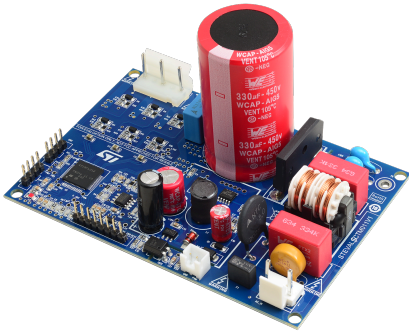


## 250 W mainstream compressor solution based on STSPIN32F0601Q and STGD5H60DF



### Features

- Complete system solution made by ready-to-use hardware and firmware
- Fitting wide range of applications supplied from the mains, rated up to 250 W:
  - refrigerator compressors
  - pumps and fans
  - industrial appliances
- Very low stand-by power consumption and overcurrent/undervoltage protections
- Inverter efficiency >96.5% at 3000 rpm
- COP efficiency >1.94 at 3000 rpm
- Based on [STSPIN32F0601Q](#) intelligent 3-phase motor controller with embedded STM32
- Power supply based on [VIPER122](#) in fly-back configuration to generate on-board DC voltages
- Inverter power stage based on [STGD5H60DF](#) IGBT rated 600 V and 5 A
- Small compact size: 7.5 x 11.2 cm
- Equipped with proven sensorless field-oriented control (FOC) firmware in one-shunt or 2+1 shunt topology
- RoHS compliant

### Description

The [STEVAL-CTM011V1](#) is a three-phase inverter based on the [STSPIN32F0601Q](#) controller, which embeds a 3-phase 600 V gate driver and an Arm® Cortex®-M0 STM32 MCU. The power stage features [STGD5H60DF](#) IGBTs.

The board supports one-shunt and two- plus one-shunt sensing topology. You can properly set the shunt topology by populating the related shunt resistors (RS1, RS2, and RS3).

Moreover, you can implement a sensorless field-oriented control (FOC). This allows driving permanent magnet synchronous motors (PMSMs) and brushless DC (BLDC) motors to cover a wide range of applications, such as refrigerator compressors, pumps, fans, and industrial appliances.

The [STEVAL-CTM011V1](#) evaluation board is compatible with a wide range of input voltages. It includes a power supply stage with the [VIPER122](#) in fly-back configuration that generates +15 V and +3.3 V supply voltages required by the application.

The companion firmware is [X-CUBE-MCSDK](#), available for download on [www.st.com](http://www.st.com), to be used with the [STSW-CTM011](#) firmware example for compressor motors.

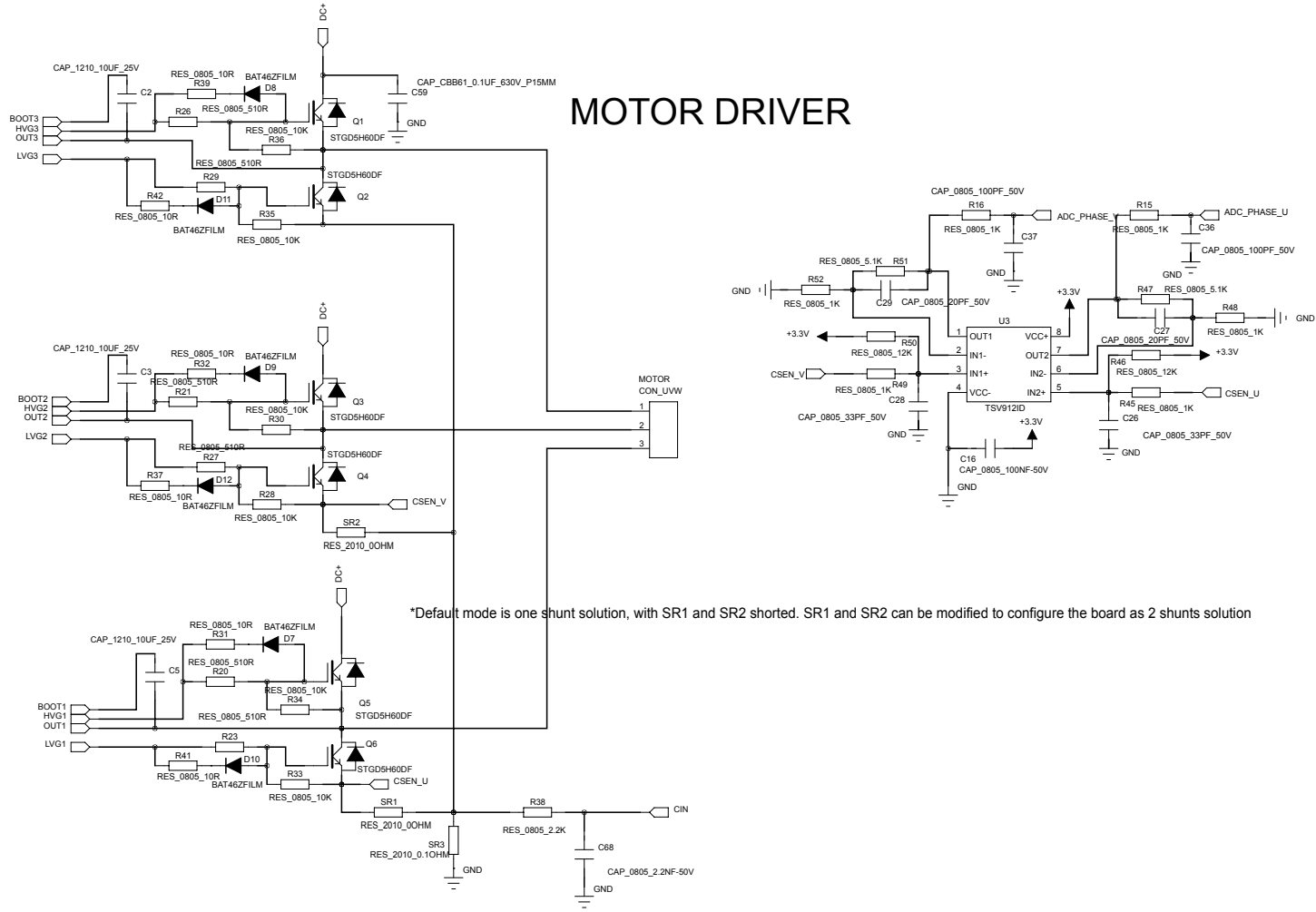
You can compile, debug, and configure the firmware through the [STM32CubeIDE](#) and [B-STLINK-ISOL](#) plus [STLINK-V3SET](#).

SWD and UART TX-RX connectors are also available.

Product summary	
250 W mainstream compressor solution based on STSPIN32F0601Q and STGD5H60DF	<a href="#">STEVAL-CTM011V1</a>
Firmware example for compressor motors	<a href="#">STSW-CTM011</a>
STM32 motor control software development kit	<a href="#">X-CUBE-MCSDK</a>
600 V three-phase controller with MCU	<a href="#">STSPIN32F0601Q</a>
H-series, 600 V, 5 A high-speed trench gate field-stop IGBT	<a href="#">STGD5H60DF</a>
Applications	Motor Control



Figure 2. STEVAL-CTM011V1 circuit schematic (2 of 2)



## 2 Board versions

Table 1. STEVAL-CTM011V1 versions

Finished good	Schematic diagrams	Bill of materials
STEVAL\$CTM011V1A <sup>(1)</sup>	STEVAL\$CTM011V1A schematic diagrams	STEVAL\$CTM011V1A bill of materials

1. This code identifies the STEVAL-CTM011V1 evaluation board first version.

## Revision history

**Table 2. Document revision history**

Date	Revision	Changes
18-Jan-2021	1	Initial release.

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