

MH195 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, 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.

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 4V to 30 V.

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

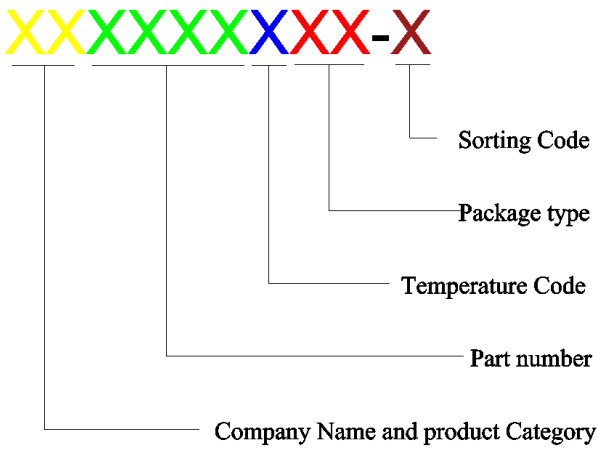
Features and Benefits

- Optimized for BLDC motor applications
- High Peak Voltage of 65V
- 100% tested at 125 °C for K.
- Temperature compensation function

Applications

- High temperature Fan motor
- 3 phase BLDC motor application
- Fan motor application
- Speed sensing
- Revolution counting
- E-Bike

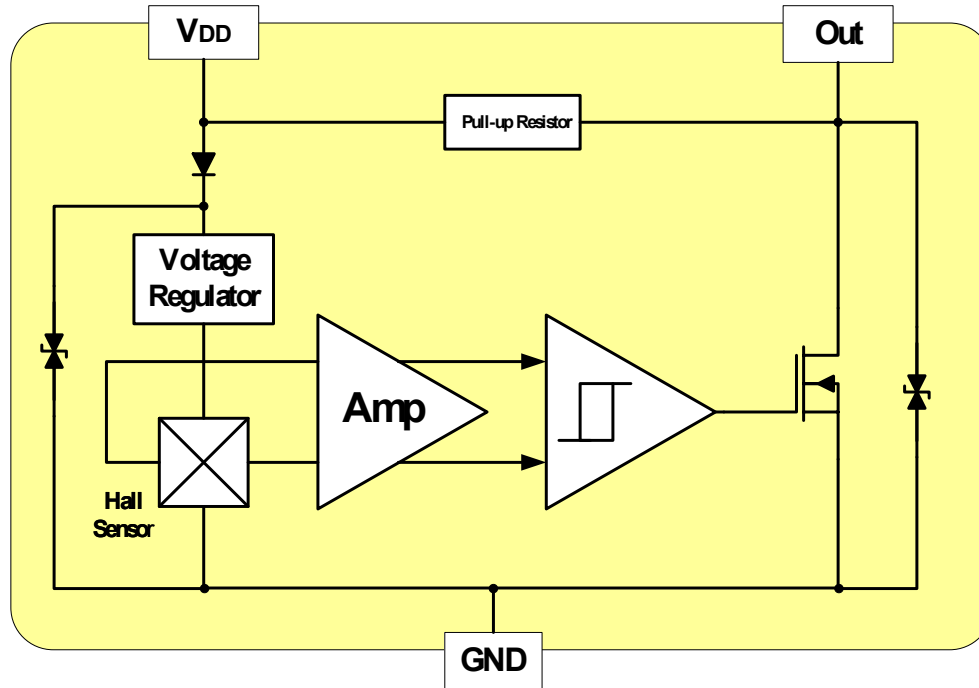
Ordering Information

	<p>Company Name and Product Category MH:MST Hall Effect/MP:MST Power IC</p> <p>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.</p> <p>Temperature range E: 85 °C, I: 105 °C, K: 125 °C, L: 150 °C</p> <p>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</p> <p>Sorting α,β,Blank.....</p>
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Part No.	Temperature Suffix	Package Type
MH195KUA	K (-40°C to + 125°C)	UA (TO-92S)
MH195KSO	K (-40°C to + 125°C)	SO (SOT-23)
MH195EUA	E (-40°C to + 85°C)	UA (TO-92S)
MH195ESO	E (-40°C to + 85°C)	SO (SOT-23)

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

Functional Diagram



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

Characteristics		Values	Unit
Supply voltage, (V_{DD})		65	V
Output Voltage, (V_{out})		65	V
Reverse Voltage, (V_{DD} / V_{out})		-14/-0.3	V
Output current, (I_{SINK})		20	mA
Operating Temperature Range, (T_A)	“E” Class	-40 ~ +85	°C
	“K” Class	-40 ~ +125	°C
Storage temperature range, (T_S)		-65 ~ +150	°C
Maximum Junction Temp, (T_J)		150	°C
Thermal Resistance	(θ_{JA}) UA / SO	206 / 543	°C/W
	(θ_{JC}) UA / SO	148 / 410	°C/W
Package Power Dissipation, (P_D) UA / SO		606 / 230	mW

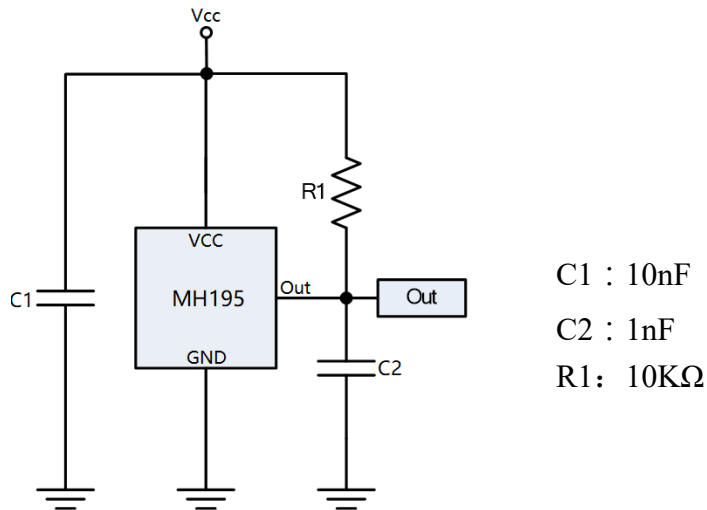
Note: Do not apply reverse voltage to V_{DD} and V_{OUT} Pin, It may be caused for Miss function or damaged device.

Electrical Specifications

DC Operating Parameters : $T_A = +25^\circ\text{C}$, $V_{DD} = 12\text{V}$

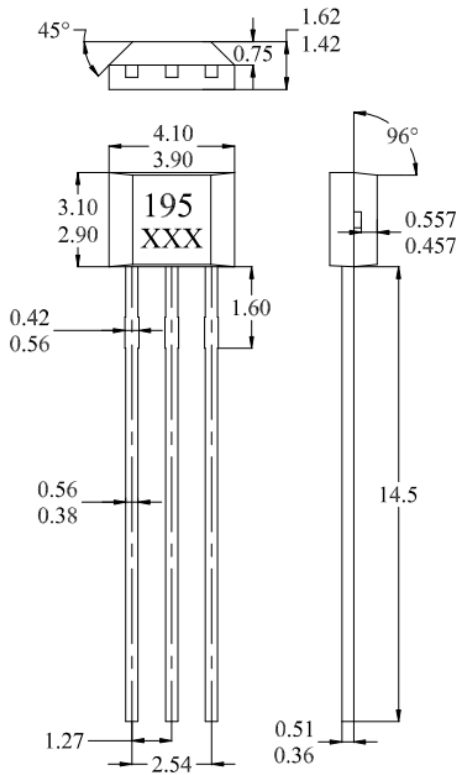
Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{CC})	Operating	4.0		30.0	V
Supply Current, (I_{CC})	$B < B_{OP}$		3.0	7.0	mA
Output Saturation Voltage, (V_{SAT})	$I_{OUT} = 5\text{mA}, B > B_{OP}$			500.0	mV
Output Leakage Current, (I_{off})	$I_{OFF} B < B_{RP}, V_{OUT} = 12\text{V}$			10.0	uA
Output Rise Time, (T_R)	$R_L = 820\Omega, C_L = 20\text{pF}$		1.5		uS
Output Fall Time, (T_F)	$R_L = 820\Omega; C_L = 20\text{pF}$		1.5		uS
Electro-Static Discharge	HBM(ACEQ-100)	4			KV
Operate Point, (B_{OP})	UA(SO)	10(-110)		110(-10)	Gauss
Release Point, (B_{RP})	UA(SO)	-110(10)		-10(110)	Gauss
Hysteresis, (B_{HYS})	$ B_{OP} - B_{RP} $		100		Gauss

Typical application circuit



Sensor Location, Package Dimension and Marking

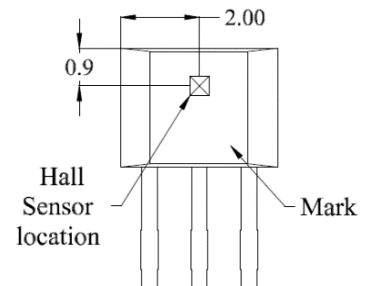
UA Package



NOTES:

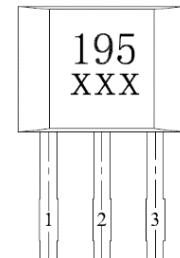
1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. Do not bend leads within 1 mm of lead to package interface.
4. PINOUT:
Pin 1 VDD
Pin 2 GND
Pin 3 Output
5. XXX; 1st X=Year;
2nd and 3rd XX=Week

Hall Chip location

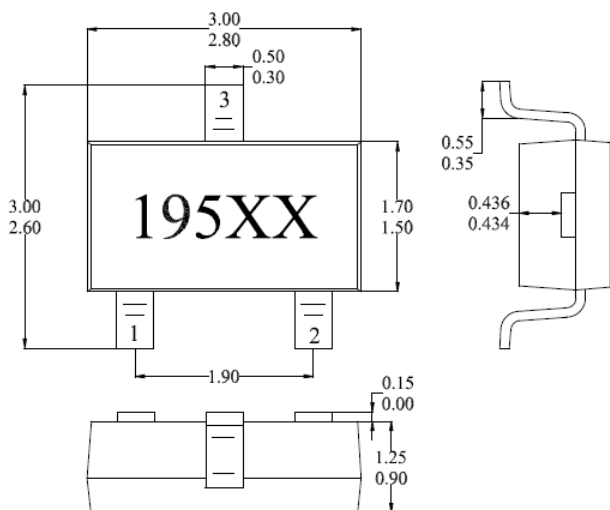


Output Pin Assignment

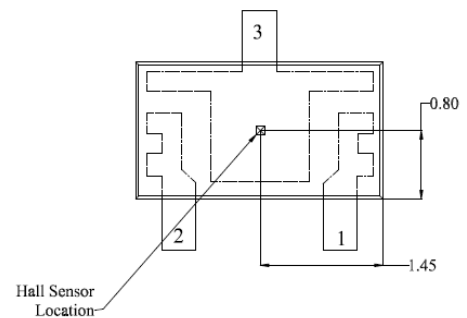
(Top view)



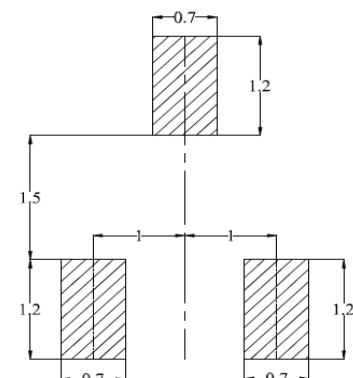
SO Package (Top View)



Hall Plate Chip Location (Bottom view)



(For reference only) Land Pattern



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
4. XX: Date Code, Refer to DC table