STRUCTURE Silicon Monolithic Integrated Circuit

PRODUCT SERIES 2-Phase Half-Wave Pre Driver for Fan Motor

TYPE B A 6 5 0 6 F

FEATURES Lock detection, Automatic restart circuit,FG output

○ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Limit	Unit
Supply voltage	Vcc	30	V
Power dissipation	Pd	624∗	mW
Operating temperature	Topr	-40～+100	℃
Storage temperature	Tstg	-55～+125	℃
Output current	Iomax	70	mA
FG signal output current	IFG	8	mA
FG signal output voltage	VFG	30	V
Junction temperature	Tjmax	125	℃

∗Reduce by 6.24mW/℃ over Ta=25℃
(On 70.0mm×70.0mm×1.6mm glass epoxy board)

○OPERATING CONDITIONS

Parameter	Symbol	Limit	Unit
Operating supply voltage range	Vcc	4.0～28.0	V
Hall input voltage range	VH	1.0～Vcc-0.5	V

∗This product is not designed for production against radioactive rays.
∗This document may be strategic data subject to COCOM regulations.

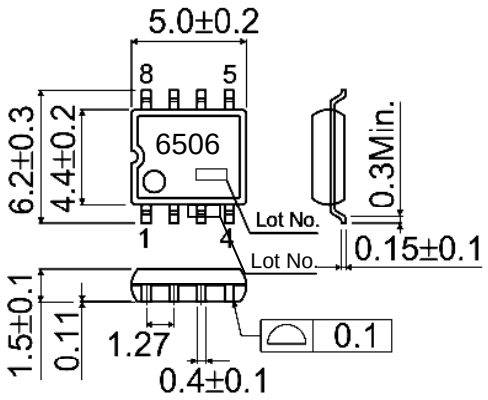
○ELECTRICAL CHARACTERISTICS (Unless otherwise specified Ta=25℃,Vcc=12V)

Parameter	Symbol	Limit			Unit	Conditions
		Min.	Typ.	Max.		
Circuit current	Icc	-	3.2	5.0	mA	At output OFF
Hall input hysteresis	Vhys	±3	-	±15	mV	
FG output L voltage	VFG	-	-	0.5	V	IFG=5mA
FG current capacity	IFG	8.0	-	-	mA	VFG=2V
Charge current of capacitor for lock detection	ILDC	2.0	3.45	5.25	μA	VLD=1.5V
Discharge current of capacitor for lock detection	ILDD	0.35	0.80	1.45	μA	VLD=1.5V
Charge-discharge current ratio of capacitor for lock detection	rCD	3	4.5	8	-	rCD=ILDC/ILDD
Clamp voltage of capacitor for lock detection	VLDCL	2.2	2.6	3.0	V	
Comparison voltage of capacitor for lock detection	VLDCP	0.4	0.6	0.8	V	
Output H voltage	VOH	10	10.5	-	V	Io=10mA

○OPERATION TRUTH TABLE

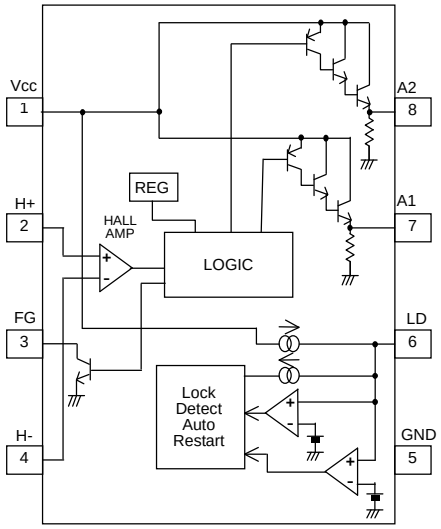
Conditions	H+(2pin)	H−(4pin)	A1(7pin)	A2(8pin)	FG(3pin)
Rotating mode	High	Low	High	Low	High
	Low	High	Low	High	Low
Lock mode	Low or High	Low or High	Low	Low	Low or High

○PACKAGE OUTLINES



SOP8 (UNIT:mm)

○BLOCK DIAGRAM



○Terminal name

Pin No.	Terminal name
1	Vcc
2	H+
3	FG
4	H-
5	GND
6	LD
7	A1
8	A2

○CAUTIONS ON USE

1) Absolute maximum ratings

An excess in the absolute maximum rations, such as supply voltage, temperature range of operating conditions, etc., can break down the devices, thus making impossible to identify breaking mode, such as a short circuit or an open circuit. If any over rated values will expect to exceed the absolute maximum ratings, consider adding circuit protection devices, such as fuses.

2) Connecting the power supply connector backward

Connecting of the power supply in reverse polarity can damage IC. Take precautions when connecting the power supply lines. An external direction diode can be added.

3) Power supply line

Back electromotive force causes regenerated current to power supply line, therefore take a measure such as placing a capacitor between power supply and GND for routing regenerated current. And fully ensure that the capacitor characteristics have no problem before determine a capacitor value. (when applying electrolytic capacitors, capacitance characteristic values are reduced at low temperatures)

4) GND potential

The potential of GND pin must be minimum potential in all operating conditions. Also ensure that all terminals except GND terminal do not fall below GND voltage including transient characteristics. However, it is possible that the motor output terminal may deflect below GND because of influence by back electromotive force of motor. Malfunction may possibly occur depending on use condition, environment, and property of individual motor. Please make fully confirmation that no problem is found on operation of IC.

5) Thermal design

Use a thermal design that allows for a sufficient margin in light of the power dissipation(Pd) in actual operating conditions.

6) Inter-pin shorts and mounting errors

Use caution when positioning the IC for mounting on printed circuit boards. The IC may be damaged if there is any connection error or if pins are shorted together.

7) Actions in strong electromagnetic field

Use caution when using the IC in the presence of a strong electromagnetic field as doing so may cause the IC to malfunction.

8) ASO

When using the IC, set the output transistor so that it does not exceed absolute maximum rations or ASO.

9) Testing on application boards

When testing the IC on an application board, connecting a capacitor to a pin with low impedance subjects the IC to stress. Always discharge capacitors after each process or step. Always turn the IC's power supply off before connecting it to or removing it from a jig or fixture during the inspection process. Ground the IC during assembly steps as an antistatic measure. Use similar precaution when transporting or storing the IC.

10) GND wiring pattern

When using both small signal and large current GND patterns, it is recommended to isolate the two ground patterns, placing a single ground point at the ground potential of application so that the pattern wiring resistance and voltage variations caused by large currents do not cause variations in the small signal ground voltage. Be careful not to change the GND wiring pattern of any external components, either.

11) Capacitor between output and GND

When a large capacitor is connected between output and GND, if Vcc is shorted with 0V or GND for some cause, it is possible that the current charged in the capacitor may flow into the output resulting in destruction. Keep the capacitor between output and GND below 100uF.

12) IC terminal input

When Vcc voltage is not applied to IC, do not apply voltage to each input terminal. When voltage above Vcc or below GND is applied to the input terminal, parasitic element is actuated due to the structure of IC. Operation of parasitic element causes mutual interference between circuits, resulting in malfunction as well as destruction in the last. Do not use in a manner where parasitic element is actuated.

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