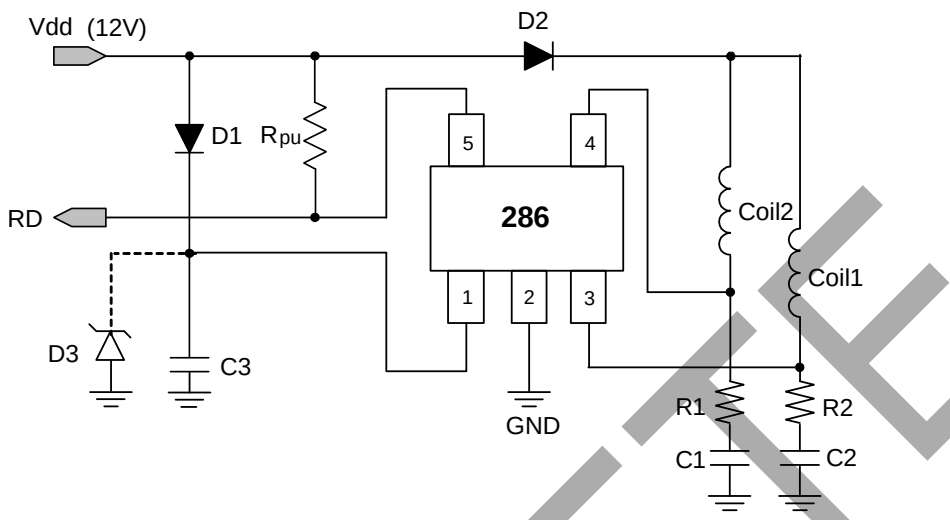
Typical Application Circuit (Note 4)



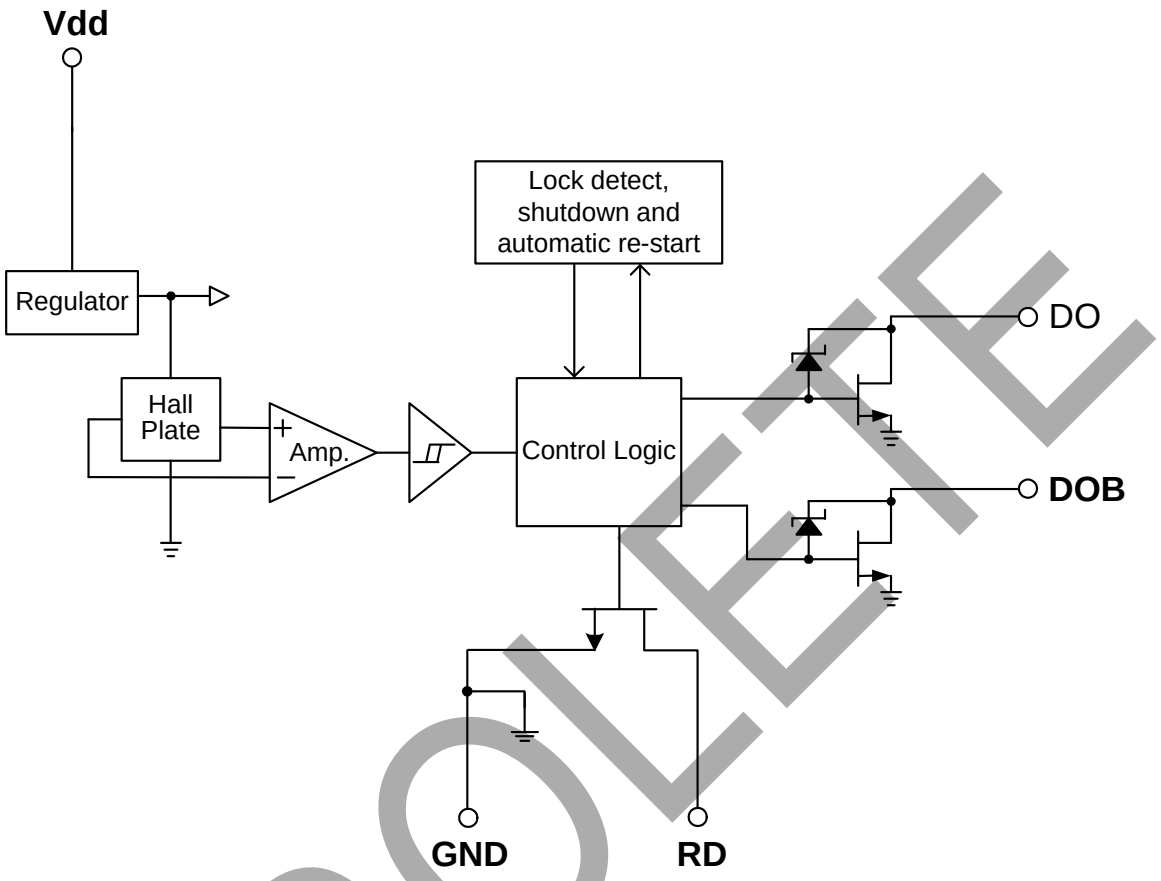
12V DC Brush-Less Fan with RD Output Function

Notes: 4. Typically it is recommended to us a 56 Ohm resistor for R1 and R2 and a 2.2μF E-Cap capacitor for C1, C2 and C3. These values may need to be optimized depending on the coils used.
To help with IC protection it's advised to add a Zener diode between Vdd and ground. The Zener diode should be chosen to help prevent the supply voltage exceeding the maximum rating of the device.

Pin Descriptions

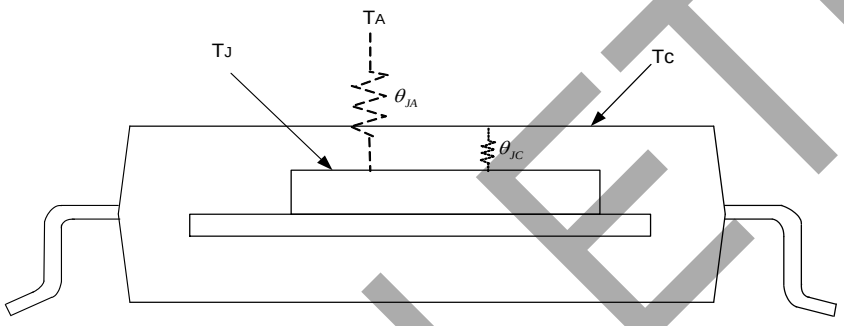
Pin Name	Description
RD	Rotor-state detection
Vdd	Input power
DO	Output pin
DOB	Output pin
GND	Ground

Functional Block Diagram



Absolute Maximum Ratings (T_A = +25°C)

Symbol	Characteristics		Rating	Unit
Vdd	Supply Voltage		24	V
I_O	Output Current	$I_{O\ (AVE)}$	500	mA
		$I_{O\ (PEAK)}$	700	mA
P_D	Power Dissipation		800	mW
T_{ST}	Storage Temperature		-55 to +150	°C
T_J	Maximum Junction Temperature		+150	°C
θ_{JA}	Thermal Resistance Junction to Case (Note 5)		156	°C/W



Note: 5. θ_{JA} should be confirmed with heat sink thermal resistance. If there is no heat sink contact, θ_{JA} will almost be the same as θ_{JC}.

Recommended Operating Conditions

Symbol	Characteristic	Conditions	Min	Max	Unit
Vdd	Supply Voltage	Operating	3.8	20	V
T_A	Operating Ambient Temperature	Operating	-40	+100	°C

Electrical Characteristics (T_A = +25°C, V_{DD} = 12V, unless otherwise specified.)

Symbol	Characteristics	Conditions	Min	Typ.	Max	Unit
Idd	Supply Current	Operating	-	2.0	4.0	mA
I_{OFF}	Output Leakage Current	V_{OUT} = 24V	-	< 0.1	10	μA
t_{RLP-ON}	Rotor Lock Protection On Time	-	0.4	0.5	0.6	Sec
$t_{RLP-OFF}$	Rotor Lock Protection Off Time	-	2.4	3	3.6	Sec
$V_{OUT(SAT)}$	Output Saturation Voltage	I_O = 300mA	-	375	500	mV
		I_O = 500mA	-	625	900	
$R_{DS(ON)}$	Output On Resistance	I_O = 300mA	-	1.25	1.67	Ω
V_{OL}	RD Output Vds	I_O = 10mA	-	0.5	-	V
Vz	Output Zener-Breakdown Voltage	-	35	42	60	V

Truth Table (Note 6)

IN-	IN+	CT	OUT1	OUT2	RD	Mode
H	L	L	H	L	L	Rotating
L	H	L	L	H	L	Rotating
-	-	H	Off	Off	H	Lockup protection activated

Note: 6. Latch-type RD output is low during rotor rotation and high when the rotor is locked (not rotating).

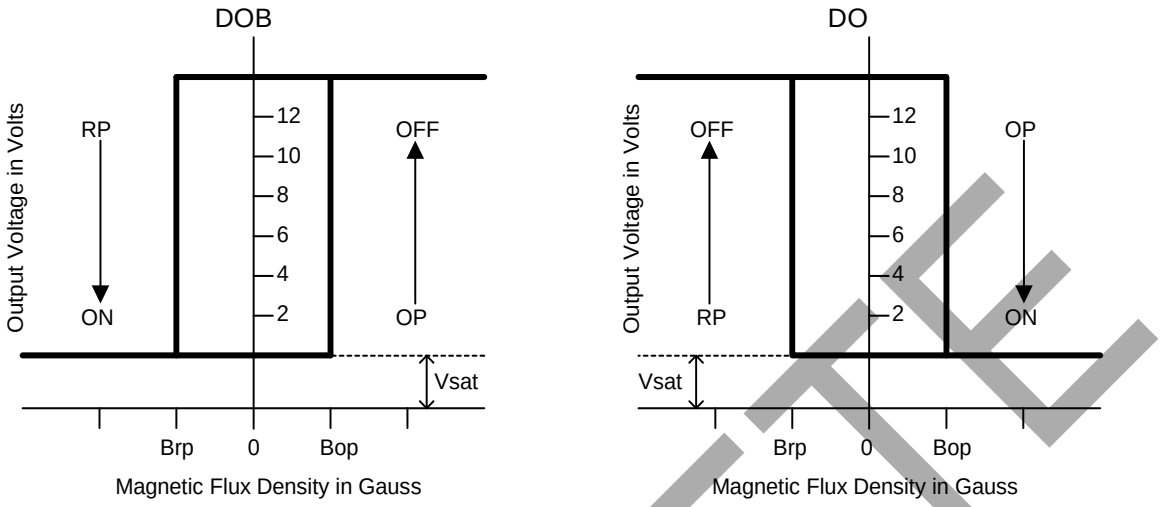
Magnetic Characteristics (T_A = +25°C, V_{DD} = 12V, unless otherwise specified, Note 7)

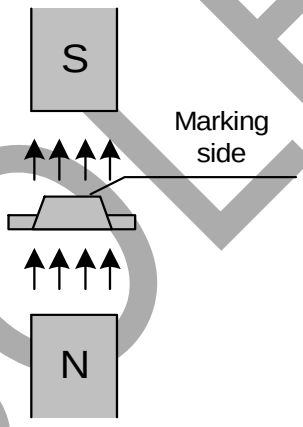
(1mT = 10 Gauss)

Symbol	Characteristics	Min	Typ.	Max	Unit
Bop	Operate Point	10	30	60	Gauss
Brp	Release Point	-60	-30	-10	Gauss
Bhy	Hysteresis	-	60	-	Gauss

Note: 7. The magnetic characteristics may vary with supply voltage, operating temperature and after soldering.

Operating Characteristics

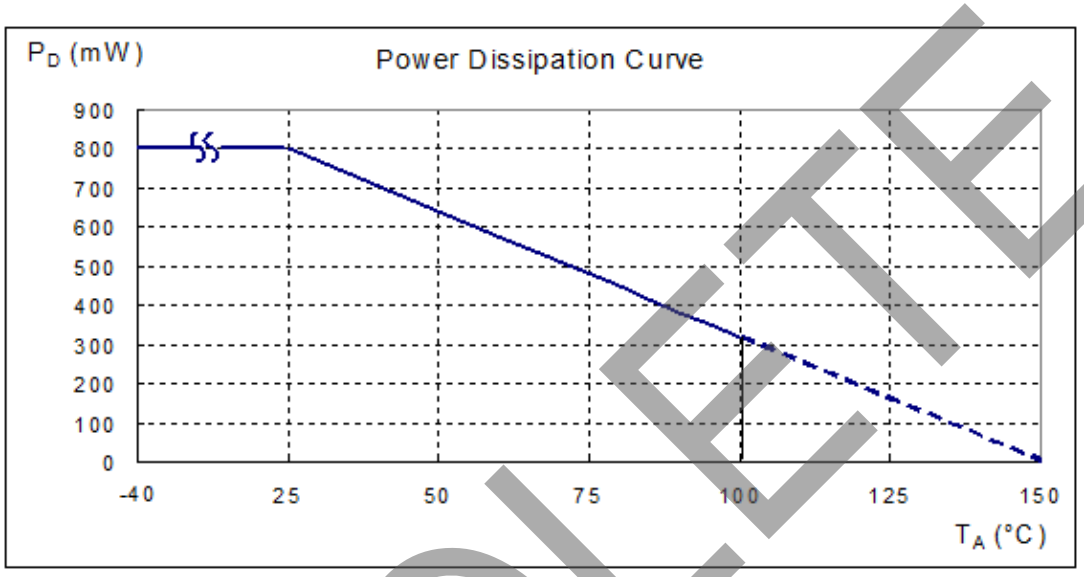




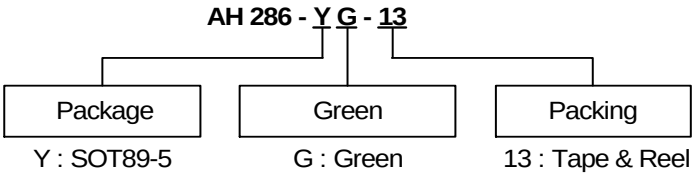
(SOT89-5)

Performance Characteristics

T_A (°C)	25	50	60	70	75	80	85	90	95	100
P_D (mW)	800	640	576	512	480	448	416	384	352	320
T_A (°C)	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**	**150**
P_D (mW)	288	256	224	192	160	128	96	64	32	0



Ordering Information

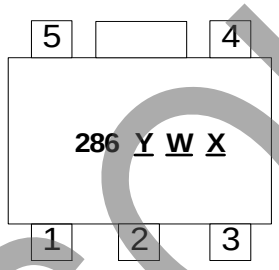


Device	Package Code	Packaging (Note 8, 9)	Bulk		13" Tape and Reel	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix
AH286-YG-13	Y	SOT89-5	NA	NA	2500/Tape & Reel	-13

Notes: 8. Pad layout as shown on Diodes Incorporated's suggested pad layout document, which can be found on our website at http://www.diodes.com/package-outlines.html.
9. Reverse taping as shown on Diodes Incorporated's Surface Mount (SMD) Packaging document AP02007, which can be found on our website http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information

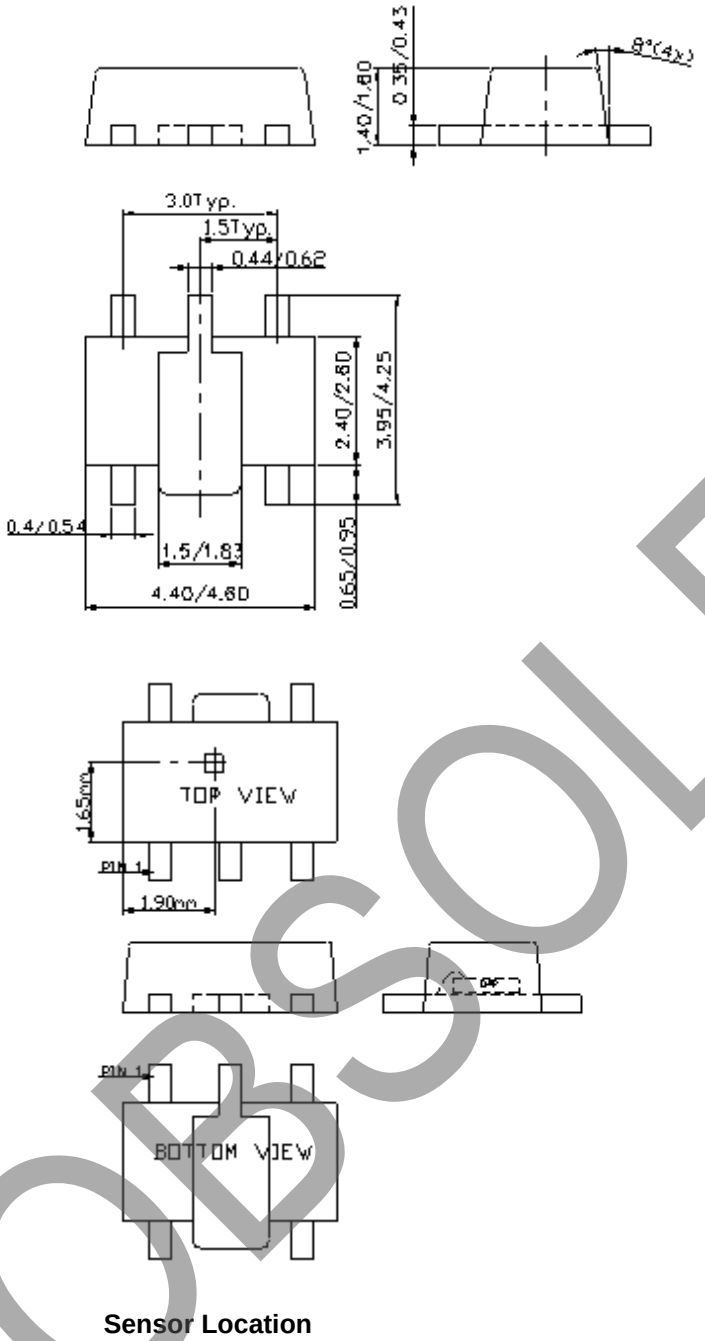
(Top View)



SOT89-5

Y : Year : 0~9
W : Week : A~Z : 1~26 week;
a~z : 27~52 week;
z represents 52 and 53 week
X : Internal code
A~Z : Green

Package Outline Dimensions (All Dimensions in mm)



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