MH275 Hall effect switch is a temperature stable, Superior high-temperature performance is made possible through a dynamic offset cancellation that utilizes chopper-stabilization.

MH275 includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, and open drain output. Advanced DMOS 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 omni-polar magnetic fields for operation.

MH275 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 types 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.

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

Features and Benefits

- DMOS Hall IC Technology.
- Operation range from 2.5V to 26V .
- Omni polar, output switches with absolute value of North or South pole from magnet.
- Reverse bias protection on power supply pin.
- High Sensitivity for reed switch replacement applications.
- Low sensitivity drift in crossing of Temp range.
- High ESD Protection, HBM>±4KV(min)
- Output Current limit in 100mA.
- RoHS compliant 2011/65/EU and Halogen Free

Applications

- Solid state switch.
- Limit switch.
- Current limit.
- Interrupter.
- Magnet proximity sensor for reed switch replacement.

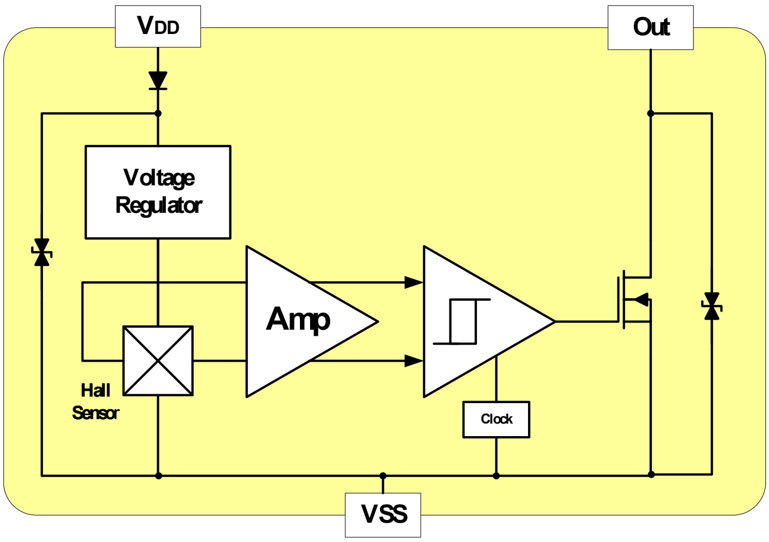
Ordering Information

XXXXXXXXX-X	
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** 181,182,183,184,185,248,249,276,477,381,381F,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) **Sorting** α,β,Blank…..

Part No.	Temperature Suffix	Package Type
MH275KUA	K (-40°C to + 125°C)	UA (TO-92S)
MH275EUA	E (-40°C to + 85°C)	UA (TO-92S)
MH275KSO	K (-40°C to + 125°C)	SO (SOT-23)
MH275ESO	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 (Ta=25℃)

Characteristics		Values	Unit
Supply voltage, (V_{DD})		28	V
Output Voltage, (V_{OUT})		28	V
Reverse Voltage, (V_{DD} / V_{OUT})		-28/-0.3	V
Output current, (I_{SINK})		25	mA
Operating Temperature Range, (T_A)	"E" Class	-40 ~ +85	℃
	"K" Class	-40 ~ +125	℃
Storage temperature Range, (T_S)		-55 ~ +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

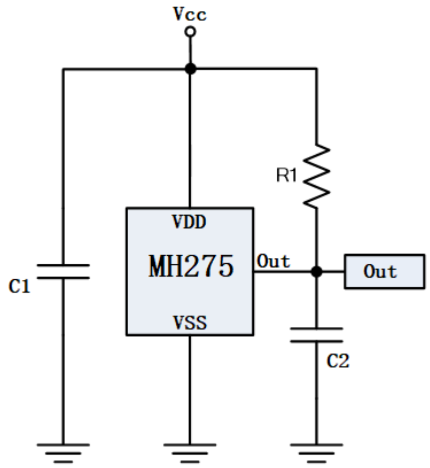
***Note**: Do not apply reverse voltage to* V_{DD} *and* V_{OUT} *Pin, It may be caused for Miss function or damaged device.*

Electrical Specifications

DC Operating Parameters ： T_A=+25℃, V_{DD}=12V

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{DD})	Operating	2.5		26.0	V
Supply Current, (I_{DD})	B<B_{OP}		2.5	5.0	mA
Output Saturation Voltage, (V_{DSON})	I_{OUT}=20mA, B>B_{OP}		300	500.0	mV
Output Leakage Current, (I_{OFF})	I_{OFF} B<B_{RP}, V_{OUT} = 20V			10.0	uA
Output Limited Current, (I_{CO})	B>B_{OP}		100		mA
Power-On Time, (T_{PO})	Power-On			100	uS
Output Switch Time, (T_{SW})	Operating			100	uS
Output Switch Frequency, (F_{SW})	Operating	5			kHz
Output Rise Time, (T_R)	R_L=1KΩ, C_L =20pF		0.1	0.45	uS
Output Fall Time, (T_F)	R_L=1kΩ; C_L =20pF		6.0	10	uS
Electro-Static Discharge	HBM	4			KV
Operate Point, B_{OPS}(B_{OPN})	B>B_{OPS}(B<B_{OPN}), V_{OUT} On	140(-250)		250(-140)	Gauss
Release Point, B_{RPS}(B_{RPN})	B<B_{RPS}(B>B_{RPN}), V_{OUT} Off	95(-205)		205(-95)	Gauss
Hysteresis, (B_{HYS})	|B_{OPX}- B_{RPX}|		45		Gauss

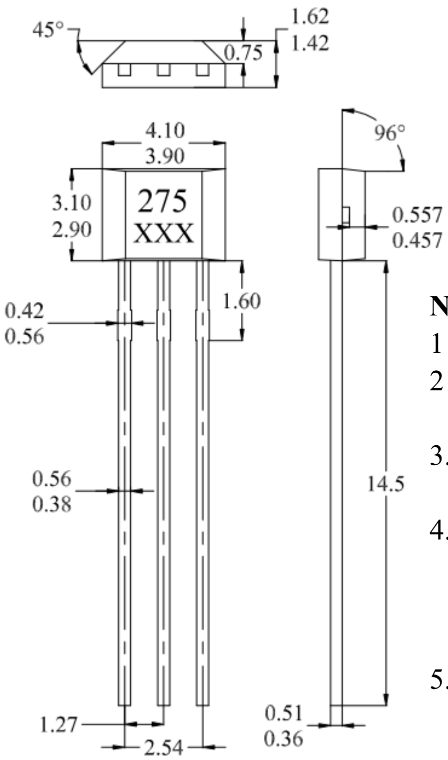
Typical application circuit



C1 ： 10nF
C2 ： 1nF
R1 ： 1KΩ

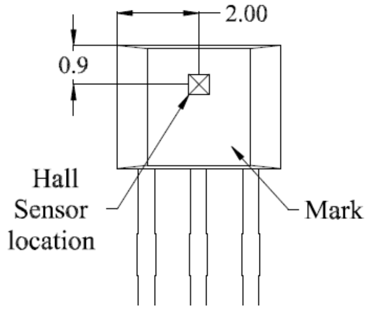
Sensor Location, Package Dimension and Marking

UA Package

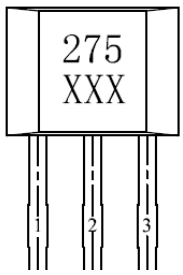


NOTES:
1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. Do not bend leads within 1 mm of lead to package interface.
4. PINOUT:
   Pin 1 VDD
   Pin 2 GND
   Pin 3 Output
5. XXX; 1st X=Year; 2nd and 3rd XX=Week

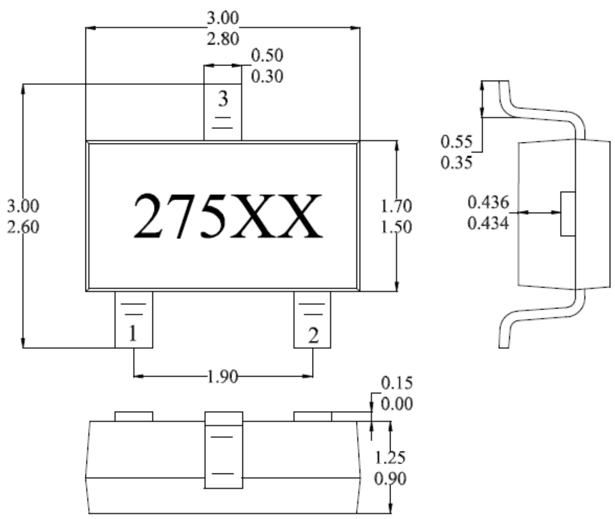
Hall Chip location



Output Pin Assignment (Top view)

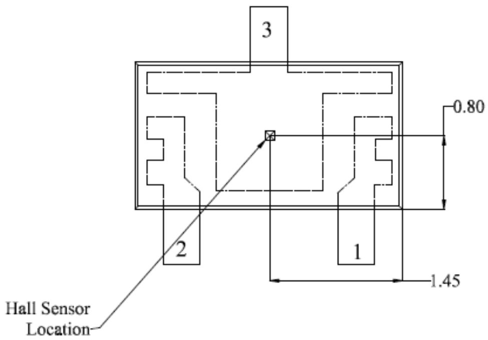


Package (SOT-23) (Top View)



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
4. XX: Date Code, Refer to DC table

Hall Plate Chip Location (Bottom view)



(For reference only) Land Pattern