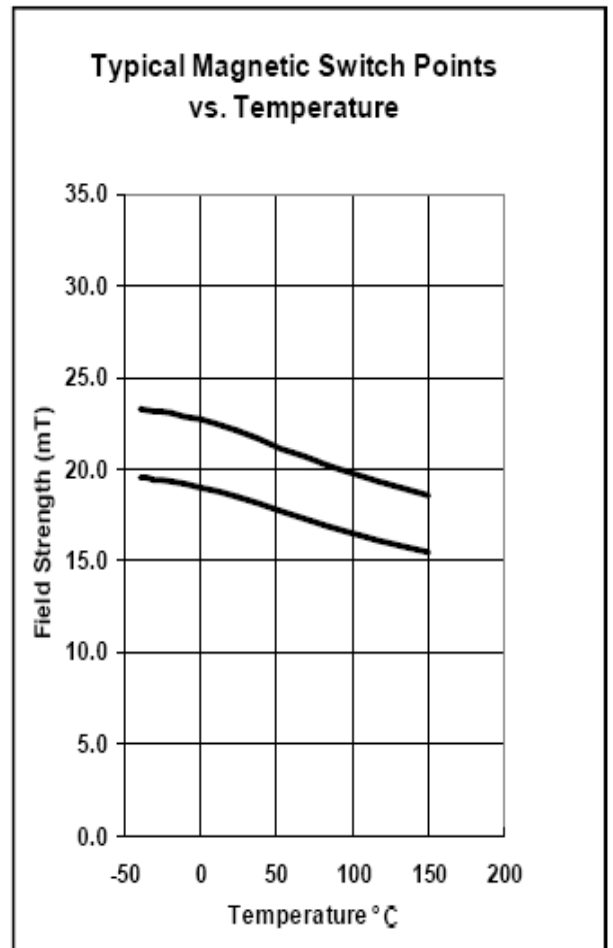
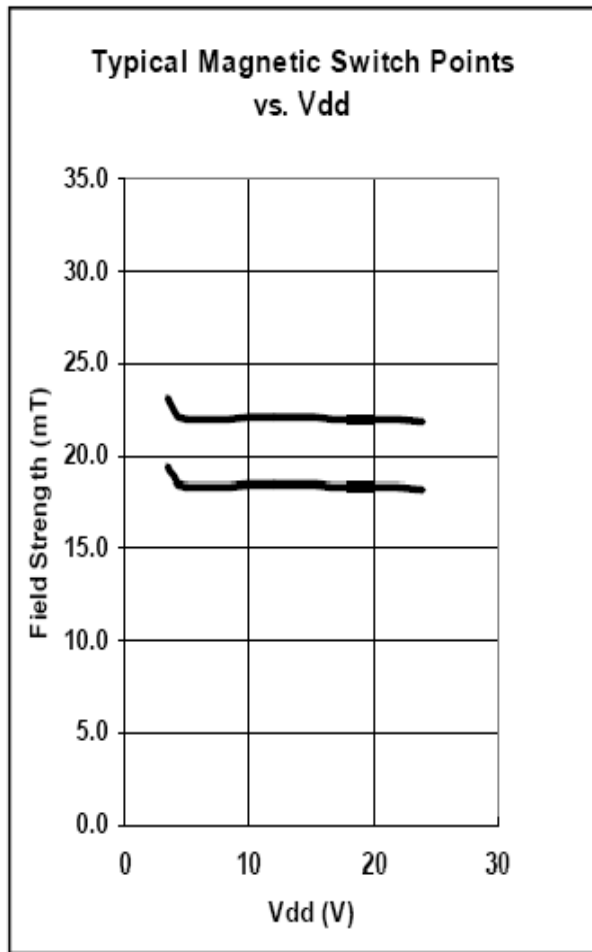
Output Behaviour versus Magnetic Pole

DC Operating Parameters $T_a = -40$ to 125°C , $V_{dd} = 2.5$ to $27V$ (unless otherwise specified)

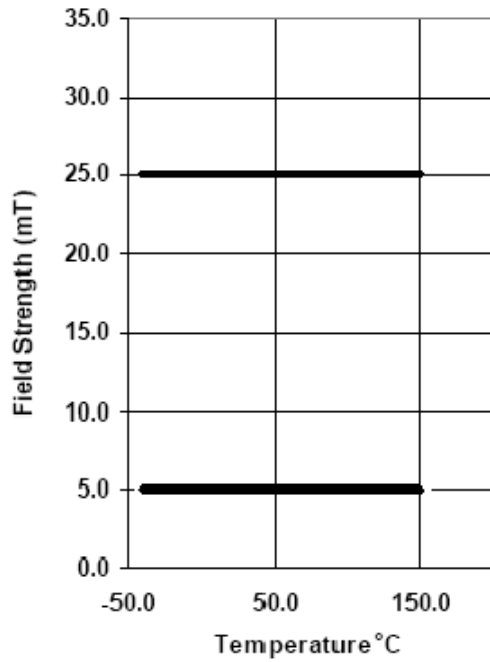
Parameter	Test condition(SO)	OUT(SO)	OUT(UA)
South pole	$B < B_{rp}$	high	Low
Null or weak magnetic field	$B=0$ or $B < B_{RP}$	high	high
North pole	$B > B_{op}$	low	high



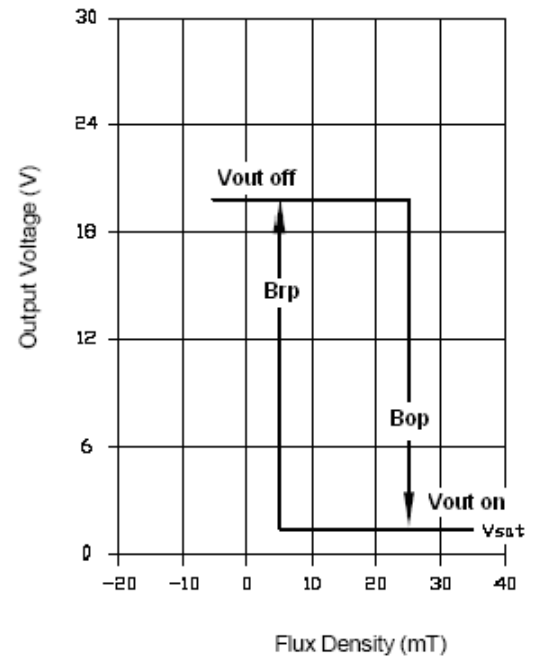
Performance Graphs



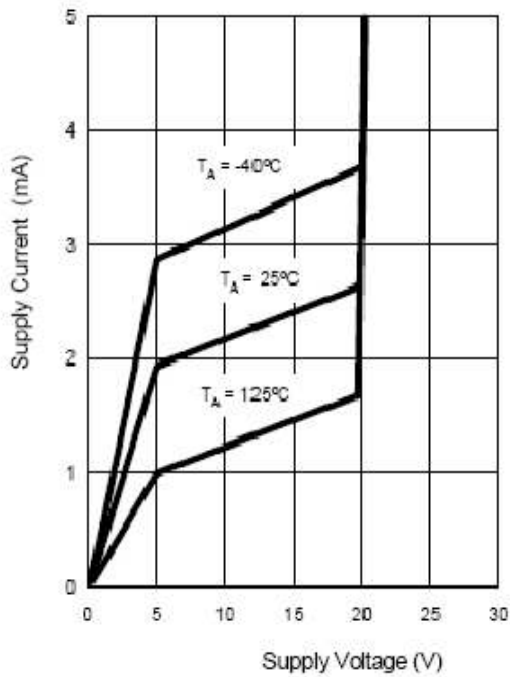
Minimum & Maximum Magnetic Switch Points vs. Temperature



Output Voltage versus Flux Density

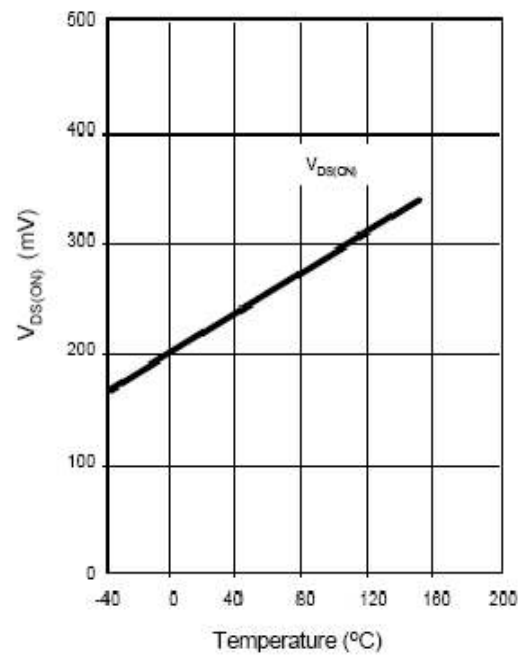


Typical Supply Current versus Supply Voltage



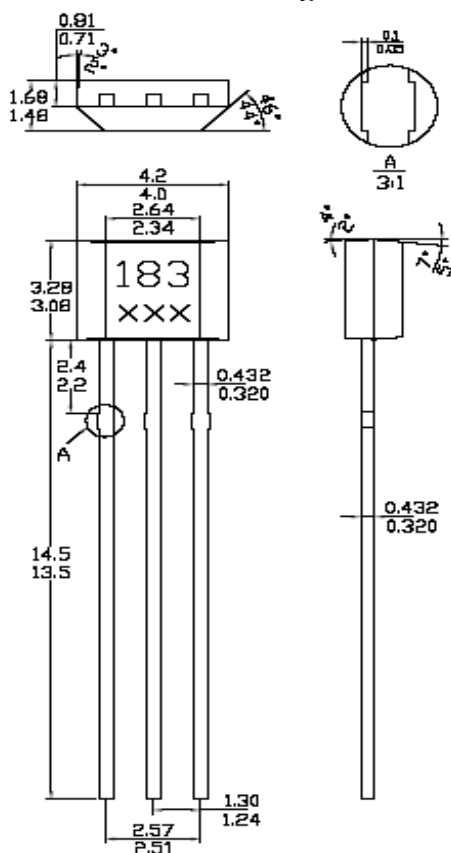
Typical Saturation Voltage versus Temperature

$V_{DD} = 12\text{ V}, I_{OUT} = 20\text{ mA}$



Sensor Location, package dimension and marking

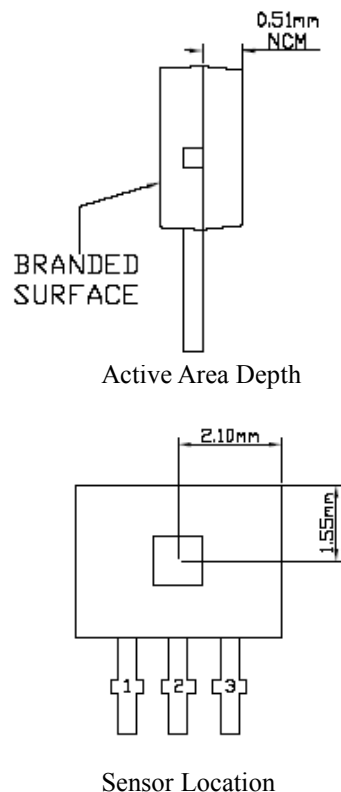
MH 183 UA-01 Package



NOTES:

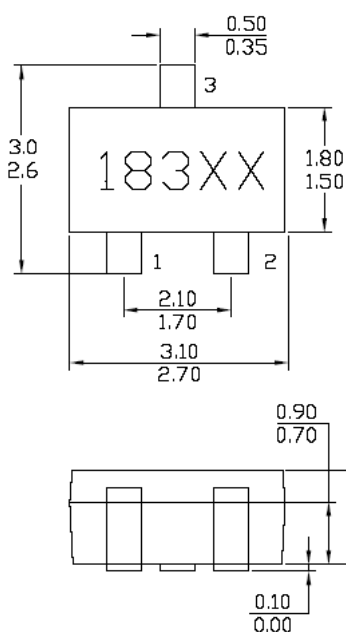
- 1).Controlling dimension: mm
- 2).Leads must be free of flash and plating voids;
- 3).Do not bend leads within 1 mm of lead to package interface;
- 4).PINOUT:

Pin 1	VDD
Pin 2	GND
Pin 3	Output



MH 183 SO-05 (SOT-23) Dimensions

(Top view)



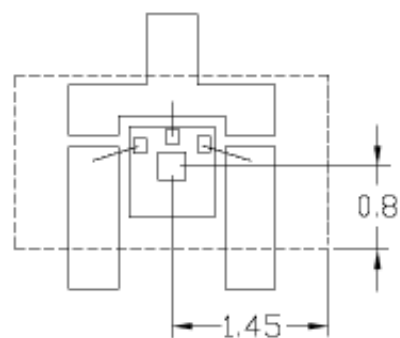
NOTES:

1. PINOUT (See Top View at left :)

Pin 1	VDD
Pin 2	Output
Pin 3	GND
2. Controlling dimension: mm;
3. Lead thickness after solder plating will be 0.254mm maximum.

SOT-23 Hall plate/ Chip location

(Bottom view)



Technical drawing of a mechanical part showing three views: a top view, a side view, and a cross-section A-A.

Top View: Shows a circular part with four lobes and a central hole. Dimensions include a total width of 4.1, a central hole diameter of 3.9, and a lobe width of 2.05. The central hole is labeled with a diameter of 3.2 and a tolerance of 3.4.

Side View: Shows the profile of the part. Dimensions include a total height of 7.8, a central hole diameter of 3.2, and a lobe height of 2.05. The central hole is labeled with a diameter of 3.2 and a tolerance of 3.4.

Cross-section A-A: Shows the internal structure of the part. Dimensions include a total width of 4.1, a central hole diameter of 3.9, and a lobe width of 2.05. The central hole is labeled with a diameter of 3.2 and a tolerance of 3.4.

1. Material: Conductive polystyrene;
2. DIM in mm;
3. 10 sprocket hole pitch cumulative tolerance ± 0.2 ;
4. Camber not to exceed 1mm in 100mm;
5. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole;
6. (SR OHM/SQ) Means surface electric resistivity of the carrier tape.