

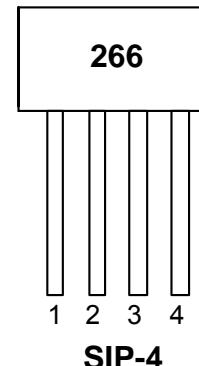
Description

AH266 is an integrated Hall sensor with output drivers designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, a Schmitt trigger to provide switching hysteresis for noise rejection, and complementary Darlington open-collector drivers for sinking large current loads. An internal band-gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

If a magnetic flux density (B) is larger than operation point (B_{op}), DO will turn on (low) and DOB will turn off (high). The output state is latched prior to reaching release point (B_{rp}). If B < B_{rp}, DO will turn off and DOB will turn on. AH266 is rated for operation over temperature range from -20°C to +85°C and voltage range from 4V to 28V. The devices are available in low cost die forms or rugged 4 pin SIP packages.

Pin Assignments

(Top View)



Features

- On-Chip Hall Plate
- Operating Voltage: 4V to 28V
- Output Current: 400mA (Continuous, +25°C)
- Reverse Protection Diode Only for Chip Reverse Power Connecting (Note 1)
- Output Protection Zener Breakdown V_Z = 62V (Typ.)
- Lead Free package: SIP-4
- SIP-4: Available in "Green" Molding Compound (No Br, Sb)
- RoHS Compliant (Note 2)
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)

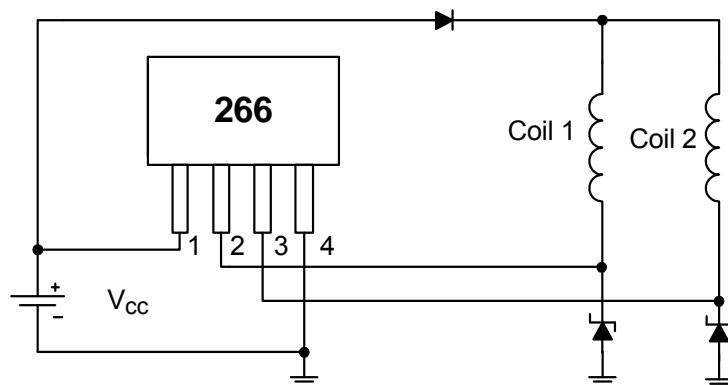
Applications

- Dual-Coil Brushless DC Motor
- Dual-Coil Brushless DC Fan
- Revolution Counting
- Speed Measurement

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Typical Applications Circuit

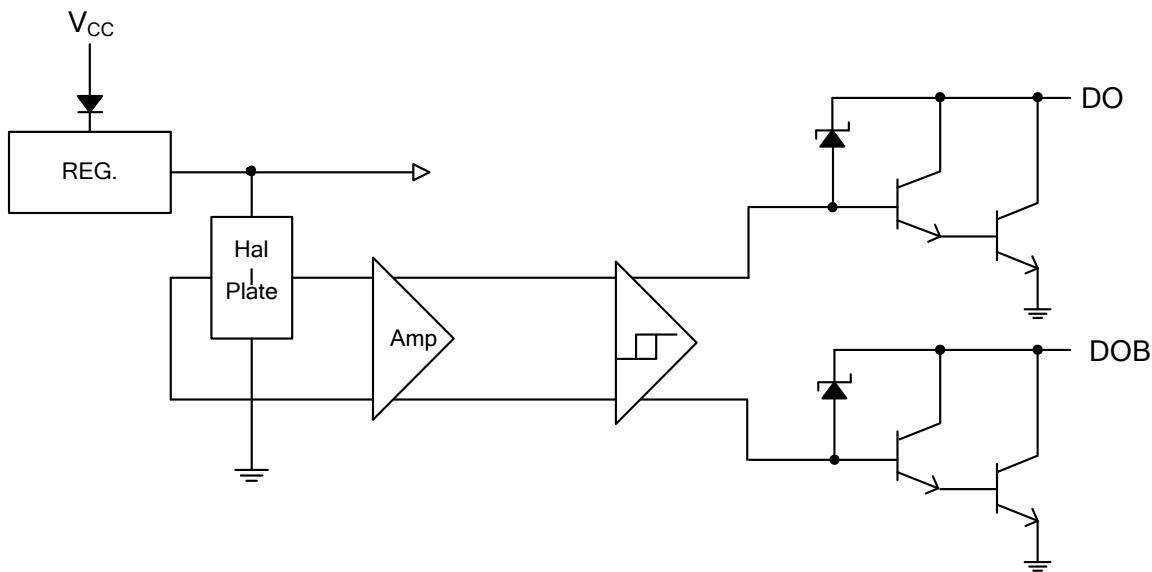


Brush-Less DC Fan

Pin Descriptions

Pin Name	P/I/O	Pin #	Description
V _{CC}	P	1	Power Supply Input
DO	O	2	Output Pin
DOB	O	3	Output Pin
GND	P	4	Ground

Functional Block Diagram



Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Symbol	Parameter	Rating	Unit
V _{CC}	Supply Voltage	28	V
V _{out (off)}	Output "OFF" Voltage	28	V
I _O (con)		400 (Note 5)	mA
I _O (hold)	Output "ON" Current	500	mA
I _O (peak)		700	mA
B	Magnetic Flux Density	Unlimited	Gauss
T _{ST}	Storage Temperature Range	-65 to +150	°C
P _D	Power Dissipation (Note 6)	550	mW
θ _{JA}	Thermal Resistance Junction-to-Ambient (SIP-4)	227	°C/W
θ _{JC}	Thermal Resistance Junction-to-Case (SIP-4)	49	°C/W

Recommended Operating Conditions (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Symbol	Characteristic	Conditions	Min	Max	Unit
V_{CC}	Supply Voltage	Operating	4	28	V
T_A	Operating Ambient Temperature (Note 7)	Operating	-20	85	°C

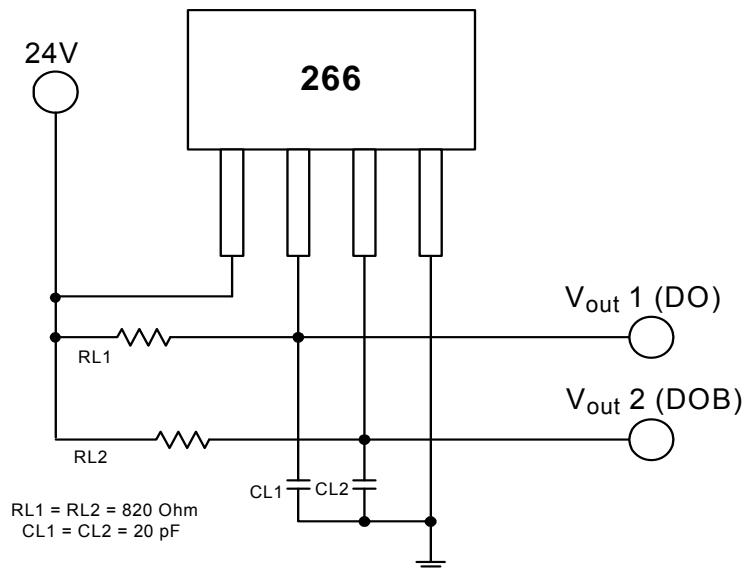
Notes:

- 4. This application circuit can't protect reverse coil current if power is connecting reverse.
- 5. $I_{o(\text{con})}$ is 150 mA at $+85^\circ\text{C}$.
- 6. See Performance Characteristics for other conditions.
- 7. Shall not exceed P_D and Safety Operation Area.

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Symbol	Characteristic	Conditions	Min	Typ.	Max	Unit
V_z	Output Zener Breakdown	Output Turn off	54	62	70	V
$V_{CE(\text{SAT})}$	Output Saturation Voltage	$V_{CC} = 24V, I_C = 400mA$	—	1.1	1.5	V
I_{CEX}	Output Leakage Current	$V_{CE} = 24V, V_{CC} = 24V$	—	< 0.1	10	μA
I_{CC}	Supply Current	$V_{CC} = 24V$, Output Open	—	5	10	mA
t_r	Output Rise Time	$V_{CC} = 24V, RL = 820\Omega, CL = 20pF$	—	1.0	5	μs
t_f	Output Falling Time	$V_{CC} = 24V, RL = 820\Omega, CL = 20pF$	—	1.0	1.5	μs
Δt	Switch Time Differential	$V_{CC} = 24V, RL = 820\Omega, CL = 20pF$	—	3.0	10	μs

Test Circuit



Magnetic Characteristics

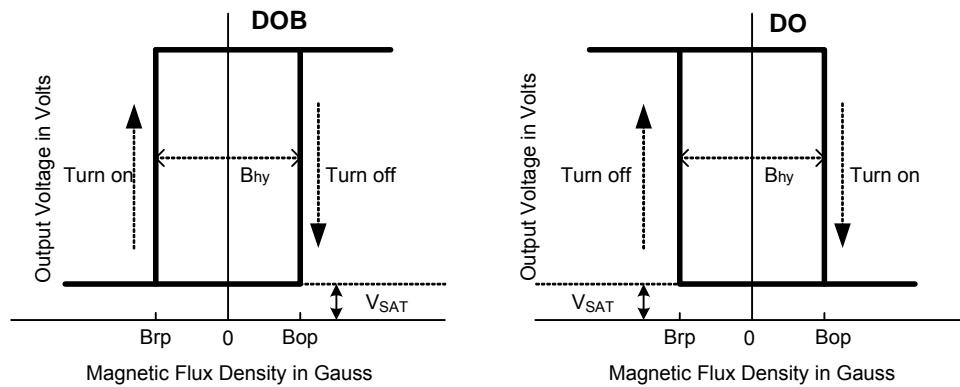
A grade

(1mT = 10 Gauss)

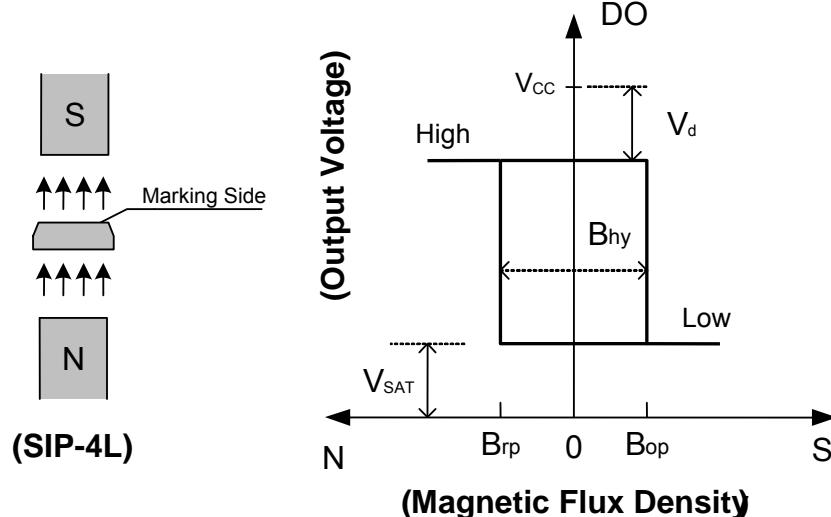
Symbol	Characteristic	Min	Typ.	Max	Unit
B _{op}	Operation Point	10	—	70	Gauss
B _{rp}	Release Point	-70	—	-10	Gauss
B _{hy}	Hysteresis	—	80	—	Gauss

B grade

Symbol	Characteristic	Min	Typ.	Max	Unit
B _{op}	Operation Point	—	—	100	Gauss
B _{rp}	Release Point	-100	—	—	Gauss
B _{hy}	Hysteresis	—	80	—	Gauss

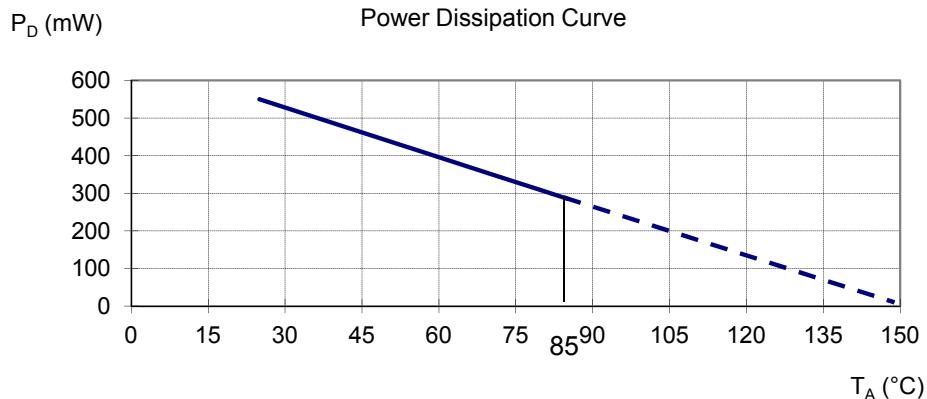


Operation Characteristics

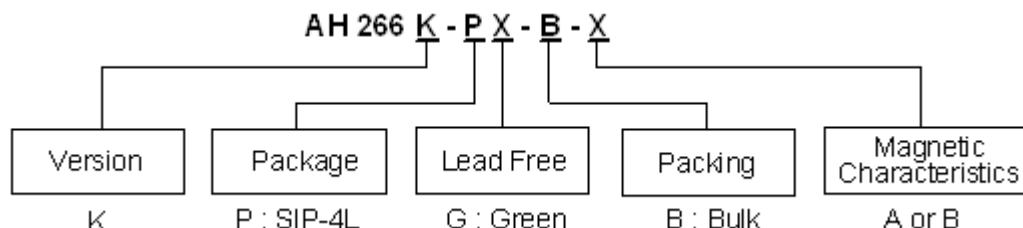


Performance Characteristics

T_A (°C)	25	50	60	70	80	85	90	95	100
P _D (mW)	550	440	396	352	308	286	264	242	220
T_A (°C)	105	110	115	120	125	130	135	140	150
P _D (mW)	198	176	154	132	110	88	66	44	0



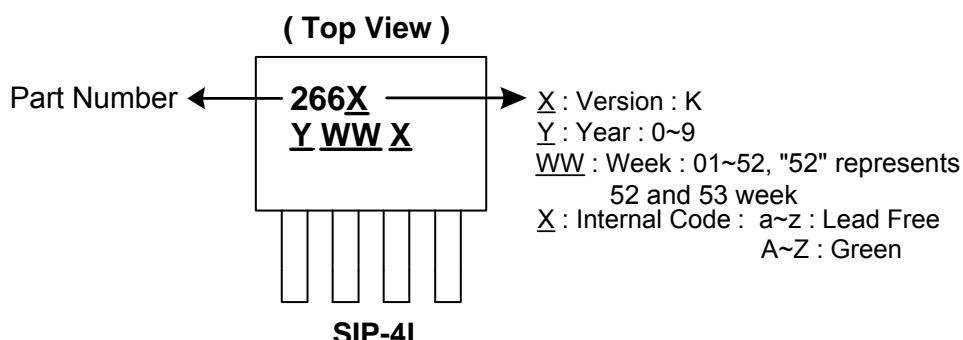
Ordering Information



Device	Package Code	Packaging (Note 8)	Bulk		Magnetic Characteristics
			Quantity	Part Number Suffix	
AH266K-PG-B-A	P	SIP-4	1000	-B	A
AH266K-PG-B-B	P	SIP-4	1000	-B	B

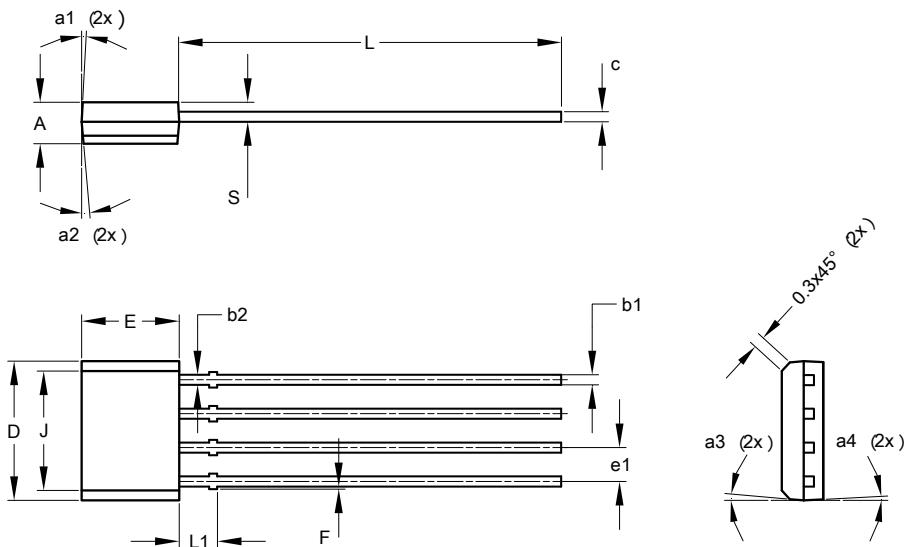
Note: 8. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

Marking Information



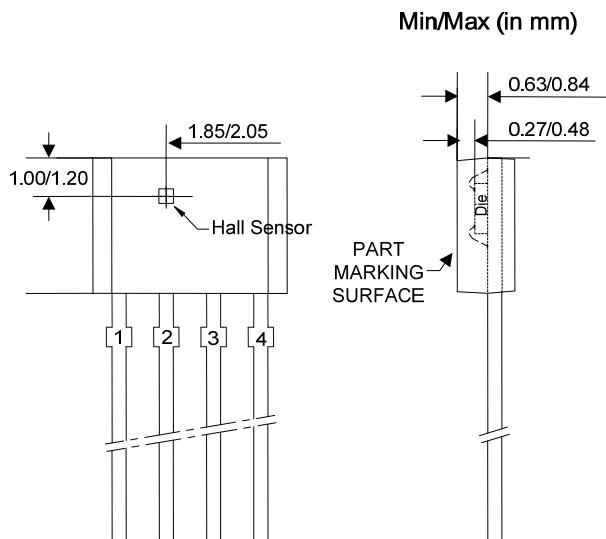
Package Outline Dimensions (All dimensions in mm.)

(1) Package type: SIP-4L



SIP-4			
Dim	Min	Max	Typ
A	1.45	1.65	1.55
b1	0.38	0.44	0.40
b2	-	-	0.48
c	0.35	0.45	0.40
D	5.12	5.32	5.22
e1	1.24	1.30	1.27
E	3.55	3.75	3.65
F	0.00	0.20	-
J	4.10	4.30	4.20
L	14.00	14.60	14.30
L1	1.32	1.52	1.42
S	0.63	0.83	0.73
a1	-	5°	3°
a2	4°	7°	5°
a3	4°	7°	5°
a4	-	5°	3°

All Dimensions in mm



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