SH273 Omni-polar Hall Effect Switch with Built-in Pull-up Resistor

SH273 is a medium sensitivity Hall effect switch designed in advanced DMOS technology. The following are integrated on a single silicon chip: voltage regulator, ESD protection, Hall voltage generator, chopper stabilized small-signal amplifier, Schmitt trigger, open-drain output and built-in pull-up resistor. Since the pull-up resistor is built, external pull-up resistor is not required. Superior high-temperature performance is made possible through a dynamic offset cancellation that utilizes chopper-stabilization.

Features

- Medium Sensitivity
- Wide operating voltage (2.5～26V)
- Built-in pull-up resistor (10kΩ)
- Stable temperature characteristics
- Good ESD protection (HBM4kV min.)

Typical Applications

- Solid-state switch
- Lid close sensor for battery powered devices
- Water meter
- Floating meter

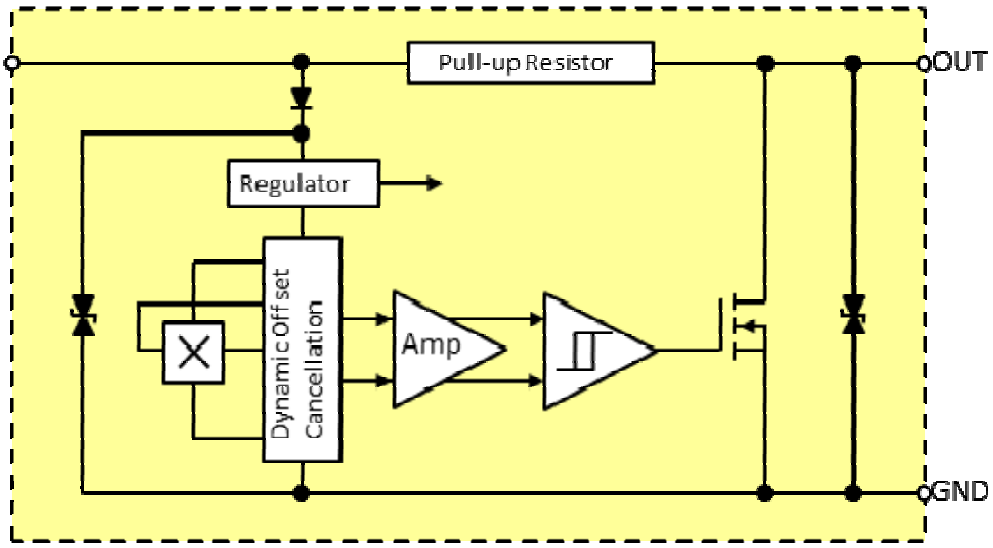
Ordering Information

Model No.	Part No.	Temperature	Package	—	Packing
SH273KUA	SH273	K	UA		
SH273ESO-TR	SH273	E	SO	—	TR

Legend:

Temperature Code:	E (-40℃～85℃), K (-40℃～125℃)
Package Code:	UA (TO92S), SO (SOT23)
Packing Code:	Brank (Balk, 500pcs/Bag), TR (Tape & Reel, 3,000pcs/Reel)

Functional Block Diagram



Absolute Maximum Ratings (T_A=25℃)

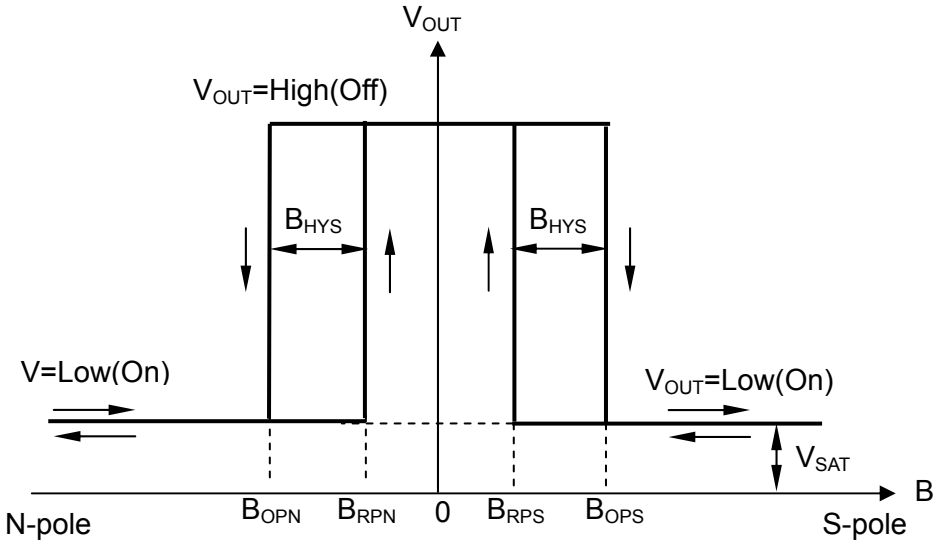
Parameter	Symbol	Value Min	Value Max	Unit
Supply Voltage	V_{DD}	-0.3	28	V
Output Voltage	V_{OUT}	-0.3	28	V
Output Current	I_{SINK}	-	13	mA
Operating Temperature Range (E/K)	T_A	-40	85/125	℃
Storage Temperature Range	T_S	-65	150	℃
Maximum Junction Temperature	T_J		150	℃
Power Dissipation (UA/SO)	P_D		606/230	mW

Electrical Characteristics (T_A=25℃, V_{DD}=12V)

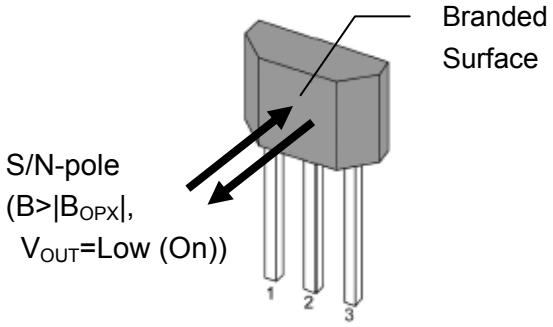
Parameter	Test Condition	Symbol	Value Min	Value Typ	Value Max	Unit
Supply Voltage		V_{DD}	2.5	-	26	V
Consumption Current	V_{OUT}=High	I_{DD}	-	-	5	mA
Output Saturation Voltage	V_{OUT}=Low	V_{SAT}	-	0.3	0.5	V
Output Leakage Current	V_{OUT}=High (20V)	I_{LEAK}	-	-	10	μA
Power-on Time		t_{on}	-	-	50	μs
Delay Time		t_d	-	-	150	μs
Output Rise time	R_L=1kΩ, C_L=20pF	t_R	-	0.04	0.45	μs
Output Fall time	R_L=1kΩ, C_L=20pF	t_F	-	0.18	0.45	μs
Built-in Pull-up Resistor		R_P		10		kΩ
Electro-Static Discharge	HBM		4	-	-	kV

Magnetic Characteristics (T_A=25℃, V_{DD}=12V)

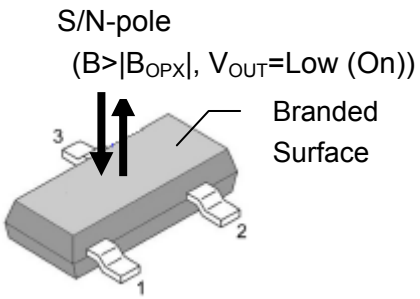
Parameter	Test Condition	Symbol	Value Min	Value Typ	Value Max	Unit
Operate Point	S pole to branded side	B_{OPS}	5	-	11	mT
	N pole to branded side	B_{OPN}	-11	-	-5	mT
Release Point	S pole to branded side	B_{RPS}	3	-	9	mT
	N pole to branded side	B_{RPN}	-9	-	-3	mT
Hysteresis	| B_{OPX} - B_{RPX} |	B_{HYS}	-	2	-	mT



Switching Characteristics



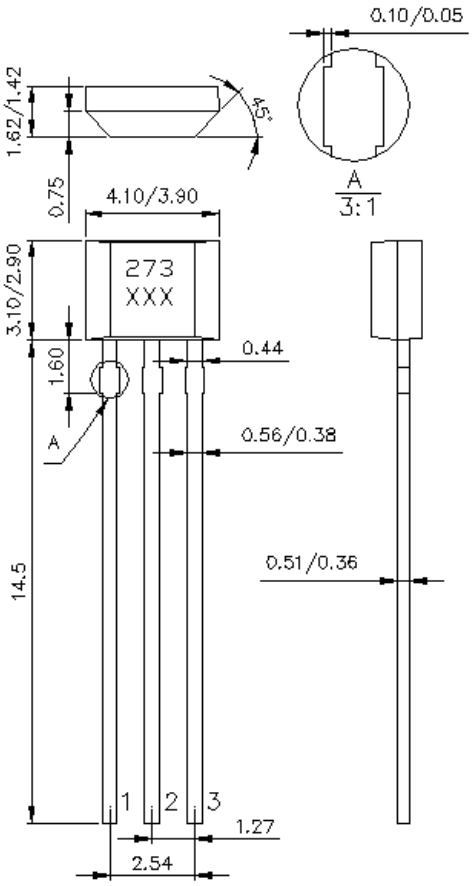
UA-package



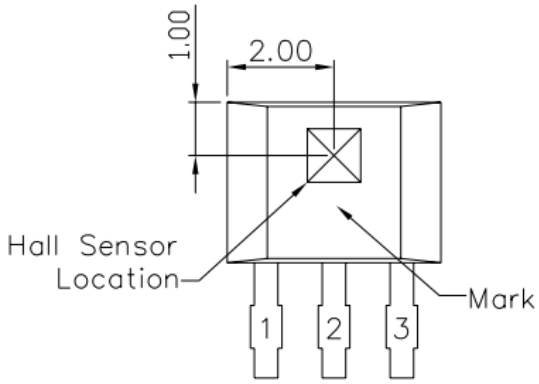
SO-package

Sensor Location, Package Dimension and Marking

UA-package: TO92S



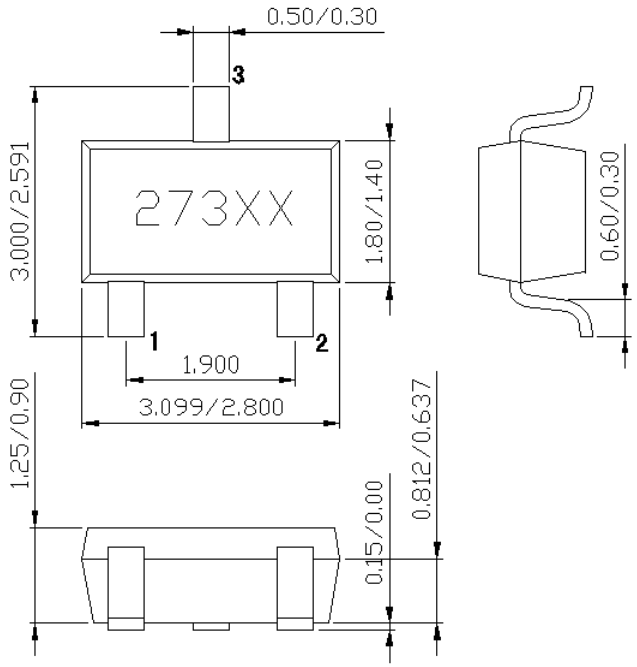
Hall sensor location



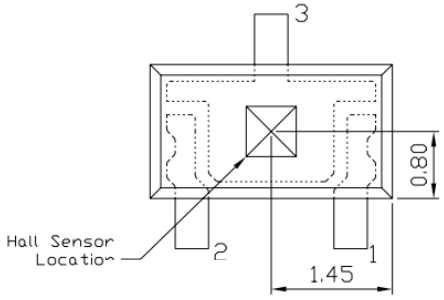
NOTES:

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 V_{DD}
   Pin 2 GND
   Pin 3 Output

SO-package: SOT23
(Upper View)



Hall sensor location
(Bottom View)



NOTES:

1. PINOUT:
   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.