

Complementary Output Hall Effect Sensor

■ Features

- Bipolar Hall effect sensor
- 4V to 20V operating voltage
- 300mA (avg) output sink current
- Build-in protecting diode only for chip reverse power connecting
- -20°C to 85°C operating temperature
- Low profile 4 pin SIP package

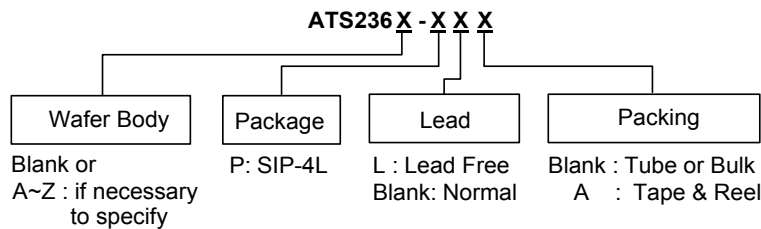
■ Applications

- Dual-coils Brush-less DC Motor
- Dual-coils Brush-less DC Fan
- Revolution Counting
- Speed Measurement

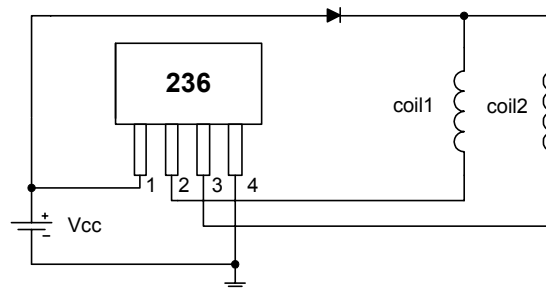
■ General Description

ATS236 is a four-terminal Hall effect sensor device with output drivers, mainly designed for electronic commutation of brush-less DC Fan. This IC internally includes the regulator, protecting diode, Hall plate, amplifier, comparator, and a pair of complementary open-collector outputs (**DO**, **DOB**). While the magnetic flux density (**B**) is larger than operate point (**Bop**), **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point (**Brp**), and then **DO**、**DOB** transfer each state.

■ Ordering Information



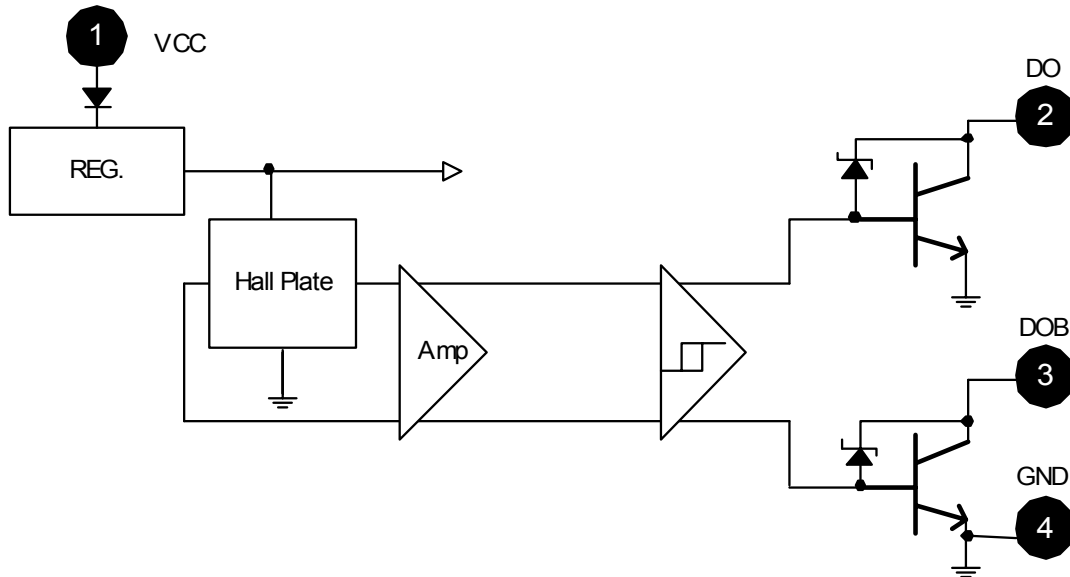
■ Typical Circuit



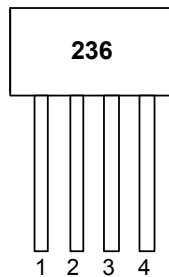
5V/12V Brush-less DC Fan

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■ Block Diagram



■ Pin Assignment



Front View

1 : VCC

2 : DO

3 : DOB

4 : GND

Name	P/I/O	Pin #	Description
Vcc	P	1	Power Supply Input
DO	O	2	Output Pin
DOB	O	3	Output Pin
GND	P	4	Ground

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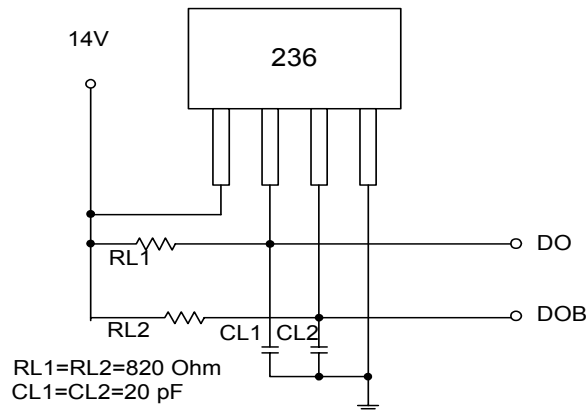
■ Absolute Maximum Ratings (at Ta=25°C)

Characteristics		Symbol	Values	Unit
Supply voltage		V_{CC}	20	V
Reverse V_{CC} Polarity Voltage		V_{RCC}	-20	V
Magnetic flux density		B	Unlimited	
Output "on" current	Continuous	I_c	0.3	A
	Hold		0.4	
	Peak (Start Up)		0.7	
Operating temperature range		T_a	-20~+85	°C
Storage temperature range		T_s	-65~+150	°C
Package Power Dissipation		PD	550	mW
Maximum Junction Temp		T_j	150	°C

■ Electrical Characteristics (Ta = +25°C Vcc = 4.0V to 20V)

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Low Supply Voltage	V_{ce}	$V_{cc}=4V, I_L=100mA$		0.4		V
Supply Voltage	V_{cc}		4		20	V
Output Zener Breakdown	V_z			35		V
Output Saturation Voltage	$V_{ce(sat)}$	$V_{cc}=14V, I_L=300mA$		0.3	0.7	V
Output Leakage Current	I_{cex}	$V_{ce}=14V, V_{cc}=14V$		<0.1	10	μA
Supply Current	I_{cc}	$V_{cc}=20V, \text{Output Open}$		16	25	mA
Output Rise Time	t_r	$V_{cc}=14V, R_L=820\Omega, C_L=20pF$		3.0	10	μs
Output Falling Time	t_f	$V_{cc}=14V, R_L=820\Omega, C_L=20pF$		0.3	1.5	μs
Switch Time Differential	Δt	$V_{cc}=14V, R_L=820\Omega, C_L=20pF$		3.0	10	μs

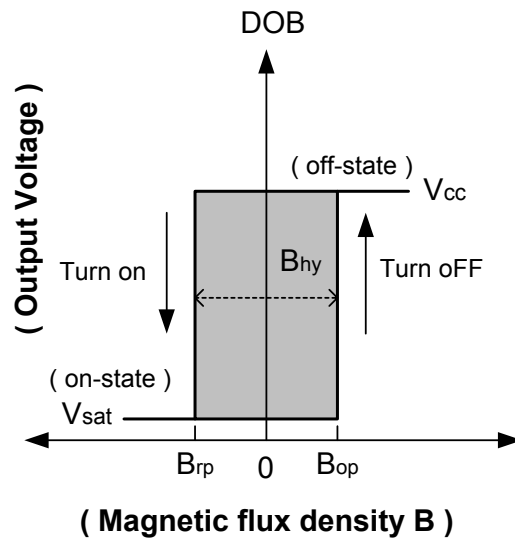
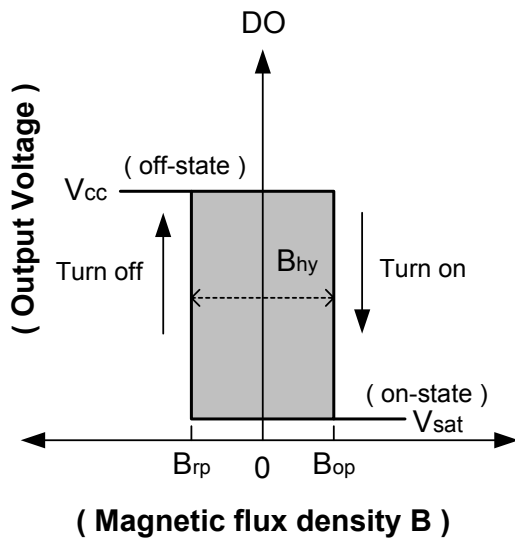
■ Test Circuit



■ Magnetic Characteristics (Ta=25°C)

(1mT=10Gauss)

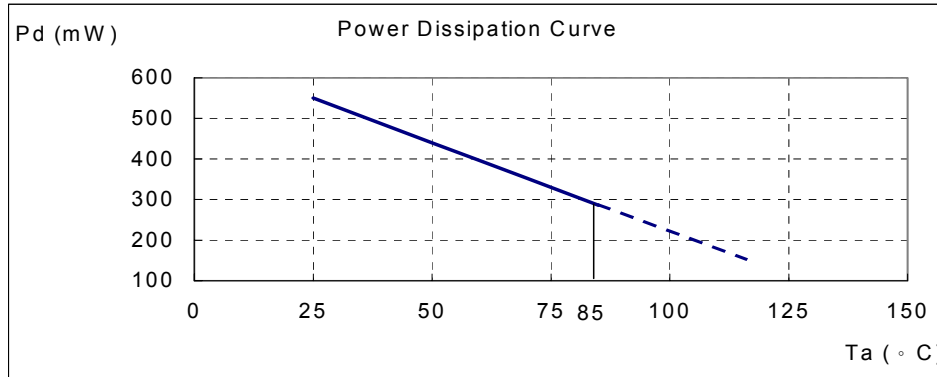
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	B_{OP}	10	-	150	Gauss
Release Point	B_{RP}	-150	-	-10	
Hysteresis	B_{HYS}	-	150	-	



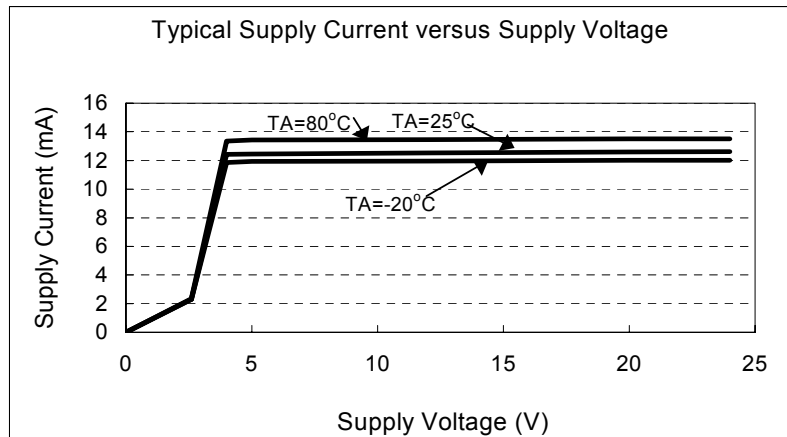
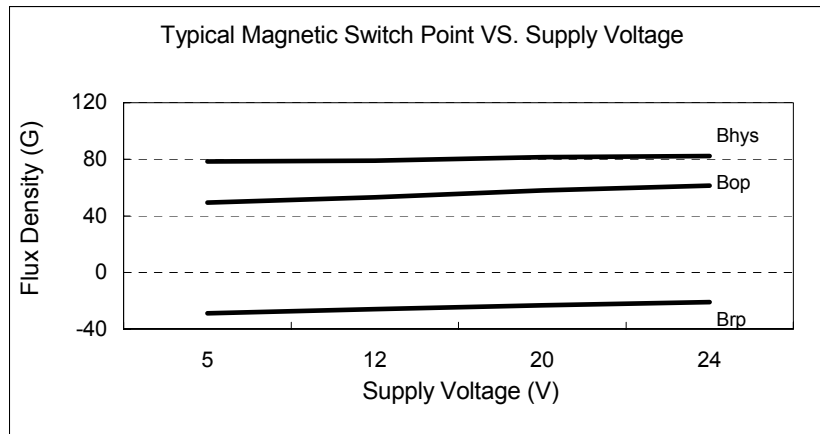
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■ Performance Characteristics (SIP4)

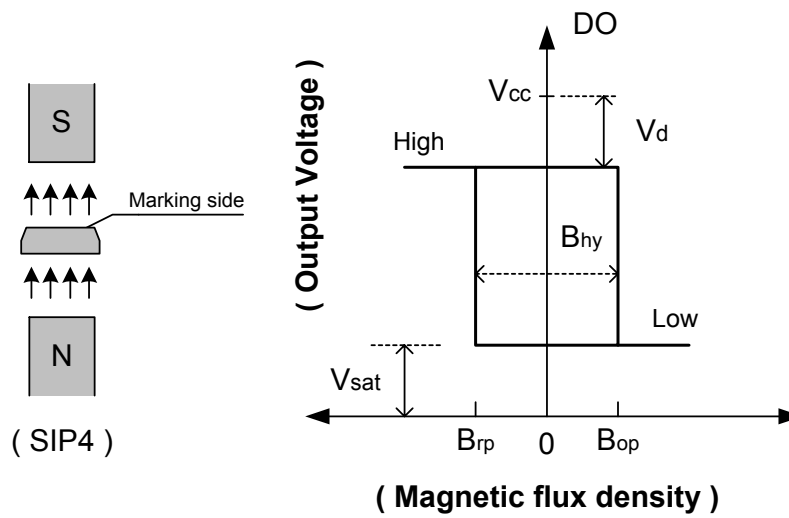
Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd (mW)	550	440	396	352	308	286	264	242	220	198	176	154	132



Note : SIP-4L package.

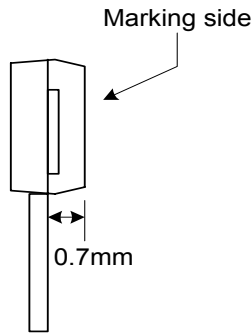


■ Operation characteristics

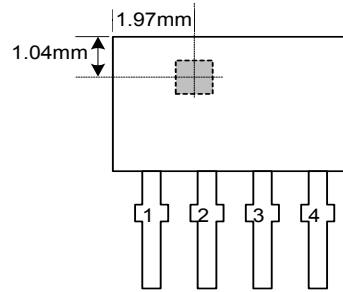


■ Package Information

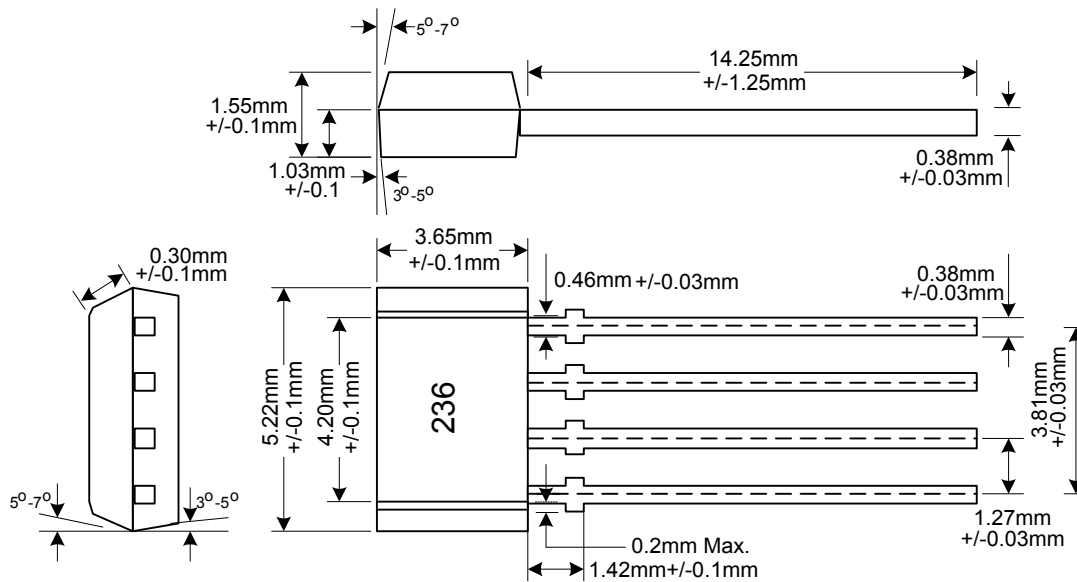
Active Area Depth



Package Sensor Location



Package Dimension



■ Marking Information

