

Product Overview

LV8702V: PWM Current Control High-Efficiency Stepper Motor Driver

For complete documentation, see the data sheet

Product Description

The LV8702V is a 2-channel Full-bridge driver IC that can drive a stepper motor driver, which is capable of micro-step drive and supports quarter step. Current is controlled according to motor load and rotational speed at half step, half step full-torque and quarter step excitation, thereby highly efficient drive is realized. Consequently, the reduction of power consumption, heat generation, vibration and noise is achieved.

Features

- Built-in 1ch PWM current control stepper motor driver (bipolar type)
- Ron (High-side Ron: 0.3, Low-side Ron: 0.25, total: 0.55, Ta = 25°C, IO = 2.5A)
- Micro-step mode is configurable as follows: full step/half step full-torque/half step/quarter step
- Excitation step moves forward only with step signal input
- Built-in output short protection circuit (latch method)
- Control power supply is unnecessary
- Built-in high-efficient drive function (supports half step full-torque/half step/quarter step excitation mode)
- Built-in step-out detection function (Step-out detection may not be accurate during high speed rotation)
- IO max=2.5A
- Built-in thermal shut down circuit

Applications

- Stepper
- Computing & Peripherals
- Industrial

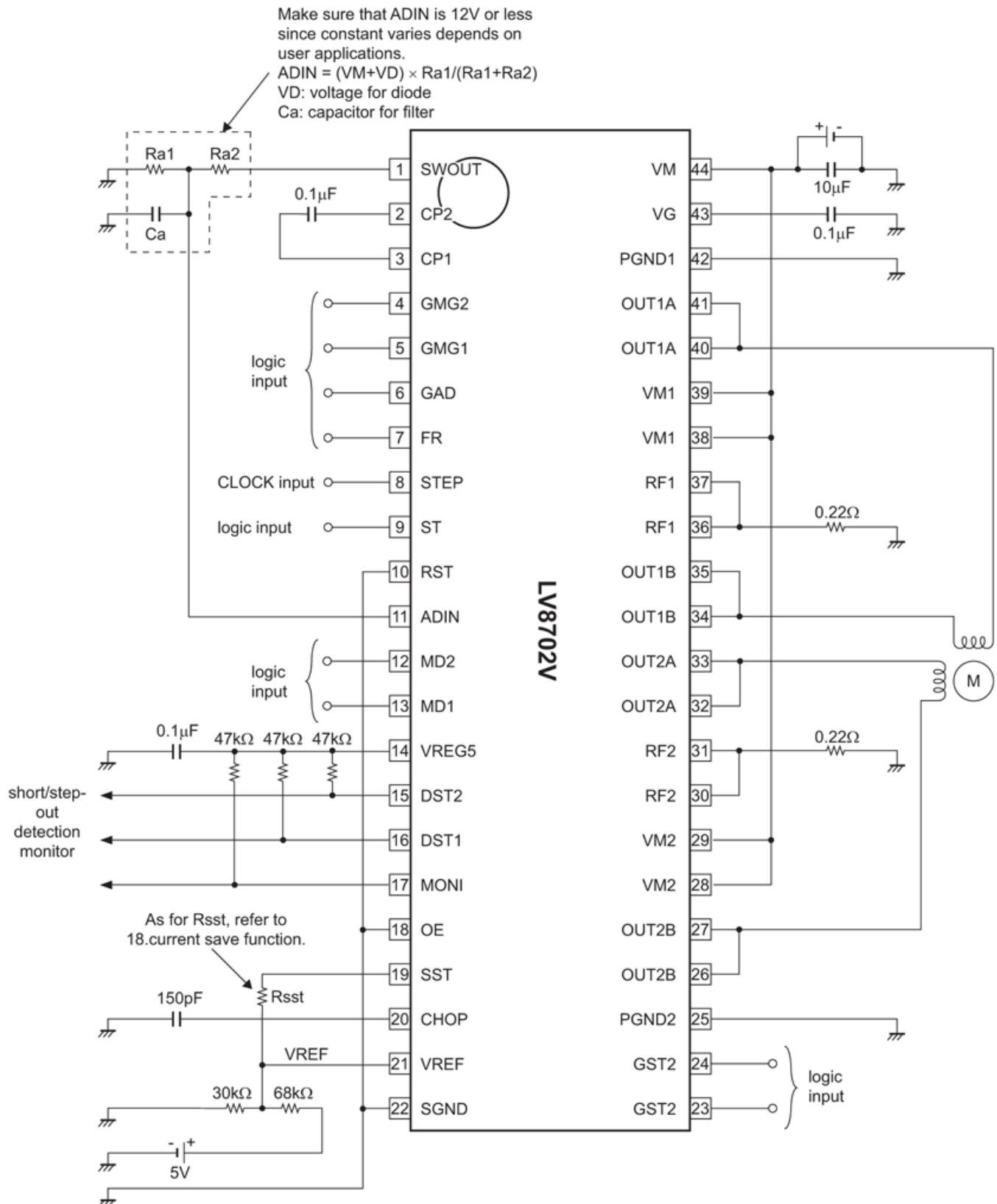
End Products

- Printer
- Scanner
- Surveillance camera(CCTV)
- Textile machine

Part Electrical Specifications

| Product | Compliance | Status | Type | V _M Min (V) | V _M Max (V) | V _{CC} Min (V) | V _{CC} Max (V) | I _O Max (A) | I _O Peak Max (A) | Step Resolution | Control Type | Feedback Method | Current Sense | Regulator Output | Fault Detection | Flyback Protection | R _{DS(on)} Typ (Ω) | Package Type |
|---------------|------------------------|--------|---------|------------------------|------------------------|-------------------------|-------------------------|------------------------|-----------------------------|-------------------------------------|--------------|-----------------|-------------------|------------------|----------------------------------|--------------------|-----------------------------|--------------|
| LV8702V-MPB-H | Pb-free Halide free | Active | Stepper | 9 | 32 | 9 | 32 | 2.5 | 3 | $\frac{1}{2}$ $\frac{1}{1}$? | Clock | | External Resistor | | Over-Current Thermal UV LO | | 0.55 | SSOP-44J EP |
| LV8702V-TLM-H | Pb-free Halide free | Active | Stepper | 9 | 32 | 9 | 32 | 2.5 | 3 | $\frac{1}{2}$ $\frac{1}{1}$? | Clock | | External Resistor | | Over-Current Thermal UV LO | | 0.55 | SSOP-44J EP |

Application Diagram



Calculation for each constant setting according to the above circuit diagram is as follows.

1) Constant current (100%) setting

$$VREF = 5V \times 30k\Omega / (68k\Omega + 30k\Omega) \approx 1.53V$$

When $VREF = 1.53V$:

$$I_{OUT} = VREF / 5 / 0.22\Omega \approx 1.39A$$

2) Chopping frequency setting

$$\begin{aligned} F_{chop} &= I_{chop} / (C_{chop} \times V_{tchop} \times 2) \\ &= 10\mu A / (150pF \times 0.5V \times 2) \\ &\approx 66.7kHz \end{aligned}$$

