

MH 182 Hall-effect sensor is a temperature stable, stress-resistant latch. 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.

The MH 182 includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, and a short circuit protected 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 latches on, and only switches off when a north polarity field of sufficient strength is present.

The MH 182 is rated for operation between the ambient temperatures -40°C and 85°C for the E temperature range, and -40°C to 125°C for the K 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 ultramini SIP for through-hole mounting.

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

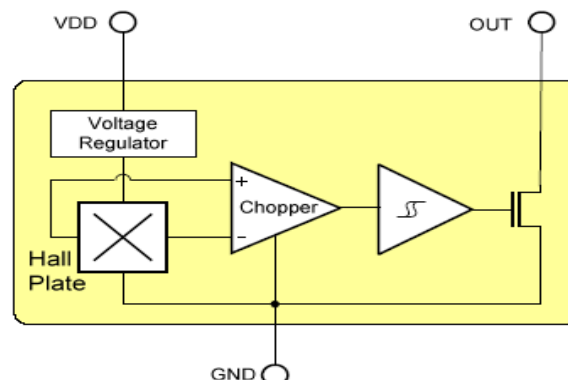
Features and Benefits

- Chopper stabilized amplifier stage
- Optimized for BLDC motor applications
- New miniature package / thin, high reliability package
- Operation down to 3.0V
- 100% tested at 125°C for K.
- Custom sensitivity / Temperature selection are available.

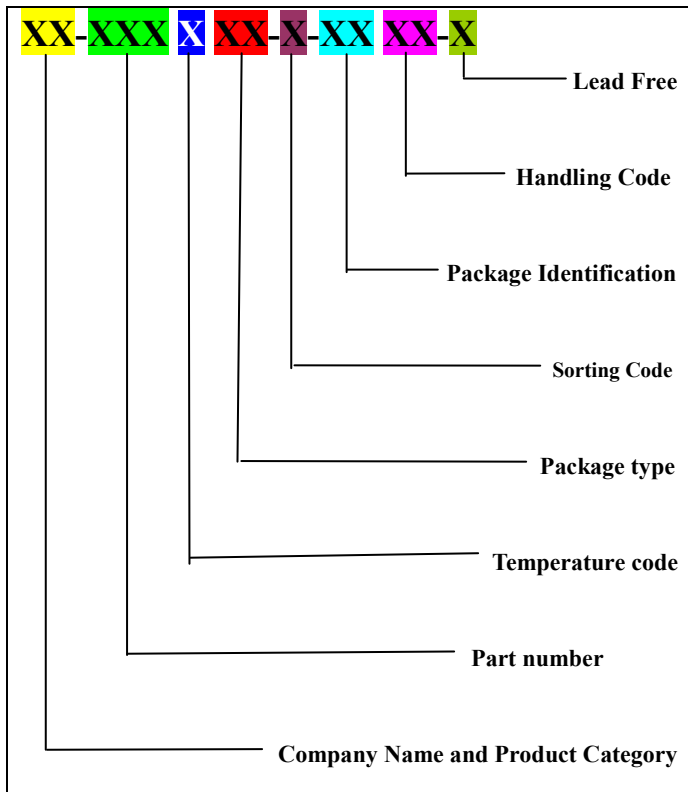
Applications

- High temperature Fan motor
- 3 phase BLDC motor application
- Speed sensing
- Position sensing
- Current sensing
- Revolution counting

Function Diagram



Ordering Information

	Company Name and Product Category MH:MST Hall Effect/MP:MST Power MOSFET Part number 181,182,281,481,185,248,249... Temperature range E: 85 Degree C, K: 125 Degree C, L: 150 Degree C Package type UA:TO-92S,SO:SOT-23,ST:Tsof-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
182	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

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

Absolute Maximum Ratings

At (Ta=25°C)

Supply Voltage, V_{DD}	24V
Reverse Voltage, V_{DD}	-0.3V
Output Voltage, V_{out}	24V
Output Current, I_{out}	50mA
Reverse Voltage , V_{OUT}	-0.3V
Operating Temperature Range, T_A “E” version	-40°C to 85°C
Operating Temperature Range, T_A “K” version	-40°C to 125°C
Storage Temperature, T_s	-55°C to 150°C
Magnetic Flux Density	No limit

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

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		3.0		24.0	Volts
Supply Current	$B < B_{op}$			5.0	mA
Output Saturation Voltage	$I_{OUT} = 20\text{ mA}$, $B > B_{OP}$			500.0	mV
Output Leakage Current	I_{OFF} $B < B_{RP}$, $V_{OUT} = 24\text{V}$			10.0	μA
Output Rise Time	$V_{DD} = 12\text{V}$, $R_L = 1.1\text{K}$, $C_L = 20\text{pF}$		0.04		μS
Output Fall Time	$R_L = 820\text{ ohm}$; $C_L = 20\text{pF}$		0.18		μS

MH 182 Magnetic Specifications

DC Operating Parameters

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

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Operate Point	Bop		10		60	Gauss
Release Point	Brp		-60		-10	Gauss
Hysteresis	Bhys			70		Gauss

MH182- α Magnetic Specifications

DC Operating Parameters

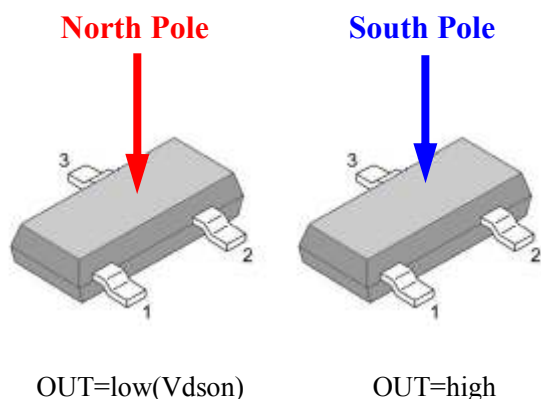
$T_A=25^{\circ}\text{C}$, $V_{SUPPLY}=12\text{V}$

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Operate Point	Bop		10		40	Gauss
Release Point	Brp		-40		-10	Gauss
Hysteresis	Bhys			70		Gauss

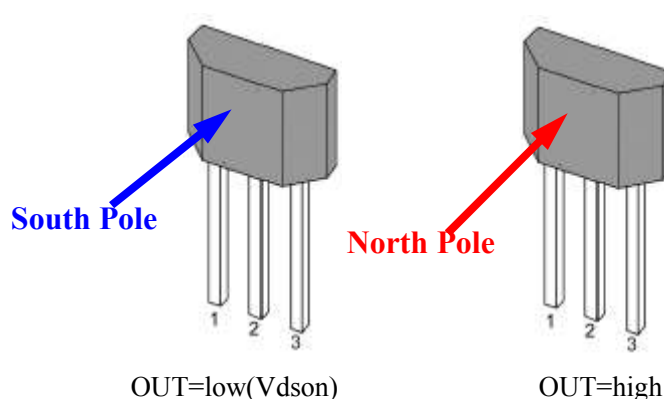
Output Behavior versus Magnetic Pole

DC Operating Parameters $T_a = -40$ to 125°C , $V_{dd} = 3.0$ to 24V (unless otherwise specified)

Parameter	Test condition(SO)	OUT(SO)	Test condition(UA)	OUT(UA)
South pole	$B < B_{rp}$	High	$B > B_{op}$	Low
North pole	$B > B_{op}$	Low	$B < B_{rp}$	High

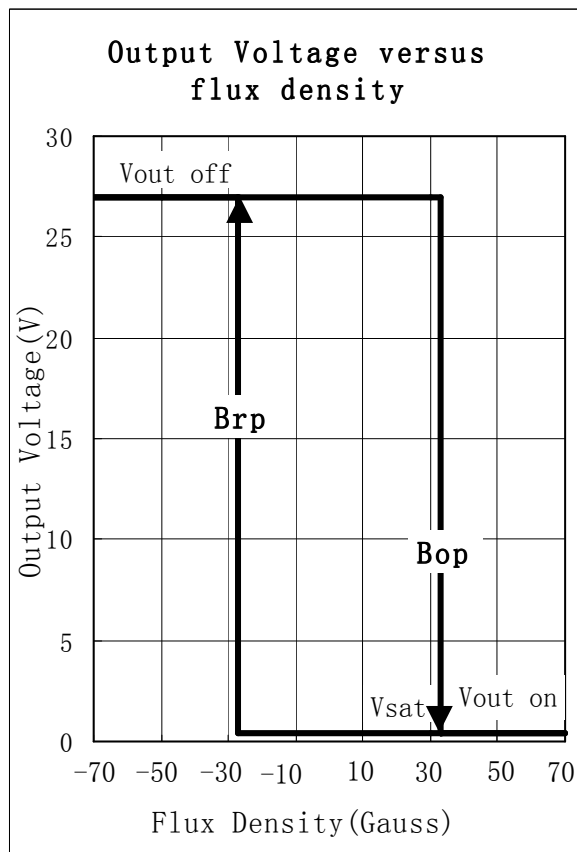
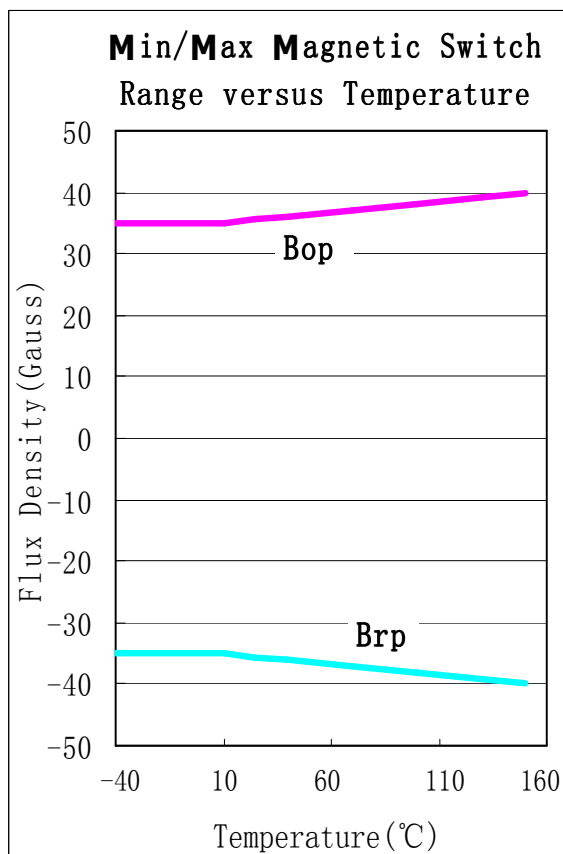
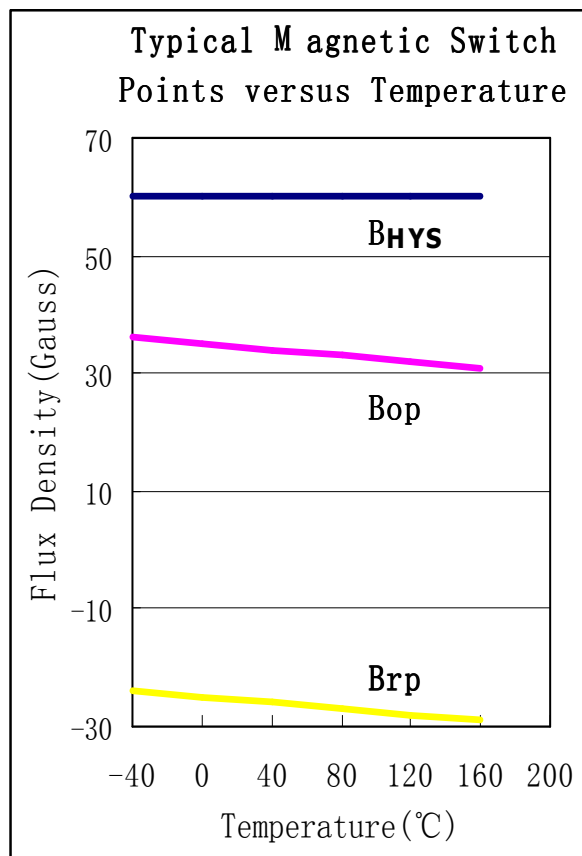
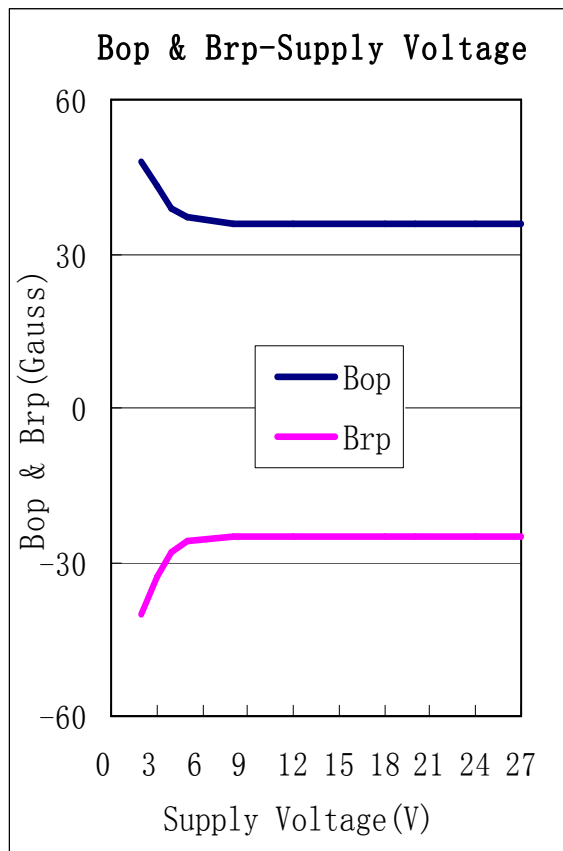


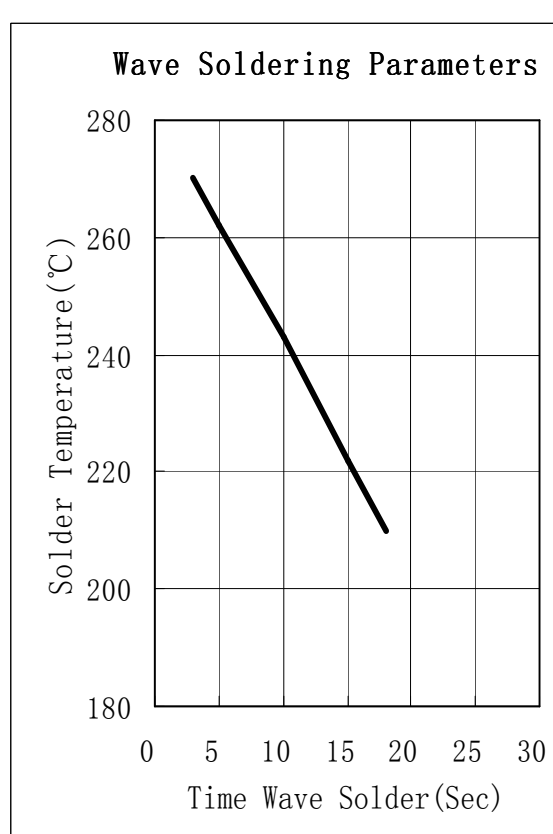
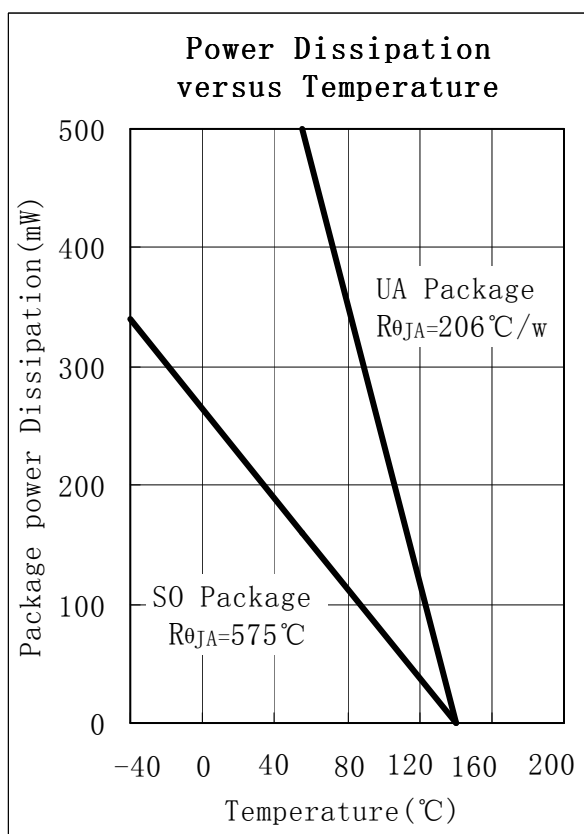
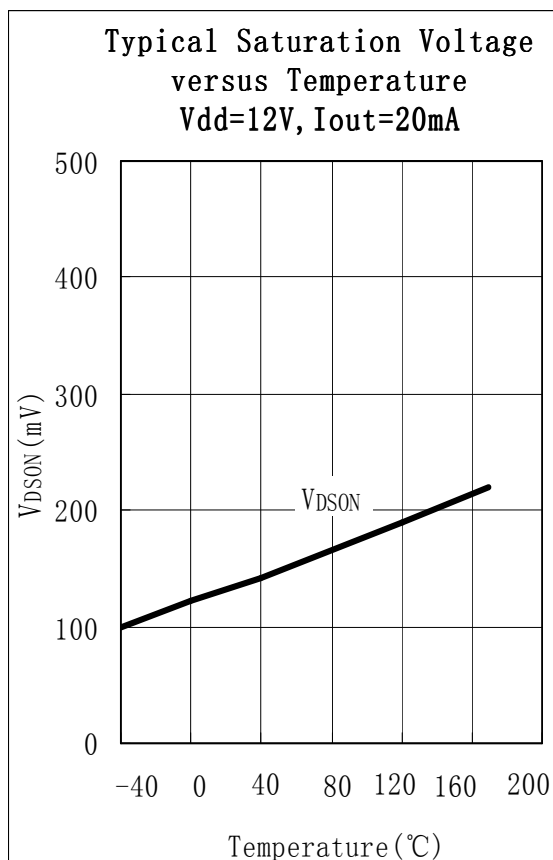
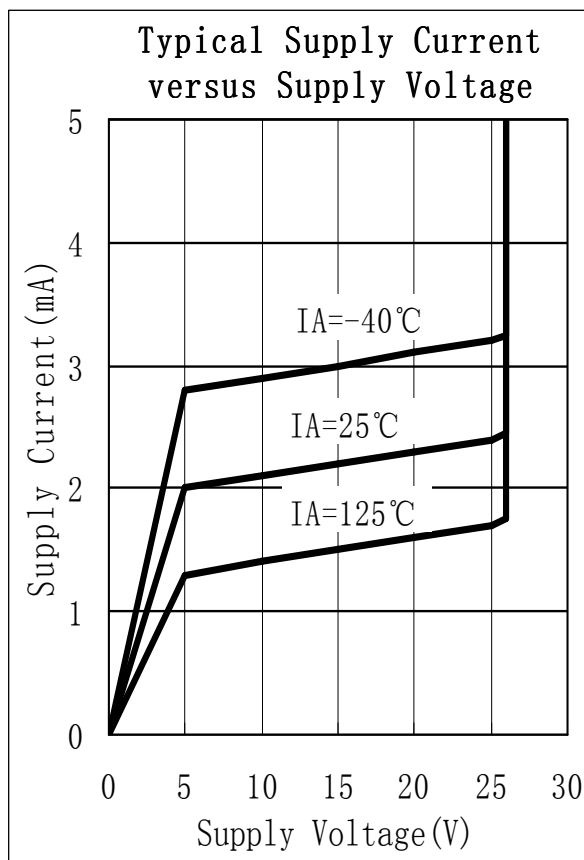
SO package



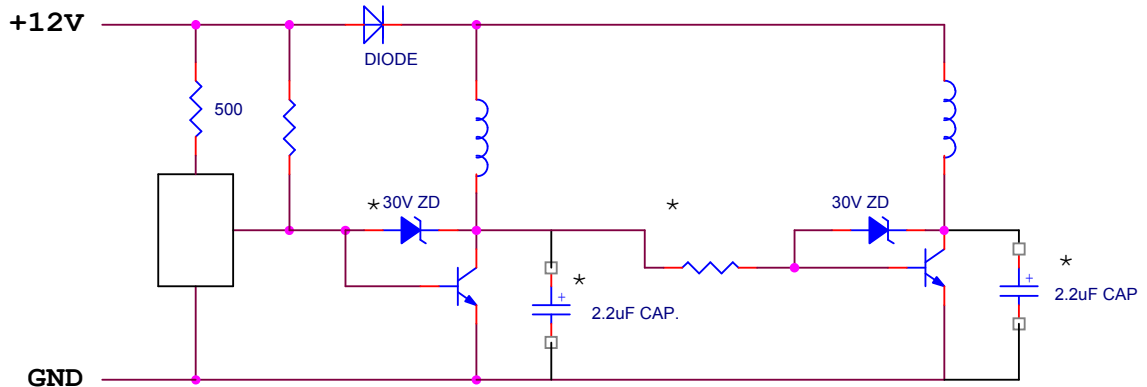
UA package

Performance Graph





Typical application circuit – Fan motor

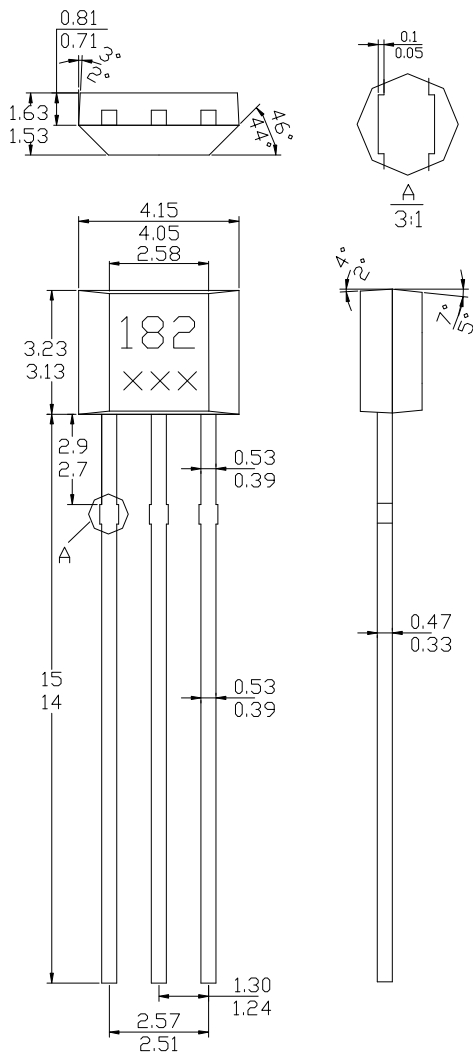


Note

* ZD or * CAP must be connected for protect reverse voltage apply to Hall IC.

Sensor Location, package dimension and marking

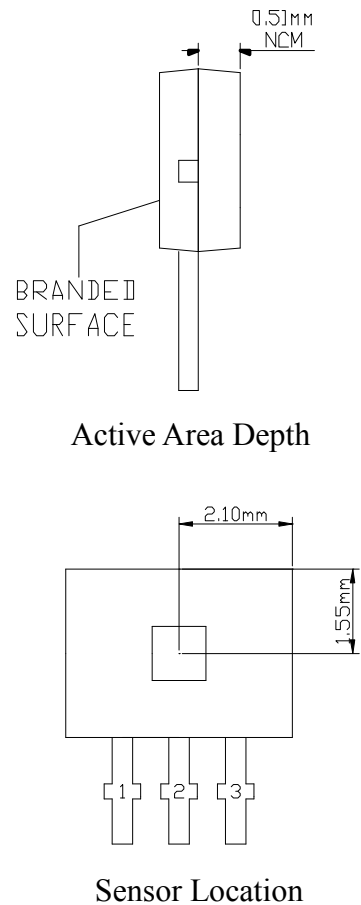
MH 182 UA-01 Package



NOTES:

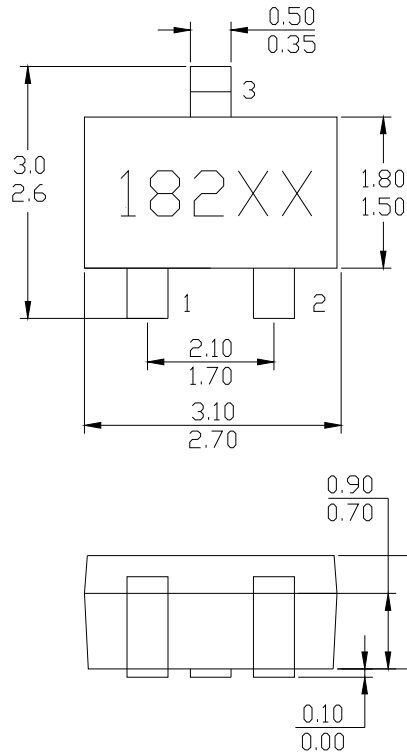
- 1).Controlling dimension: mm
- 2).Leads must be free of flash and plating voids
- 3).Do not bend leads within 1 mm of lead to package interface.
- 4).PINOUT:

Pin 1	V _{DD}
Pin 2	GND
Pin 3	Output



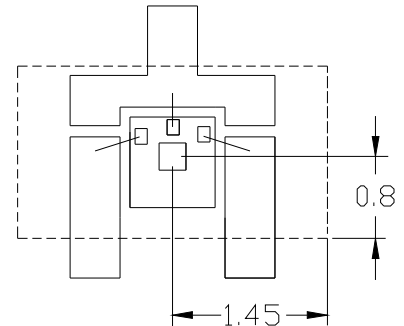
MH 182 SO-05(SOT-23) Dimensions

(Top view)



SOT-23 Hall Chip location

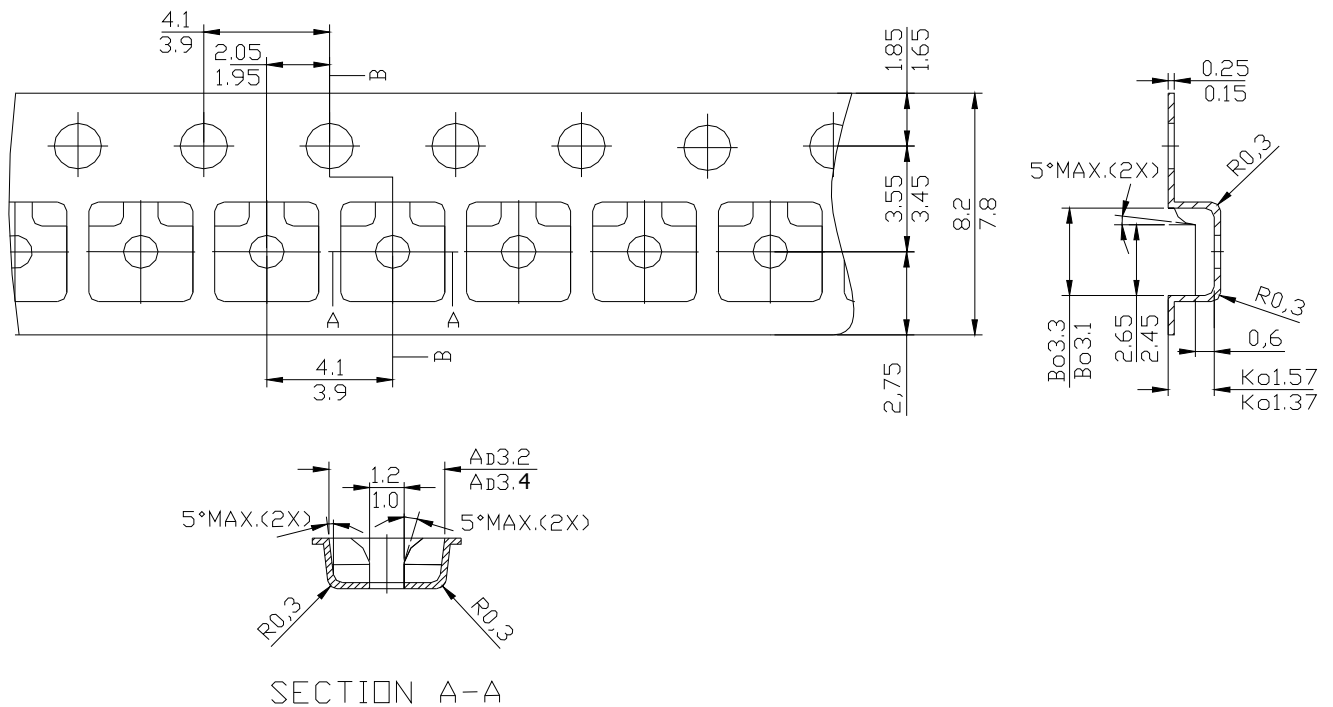
(Bottom view)

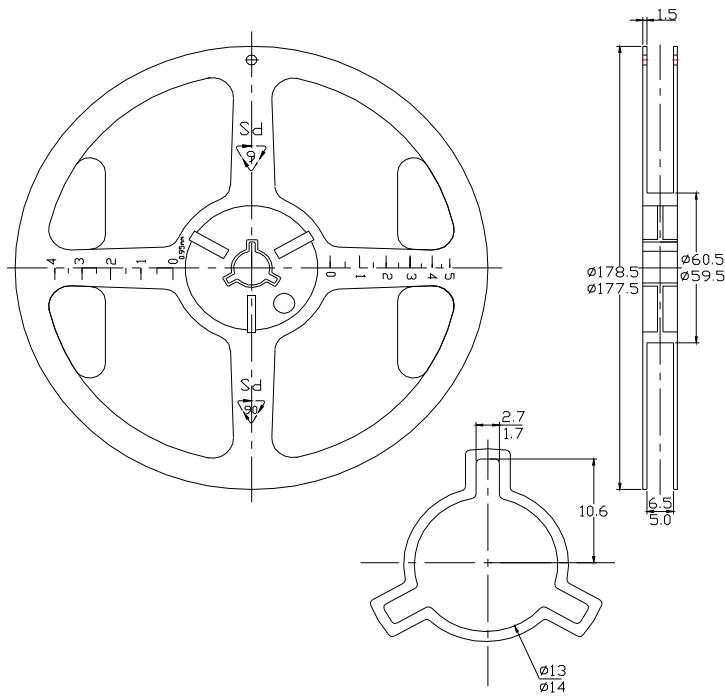


NOTES:

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.

Tape On Reel Dimension for Sot 23 package





NOTES:

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