SH163 High Sensitivity Hall Effect Latch

SH163 is a High Sensitivity Hall-effect Latch designed in advanced DMOS technology. The following are integrated on a single silicon chip: voltage regulator, reverse bias protection, ESD protection, Hall voltage generator, chopper stabilized small-signal amplifier, Schmitt trigger, open-drain output and thermal shut-down protection. Superior high-temperature performance is made possible through a dynamic offset cancellation that utilizes chopper-stabilization.

Features

- Dynamic offset cancellation
- High sensitivity (3mT typ.)
- Open-drain output
- Maximum output sink current 100mA
- Thermal shut-down protection
- 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
SH163KSO-TR	SH163	K	SO	—	TR

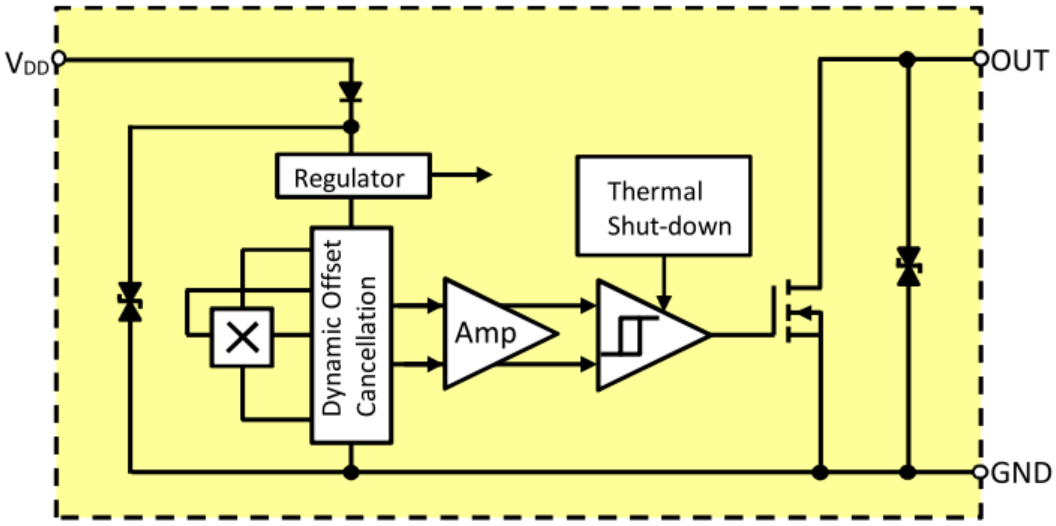
Legend:

Temperature Code: K (-40℃～125℃)

Package Code: SO (SOT23)

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

Functional Block Diagram



Absolute Maximum Ratings (T_A=25℃)

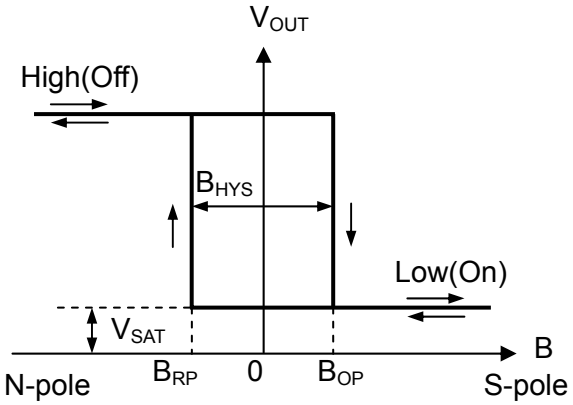
Parameter	Symbol	Value Min	Value Max	Unit
Supply Voltage	V_{DD}	-28	28	V
Output Voltage	V_{OUT}	-0.3	28	V
Output Current	I_{SINK}	-	100	mA
Operating Temperature Range(K)	T_A	-40	125	℃
Storage Temperature Range	T_S	-65	150	℃
Maximum Junction Temperature	T_J	-	150	℃
Power Dissipation	P_D	-	230	mW

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

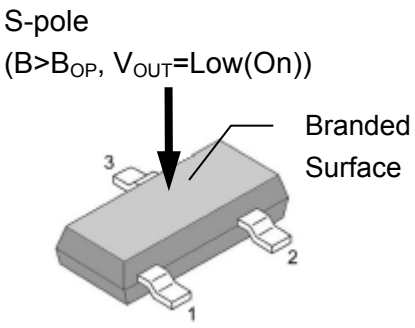
Parameter	Test Condition	Symbol	Value Min	Value Typ	Value Max	Unit
Supply Voltage		V_{DD}	3.5	-	24	V
Consumption Current	V_{OUT}=High	I_{DD}	-	3.5	8	mA
Output Saturation Voltage	I_{SINK}=80mA, V_{OUT}=Low	V_{SAT}	-	-	0.2	V
Output Leakage Current	V_{OUT}=High	I_{LEAK}	-	-	10	μA
Output Rise time	R_L=1kΩ, C_L=20pF	t_R	-	-	0.5	μs
Output Fall time	R_L=1kΩ, C_L=20pF	t_F	-	-	0.5	μs
Thermal Shut-down Temperature		T_{SD}	150	-	-	℃
Thermal Shut-down Hysteresis		T_{SDH}	-	30	-	℃
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_{OP}	0	-	6	mT
Release Point	N pole to branded side	B_{RP}	-6	-	0	mT
Hysteresis		B_{HYS}	-	6	-	mT



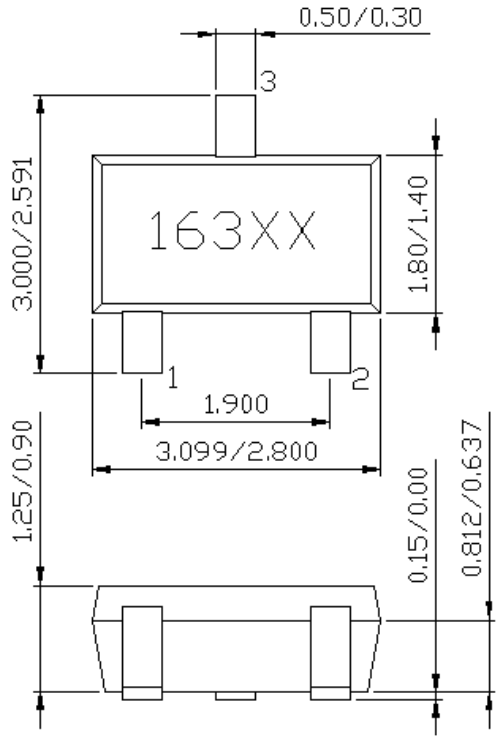
Switching Characteristics

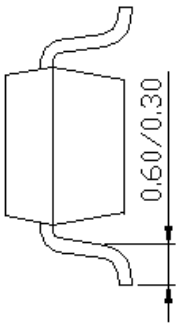


SO-package

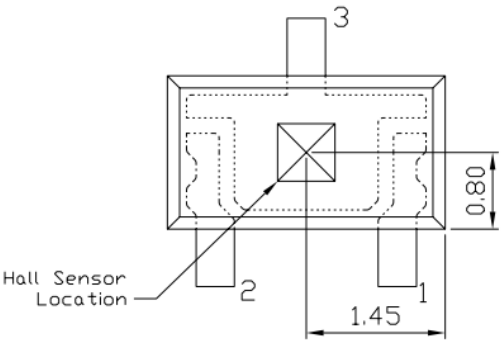
Package Dimension, Sensor Location and Marking

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.