

---

**Dual-Channel Hall Effect Switch with Both Speed and Direction Outputs**

---

**Features and Benefits**

- Precisely aligned double Hall elements
- Logic output signal quadrature A/B output
- Direction of logic output signals
- Excellent temperature stability
- Stabled topology with advanced Chopper
- High sensitivity (BOP & BRP)
- Support wide voltage range: 3.0 - 24 V
- Small package size

**Application**

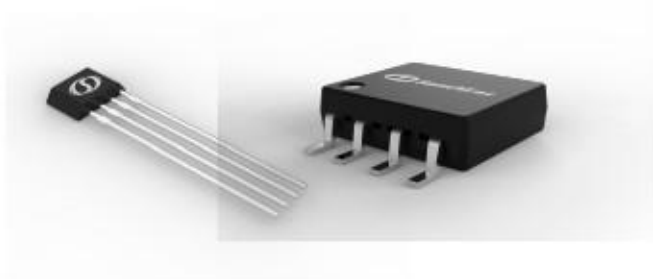
- Magnetic encoding
- Spindle monitoring
- Garage door
- Motorized sliding door
- Sunroof motor

**Description**

AH2526 is a dual-channel Hall effect switch IC, much suitable for speed and direction sensing applications, including encoding ring magnet target. AH2526 provides various output signals, indicates the speed and direction of target rotation. Hall elements are photo-lithographically lithography aligned, the result is better than 1 $\mu$ m. Maintaining precise displacement between two active Hall elements eliminates a major manufacturing obstacle in fine pitch detection applications. The AH2526 is a sensitive magnetic device ideally suitable for using in harsh automotive and industrial environments.

The distance between AH2526's Hall elements is 1.4mm, and work with the proper ring magnets to provide speed and direction information. A low-drift amplifier ensures symmetry between the switches to maintain signal quadrature. An on-chip voltage regulator allows the device to be used over a wide operating voltage range of 3.0 to 24V.

The AH2526 is available in 4-pin SIP and 8-pin SOIC plastic packages. Both packages are 100% lead-free, matte tinned lead.

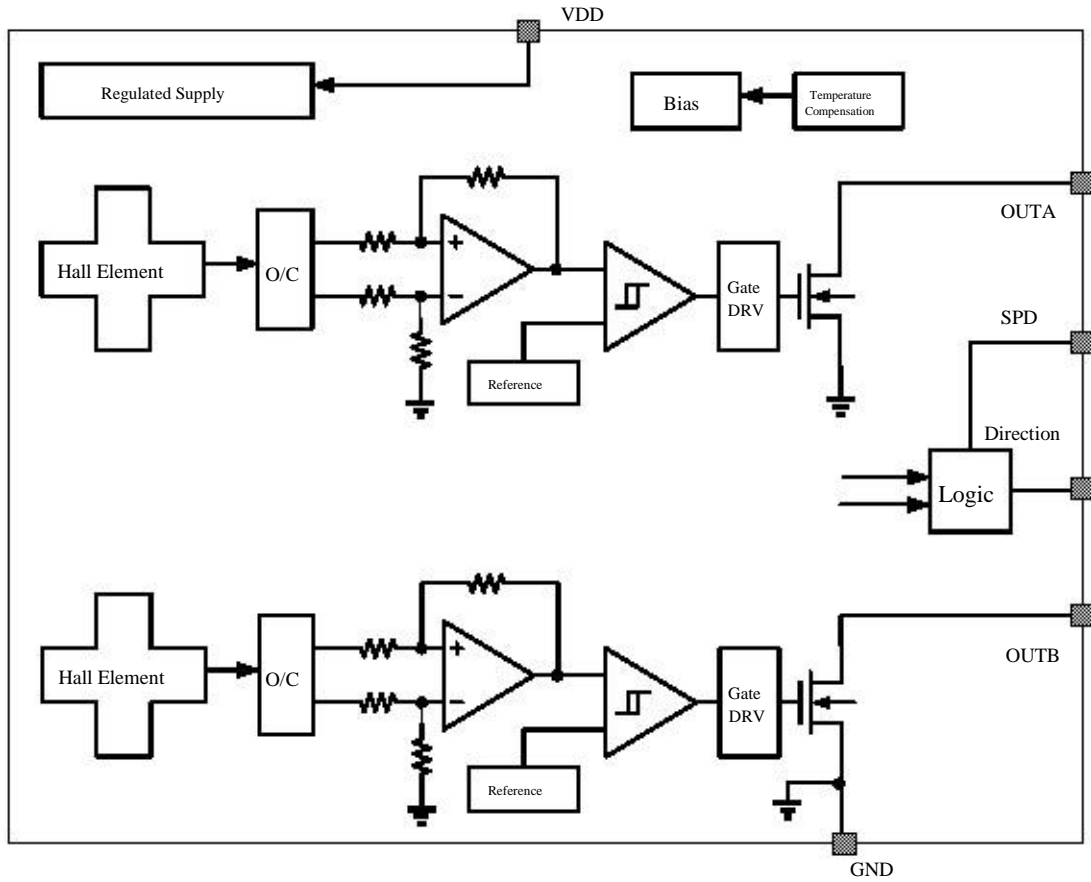


---

## Contents

Features and Benefits .....	- 1 -	Operating Characteristics .....	- 5 -
Application .....	- 1 -	Characteristic Curve .....	- 7 -
Description .....	- 1 -	Characteristic Curve (continued) .....	- 8 -
Functional Block Diagram .....	- 3 -	Typical Application .....	- 9 -
Order Information .....	- 3 -	Typical Output Waveform .....	- 10 -
Pin Description .....	- 4 -	Package Information (VB) .....	- 11 -
Absolute Maximum Ratings .....	- 5 -	Package Information (DC).....	- 12 -
ESD .....	- 5 -	Revision History .....	- 13 -
Thermal Characteristics .....	- 5 -		

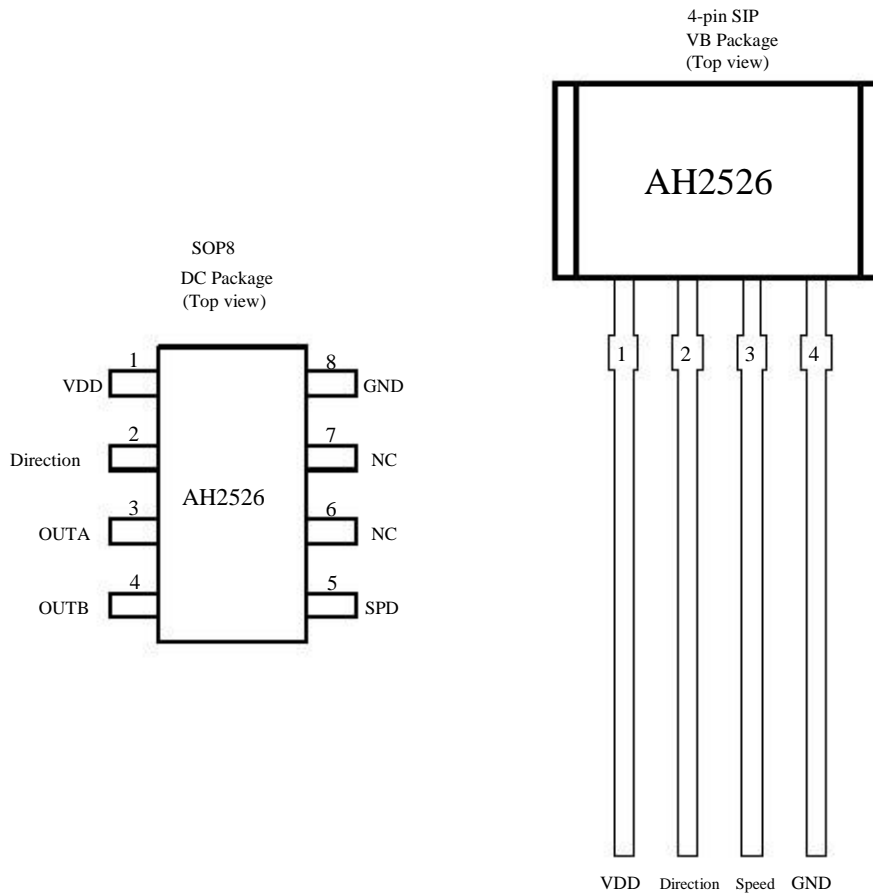
## Functional Block Diagram



## Order Information

Part Number	Packing	Package	Ambient Temperature	B <sub>OP</sub> (Typ.)	B <sub>RP</sub> (Typ.)
AH2526VB	Bulk, 500 pieces/bag	4-pin SIP	-40°C ~ 150°C	+10mT	-10mT
AH2526DC	Reel, 3000 pieces/reel	8-pin SOIC			

## Pin Description



Pin Terminal		Type	Description	
Name	No.			
	DC	VB		
VDD	1	1	Power Supply	3.0V ~24 V Supply Voltage
Direction	2	2	Output	Directional output, open drain output requires a external pull-up resistor.
OUTA	3	3	Output	A-channel output, open drain output requires a external pull-up resistor.
OUTB	4	--	Output	B-channel output, open drain output requires a external pull-up resistor.
Speed	5	--	Output	A / B Output
NC	6	--	NC	--
NC	7	--	NC	--
GND	8	4	GND	Ground Terminal

## Absolute Maximum Ratings

Over operating natural temperature range (unless otherwise noted) <sup>(1)</sup>

Parameter	Symbol	Min.	Max.	Unit
Power supply terminal withstand voltage	VDD	-0.5	28	V
Output terminal withstand voltage	VOUT	-0.5	28	V
Output terminal irrigation current	ISINK	0	15	mA
Ambient temperature	TA	-40	150	°C
Junction Temperature	TJ	-55	165	°C
Storage Temperature	TSTG	-65	175	°C

<sup>(1)</sup> Stresses above those listed here may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## ESD

The Human Body Model (HBM) test was conducted according to the AEC-Q100-002 standard.

Type	Parameter	Min.	Max.	Unit
ESD (HBM)	VESD	-4	4	KV

## Thermal Characteristics

Symbol	Parameter	Test Conditions	Rating	Unit
R <sub>θJA</sub>	VB Package Thermal Resistance	Single-layer PCB, with copper limited to solder pads	177	°C/W
R <sub>θJA</sub>	BU Package Thermal Resistance	Single-layer PCB, with copper limited to solder pads	140	°C/W

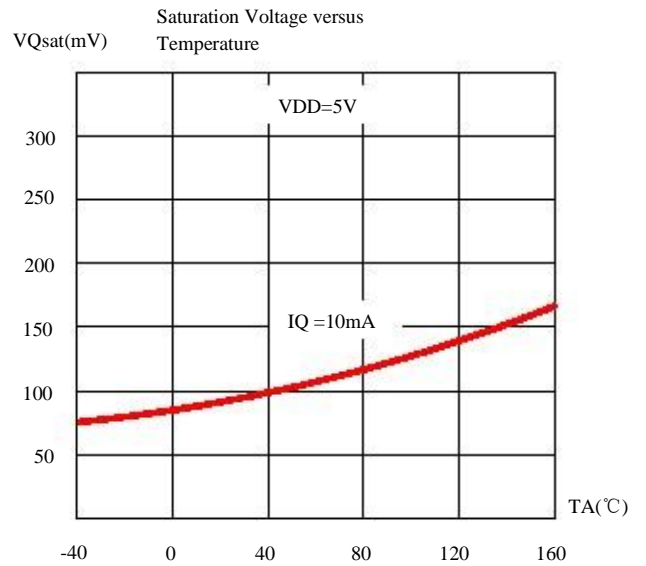
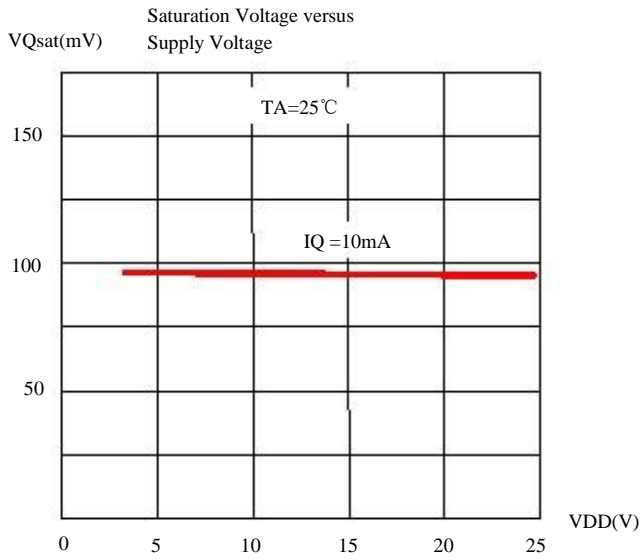
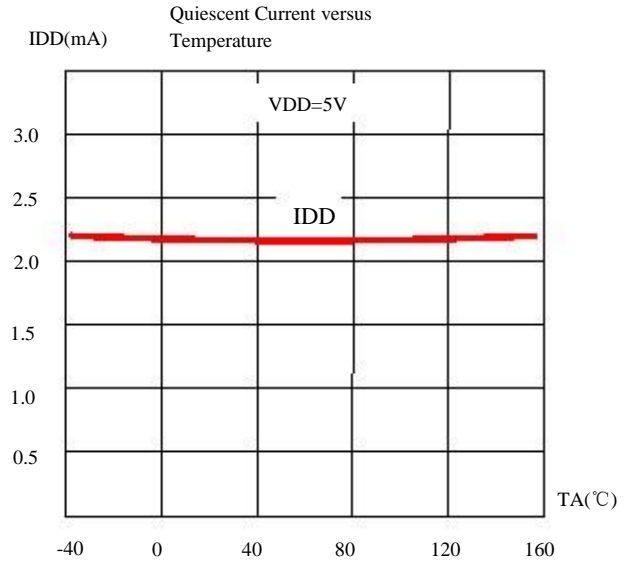
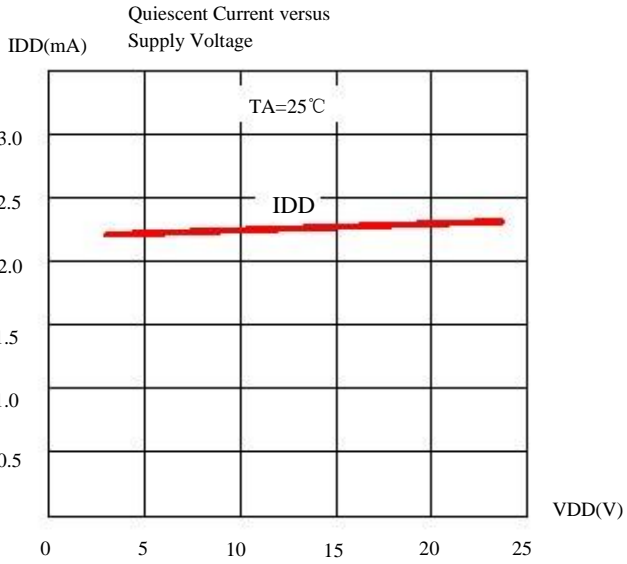
## Operating Characteristics

Over operating natural temperature range (VDD = 5.0V, unless otherwise noted )

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
VDD	Operating Voltage (1)	TJ < TJ (Max.)	3.0	--	24	V
IDD	Operating Current	VDD=2.8 to 24 V	1.0	--	3.5	mA
ton	Power-On Time		--	35	50	μS
IQL	Leakage Current	Output Hi-Z	--	--	1	μA
RDS <sub>(on)</sub>	Field Effect Transistor On-Resistance	VDD=5V, IO=10mA, TA=25°C	--	20	--	Ω
td	Output Delay Time	B=BRP to BOP	--	13	25	μS
tr	Output Rise Time	R1=1Kohm Co=50pF	--	--	0.8	μS
tf	Output Fall Time	R1=1Kohm Co=50pF	--	--	0.8	μS
<b>Magnetic Characteristics</b>						
fBW	Bandwidth		40	--	--	kHz
BOP	Operating Point	VB Package	7.5	10.0	14.5	mT
BRP	Releasing Point		-14.5	-10.0	-7.5	mT
BHYS	Hysteresis		--	20.0	--	mT
BO	Magnetic Compensation	BO=(BOP+BRP)/2	--	0	--	mT

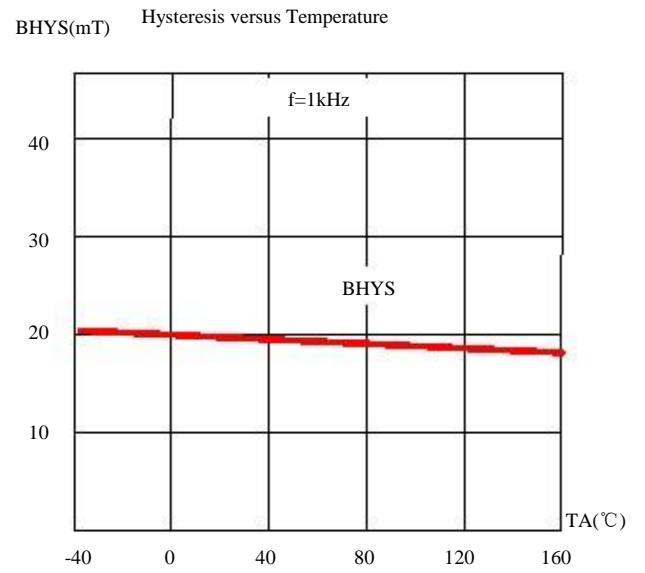
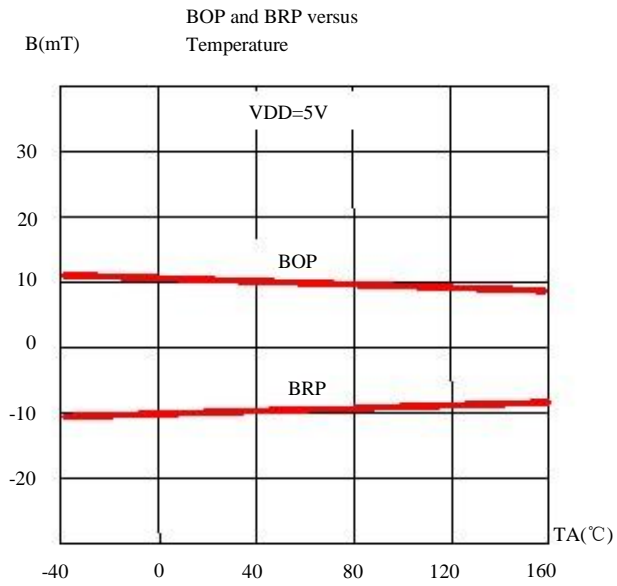
1mT=10Gs

# Characteristic Curve



---

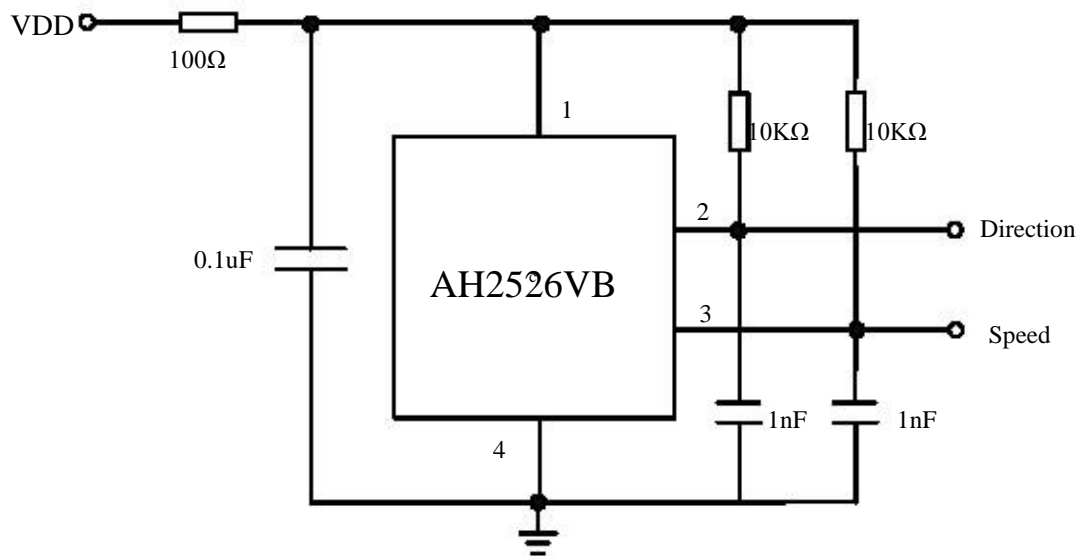
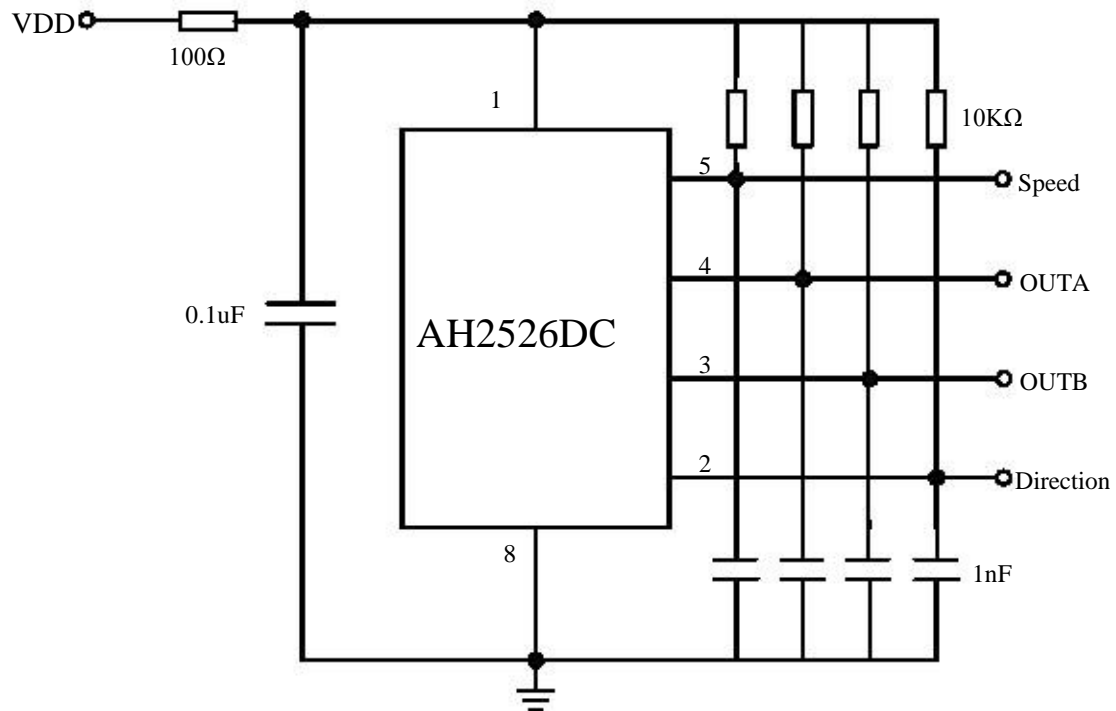
## Characteristic Curve (continued)





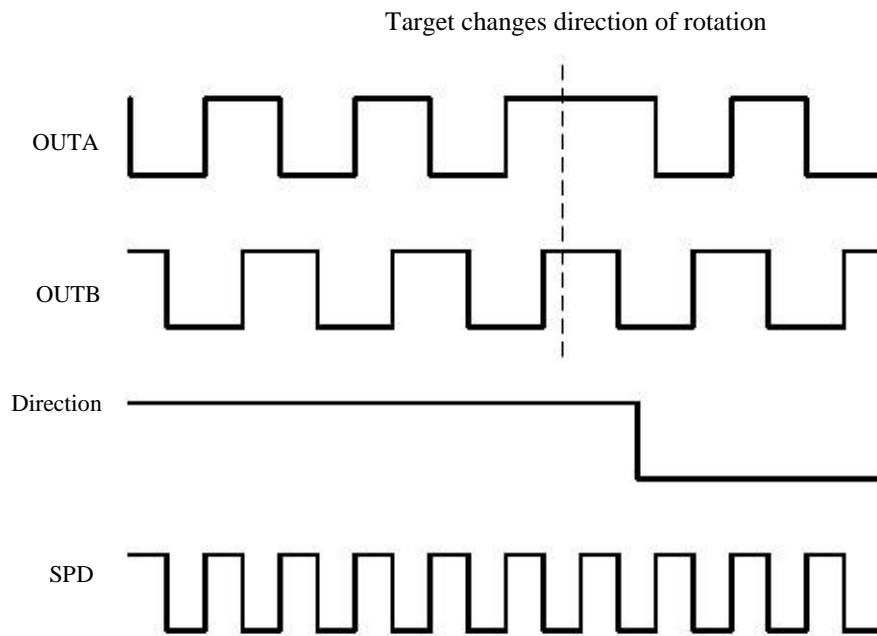
---

## Typical Application

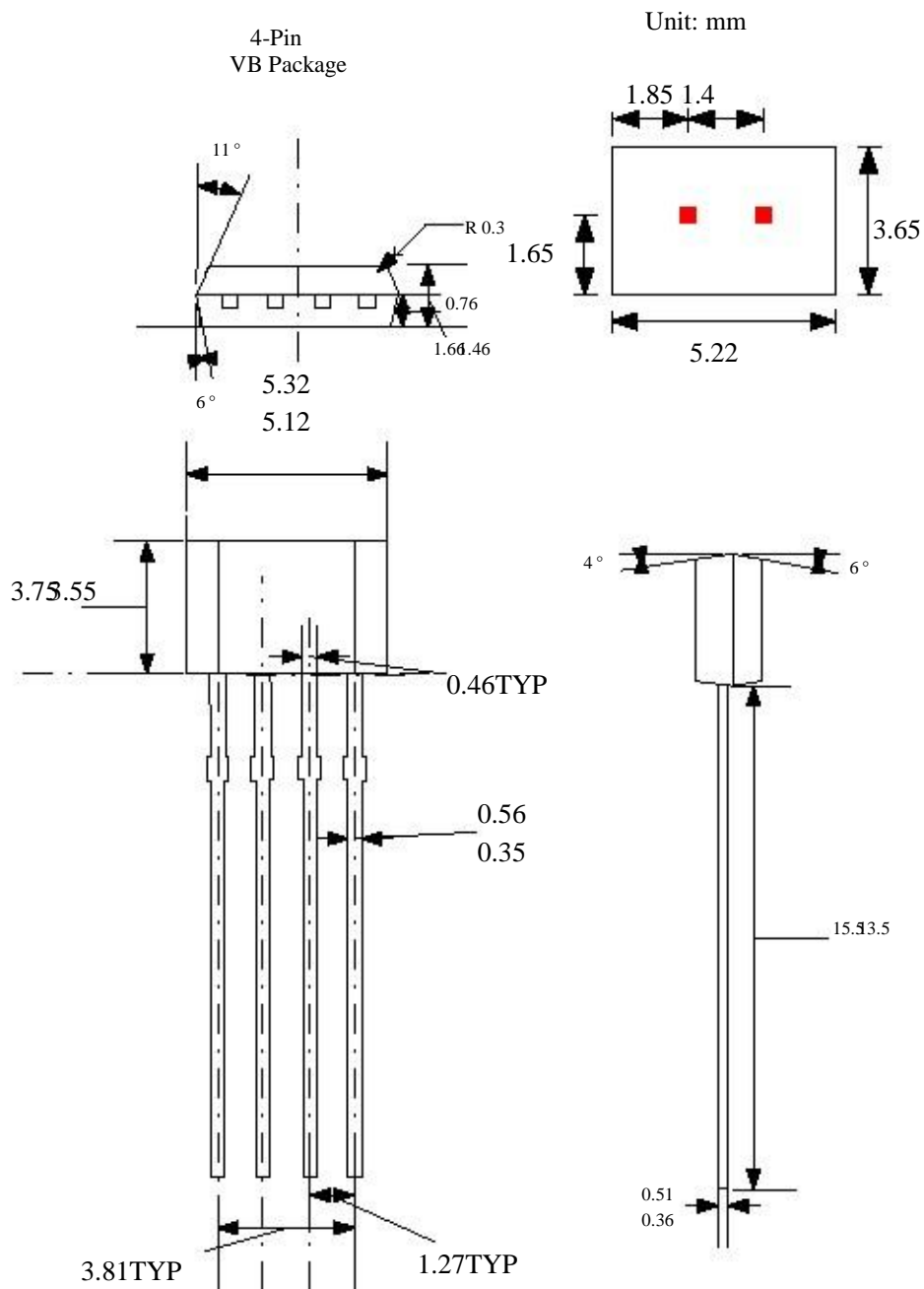


---

## Typical Output Waveform



## Package Information (VB)

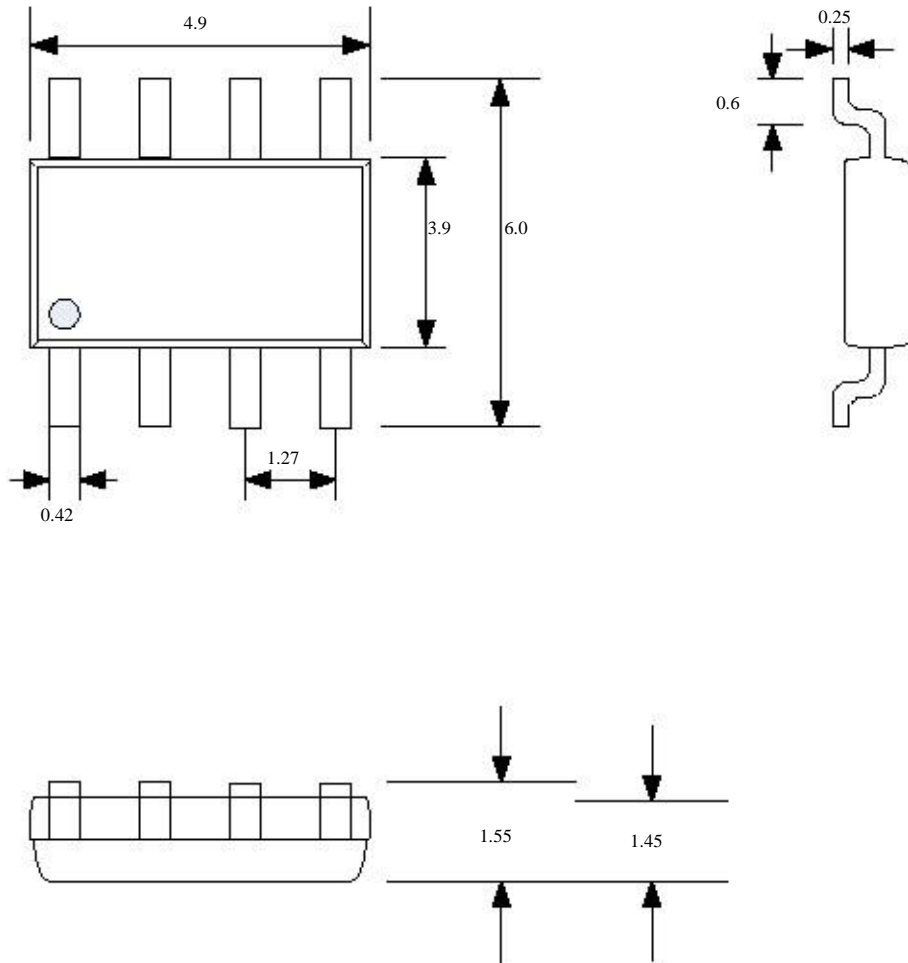


Note:

1. Exact body and lead configuration at vendor's option within the range shown.
  2. Height does not include mold gate overflow.
- Where no tolerance is specified, dimension is the nominal size.

---

## Package Information (DC)



### Note:

1. Exact body and lead configuration at vendor's option within range shown.
  2. Height does not include mold gate overflow.
- Where no tolerance is specified, dimension is the nominal size.

---

## Revision History

Number	Date	Description
Rev0.1	2017-03-02	Preliminary version
Rev2.3	2018-09-02	Final version number of the old specification
RevA/1.0	2020-11-19	Unified format release