



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 $T_a = 25^\circ\text{C}$

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	$P_d\ max$	Mounted on a board *	800	mW
Operating temperature	T_{opr}		-30 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

* 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	V _{COM}		0.2 to V _{IN} -2.3	V

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

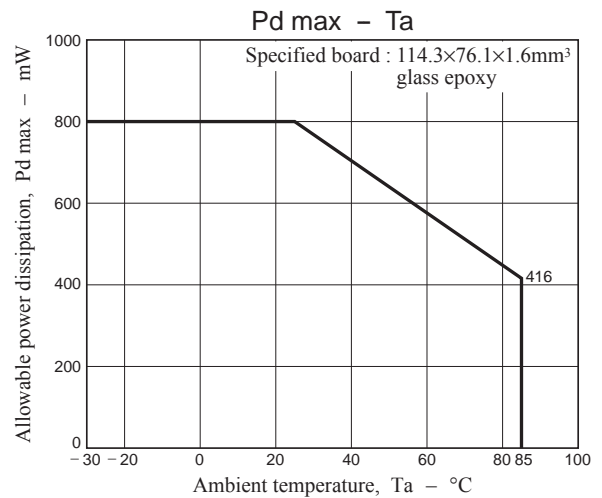
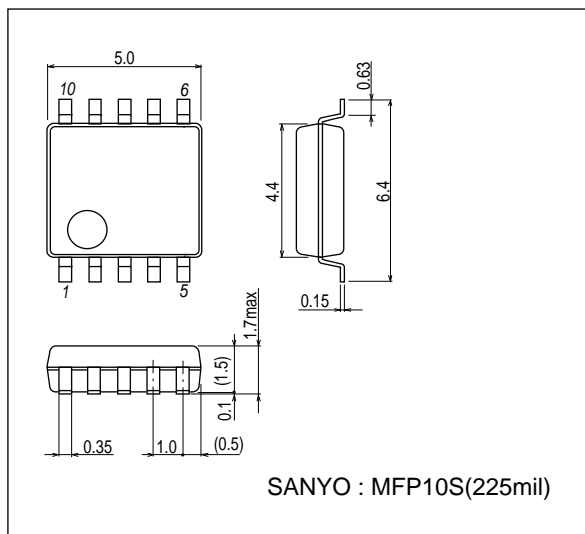
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
V _{IN} voltage	V _{IN}	I _{IN} = 6mA	6.9	7.2	7.6	V
CT capacitor charging current	I _{CT1}	CT = 0V	0.8	1.2	2.0	μA
CT capacitor dis-charging current	I _{CT2}	CT = 6.0V	0.12	0.24	0.4	μA
capacitor charging / dis-charging current ratio	R _{CT}	R _{CT} = I _{CT1} / I _{CT2}	4.0	5.0	7.0	
CT charging voltage	V _{CTH}	V _{CT} / V _{IN}	66	70	74	%
CT dis-charging voltage	V _{CTL}	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 _{FGL/RDL}	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

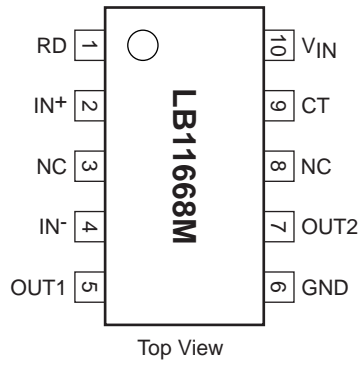
unit : mm (typ)

3086B

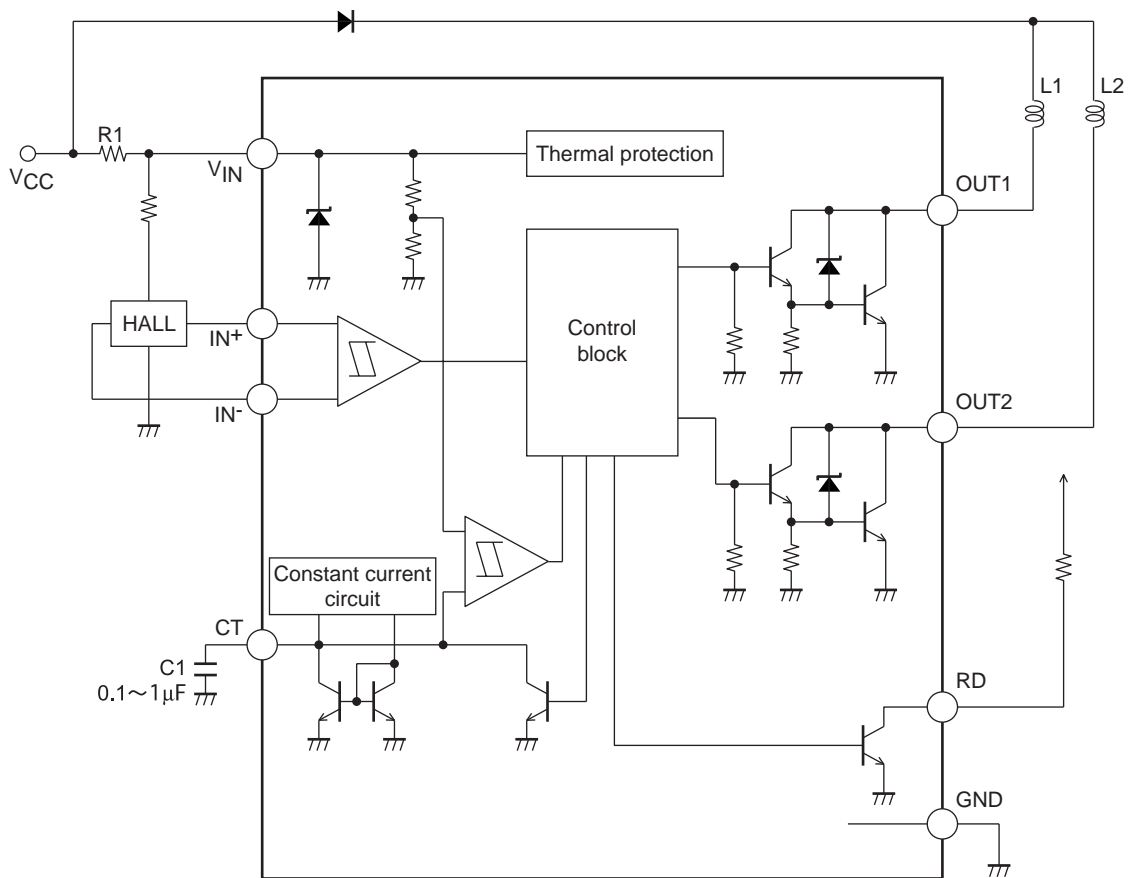


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Pin Assignment



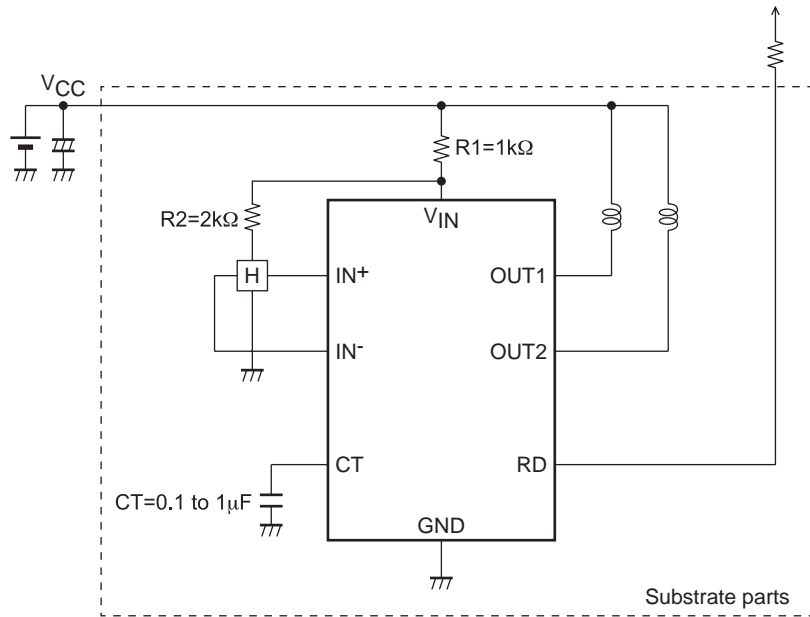
Block Diagram



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.

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