



PT-30DFA

Single-Phase Full-Wave Linear Drive

APPLICATIONS

- Single coils DC brushless motor.
- DC 2.0V~18V.

FEATURES

- Single-phase full-wave linear driver (BTL linear output driver)
- Switch noise elimination
- Motor lock protection and automatic restart
- Connectable direct to Hall element
- Built-in hysteresis comparator
- Frequency Generation output
- Low power consumption and high driving efficiency

INPUT DEVICES

- HALL IC or HALL ELEMENT

SPECIFICATIONS

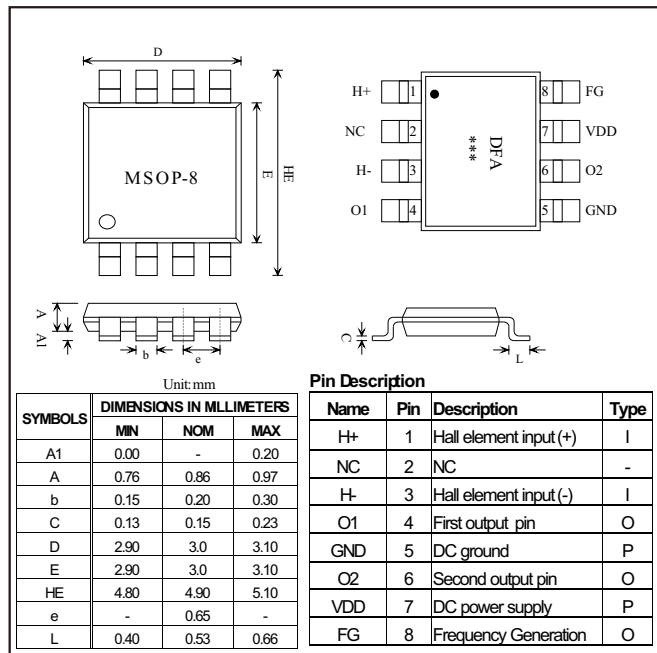
Absolute Maximum Ratings (Ta = 25C)

Parameter	Symbol	Conditions	Ratings	Units
Maximum supply voltage	V_{DD}^{max}		18	V
Allowable power dissipation	P_d		450*	mW
Operating temperature	T_a		-30 ~ +100	°C
Storage temperature	T_s		-55 ~ +150	°C
Output current	I_{out}	Continoue	350	mA

* On 50mm x 50mm x 1.6mm glass epoxy board

- ◆ Any and all PROLIFIC products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your PROLIFIC representative nearest you before using any PROLIFIC products described or contained herein in such applications.
- ◆ PROLIFIC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all PROLIFIC products described or contained herein.

PACKAGE: MSOP8



Electrical Characteristics

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply Voltage	V _{DD}		2.0		18	V
Output low-level Voltage	V _{OL}	I _O =200mA		0.4	0.5	V
Output High-level Voltage	V _{OH}	I _O =200mA	V _{CC} -0.5	V _{CC} -0.4		V
Output Breakdown Voltage	V _{BV}		18	22	30	V
Input offset voltage	V _{OS}		-6		6	mV
Supply Current	I _{DD}	Output open		3	10	mA
FG flow-in Current	I _{FG}	Pull-high resistor is 470ohm@12V		25		mA
FG Supply Voltage					30	V
FG Frequency		Same with Hall input signal				
Pre-Amplifier Gain	V _G			50		dB

Truth Table

H+	H-	State	O1	O2	FG	RD
H	L	Rotate	L	H	L	L
L	H	Rotate	H	L	H	L
H	L	Lock	L	L	H	H
L	H	Lock	L	L	H	H

Lock Protection

In order to protect the motor, the driver IC will be shutdown to drive the coil when the motor is locked over 0.3seconds. Then, it restarts to drive the motor after 2.1seconds. Figure 1 shows the timing diagram between the hall input signal and driver's output state.

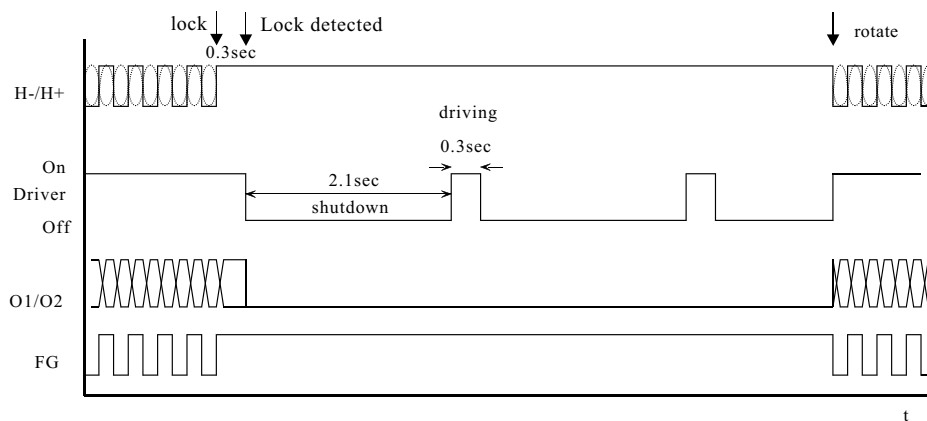


Fig 1. Lock Protection

Pre-Amplifier

This driver IC integrates signal amplifier and the hysteresis comparator in this chip. The hysteresis comparator uses the hysteresis characteristic to eliminate noisy oscillations at output of the comparator.

The driver IC architecture block diagram is shown in Fig. 2.

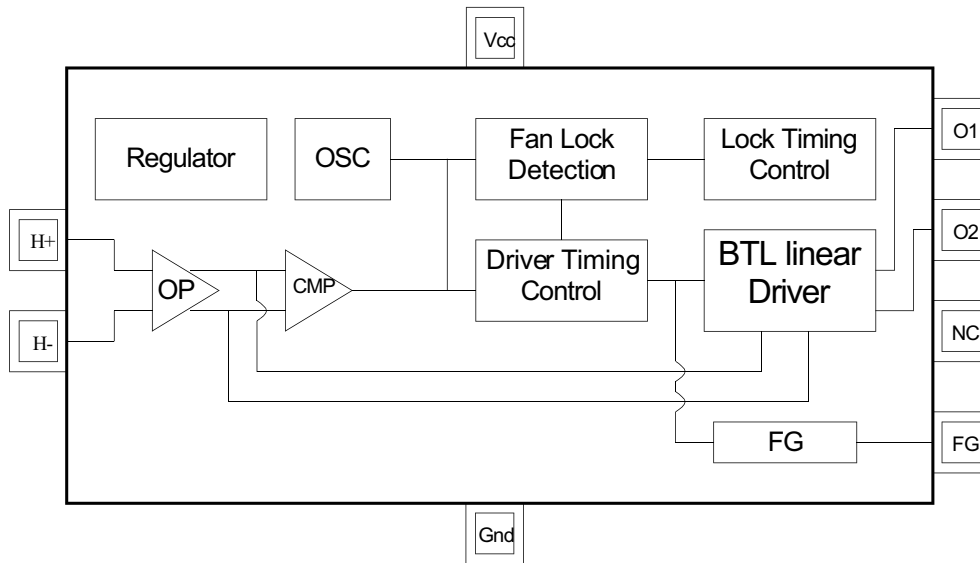


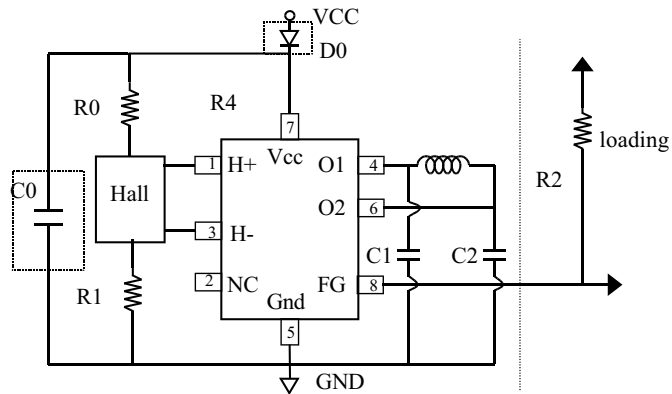
Fig. 2. Driver IC Architecture

- ◆ Specifications of any and all PROLIFIC products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- ◆ PROLIFIC Technology Inc. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- ◆ In the event that any and all PROLIFIC products described or contained herein fall under strategic products (including services) controlled under the Foreign Exchange and Foreign Trade Control Law of Taiwan, such products must not be exported without our obtaining export license from the Ministry of International Trade and Industry in accordance with the above law.
- ◆ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of PROLIFIC Technology Inc.
- ◆ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the □Delivery Specification□ for the PROLIFIC product that you intend to use.
- ◆ Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. PROLIFIC believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

Specifications and information herein are subject to change without notice.

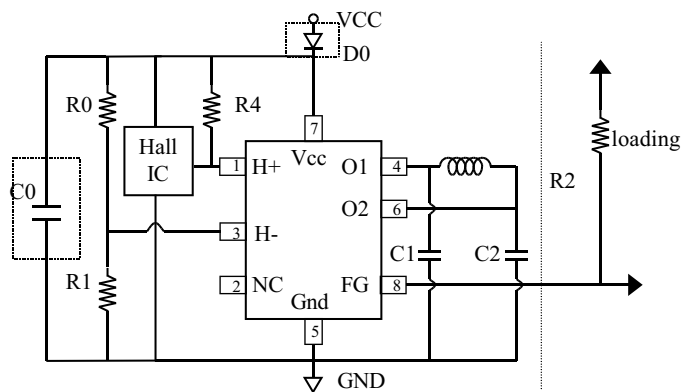
APPLICATION CIRCUITS/ Single coil

*Hall element input



R0=R1: depend on hall device Spec. R0=R1 is recommended
 R2: open drain loading
 C0: optional decoupling capacitor 0.1uF
 C1,C2: 1uF~2.2uF capacitor

*Hall IC input



R0, R1, R4: 10K
 R2: open drain loading
 C0: optional decoupling capacitor 0.1uF
 C1,C2: 1u~2.2uF capacitor