

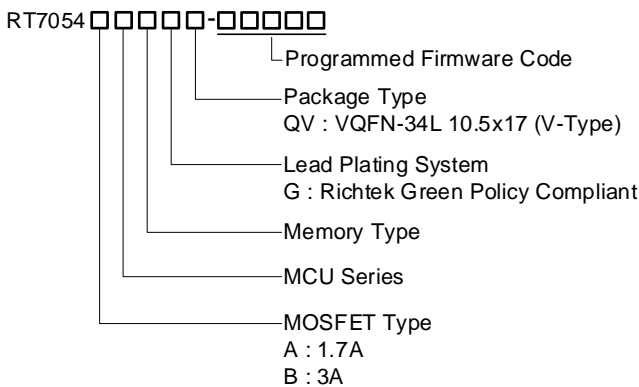
# System Integrated Power Module (sIPM<sup>®</sup>) for PMSM/BLDC Motor Drive

## General Description

The RT7054 is one of Richtek's sIPM<sup>®</sup> family, which are designed for advanced motor drive applications. This ASIC consists of a PMSM/BLDC controller, LDOs, the gate driver, bootstrap diodes and MOSFETs. It optimizes these devices specifically designed for PMSM/BLDC motor applications so as to provide great benefits to users with cost-effectiveness, easy design, board space saving and high reliability.

The RT7054 is available in a VQFN-34L 10.5x17 package. The recommended junction temperature range is -40°C to 125°C, and the ambient temperature range is -40°C to 105°C.

## Ordering Information




Note:

Richtek products are Richtek Green Policy compliant and compatible with the current requirements of IPC/JEDEC J-STD-020.

## Marking Information

For marking information, contact our sales representative directly or through a Richtek distributor located in your area.

## Features

- **Integrated 3-Phase PMSM/BLDC Controller, LDOs, Gate Driver and Bootstrap Diodes and MOSFETs**
- **Sensorless Field Oriented Control (FOC) with Optional Hall Sense Startup Strategy**
- **Optimized Switching Loss and EMI Trade-Offs**
- **Built-In Short Circuit, Under-Voltage-Lockout (UVLO) and Locked-Rotor Protection**
- **Temperature Sensor Embedded**
- **Motor Controller**
  - ▶ **ARM 32-bit Cortex-M0 CPU, Frequency up to 60MHz**
  - ▶ **Memories Size 16KB MTP, Internal ROM with Embedded Motor Control Library and 4KB SRAM**
  - ▶ **Deep Sleep Mode for Power Saving**
  - ▶ **I<sup>2</sup>C and UART Communication Interface**
  - ▶ **7-Channel 10-bit ADC**
    - ◆ **AD0 to AD5 are used for Differential Mode Current Sense**
    - ◆ **AD6 to AD9 are used for System Application**
  - ▶ **1-Channel Type 8-bit DAC for Debugging**
- **Gate Driver**
  - ▶ **Built-In UVLO Function**
  - ▶ **Shoot Through Prevention**
  - ▶ **Matched Propagation Delay**
- **MOSFETs**
  - ▶ **Low On-Resistance**
  - ▶ **Low Reverse Recovery Charge**
- **RT7054A1MGQV and RT7054B1MGQV with Firmware Code UXY1 Certified by UL for IEC 60730-1 Class B Compliance with Recognized Marking :** 
- **UL Certified No. E478780 (UL 60730-1)**

## Applications

- PMSM/BLDC Motor
- Ceiling Fan
- Air Conditioner Indoor/Outdoor Fan
- Pump