Ordering number : ENA1889

SANYO Semiconductors
DATA SHEET

LB11668M — Monolithic Digital IC For Fan Motor Two-Phase Half-Wave Driver

Overview

The LB11668M 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		800	mA
Output withstand voltage	V_{OUT} max		Internal	V
RD output current	I_{RD} max		10	mA
RD output withstand voltage	V_{RD} max		28	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

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.

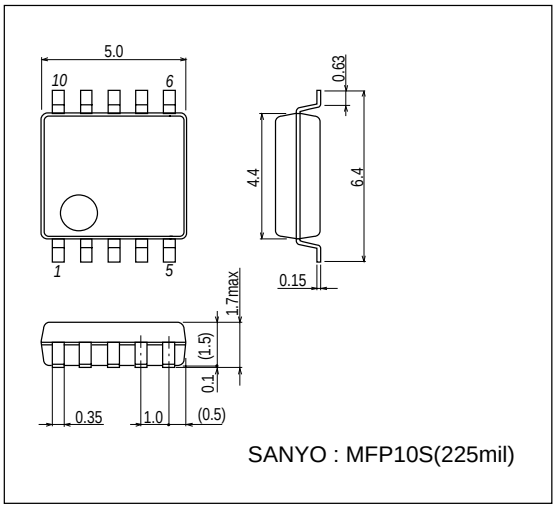
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
V_{IN} voltage	V_{IN}	I_{IN} = 6mA	6.9	7.2	7.6	V
CT capacitor charging current	$I_{CT}1$	CT = 0V	0.8	1.2	2.0	μA
CT capacitor dis-charging current	$I_{CT}2$	CT = 6.0V	0.12	0.24	0.4	μA
capacitor charging / dis-charging current ratio	R_{CT}	$R_{CT} = I_{CT}1 / I_{CT}2$	4.0	5.0	7.0	
CT charging voltage	$V_{CT}H$	V_{CT} / V_{IN}	66	70	74	%
CT dis-charging voltage	$V_{CT}L$	V_{CT} / V_{IN}	36	40	44	%
Output limit withstand voltage	V_OLM	I_O = 10mA	50	53	56	V
Output saturation voltage	V_OL1	I_O = 200mA		0.85	1.1	V
Hall input sensitivity	V_{HN}	Including offset and hysteresis		8	18	mV
RD output saturation voltage	$V_{FG/RD}$	I_{RD} = 5mA		0.2	0.5	V
RD output leak current	$I_{FG}L/I_{RD}L$	V_{RD} = 14V		0.1	10	μA
Thermal protection function operating temperature	TSD	Design target value *	150	180	210	°C

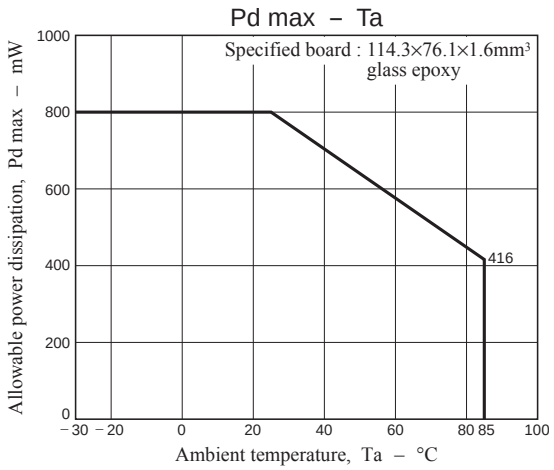
* Design target value and is not measured.

Package Dimensions

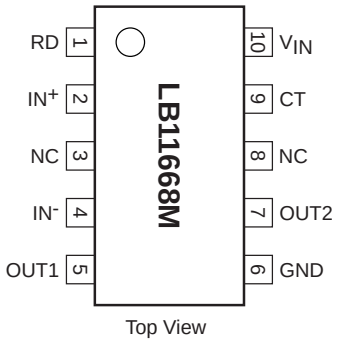
unit : mm (typ)

3086B



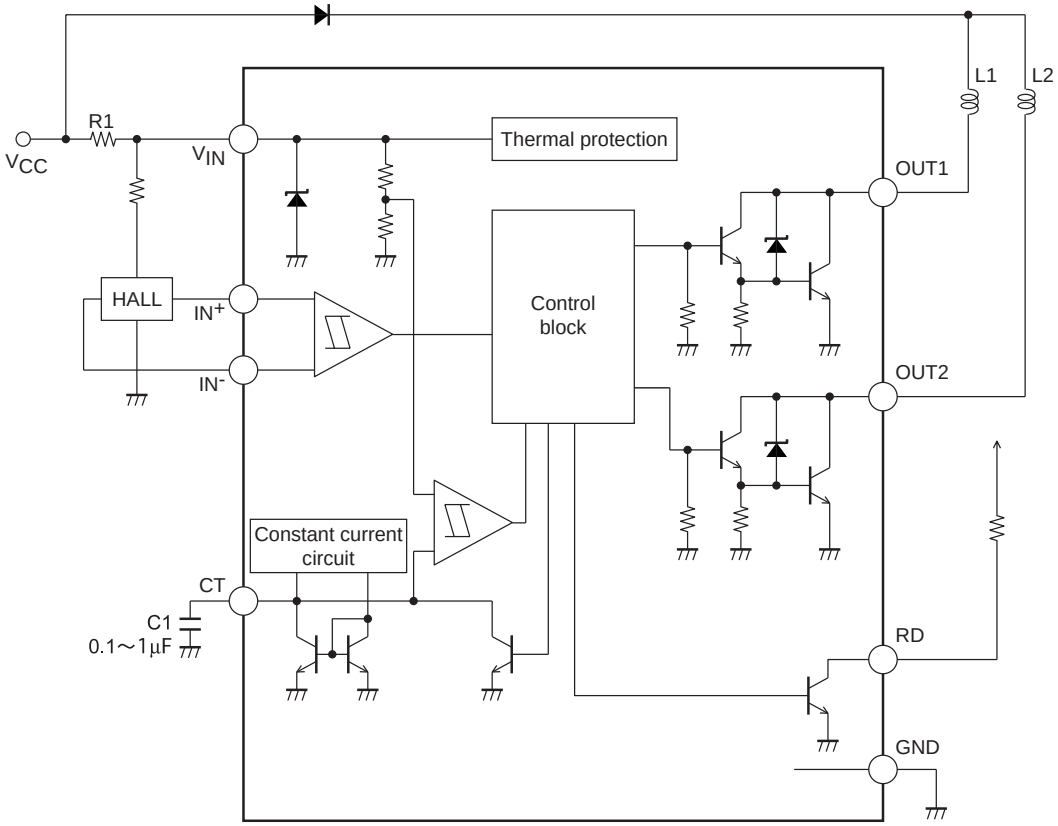


Pin Assignment



Top View

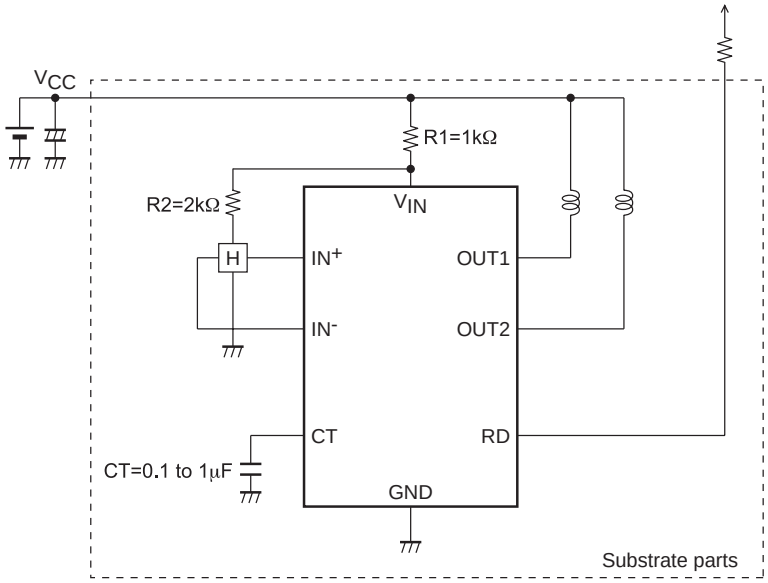
Block Diagram



Truth table

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

Application Circuit Example 24V power supply



Notice

- Take care not to cause interference due to wiring of IN- and OUT1.
- In application of connecting the CT pin to GND, lock protection and restart function are not effective.
- If the current value is about 500mA or less, IC cannot be destroyed though the current limited to GND→OUT→ coil → power supply by the coil resistance flows in the reverse-connection of power supply- GND by the above figure application. Di is put between VCC and the coil if there is a necessity.