

### SH173 Hall Effect Latch with Built-in Pull-up Resistor

SH173 is a high sensitivity Hall effect latch 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

- Dynamic offset cancellation
- High sensitivity (3mT typ.)
- Built-in pull-up resistor (10kΩ)
- Stable temperature characteristics
- Good ESD protection (HBM4kV min.)
- Reverse bias protection

#### Typical Applications

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

#### Order Information

Order No.	Part No.	Temperature	Package	—	Packing
SH173KSO-TR	SH173	K	SO	—	TR

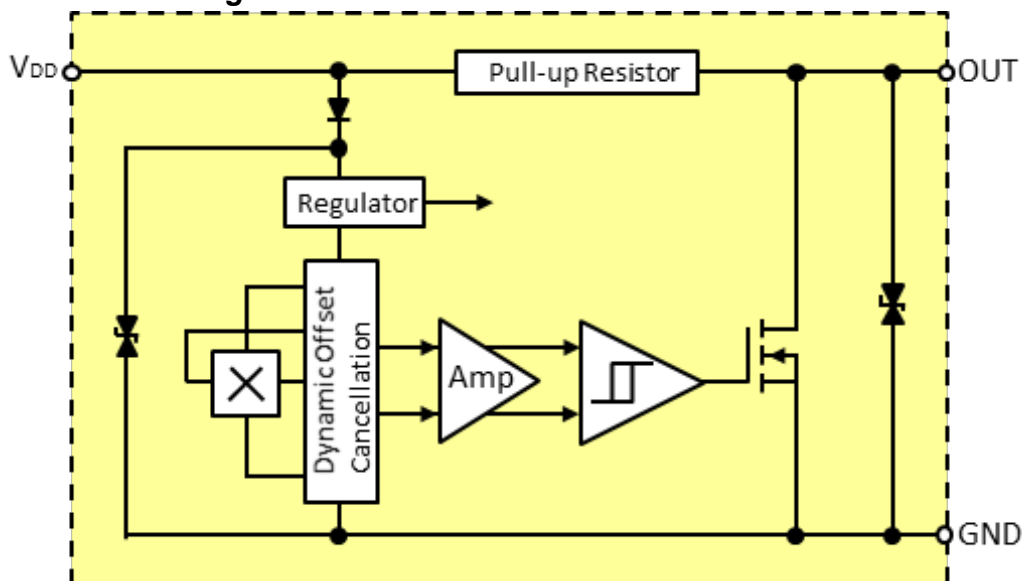
Legend:

Temperature Code: K (-40°C~125°C)

Package Code: SO (SOT23)

Packing Code: TR (Tape & Reel, 3,000pcs/Reel)

#### Functional Block Diagram



**Absolute Maximum Ratings** ( $T_A=25^{\circ}\text{C}$ )

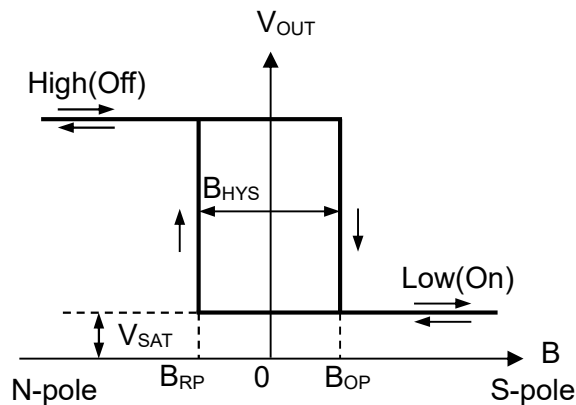
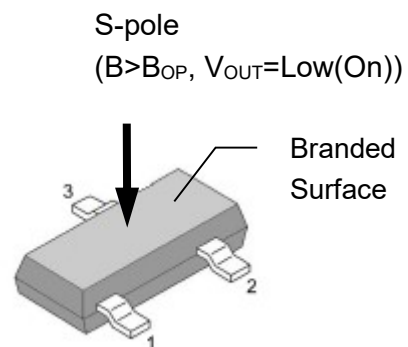
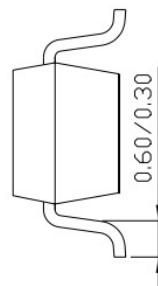
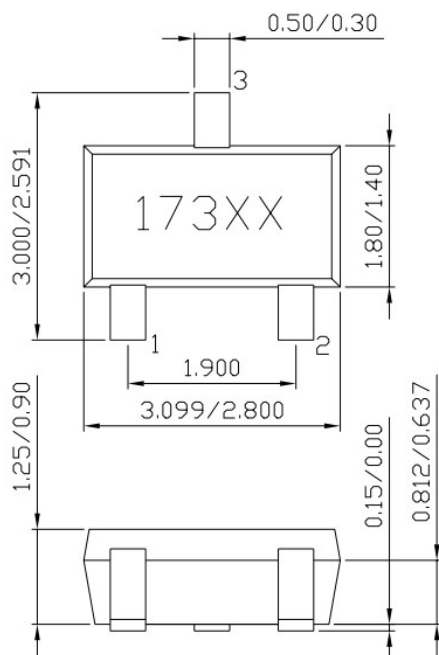
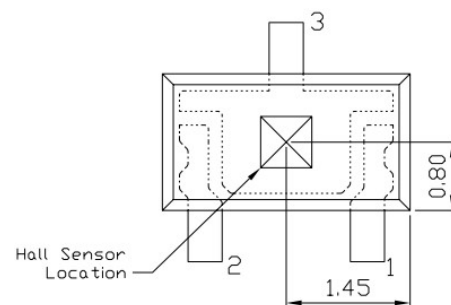
Parameter	Symbol	Value		Unit
		Min	Max	
Supply Voltage	$V_{DD}$	-0.3	28	V
Output Voltage	$V_{OUT}$	-0.3	28	V
Output Current	$I_{SINK}$	-	25	mA
Operating Temperature Range (K)	$T_A$	-40	125	$^{\circ}\text{C}$
Storage Temperature Range	$T_S$	-65	150	$^{\circ}\text{C}$
Maximum Junction Temperature	$T_J$		150	$^{\circ}\text{C}$
Power Dissipation	$P_D$		230	mW

**Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$ ,  $V_{DD}=12\text{V}$ )

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage		$V_{DD}$	3.3	-	26	V
Consumption Current	$V_{OUT}=\text{High}$	$I_{DD}$	-	3	5	mA
Output Saturation Voltage	$V_{OUT}=\text{Low}$	$V_{SAT}$	-	-	0.4	V
Output Leakage Current	$V_{OUT}=\text{High}$	$I_{LEAK}$	-	-	10	$\mu\text{A}$
Output Rise time	$R_L=1.1\text{k}\Omega$ , $C_L=20\text{pF}$	$t_R$	-	0.04	0.45	$\mu\text{s}$
Output Fall time	$R_L=820\Omega$ , $C_L=20\text{pF}$	$t_F$	-	0.18	0.45	$\mu\text{s}$
Pull-up Resistor		$R_P$		10		$\text{k}\Omega$
Electro-static Discharge	HBM		4	-	-	kV

**Magnetic Characteristics** ( $T_A=25^\circ\text{C}$ ,  $V_{DD}=12\text{V}$ )

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Operate Point	S pole to branded side	B <sub>OP</sub>	0.5	-	6	mT
Release Point	N pole to branded side	B <sub>RP</sub>	-6	-	-0.5	mT
Hysteresis		B <sub>HYS</sub>	-	6	-	mT


**Switching Characteristics**

**SO package**
**Sensor Location, Package Dimension and Marking**
**SO package: SOT23**
**(Upper View)**

**Hall Sensor Location**
**(Bottom View)**

**NOTES:**

- Controlling dimension: mm
- Lead thickness after solder plating will be 0.254mm maximum.
- Chip must be in PKG. center.
- PINOUT:
 

Pin 1	$V_{DD}$
Pin 2	Output
Pin 3	GND