

## Product Overview

### LV8814J: Motor Driver, 3-Phase, PWM, Full-Wave, BLDC

For complete documentation, see the data sheet.

The LV8814J is a 3-phase BLDC motor driver which is controlled by single Hall sensor. A 180 degrees sinusoidal driving method is adopted and the IC can control motor with low vibration and the low noise. In addition, lead-angle adjustment is possible by an external pin. Lead-angle value and lead-angle slant can be adjusted independently. Thus, the device can be driven by high efficiency and low noise with various motors. The power element to drive a motor is built-in and contributes to high efficiency by low on resistance ( $0.5 \Omega$ ). The Hall sensor bias driver is equipped, and a Hall IC is supported as well. As a method of the rotary speed control of the motor, direct-PWM pulse input or DC-voltage input can be chosen.

#### Features

- 3-phase full wave (sinusoidal) drive
  - Any practical combination of slot and pole can be handled. (e.g. 3S3P, 3S4P, 6S4P, 6S8P, 12S8P, 9S12P and so on)
  - built-in power FETs (P-MOS/N-MOS)
  - Speed control function by direct PWM or DC voltage input
  - Minimum input PWM duty cycle can be configured by voltage input
  - Soft start-up function and soft shutdown function
  - Soft PWM duty cycle transitions
  - Built-in current limit circuit and thermal protection circuit
  - Regulated voltage output pin for Hall sensor bias
  - Built-in locked rotor protection and auto recovery circuit
- For more features, see the data sheet

#### Benefits

- Static sound, low vibration, high efficiency
- Versatility
- Part mark reduction. The implementation area small
- Speed control is possible by two methods.(selectable)
- It is contributed to movement stability
- It is contributed to static sound characteristics at the time of the start
- Static sound characteristics at the time of the speed abnormality are good
- Safe use is provided by a protection function
- A PCB design is easy
- Safe use is provided by a protection function

#### Applications

- Fan motor units

#### End Products

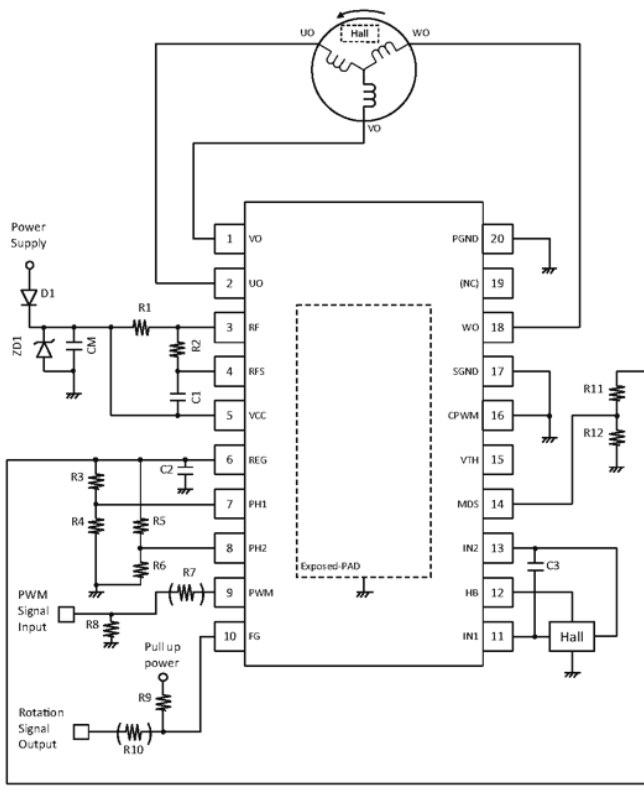
- Refrigerator
- PC

#### Part Electrical Specifications

Product	Compliance	Status	Phase	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Control Type	Package Type
LV8814J-AH	Pb-free	Active	3	3.6	16	3.6	16		2	DC	SSOP-20
	Halide free									PWM	

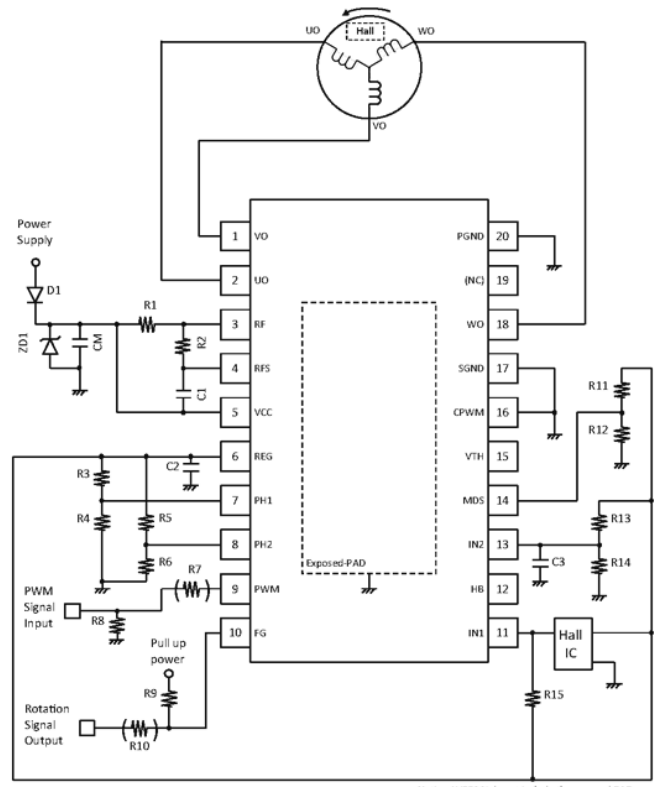
# Application Diagram

## APPLICATION CIRCUIT DIAGRAM



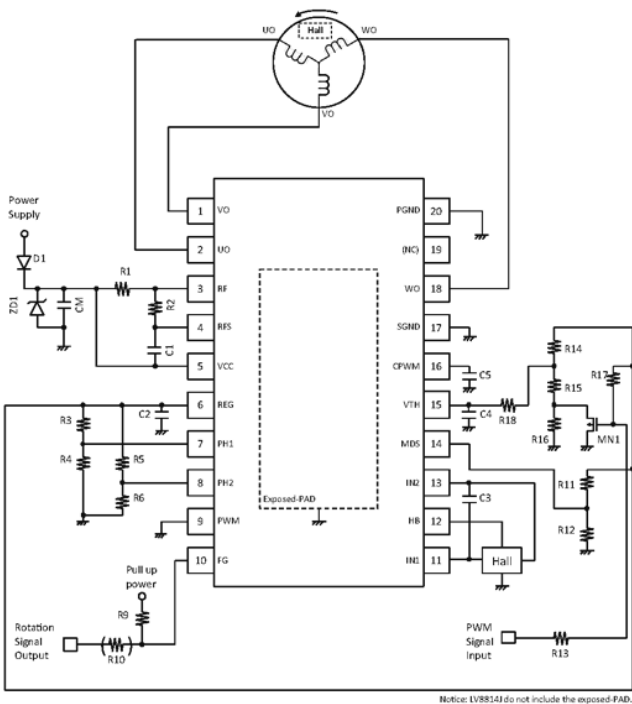
Notice: LV8814J do not include the exposed-PAD.

Figure 1. Three-phase BLDC Motor Drive with LV8811G, LV8813G, and LV8814J using One Hall Sensor



Notice: LV8814J do not include the exposed-PAD.

Figure 2. Three-phase BLDC Motor Drive with LV8811G, LV8813G, and LV8814J using One Hall IC



Notice: LV8814J do not include the exposed-PAD.

Figure 3. Three-phase BLDC Motor Drive with LV8811G, LV8813G, and LV8814J using PWM to DC conversion for speed control

### EXAMPLE COMPONENT VALUE

Device	Value	Device	Value
D1	MBR43013G (ON semi)	R5	0 to 50kΩ
ZD1	MNS25247B11G (ON semi)	R6	50k to 0Ω
CM	4.7μF	R7	1kΩ
C1	1500pF	R8	NC
C2	1μF	R9	1k to 10kΩ
C3	0.1μF	R10	1kΩ
C4	1μF	R11	0 to 50kΩ
C5	330pF	R12	50k to 0Ω
R1	0.22Ω / 0.22Ω (0.5W)	R13	10kΩ
R2	1kΩ	R14	30kΩ
R3	0 to 50kΩ	R15	7.5kΩ
R4	50k to 0Ω	R16	62kΩ
		R17	68kΩ
		R18	1kΩ

For more information please contact your local sales support at [www.onsemi.com](http://www.onsemi.com).

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