SH190 High Voltage Bipolar Hall Effect Latch

SH190 is a Hall-effect latch designed in silicon bipolar technology and is designed for electronic commutation of brush-less DC motor applications. The following are integrated on a single silicon chip: voltage regulator, reverse bias protection, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, and open-collector output. The internal voltage regulator is used to provide temperature compensated supply voltage for internal circuits and permits a wide supply voltage range operation.

Features

- High Peak Voltage (65V max.)
- Optimized for BLDC motor applications
- Reverse bias protection on power supply pin

Typical Applications

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

Order Information

Order No.	Part No.	Temperature	Package	— Packing
SH190KUA	SH190	K	UA	

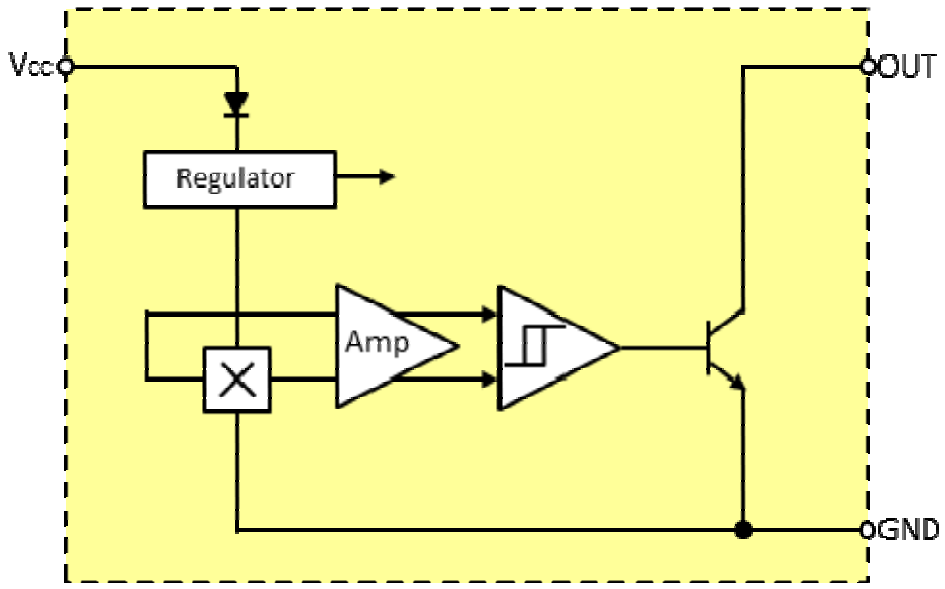
Legend:

Temperature Code: K (-40℃～125℃)

Package Code: UA (TO92S)

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

Functional Block Diagram



Absolute Maximum Ratings (T_A=25℃)

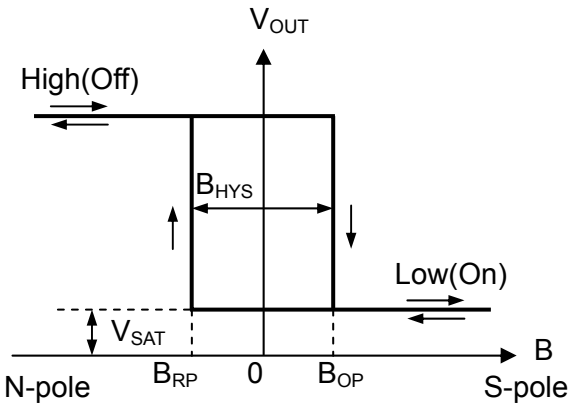
Parameter	Symbol	Value Min	Value Max	Unit
Supply Voltage	V_{CC}	-32	65	V
Output Voltage	V_{OUT}	-32	65	V
Output Current	I_{SINK}	-	25	mA
Operating Temperature Range (K)	T_A	-40	125	℃
Storage Temperature Range	T_S	-65	150	℃
Maximum Junction Temperature	T_J		150	℃
Power Dissipation	P_D		606	mW

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

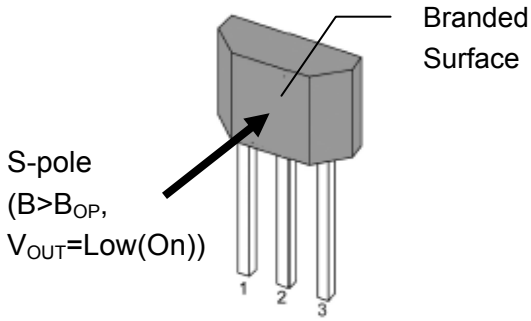
Parameter	Test Condition	Symbol	Value Min	Value Typ	Value Max	Unit
Supply Voltage		V_{CC}	4	-	30	V
Consumption Current	V_{OUT}=High	I_{CC}	-	3	8	mA
Output Saturation Voltage	I_{SINK}=5mA, V_{OUT}=Low	V_{SAT}	-	-	0.5	V
Output Leakage Current	V_{OUT}=24V(High)	I_{LEAK}	-	-	10	μA
Output Rise Time	R_L=820Ω, C_L=20pF	t_R	-	1.5	-	μs
Output Fall Time	R_L=820Ω, C_L=20pF	t_F	-	1.5	-	μs

UA-package 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}	1	-	11	mT
Release Point	N pole to branded side	B_{RP}	-11	-	-1	mT
Hysteresis		B_{HYS}	-	10	-	mT

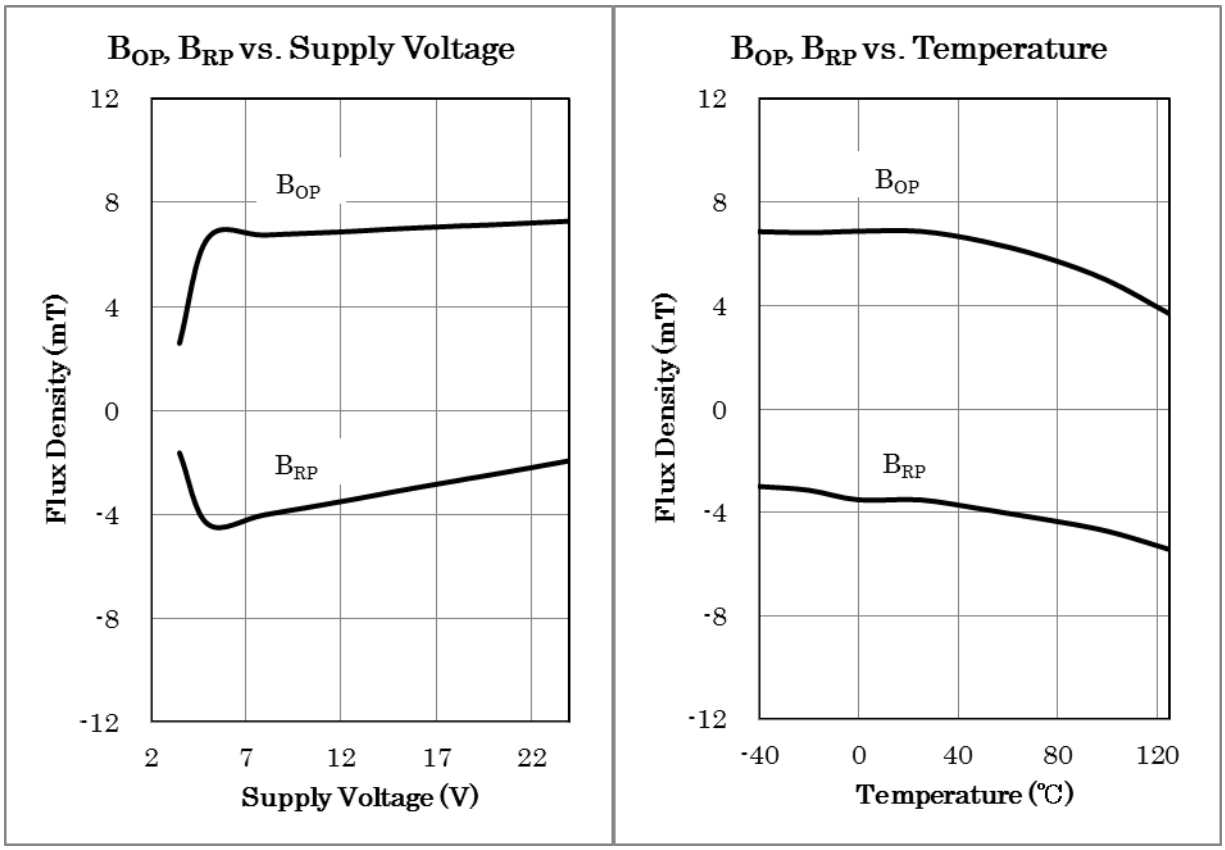


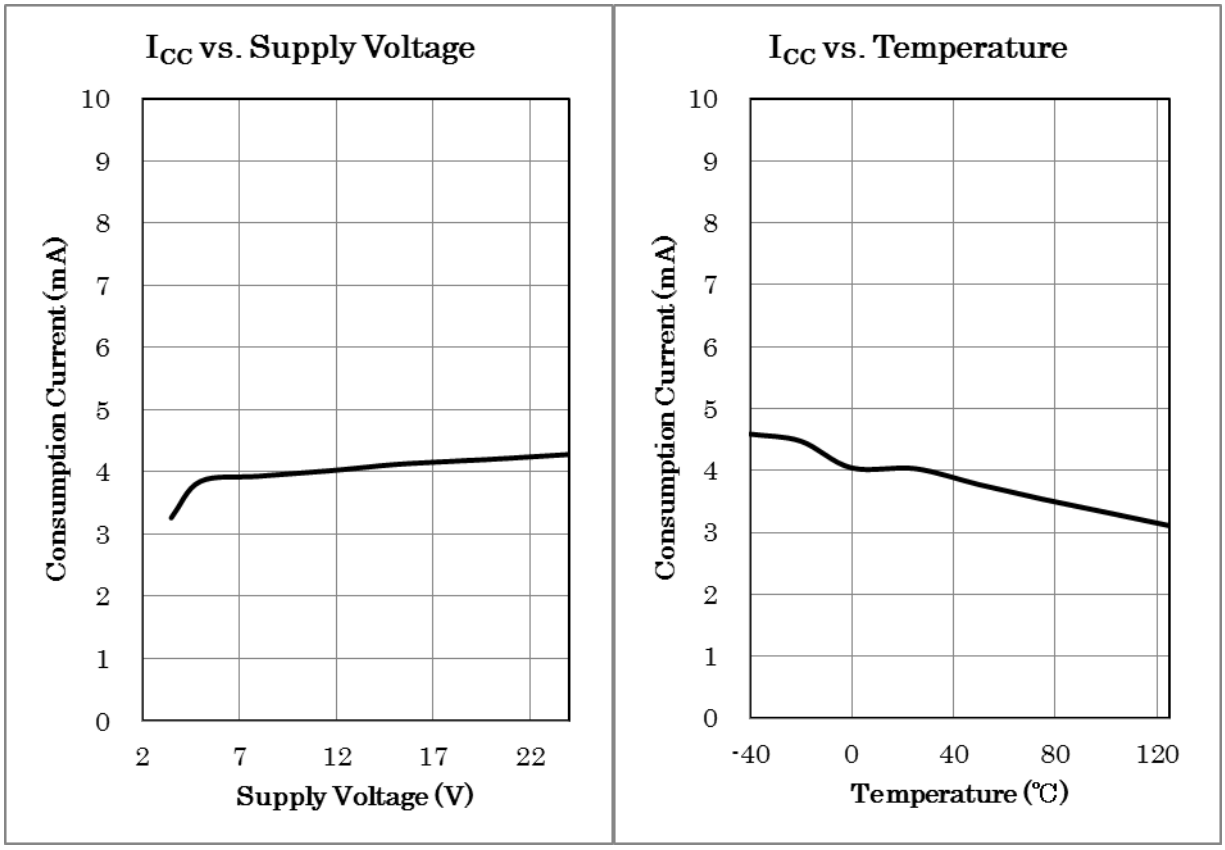
Switching Characteristics



UA-package

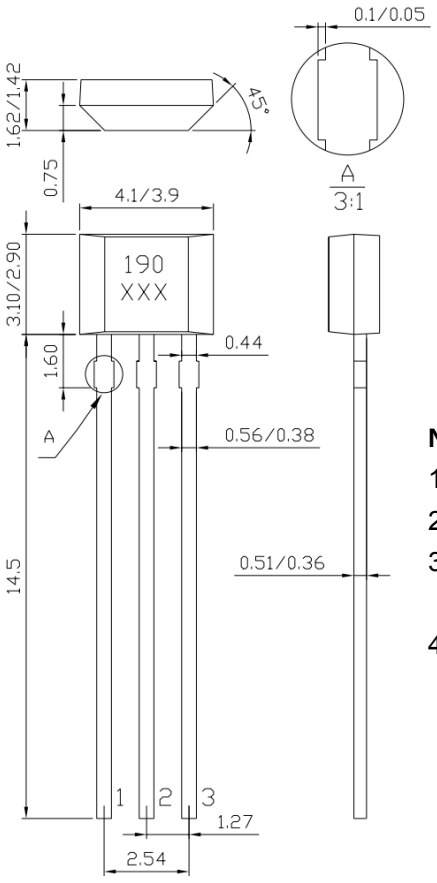
Performance Graphs



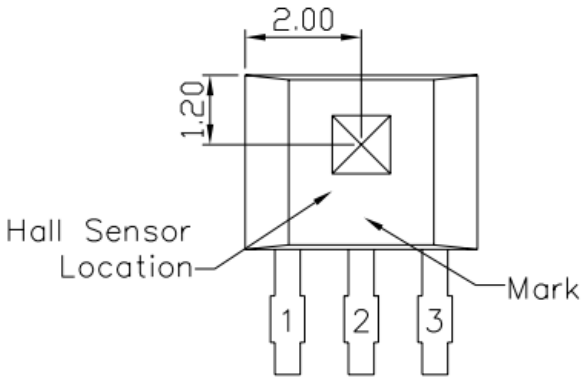


Sensor Location, Package Dimension and Marking

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 Vcc
   Pin 2 GND
   Pin 3 Output