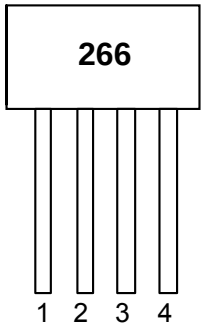
Description

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 (Bop), DO will turn on (low) and DOB will turn off (high). The output state is latched prior to reaching release point (Brp). If B< Brp, 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)



SIP-4

Features

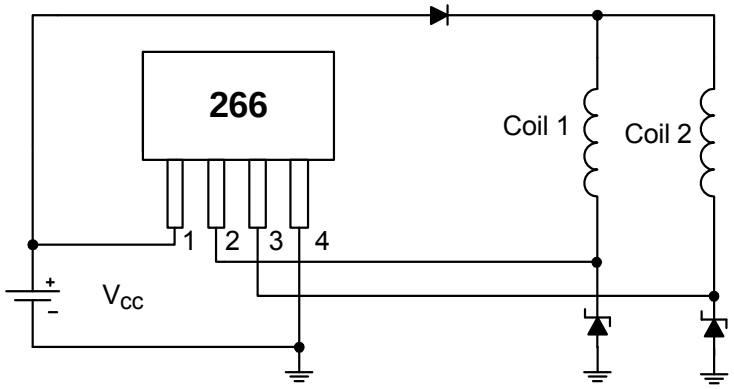
- On-Chip Hall Plate
- Operating Voltage: 4V to 28V
- Output Current: 400mA (Continuous**,** +25°C)
- Reverse Protection Diode Only for Chip Reverse Power Connecting (Note 1)
- Output Protection Zener Breakdown V_Z = 62V (Typ.)
- Lead Free package: SIP-4
- SIP-4: Available in “Green” Molding Compound (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

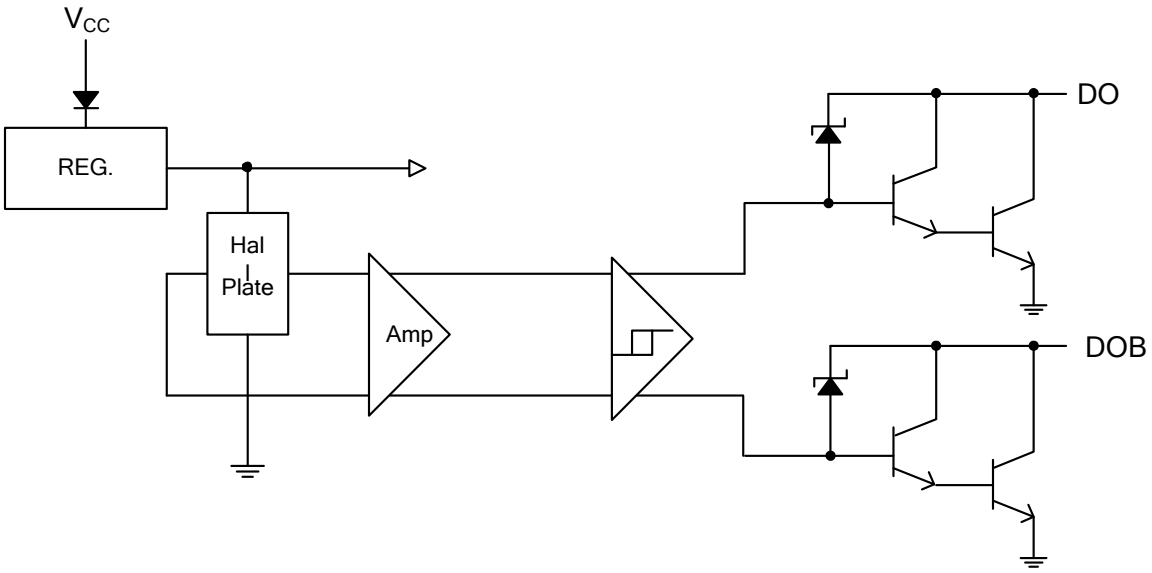


Brush-Less DC Fan

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
$I_{O\ (con)}$	Output “ON” Current	400 (Note 5)	mA
$I_{O\ (hold)}$		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°C, unless otherwise specified.)

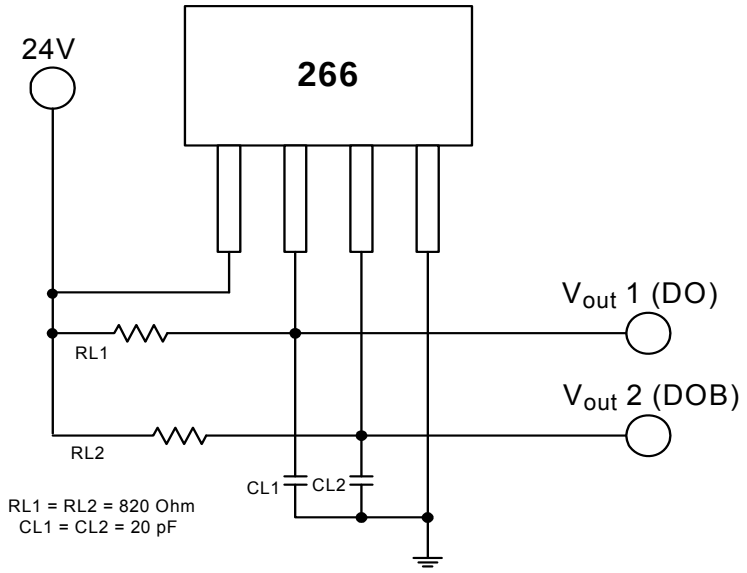
Symbol	Characteristic	Conditions	Min	Max	Unit
V_{CC}	Supply Voltage	Operating	4	28	V
T_A	Operating Ambient Temperature (Note 7)	Operating	-20	85	°C

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

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Symbol	Characteristic	Conditions	Min	Typ.	Max	Unit
V_z	Output Zener Breakdown	Output Turn off	54	62	70	V
$V_{CE\ (SAT)}$	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
tr	Output Rise Time	V_{CC} = 24V, RL = 820Ω, CL = 20pF	—	1.0	5	μs
tf	Output Falling Time	V_{CC} = 24V, RL = 820Ω, CL = 20pF	—	1.0	1.5	μs
Δt	Switch Time Differential	V_{CC} = 24V, RL = 820Ω, CL = 20pF	—	3.0	10	μs

Test Circuit



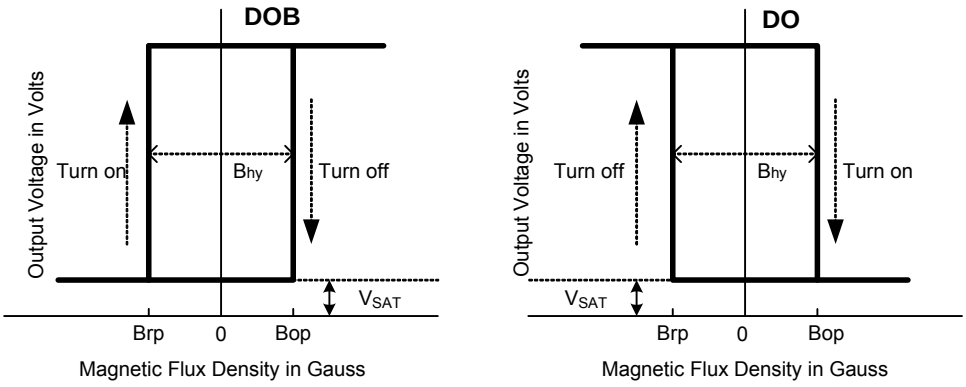
Magnetic Characteristics

A grade (1mT = 10 Gauss)

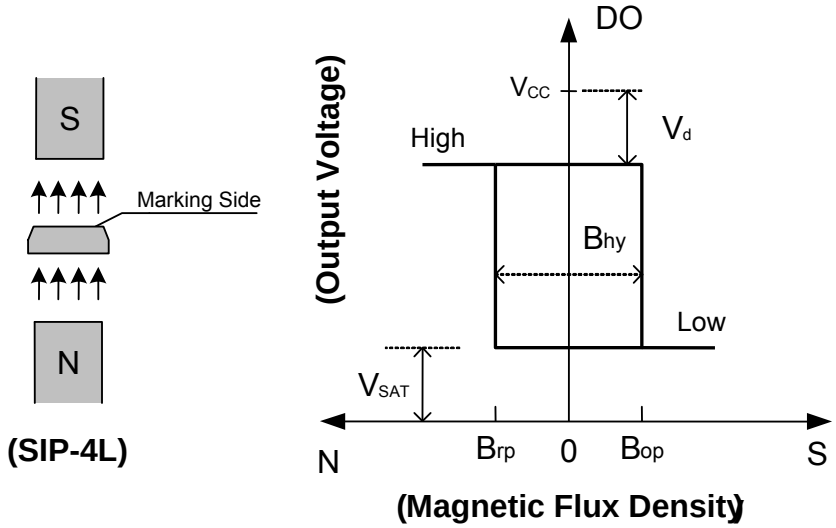
Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operation Point	10	—	70	Gauss
Brp	Release Point	-70	—	-10	Gauss
Bhy	Hysteresis	—	80	—	Gauss

B grade

Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operation Point	—	—	100	Gauss
Brp	Release Point	-100	—	—	Gauss
Bhy	Hysteresis	—	80	—	Gauss

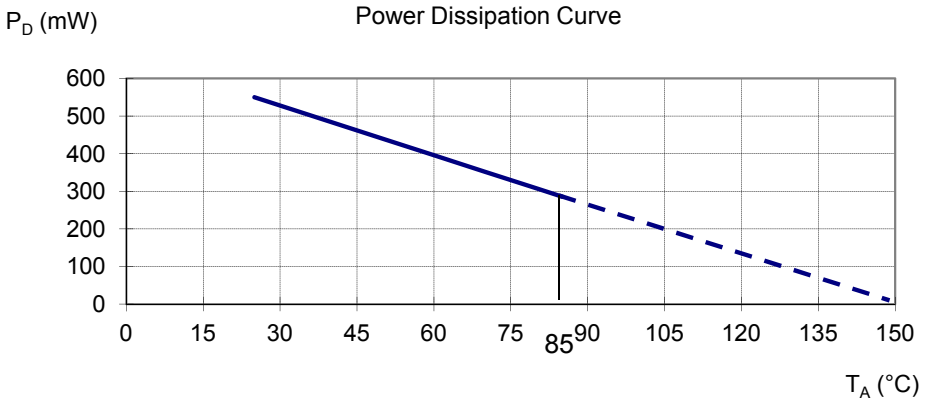


Operation Characteristics

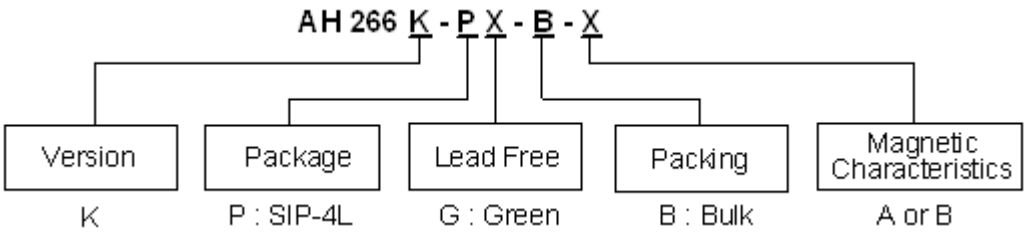


Performance Characteristics

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



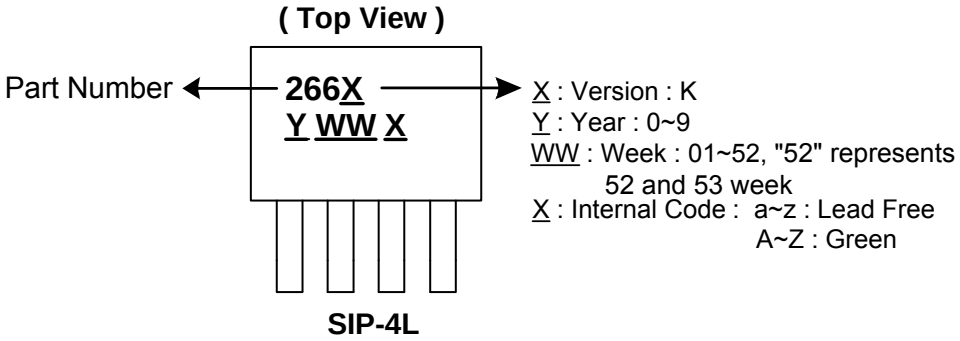
Ordering Information



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

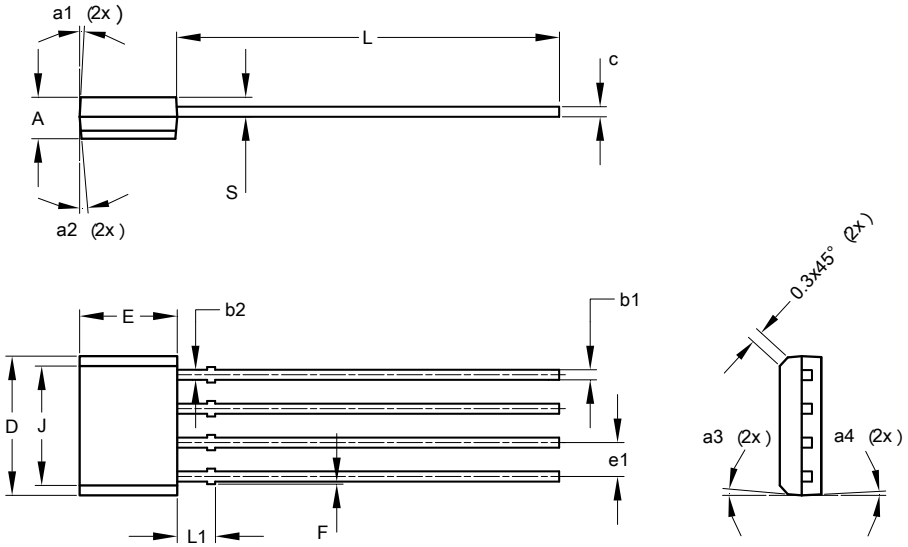
Note: 8. For packaging details, go to our website at http://www.diodes.com/products/packages.html

Marking Information



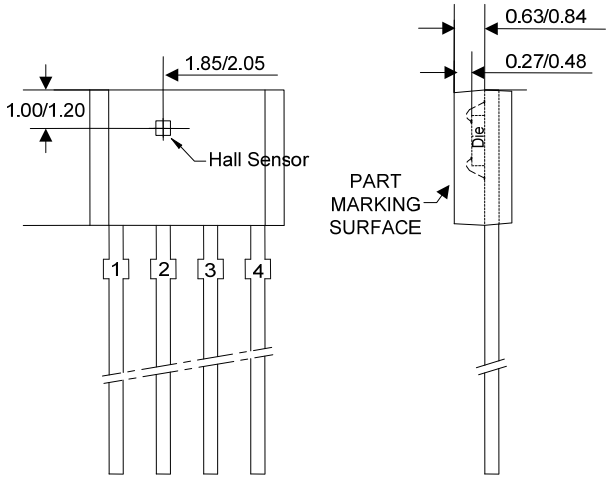
Package Outline Dimensions (All dimensions in mm.)

(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			

Min/Max (in mm)



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