

Two Coil Fan Motor Predriver

■ Features

- Compatible to a Hall element
- Operating voltage (V_{CC}) : 4V to 28V
- Lock shutdown and automatic restart
- Speed indication (FG) output
- Output current $I_O=70mA_{(max)}$
- Operating temperature (T_{opr}) : -30°C to +85°C
- SOP8 package
- Include Thermal Shutdown circuit

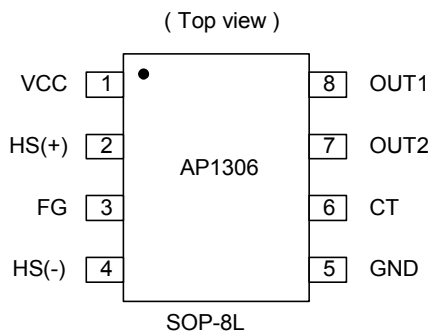
■ Application

- High voltage, high current brushless DC fan

■ General Description

The AP1306 fan motor predriver is suited for two-coil brush-less DC fan. All functions, including lock shutdown, automatic restart, speed indication (FG), have been incorporated into one chip. When the motor is under lock condition, lock shutdown function turns off the output. When the lock condition is removed, the IC automatically restarts and allows DC fan to run. In addition, the FG function is to indicate the rotation speed.

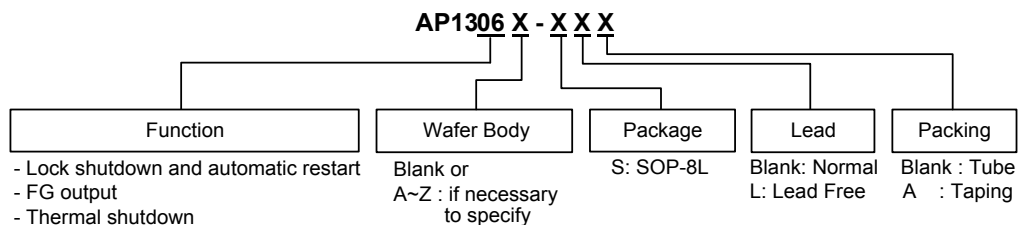
■ Pin Assignment



■ Pin Descriptions

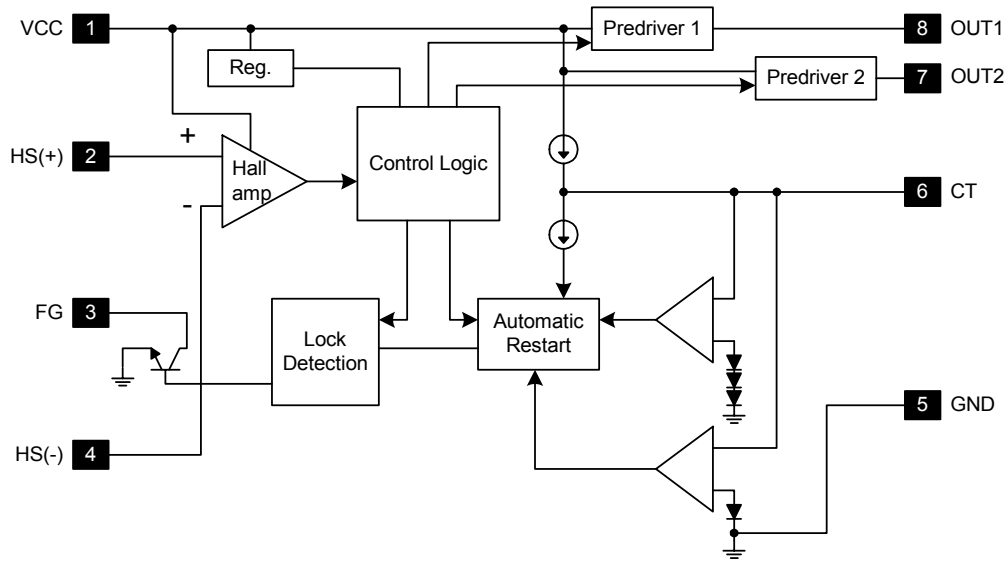
Name	Description
VCC	Power input
HS(+)	Hall input
FG	Speed indication
HS(-)	Hall input
GND	Ground
CT	Timing capacitor
OUT2	Driver output
OUT1	Driver output

■ Ordering Information

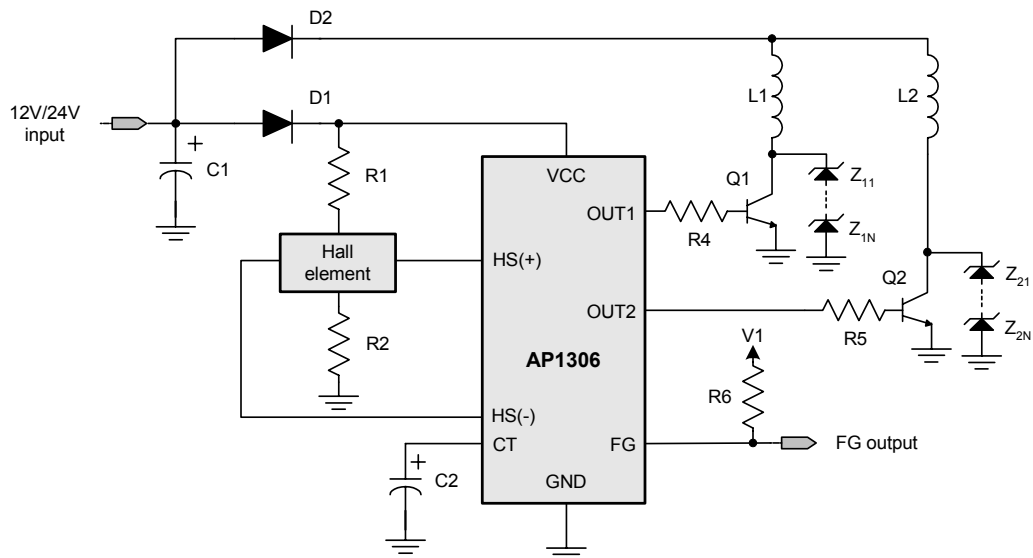


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■ Block Diagram



■ Application Circuit



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■ Absolute Maximum Ratings (T_A=25°C)

Parameter	Symbol	Rating	Unit
Input voltage	V _{CC}	30	V
Output current	I _{OUT}	70	mA
Allowable power dissipation	P _D	550*(note1)	mW
Operating temperature	T _{OPR}	-30 to +85	°C
Storage temperature	T _{STG}	-55 to +125	°C
FG V _{CEO} D.C. Voltage	V _{CEO}	36	V

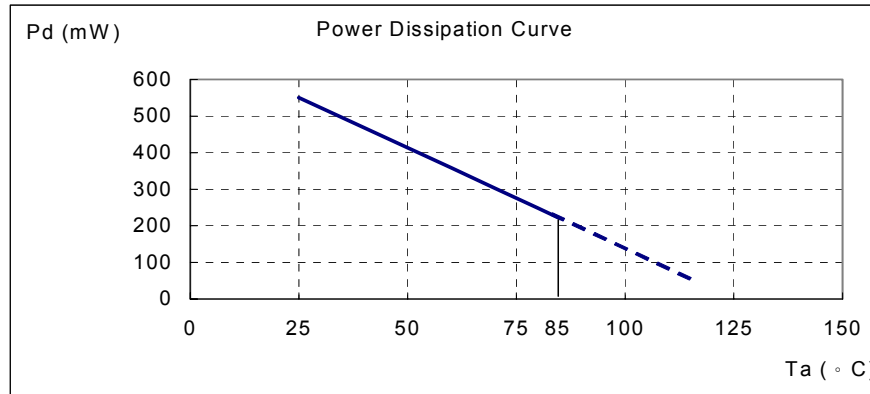
*note1 : Reduced by 5.5mW for each increase in Ta of 1°C over 25 °C

■ Electrical Characteristics (T_A=25°C, V_{CC}=12V, unless otherwise noted)

Parameter	Symbol	Conditions	Rating			Unit
			Min.	Typ.	Max.	
Input voltage	V _{IN}		4	--	28	V
Hall input voltage (DC+AC)	V _{BH}	Includes the amplitude of signal	1	--	V _{CC} -0.5	V
Supply current	I _{CC}	The output is off	--	3.2	5	mA
Hall amp input hysteresis (+)	V _{HYS+}	Delta V when V _{BH} =6V	3	--	15	mV
Hall amp input hysteresis (-)	V _{HYS-}	Delta V when V _{BH} =6V	-3	--	-15	mV
Charge current	I _{CHG}	V _{CT} = 1.5V	2	3.45	5.25	uA
Discharge current	I _{DHG}	V _{CT} = 1.5V	0.35	0.8	1.45	uA
Charge/discharge ratio	R _{CD}	I _{CHG} /I _{DCHG}	3	4.5	8	--
Clamp voltage	V _{CL}		2.2	2.6	3.0	V
Comparator voltage	V _{CP}		0.4	0.6	0.8	V
Output high level	V _{OH}	I _O = 10mA	10	10.5	--	V
FG pin output low	V _{fgl}	I _f g = 5mA	--	--	0.5	V
FG pin sink current capacity	I _f g	V _f gl = 2V	8	--	--	mA

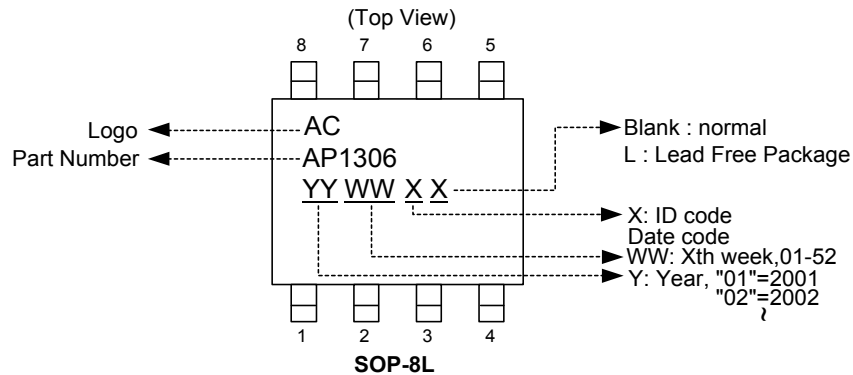
■ Performance Characteristics

Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd (mW)	550	413	358	303	248	220	193	165	138	110	83	55	28



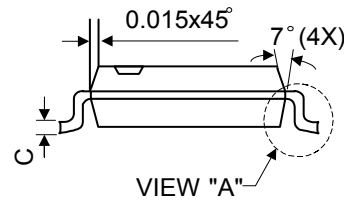
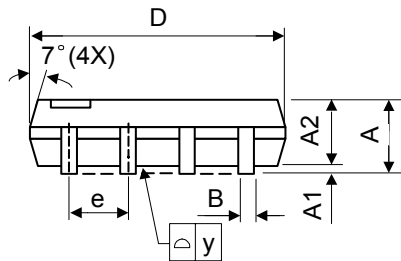
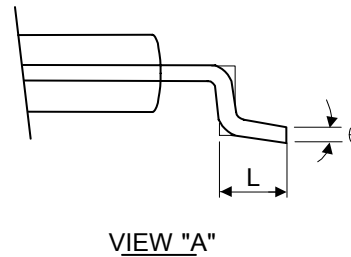
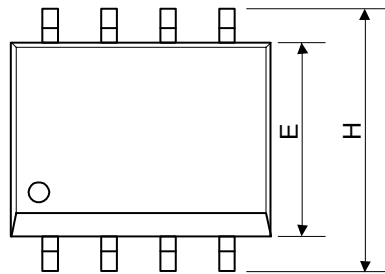
Note : SOP-8L package.

■ Marking Information



■ Package Information

Package Type: SOP-8L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.40	1.60	1.75	0.055	0.063	0.069
A1	0.10	-	0.25	0.040	-	0.100
A2	1.30	1.45	1.50	0.051	0.057	0.059
B	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.010
D	4.80	5.05	5.30	0.189	0.199	0.209
E	3.70	3.90	4.10	0.146	0.154	0.161
e	-	1.27	-	-	0.050	-
H	5.79	5.99	6.20	0.228	0.236	0.244
L	0.38	0.71	1.27	0.015	0.028	0.050
y	-	-	0.10	-	-	0.004
θ	0°	-	8°	0°	-	8°