



CH175

Bipolar High sensitivity Low power Hall effect bipolar rotation

➤ Product description

CH175 Hall-effect sensor is a temperature stable, stress-resistant, Low Tolerance of Sensitivity micro-power switch. Superior high-temperature performance is made possible through a dynamic offset cancellation that utilizes chopper-stabilization. This method reduces the offset voltage normally caused by device over molding, temperature dependencies, and thermal stress.

CH175 is special made for low operation voltage, 1.5V, to active the chip which includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, CMOS output driver. Advanced CMOS wafer fabrication processing is used to take advantage of low-voltage requirements, component matching, very low input-offset errors, and small component geometries. This device requires the presence of omni-polar magnetic fields for operation.

The package type is in a Halogen Free version has been verified by third party Lab.

➤ Features

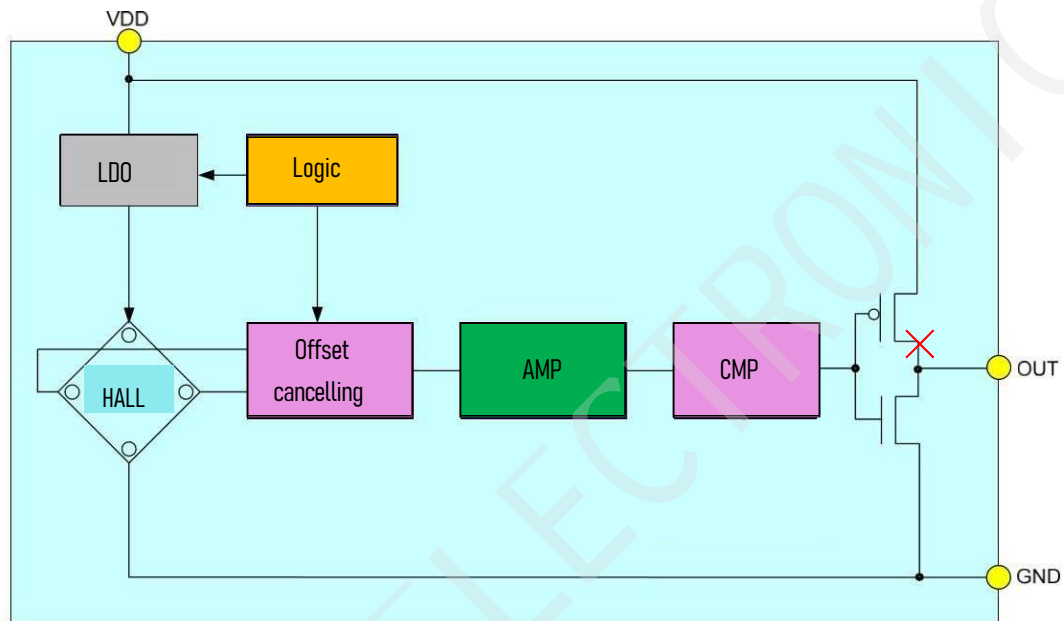
- Omni polar, High sensitivity switch hall IC
- Operation from 1.5V to 6V
- Ultra low power consumption at 2.2uA(Avg.)
- High ESD protection, HBM(HBM)4000V
- Operation frequency :25Hz



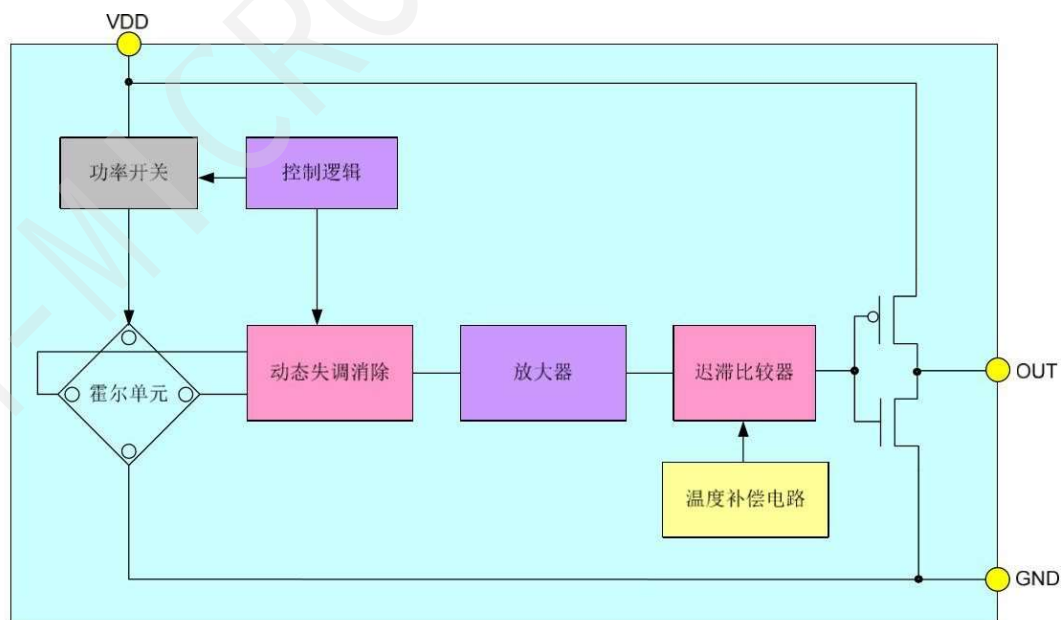
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➤ FunctionalDiagram



CH175A: Open-DrainOutput



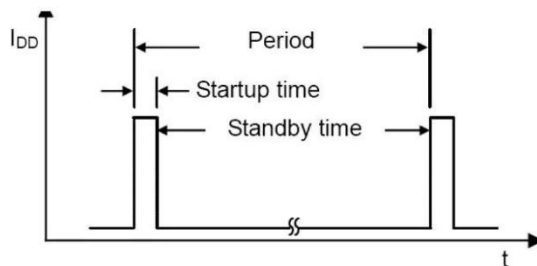
CH175B: CMOSOutput

➤ **AbsoluteMaximumRatings** @(T=25° C)

Parameter	Min	Typ	Max	Unit
Supply Voltage			7	V
Output Voltage			7	V
Output current		1		mA
Operating temperature range	-40		85	°C
Storage temperature range	-65		150	°C
Maximum Junction temp.			150	°C
Magnetic flux density		unlimited		Gauss

➤ **Electrical Specifications** @(T=25° C , VDD =1.5V)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	vDD	Operating	1.5	3	6	V
Supply Current	iDD	Awake state		1	2.3	mA
		Sleep state		2	10	uA
		Average 【40u/10mS】	2.2	3.0	5.9	uA
Output Voltage	vOH	I _{OUT} = 0.5mA , Source	V _{DD} - 0.2			V
	vOL	I _{OUT} = 0.5mA , Sink			0.2	V
Output Leakage Current	iOFF	Output off			1	uA
Startup time	τ _{AW}	Awake state		40	80	uS
Standby time	τ _{SL}	Sleep state		40	80	mS
Duty cycle				0.1		%
Electro-Static Discharge	ESD	HBM	4			KV

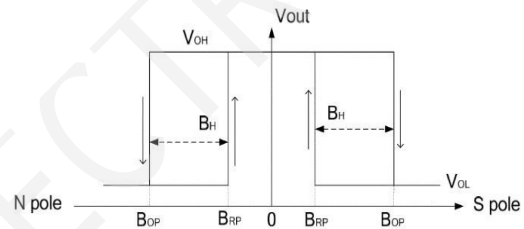


Note :
Startup / Standby time

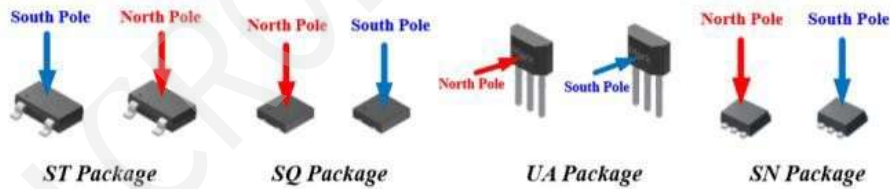
➤ Magnetic Specifications

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Operating Point	B_{OPS}	S pole, $B > B_{OP}$, Vout On		35	50	Gauss
	B_{OPN}	N pole, $B < B_{OP}$, Vout On	-50	-35		Gauss
Release Point	B_{RPS}	S pole, $B < B_{RP}$, Vout Off	10	25		Gauss
	B_{RPN}	N pole, $B > B_{RP}$, Vout Off		-25	-10	Gauss
Hysteresis	B_H	$ B_{OP} - B_{RP} $		10		Gauss

Parameter	Test condition	OUT
Source pole	$B > B_{OP}$	L
Weak magnetic field	$ B < B_{RP} $	H
North pole	$B < B_{OP}$	L

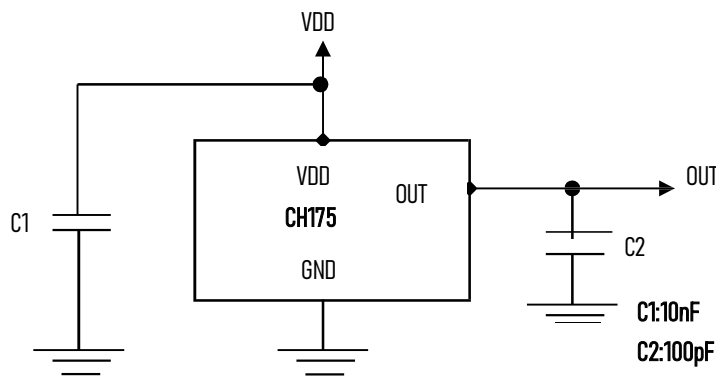


Note: magnetic field on Logo plate



Note: magnetic field on Logo plate

➤ Typical Application Circuit





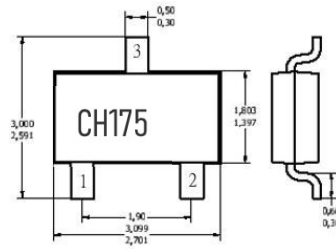
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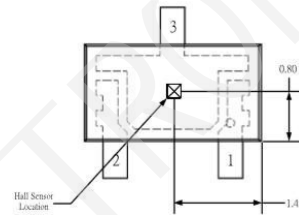
➤ Package Specifications 【unit: mm】

- TSOT23-3 package

Pin No.	Pin Name	Function
1	VDD	Power supply
2	OUT	Output
3	GND	Ground



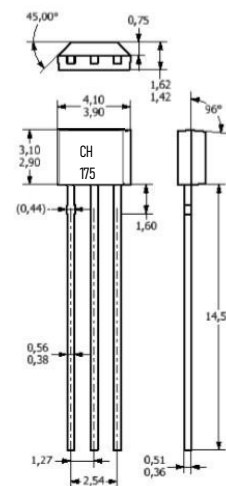
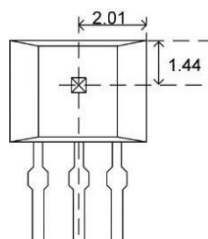
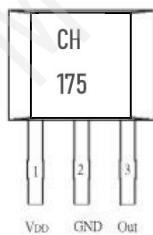
TSOT23-3 package
Top View



TSOT23-3 package
Bottom View

- TO-92S package

Pin No.	Pin Name	Function
1	VDD	Power supply
2	GND	Ground
3	OUT	Output



➤ Ordering Information

Part Number	Bop(GS)	Brp(GS)	Bhyst(GS)	Output	package
CH175AP	±35	±25	10	CMOS	TO-92S
CH175AT	±35	±25	10	CMOS	TSOT23-3