Ordering number : ENA1096

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SANYO Semiconductors
DATA SHEET

LB11669M — Monolithic Digital IC For Fan Motor Two-Phase Half-Wave Driver

Overview

The LB11669M is a two-phase uni-polar brushless motor driver for fan motor.

Functions

- Two-phase half-wave drive.
- RD (lock detection) outputs incorporated.
- FG (rotation detection) outputs incorporated.
- Thermal shutdown circuit incorporated.
- Lock protection and automatic return function incorporated.
- Output protection zener diode incorporated.
- Hall input amplifier incorporated.

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum inflow current	I_{IN} max		100	mA
Output current	I_{OUT} ave		400	mA
	I_{OUT} peak	Only when starting and lock protection is activated	800	mA
Output withstand voltage	V_{OUT} max		Internal	V
FG/RD output current	$I_{FG/RD}$ max		10	mA
FG/RD output withstand voltage	$V_{FG/RD}$ max		30	V
Allowable power dissipation	Pd max	Mounted on a board *	800	mW
Operating temperature	Topr		-30 to +85	°C
Storage temperature	Tstg		-55 to +150	°C

* Specified board : 114.3mm × 76.1mm × 1.6mm, glass epoxy board.

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Recommended Operating Conditions at Ta = 25°C

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Parameter	Symbol	Conditions	Ratings	Unit
Inflow current range	I_{IN}		5 to 25	mA
Common-mode input voltage range	VCOM		0.2 to V_{IN} -2.3	V

Electrical Characteristics at Ta = 25°C, V_{CC}=24V, R1=1kΩ, unless otherwise specified.

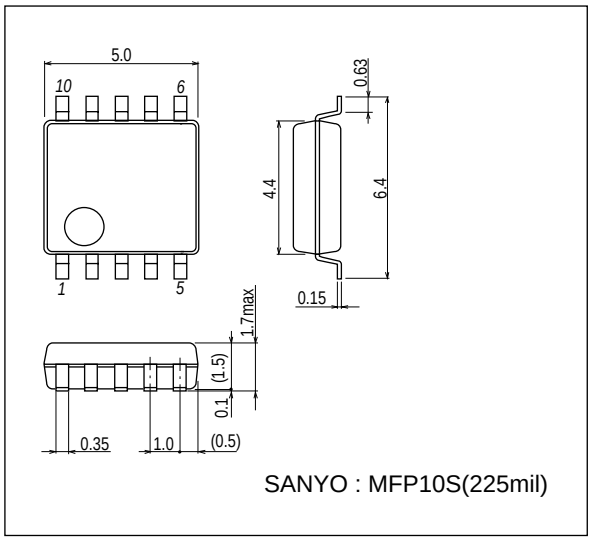
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
V_{IN} voltage	V_{IN}	I_{IN} = 6mA	5.95	6.3	6.65	V
CT capacitor charging current	$I_{CT}1$	CT = 0.5V	1.8	2.55	3.4	μA
CT capacitor dis-charging current	$I_{CT}2$	CT = 6.0V	0.15	0.23	0.31	μA
capacitor charging / dis-charging current ratio	R_{CT}	$R_{CT} = I_{CT}1 / I_{CT}2$	10.5	11	14.5	
CT charging voltage	$V_{CT}H$	V_{CT} / V_{IN}	74	79	84	%
CT dis-charging voltage	$V_{CT}L$	V_{CT} / V_{IN}	41	46	51	%
Output limit withstand voltage	V_OLM	I_O = 100mA	49	52	55	V
Output saturation voltage	V_OL1	I_O = 200mA		0.85	1.1	V
Hall input sensitivity	V_{HN}	Including offset and hysteresis		±15	±30	mV
FG/RD output saturation voltage	$V_{FG/RD}$	$I_{FG/RD}$ = 5mA		0.15	0.3	V
FG/RD output leak current	$I_{FG}L/I_{RD}L$	$V_{FG/RD}$ = 14V		0.1	10	μA
Thermal protection function operating temperature	TSD	Design target value *		180		°C

* Design target value and is not measured.

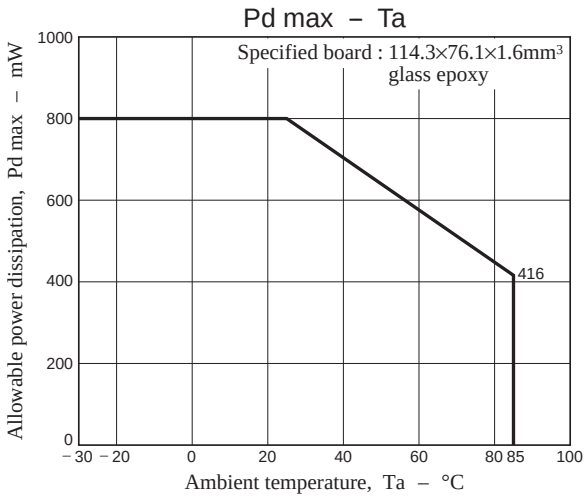
Package Dimensions

unit : mm (typ)

3086B



SANYO : MFP10S(225mil)



Pin Assignment

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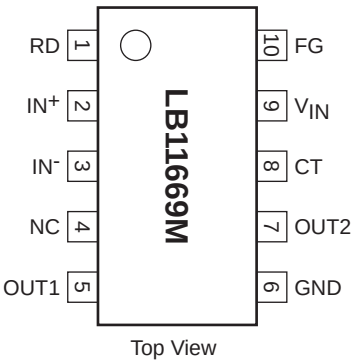
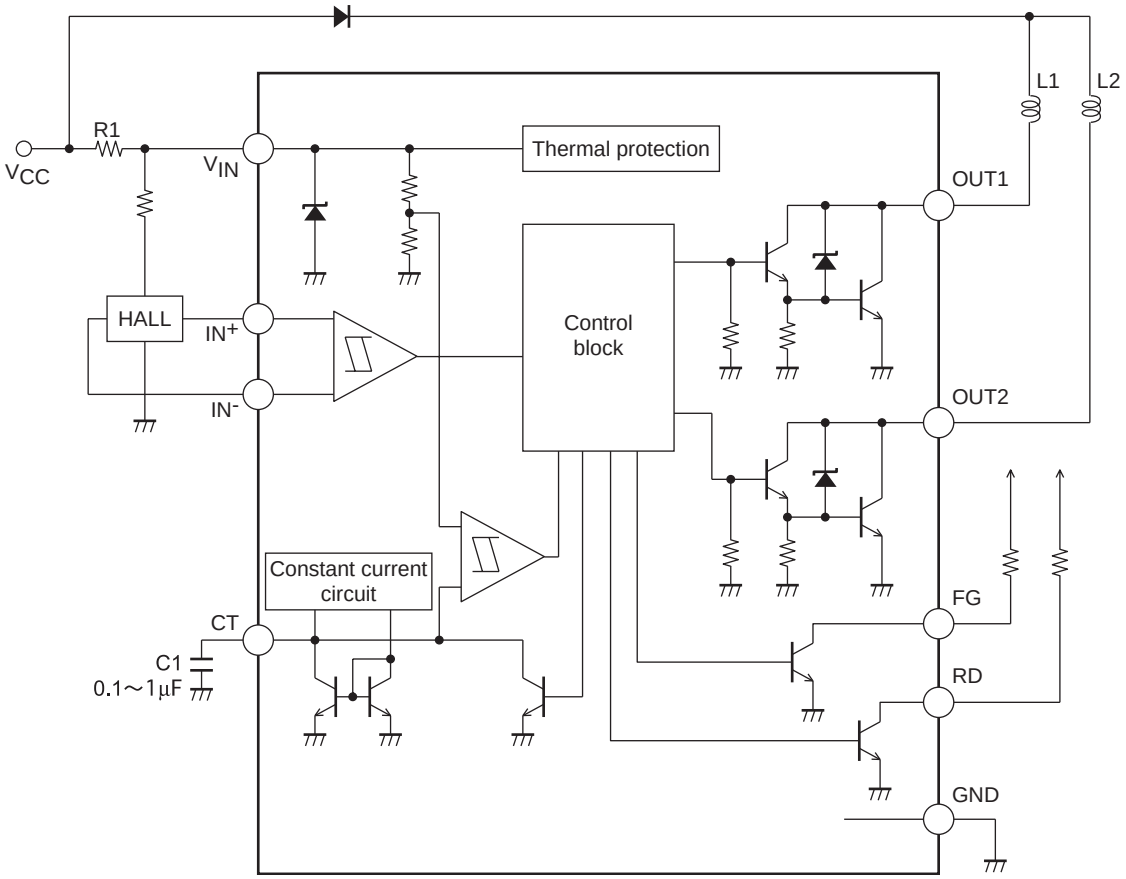


Top View

Block Diagram



Truth table

IN-	IN+	CT	OUT1	OUT2	FG	RD	Mode
H	L	L	H	L	L	L	Rotation
L	H		L	H	OFF	L	
H	L	H	OFF	OFF	L	OFF	Lock protection
L	H		OFF	OFF	OFF	OFF	

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Application Circuit Example 24V power supply

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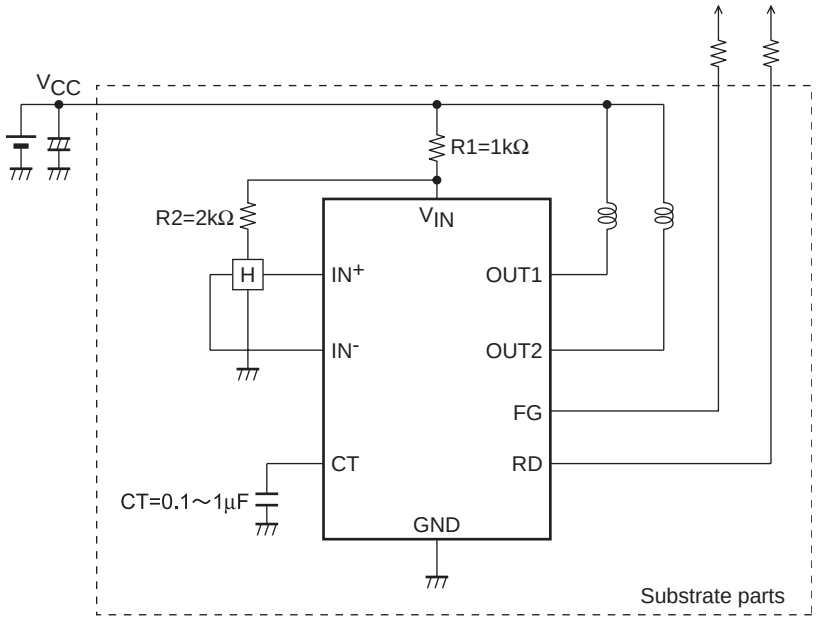

Notice

- Take care not to cause interference due to wiring of IN^- and OUT1.
- Wiring need to be short to prevent carrying of the noise. If the noise is carried, insert a capacitor between IN^+ and IN^-.
- In application of connecting the CT pin to GND, lock protection and restart function are not effective.

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