

MH 181, Hall-Effect sensor, designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall Voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open collector output. An internal band gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range. The device is identical except for magnetic switch points.

The device includes on a single silicon chip a voltage regulator, Hall-voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, and short-circuit protected open-collector output to sink up to 25mA. A south pole of sufficient strength will turn the output on. The North Pole is necessary to turn the output off. An on-board regulator permits operation with supply voltages of 3.5V to 20 V.

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

Features and Benefits

- Resistant to Physical Stress.
- Temperature compensation.
- Wide operating voltage range.
- High Quality and Low Cost.
- Open-Collector pre-driver.
- Reverse bias protection on power supply pin.
- Small Size.
- 100% at 125°C “Hot Test” in MH 181 KUA

Applications

- High temperature Hall IC application
- Fan motor application
- BLDC motor application
- Speed sensing
- Position sensing
- Current sensing
- Revolution counting
- 3 phase BLDC motor in “K” Spec

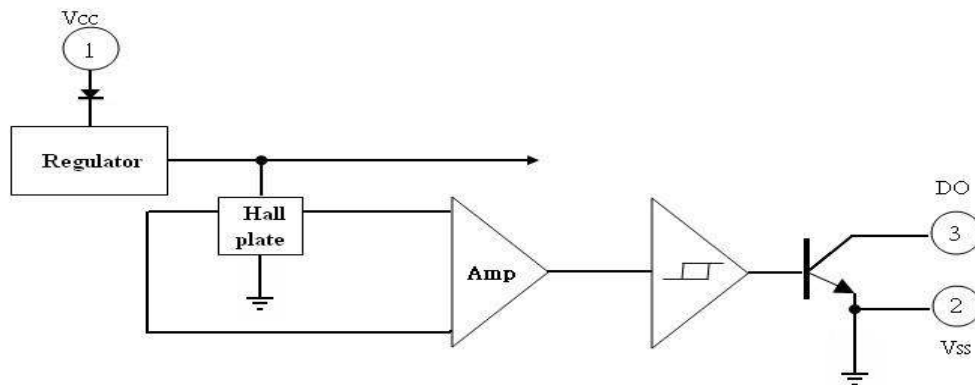
Ordering Information

 Lead Free Handling Code Package Identification Sorting Code Package type Temperature code Part number Company Name and Product Category	Company Name and Product Category MH:MST Hall Effect/MP:MST Power MOSFET Part number 181,182,183,184,185,248,249... Temperature range E: 85 Degree C, K: 125 Degree C, L: 150 Degree C Package type UA:TO-92S,SO:SOT-23,ST:Tsol-25,SU:USON Sorting α, β, Blank,..... Package Identification Code 01,02,03,..... Handling Code BLANK: ESD bag, TR: Tape & Reel Lead Free Code BLANK: Lead Free Device ,G: Green
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Part No.	Temperature Suffix	Package Type	Package Identification
181	K (-20°C to + 125°C)	UA (TO-92S)	01/02
	E (-20°C to + 85°C)	UA (TO-92S)	01/02

MH 181KUA is developed as “125 degree C Temperature Version” by MST technology. Major application is industrial and automotive.

Functional Diagram



Absolute Maximum Ratings

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

Supply Voltage, Vcc	20V
Output	30V
Output Current, Iout	25mA
Operating Temperature Range, T_A “K” version	-20°C to 125°C
Storage Temperature, T_s	-55°C to 150°C
Magnetic Flux Density	No limit

Electrical Specifications

DC Operating Parameters $T_A = +25^\circ\text{C}$, $V_{DD} = 12\text{V}$ (Unless otherwise specified)

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage		3.5		20.0	Volts
Supply Current	$B < B_{rp}$			8.0	mA
Output Saturation Voltage	$I_{out} = 10\text{mA}$			700.0	mV
Output Leakage Current	$V_{out} = 12\text{V}$			10.0	μA
Output Rise Time	$R_L = 820\ \Omega$; $C_L = 20\text{pF}$			1.5	μs
Output Fall Time	$R_L = 820\ \Omega$; $C_L = 20\text{pF}$			1.5	μs

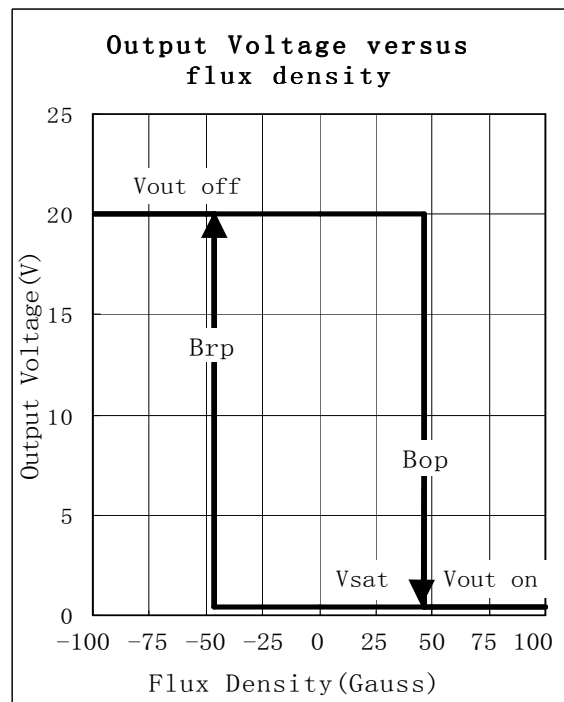
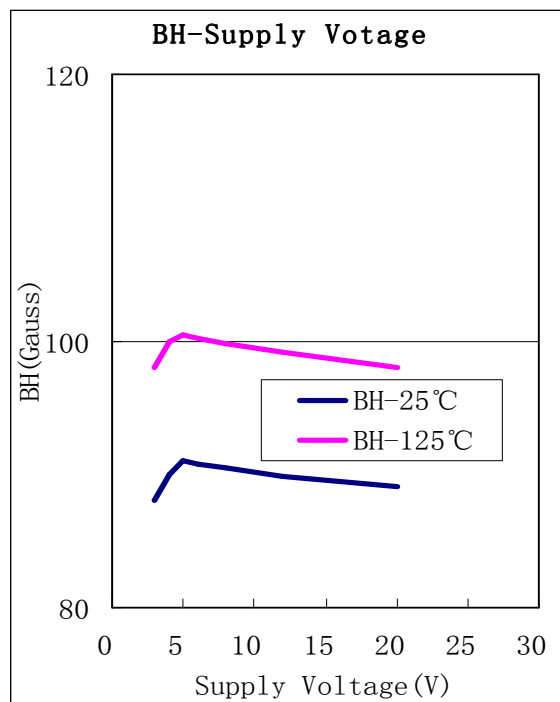
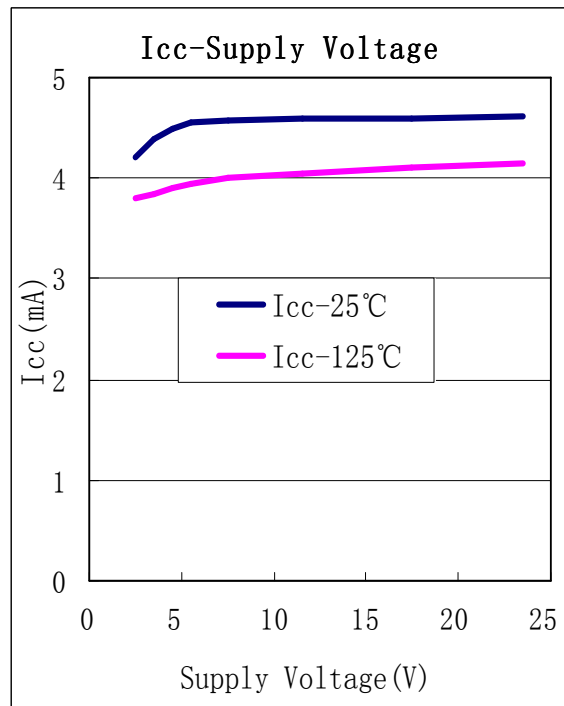
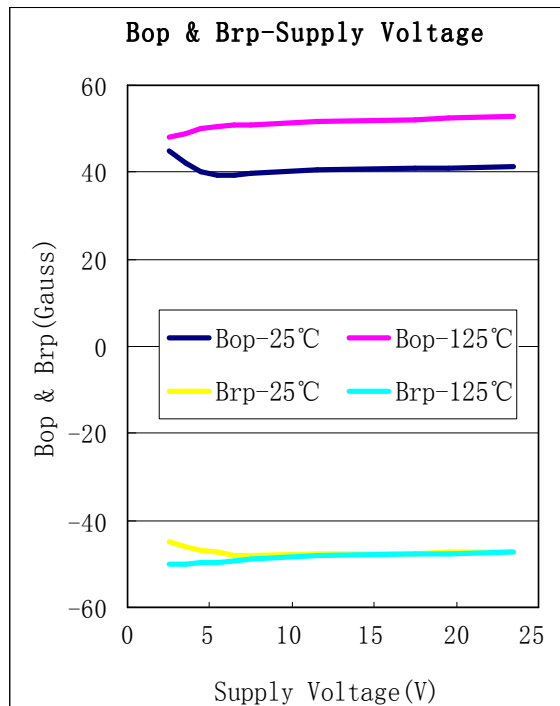
Magnetic Specifications

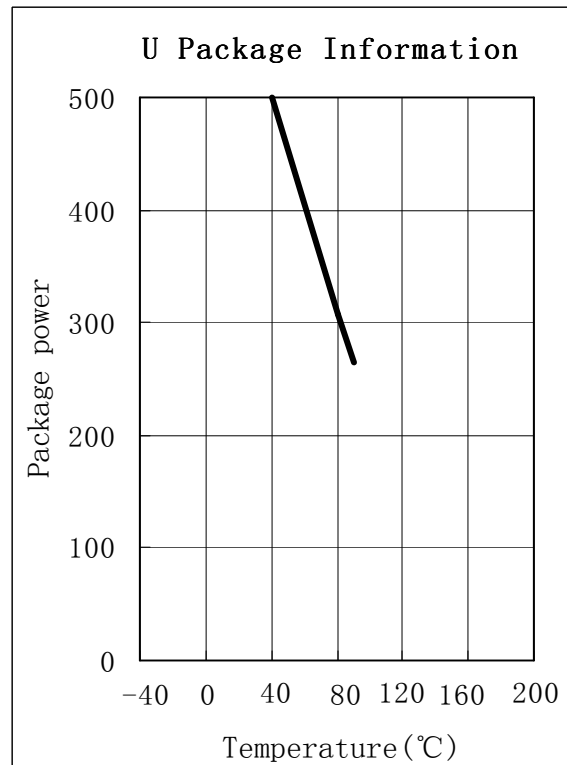
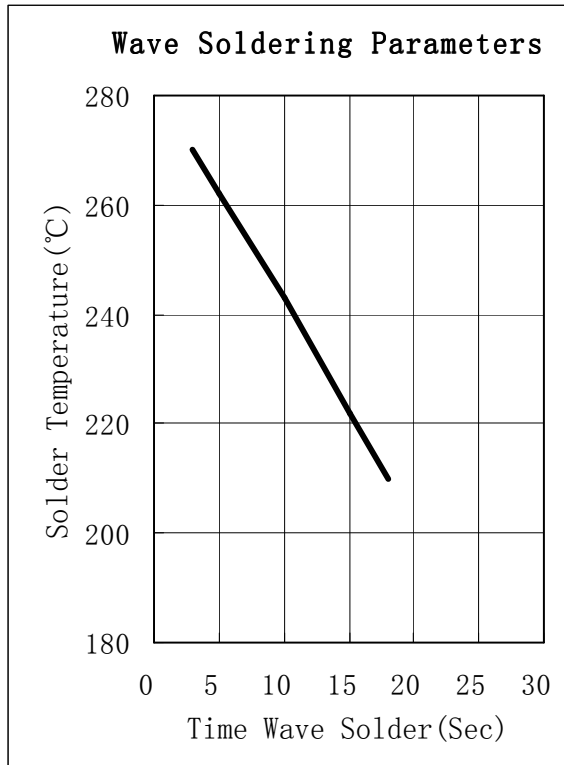
DC Operating Parameters

$T_A=25^{\circ}\text{C}$, $V_{\text{SUPPLY}}=12\text{V}$

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Operate Point	Bop		5		90	Gauss
Release Point	Brp		-90		-5	Gauss
Hysteresis	Hys			100		Gauss

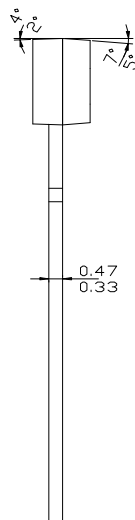
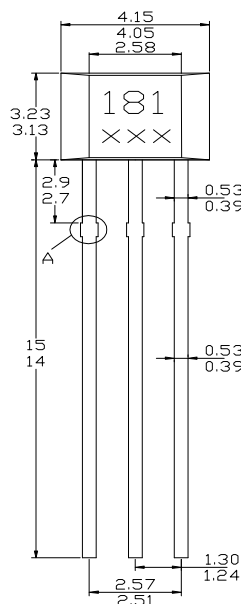
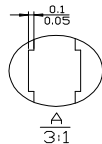
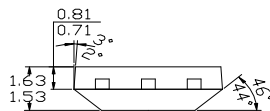
Performance Graphs





Sensor Location, package dimension and marking

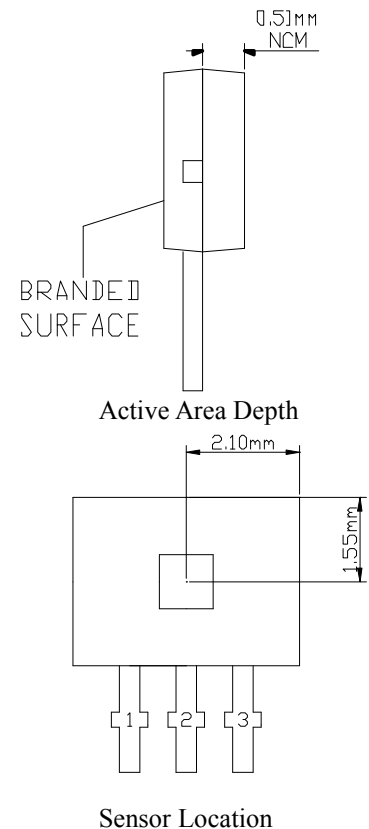
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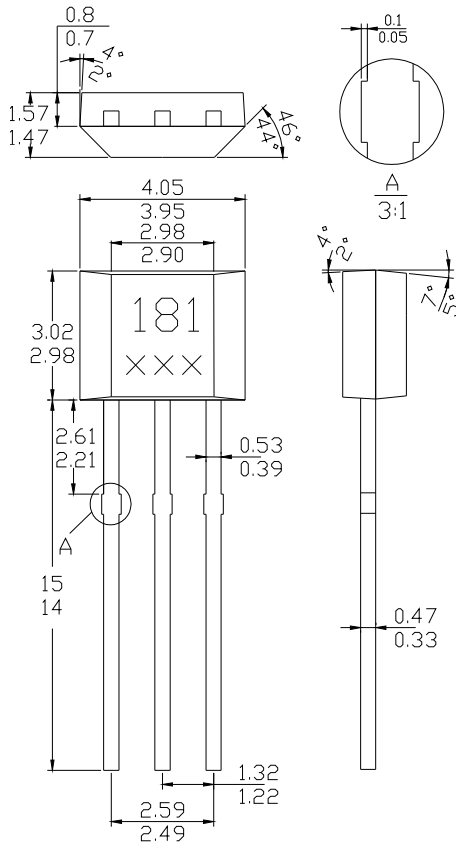
NOTES:

- 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



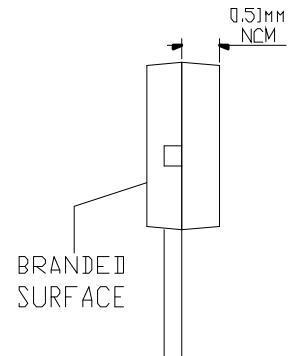
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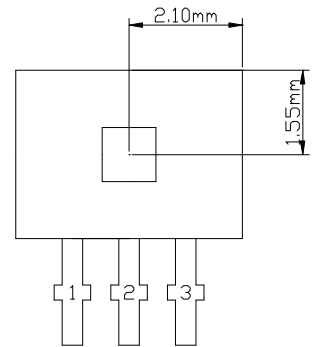
NOTES:

- 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



Active Area Depth



Sensor Location