MH632 Hall-effect sensor is a temperature stable, stress-resistant sensor. 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.

MH632 includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, Totem pole output, thermal shutdown and high ESD protection. The Totem pole output could save a pull-high resistance in application circuit, thus save the space and cost. This type output also has larger drive capability and faster response speed.

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.

MH632 is rated for operation between the ambient temperatures –40℃ and 85℃ for the E temperature range, and –40℃ to 125℃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 ultra mini SIP for through-hole mounting.

Packages is Halogen Free standard and which have been verified by third party lab.

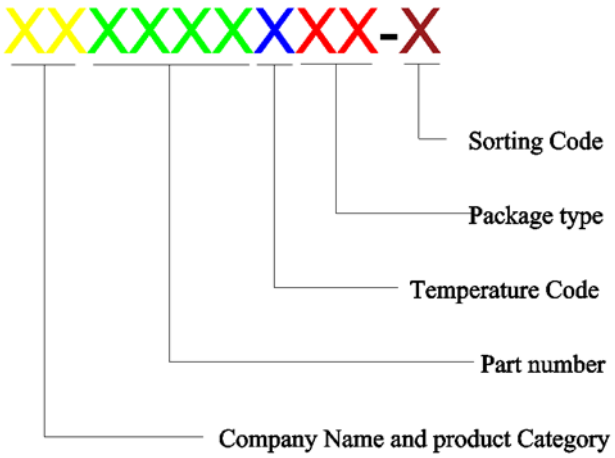
Features and Benefits

- DMOS Hall IC Technology.
- Reverse bias protection on power supply pin.
- Chopper stabilized amplifier stage.
- Optimized for BLDC motor applications.
- Reliable and low shifting on high Temp condition.
- Good ESD Protection.
- 100% tested at 125℃ for K.
- Custom sensitivity / Temperature selection are available.
- RoHS compliant 2011/65/EU and Halogen Free

Applications

- High temperature Fan motor
- 3 phase BLDC motor application
- Speed sensing
- Position sensing
- Current sensing
- Revolution counting
- Solid-State Switch
- Linear Position Detection
- Angular Position Detection
- Proximity Detection
- High ESD Capability

Ordering Information



Company Name and Product Category

MH:MST Hall Effect/MP:MST Power IC

Part number

181,182,183,184,185,248,249,276,477,381,381F,381R,382…..

If part # is just 3 digits, the forth digit will be omitted.

Temperature range

E: 85 ℃, I: 105 ℃, K: 125 ℃, L: 150 ℃

Package type

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

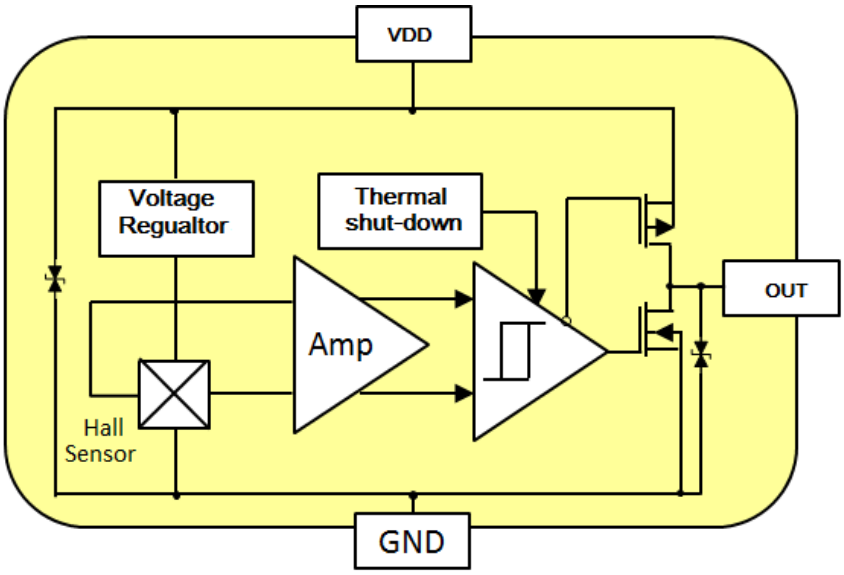
Sorting

α, β,Blank…..

Part No.	Temperature Suffix	Package Type
MH632KSO	K (-40°C to +125°C)	SO (SOT-23)
MH632KUA	K (-40°C to +125°C)	UA (TO-92S)

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

Functional Diagram



Absolute Maximum Ratings *At(Ta=25℃)*

Characteristics		Values	Unit
Supply Voltage (V_{DD})		24	V
Output Voltage (*Vout*)		24	V
Reverse Voltage (V_{DD} / *Vout*)		-0.3	V
Output current (I_{SINK})		100	mA
Operating Temperature Range (T_A)	"E" Class	-40 ~ +85	℃
	"K" Class	-40 ~ +125	℃
Storage temperature Range (T_S)		-65 ~ +150	℃
Maximum Junction Temp (T_J)		150	℃
Thermal Resistance	(θ_{JA}) UA / SO	206 / 543	℃ /w
	(θ_{JC}) UA/ SO	148 / 410	℃/w
Package Power Dissipation (P_D)		606 / 230	mW

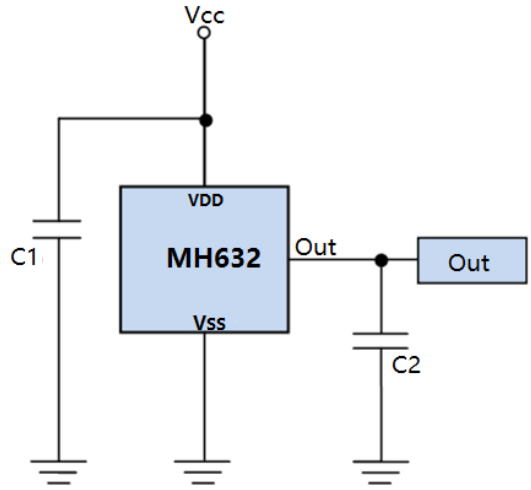
***Note**: Do not apply reverse voltage to* V_{DD} and V_{OUT} *Pin, It may be caused for Miss function or damaged device.*

Electrical Specifications

DC Operating Parameters： TA=+25℃, VDD=12V

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage (V_{DD})	Operating	3.5		20	V
Supply Current (I_{DD})	B<BOP		3.5	8.0	mA
Output High Voltage (V_{OH})	I_{OUT}=50mA(Source)	V_{DD}-0.2			V
Output Low Voltage (V_{OL})	I_{OUT}=50mA(Sink)			0.2	mV
Output Rise Time (T_R)	CL =20pF			5	uS
Output Fall Time (T_F)	CL =20pF			1.5	uS
Thermal shut-down Temp		130			℃
Thermal shut-down Hysteresis			30		℃
Electro-Static Discharge	HBM	4			KV

Typical application circuit



C1：10nF

C2：1nF

MH632 Magnetic Specifications

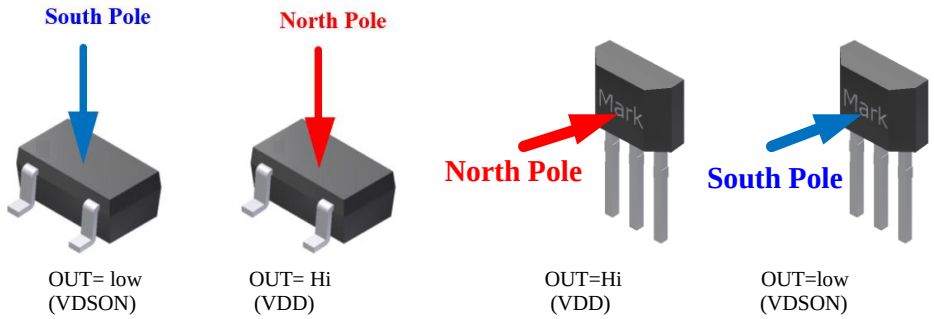
DC Operating Parameters： Ta=+25℃, VCC=12V

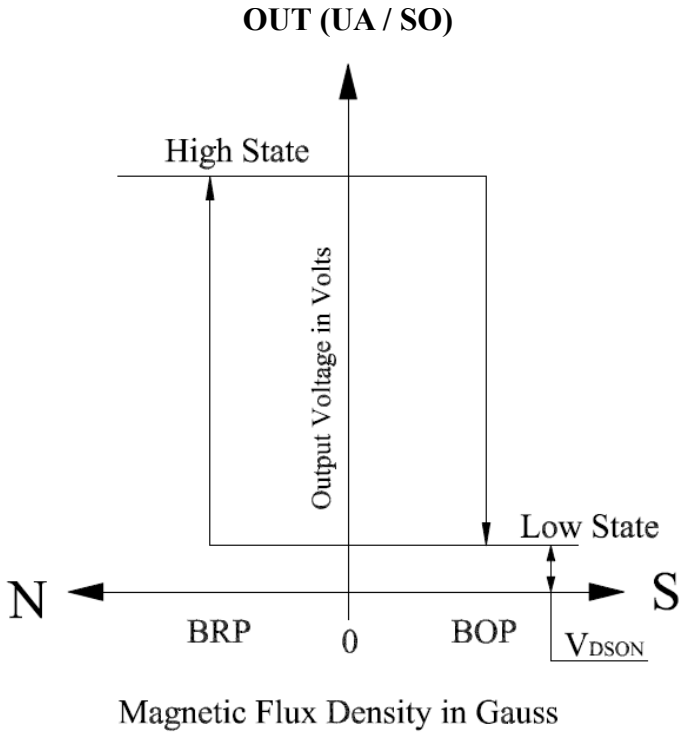
Parameter	Symbol	Min.	Typ.	Max.	Units
Operate Point	B_{OP}	10		60	Gauss
Release Point	B_{RP}	-60		-10	Gauss
Hysteresis	B_{HYS}		50		Gauss

Output Behavior versus Magnetic Pole

DC Operating Parameters： Ta = -40 to 125℃, VDD = 3.5 to 18V

Parameter	Test condition	UA /SO OUT
North pole	B>B_{OP}	Hi
South pole	B<B_{RP}	Low

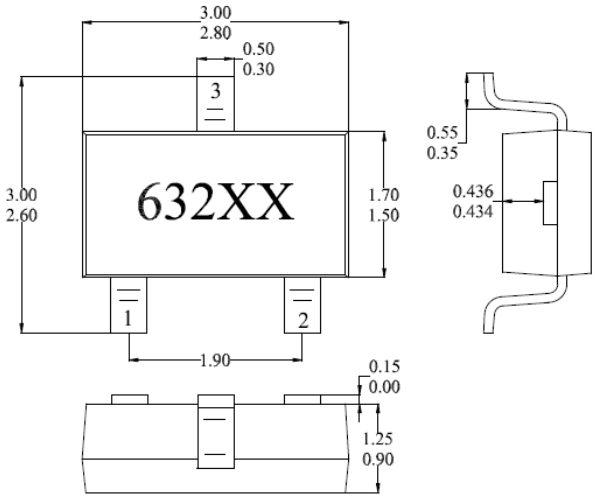




Sensor Location, Package Dimension and Marking

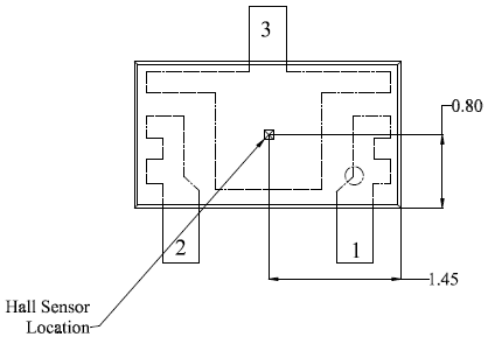
SO Package

(Top View)



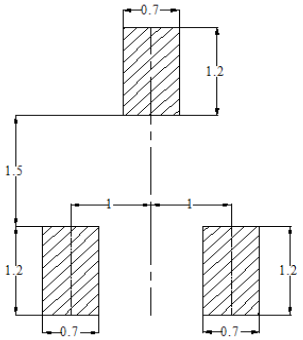
Hall Plate Chip Location

(Bottom View)



Output Pin Assignment

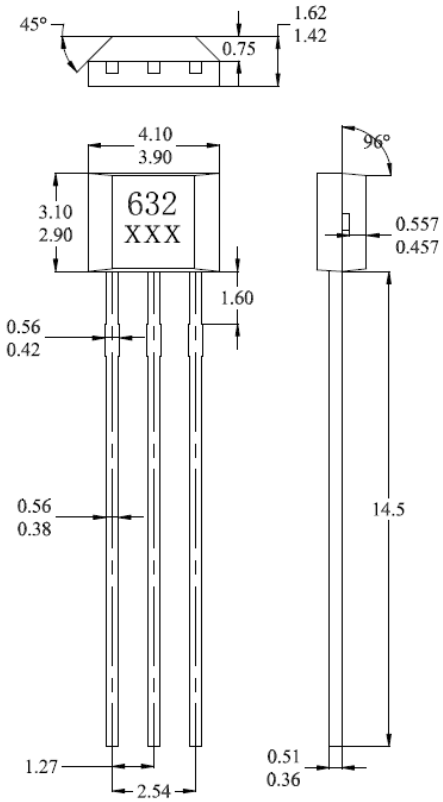
(Top view)



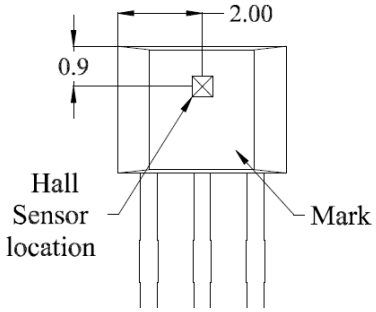
NOTES:

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

UA Package



Hall Chip location



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

Output Pin Assignment

(Top view)