ChenYang
Technologies GmbH & Co. KG

HALL-EFFECT LATCHING SWITCH IC CYD3601

The CYD3601 is a bipolar Hall Effect switch with a latched digital output. The built-in dynamic offset cancellation of pre-amplifier stage achieves optimal symmetrical magnetic sensing. This Hall Effect IC is optimal for DC brushless fan applications. The supply voltage range is from 2.5V to 18V.

FEATURES

- 2.5V to 18V power supply
- Built-in dynamic offset cancellation
- Small size, convenient installing
- High balance and low thermal drift
- magnetic sensing
- **ROHS Compliant**

TYPICAL APPLICATIONS

- Brushless DC motor
- VCD/DVD loader, CD/DVD-ROM
- Contactless switch
- Cover detector
- Speed measurement
- Home applications
- Home safety

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Supply voltage	V_{CC}	18	V
Magnetic flux density	B	Unlimited	mT
Storage temperature range	T_S	-50 ~ +150	°C
Operating temperature range	T_A	-40 ~ +125	°C
Max. Output current	Iomax	25	mA

ELECTRICAL CHARACTERISTICS

T_A=25°C, V_{DD}=12V

Parameter	Symbol	Test conditions	Type and Value			Unit
			min	typical	max	
Supply voltage	V_{CC}		2.5	-	18	V
Output sink voltage	V_{OL}	Iout=15mA	-	0.3	0.5	V
Output Breakdown voltage	V_{BV}		18	22	30	V
Supply current	I_{DD}	Output open@12V	-	6	8	mA

MAGNET CHARACTERISTICS

(V_{DD}=12V DC, T_A=+25°C)

Parameter	Symbol	Type and Value			Unit
		min	typical	max	
Operating point	B_{OP}		3	6	mT
Release point	B_{RP}	-6	-3		mT
Hysteresis	B_H	2	6	10	mT

NOTE: 1mT=10GS

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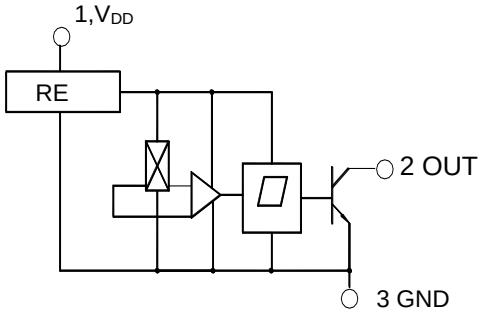
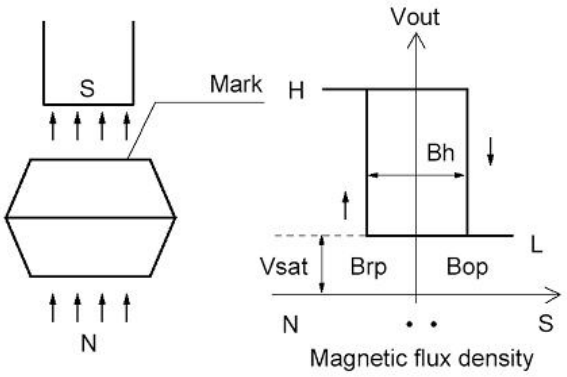
BLOCK DIAGRAM

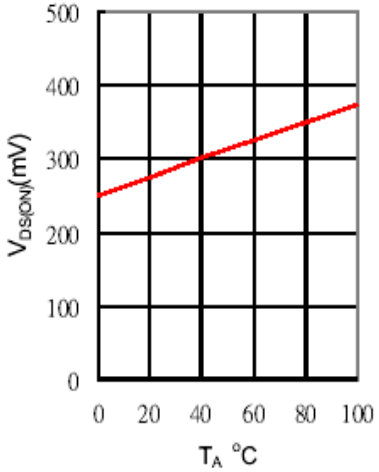


This Hall Effect Switch IC integrates the sensor, Pre-amplifier with dynamic offset cancellation and hysteresis comparator in single chip.

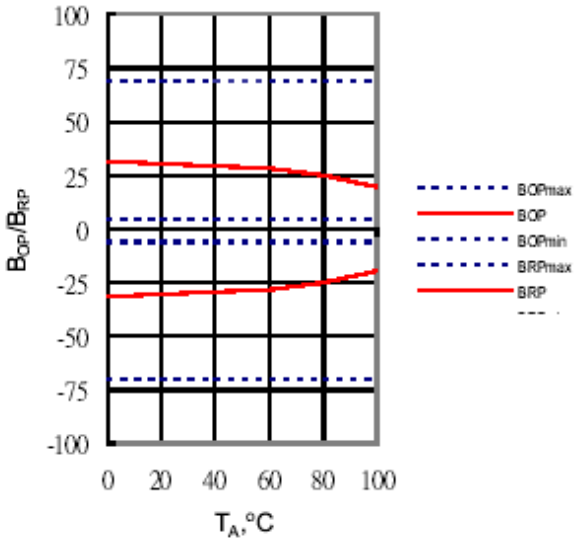
Magnetic-electrical transfer characteristics



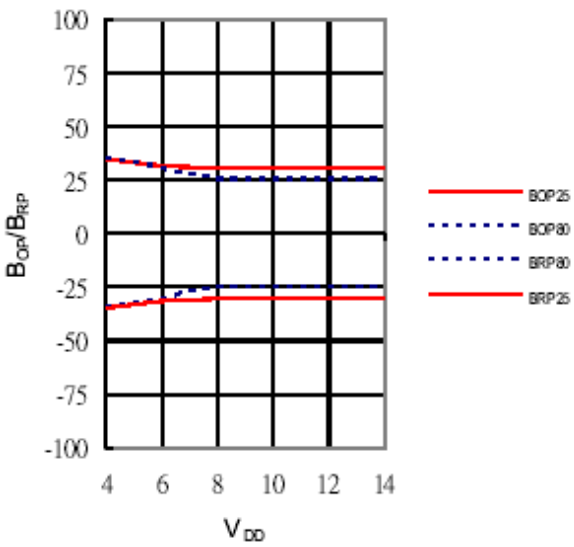
Output voltage versus temperature



B_{OP}, B_{RP} versus temperature



B_{OP}, B_{RP} versus supply voltage



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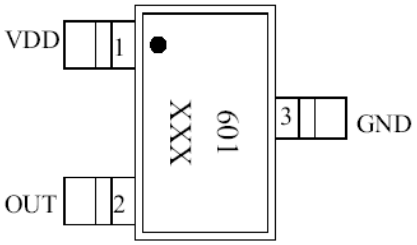
Package Type: SOT-23



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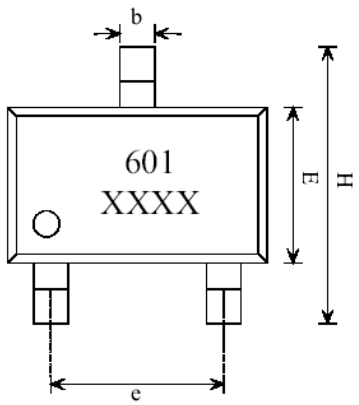
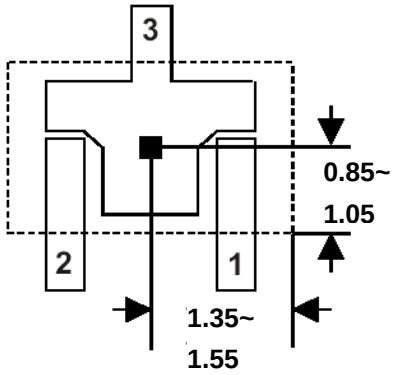
Pin Description

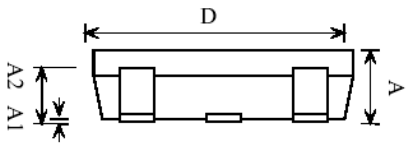
Name	Pin	Description	Type
VDD	1	DC power supply	P
OUT	2	Output pin	O
GND	3	DC ground	P

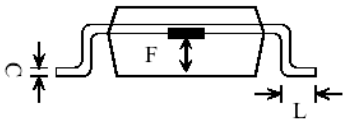


Sensor Location

Bottom view







SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.60	1.80
F	**0.35**	**0.50**	0.65
H	2.60	2.8	3.00
e	1.7	1.9	2.1
L	0.20	-	-

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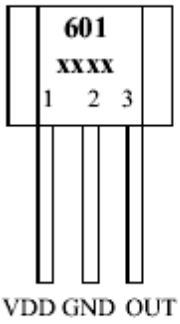
Package Type: TO-92 3Pin



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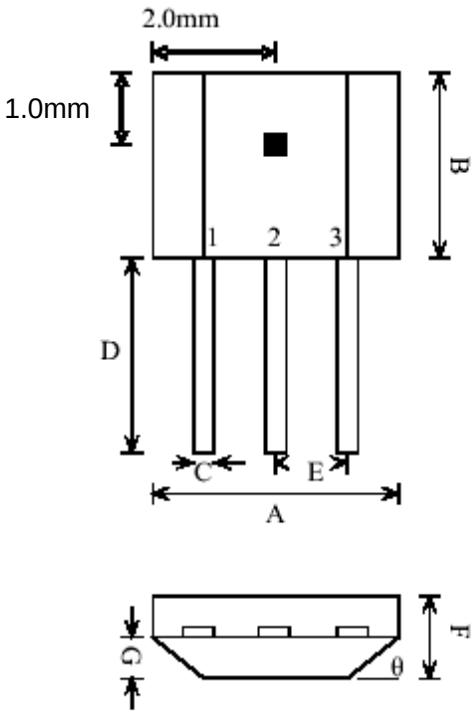
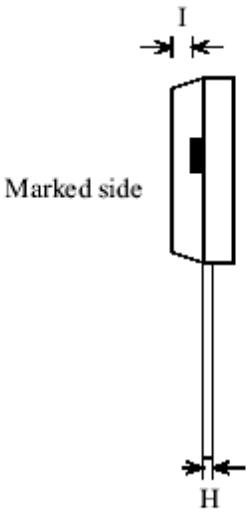
Pin Description

Name	Pin	Description	Type
VDD	1	DC power supply	P
GND	2	DC ground	P
OUT	3	Output pin	O





SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	3.80	4.00	4.20
B	2.90	3.10	3.30
C	0.38	0.45	0.52
D	14.40	14.60	14.80
E	1.24	1.27	1.30
F	1.45	1.50	1.55
G	0.68	0.73	0.78
H	0.36	0.43	0.50
I	0.41	0.43	0.45
θ		45°	

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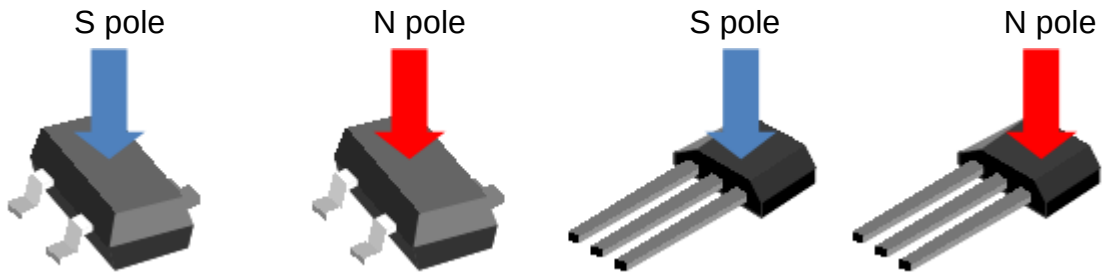
Relation between output and applied magnetic field B

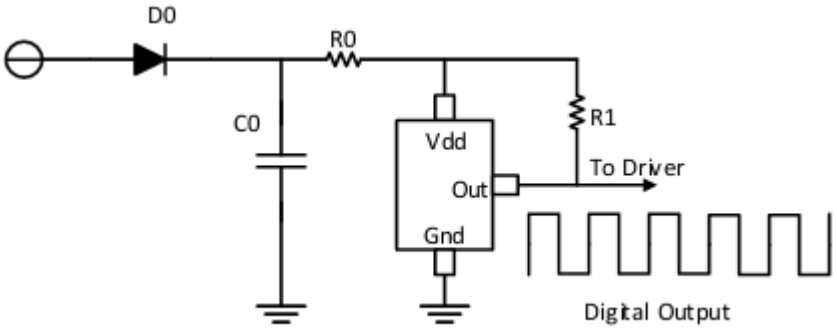
(TA=-40°C~125°C, VDD=2.5~18VDC)

Part number	CYD3601S		CYD3601T	
Parameter	Condition	Output	Condition	Output
S pole	B<Brp	High	B>Bop	Low
N pole	B>Bop	Low	B<Brp	High



Ouput = High Output = Low Output = High Output = Low

Application circuit



NOTE:

D0: general diode
C0: decoupling capacitor 1µF (recommended)
R0: 1kΩ, 0.5W for power supply +24VDC, 0Ω for power supply 5V, 12V and 15VDC
R1: 1k ~ 10k Ω (recommended)

Ordering Information

Package	Ordering no.	Mark	Packing	Temperature range
SOT-23	CYD3601S	601	3000/reel	-40°C ~ +125°C
TO-92	CYD3601T	601	500-1000units/pack	-40°C ~ +125°C

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