CSH266A4

Complementary Output Hall Effect Latched Sink Driver IC

Description

The CSH266A4 is an integrated Hall sensors with output drivers designed for electronic commutation of brushless DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and complementary open collector drivers for sinking large current loads. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.
If a magnetic flux density larger than threshold BOP, DO is turned on (low) and DOB is turned off (high). The output state is held until a magnetic flux density reversal falls below Brp causing DO to be turned off and DOB turned on.
CSH266A4 is rated for operation over temperature range from -20℃to 100℃ and voltage range from 3.5V to 28V.
The devices are available in low cost die forms or rugged 4 pin SIP packages.

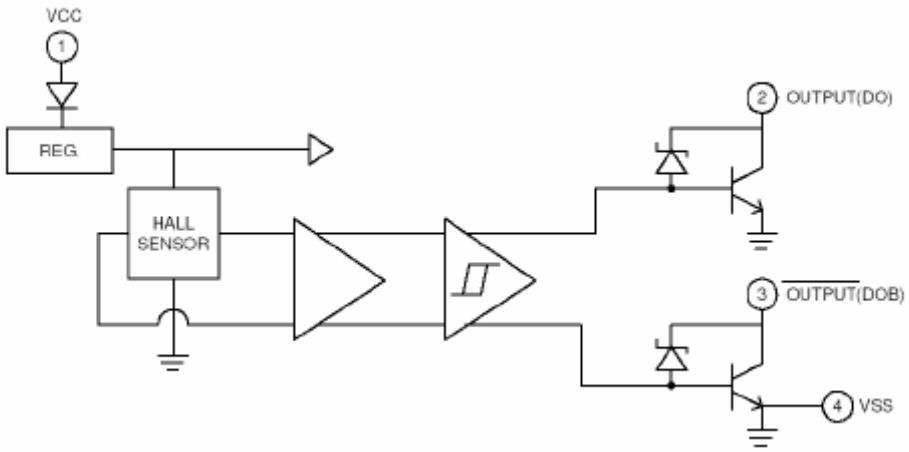
Features

- On-chip Hall sensor IC with two different sensitivity and hysteresis settings
- Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range
- High output sinking capability up to 300mA for driving large load
- Lower current change rate reduces the peak output voltage during switching
- Build in protection diode for chip reverse power connecting
- Package: SIP-4L

Applications

- Brushless DC motor
- Brushless DC fan
- Revolution counting
- Speed measurement

Functional Block Diagrams



Pin Descriptions

Name	P/I/O	Pin#	Description
Vcc	P	1	Positive Power supply
DO	O	2	Output Pin
DOB	O	3	Output Pin
Vss	P	4	Ground

Absolute Maximum Ratings at Ta = 25℃

Parameter		Symbol	VALUE	Unit
Supply Voltage		Vcc	28V	V
Reverse Vcc Polarity Voltage		VRCC	-35V	V
Magnetic flux density		B	Unlimited	
Output OFF Voltage		Vce	50(Note1)	V
Output ON Current	Continuous	Ic	300	mA
	Hold		400	
	Peak(Start UP)		700	
Operating Temperature Range		Ta	-20~100	℃
Storage Temperature Range		Ts	-65~150	℃
Package Power Dissipation		PD	550	mW
Maximum Junction Temp.		Tj	175	℃

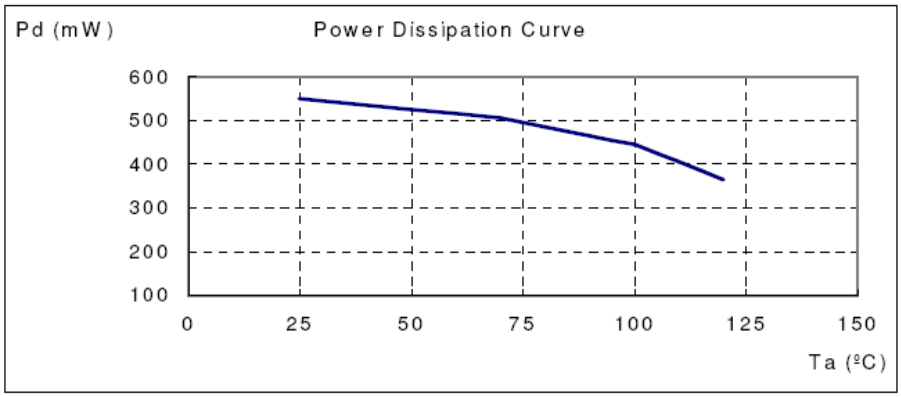
Note 1 Output Zener protection voltage.

Electrical Characteristics (Ta=+25℃, Vcc=4.0V to 20V)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Low Supply Voltage	Vce	Vcc=3.5V, IL=100mA	-	0.4	-	V
Supply Voltage	Vcc	-	3.5	-	28	V
Output Saturation Voltage	Vce(sat)	Vcc=14V, IL=300mA	-	0.6	0.9	V
Output Leakage Current	Icex	Vce=14V, Vcc=14V	-	<0.1	10	uA
Supply Current	Icc	Vcc=20V, Output Open	-	13	20	mA
Output Rise Time	Tr	Vcc=14V, RL=820Ω, CL=20pf	-	3.0	10	us
Output Falling Time	Tf	Vcc=14V, RL=820Ω, CL=20pf	-	0.3	1.5	us
Switch Time Differential	Δt	Vcc=14V, RL=820Ω, CL=20pf	-	3.0	10	us

Power dissipation VS. Environment Temperature

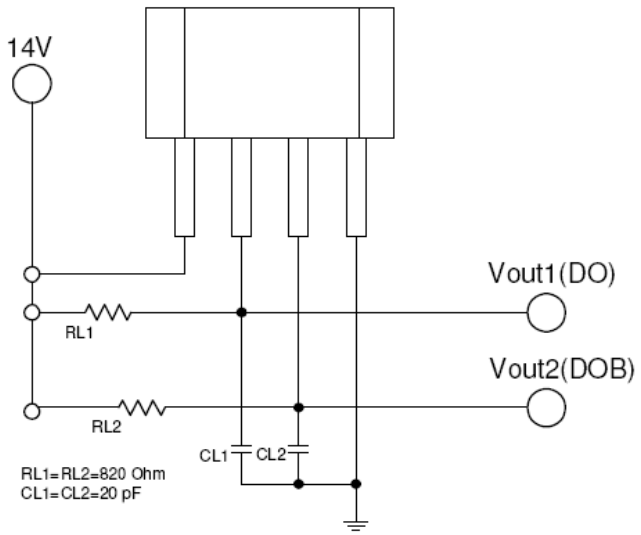
Ta(℃)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd(mW)	550	525	515	505	485	475	465	455	445	425	405	385	365



Magnetic Characteristics

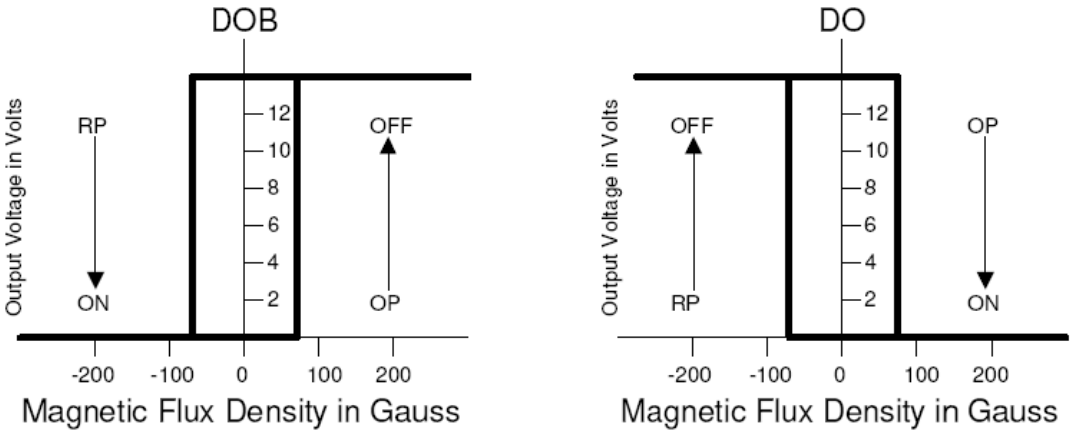
Characteristic		Symbol	Ta=+25℃		Ta=0℃ to 70℃		Unit
			Min	Max	Min	Max	
Operate Point	BIN A	Bop	0	70	0	70	Gauss
	BIN B	Bop	-	100	-	100	Gauss
	BIN C	Bop	-	130	-	130	Gauss
Release Point	BIN A	Brp	-70	0	-70	0	Gauss
	BIN B	Brp	-100	-	-100	-	Gauss
	BIN C	Brp	-130	-	-130	-	Gauss
Hysteresis	BIN A	Bhys	40	110	20	140	Gauss
	BIN B	Bhys	50	150	30	200	Gauss
	BIN C	Bhys	60	160	40	220	Gauss

Test Circuit

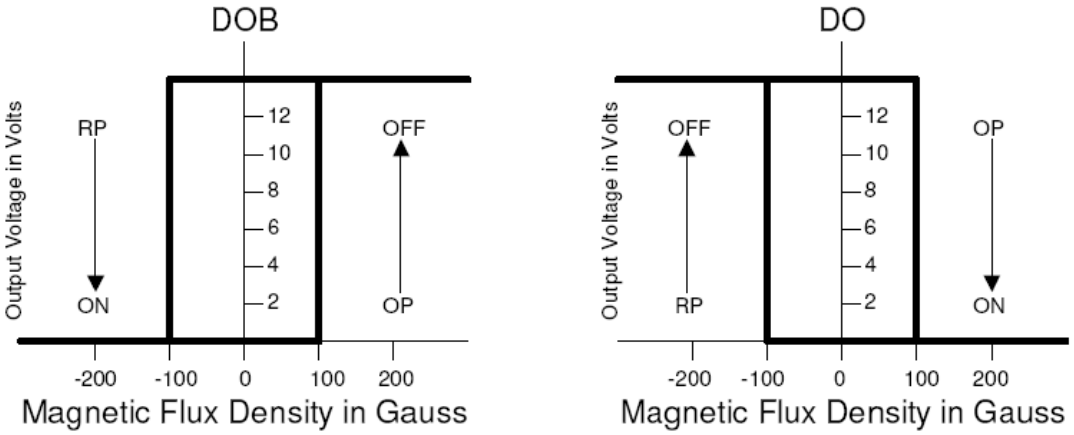


Hysteresis Characteristics

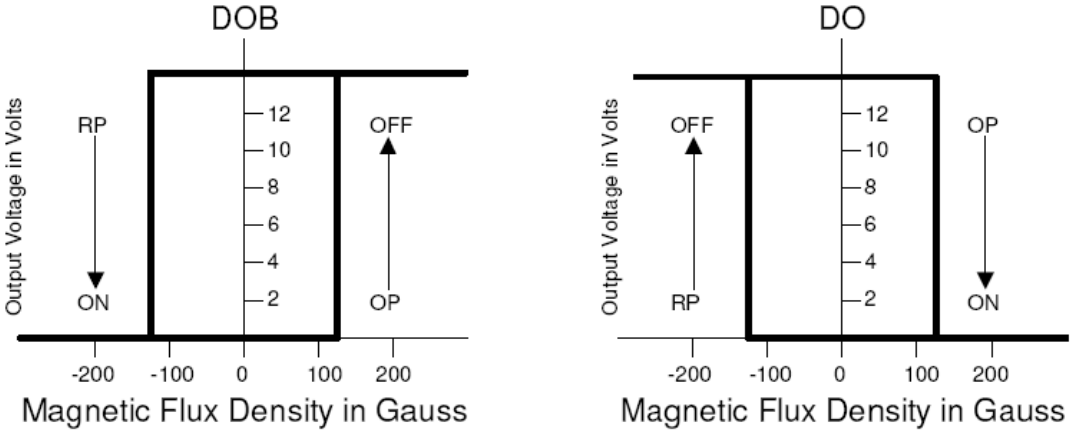
Bin A



Bin B

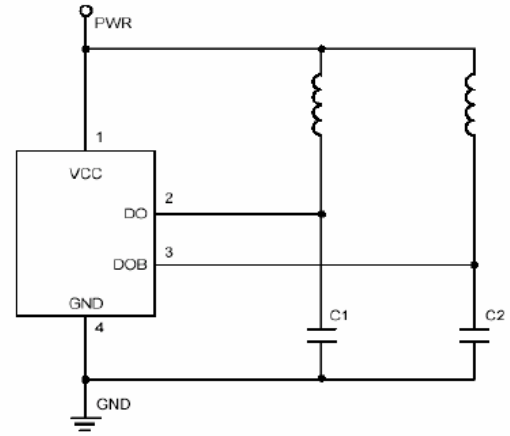


Bin C



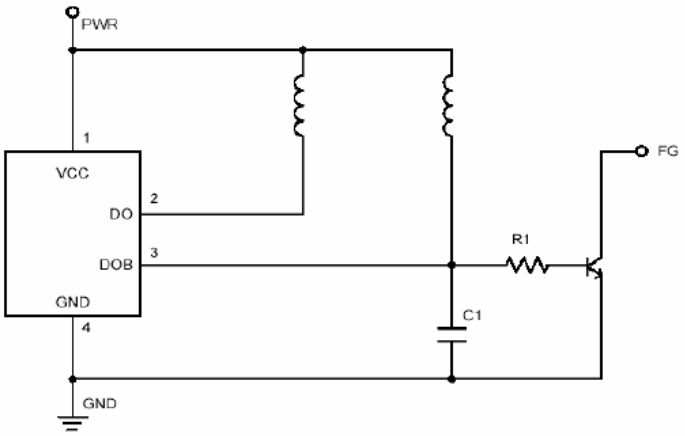
Application Circuit Double Coil

1) Output on current, Ic > 200mA



Remark: C1, C2: Capacitor 2.2μF~4.7μF (optional)

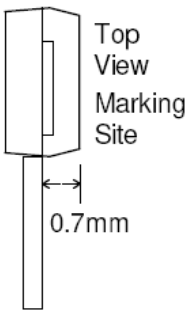
2) With FG output



Remark: C1: Capacitor 0.1μF~1μF R1: Resister 1KΩ

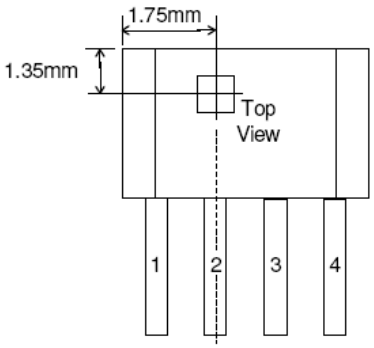
Package Information

Active Area Depth

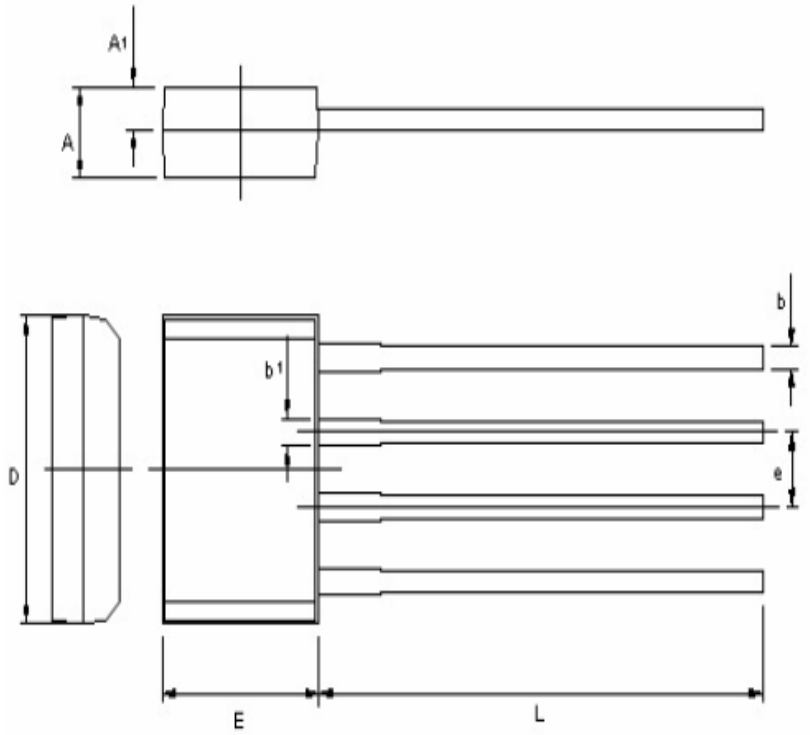


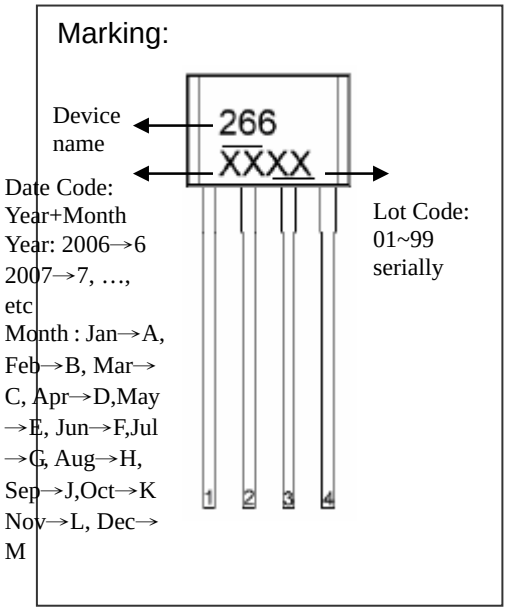
Tolerance: +/- 0.05mm

Package Sensor Location



SIP-4L Dimension





Style: Pin 1.VCC 2.Output 3.Output 4. Ground

4-Lead SIP-4L Plastic Package
CYStek Package Code: A4

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.051	0.071	1.295	1.803	D	0.201	0.211	5.105	5.359
A1	0.024	-	0.610	-	E	0.139	0.149	3.531	3.785
b	0.013	0.017	0.330	0.432	L	0.551	0.630	14.00	16.00
b1	0.016	0.020	0.406	0.508	e	0.05 REF		1.27 REF	

Notes: 1.Dimension and tolerance based on our Spec. dated Apr. 18,2002.
2.Controlling dimension: millimeters.
3.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
4.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0