SH181 Hall Effect Latch

SH181 is a Hall-effect latch designed in silicon bipolar technology. The following are integrated on a single silicon chip: voltage regulator, reverse bias protection, Hall-voltage generator, small-signal amplifier, Schmitt trigger, and open-collector output to sink up to 25mA. The south pole of sufficient strength will turn the output on. The North Pole is necessary to turn the output off. The voltage regulator on the chip permits operation with supply voltages of 3.5V to 20V.

Features

- General-purpose latch
- Low cost
- Reverse bias protection on power supply pin

Typical Applications

- Brushless DC motor
- Brushless DC fan
- Rotation detection

Order Information

Order No.	Part No.	Temperature	Package	—	Packing
SH181KUA	SH181	K	UA		

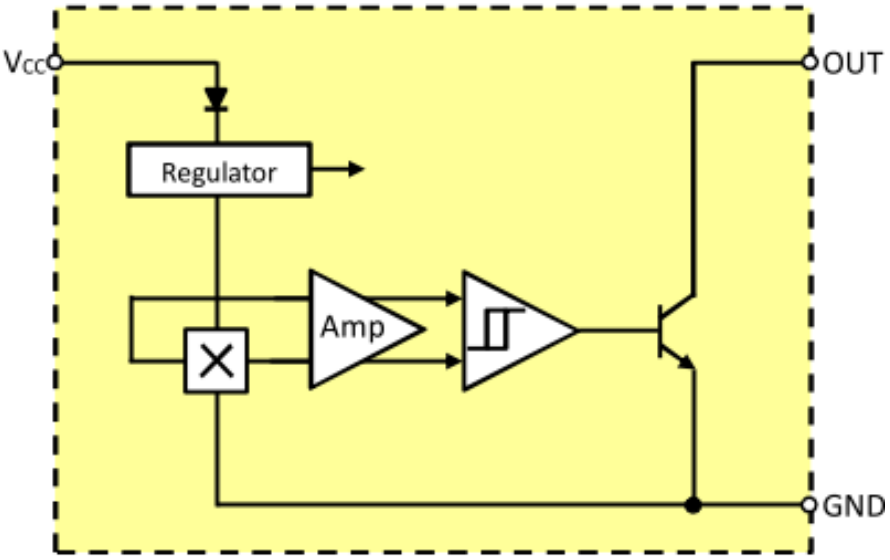
Legend:

Temperature Code: K (-40℃～125℃)

Package Code: UA (TO92S)

Packing Code: Brank (Balk, 500pcs/Bag)

Functional Block Diagram



Absolute Maximum Ratings (T_A=25℃)

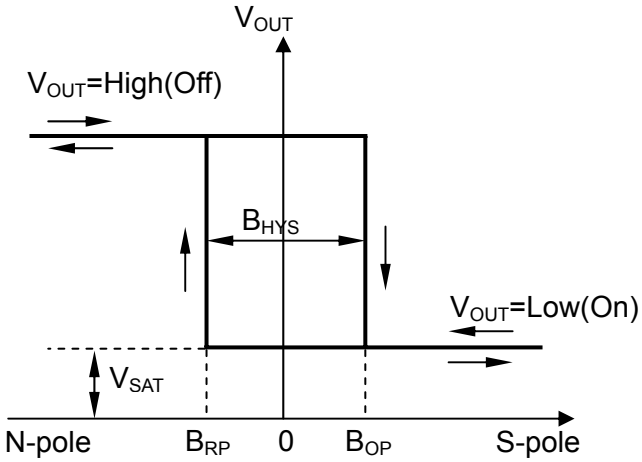
Parameter	Symbol	Value Min	Value Max	Unit
Supply Voltage	V_{DD}	-20	20	V
Output Voltage	V_{OUT}	-20	30	V
Output Current	I_{SINK}	-	25	mA
Operating Temperature Range (K)	T_A	-40	125	℃
Storage Temperature Range	T_S	-55	150	℃
Maximum Junction Temperature	T_J		150	℃
Power Dissipation	P_D		606	mW

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

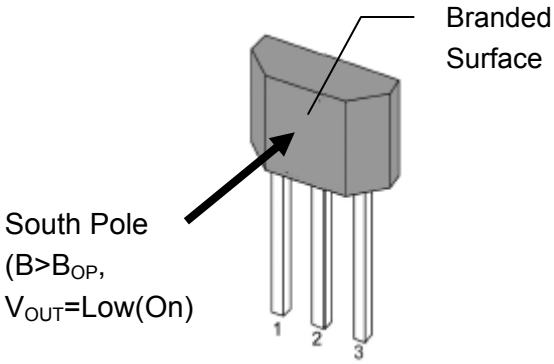
Parameter	Test Condition	Symbol	Value Min	Value Typ	Value Max	Unit
Supply Voltage		V_{CC}	3.5	-	20	V
Consumption Current	V_{OUT}=High	I_{CC}	-	4	8	mA
Output Saturation Voltage	I_{SINK}=10mA, V_{OUT}=Low	V_{SAT}	-	0.3	0.7	V
Output Leakage Current	V_{OUT}=High (12V)	I_{LEAK}		< 0.1	10	μA
Output Rise time	R_L=820Ω, C_L=20pF	t_R	-	-	1.5	μs
Output Fall time		t_F	-	-	1.5	μs

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

Parameter	Test Condition	Symbol	Value Min	Value Typ	Value Max	Unit
Operate Point	S pole to branded side	B_{OP}	0.5	-	9	mT
Release Point	N pole to branded side	B_{RP}	-9	-	-0.5	mT
Hysteresis		B_{HYS}	-	10	-	mT

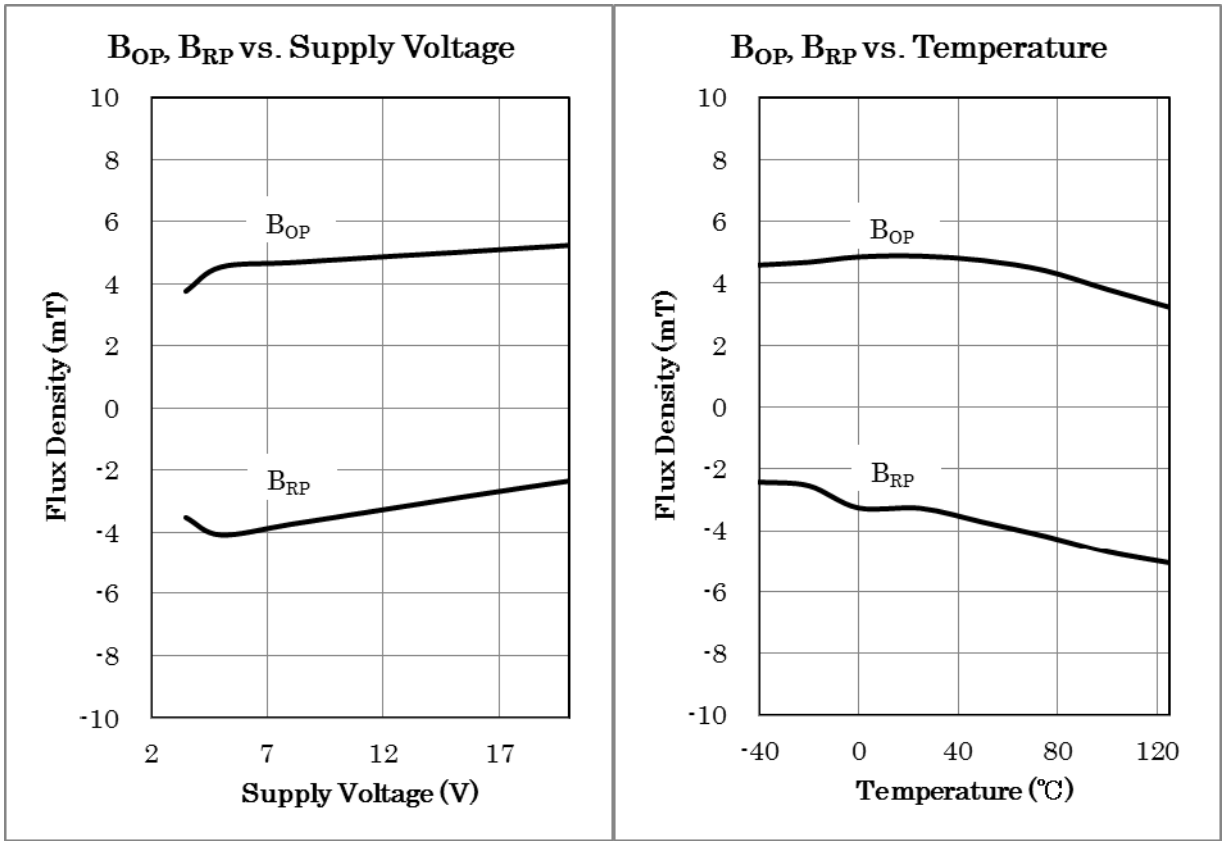


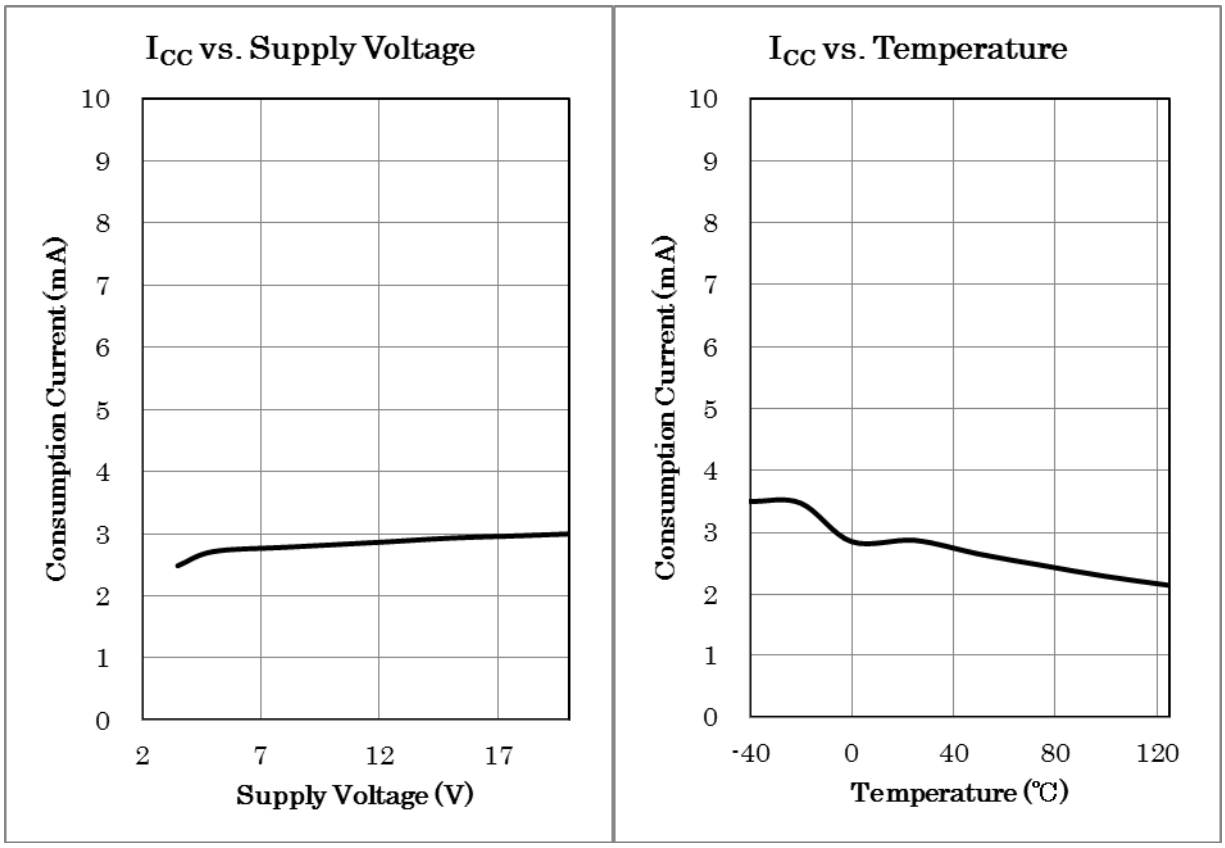
Switching Characteristics



UA-package

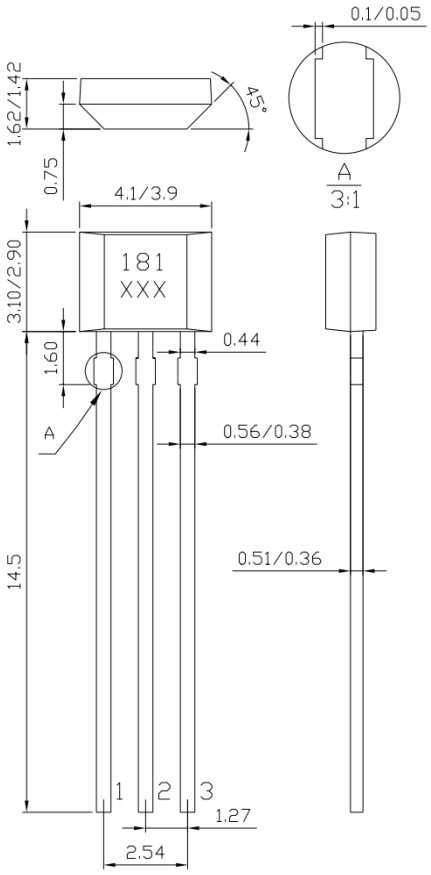
Performance Graphs



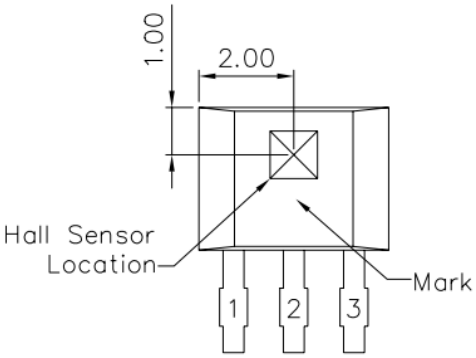


Sensor Location, Package Dimension and Marking

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_{CC}
Pin 2	GND
Pin 3	Output