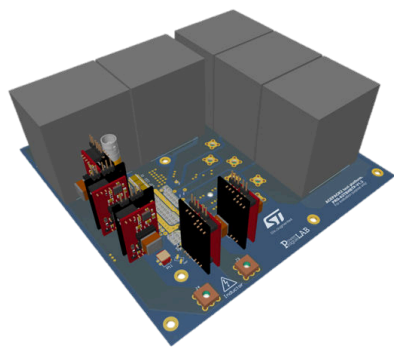


Testing platform for SiC based triple boost (650 V, 49 mΩ typ.) plus half-bridge topology (650 V, 23.5 mΩ typ.) in ACEPACK 2 power module A2TBH45M65W3-FC



Fully assembled board developed for performance evaluation only,
not available for sale

Features

- Testing platform for power module embedding three (49 mΩ typ.) SiC based boost converters and one (23.5 mΩ typ.) SiC based half bridge for synchronous buck converter
- Power module driven by STGAP3SXS, isolated gate driver optimized for SiC MOSFETs
- Isolated gate drivers are supplied by synchronous iso-buck converter based on L6986I
- Preset 18 V/-3 V supply voltage for output stage of isolated drivers
- Possibility to set a specific gate voltage for both positive and negative level
- Possibility to adjust gate resistor
- Prepared for performance evaluation of the power module

Description

The **STDES-A2TBH45M65** is a testing board for the SiC based, triple boost plus half bridge topology in ACEPACK 2 power module.

It is designed to ease the testing and evaluating the power module. It contains the necessary parts to operate the high-power module such as input and output capacitors and high current terminals to connect the module to the rest of the circuit. The power inductors are connected to the testing platform via high current terminals. The inductors are not part of the test platform. This allows versatility when evaluating and testing the power module at different conditions and configurations.

The **A2TBH45M65W3-FC** power module contains a three times boost converter and single half bridge topology with embedded DC link ceramic capacitor.

The ceramic capacitor inside the module helps to improve the switching performance and mitigates the voltage overshoot ringing across the switches as it minimizes stray inductance of the commutation loop.

The module embeds an NTC for the temperature measurement and reverse polarity protection diodes.

The reverse diodes are used in final application to bypass SiC switches in boost converters in case the input voltage polarity is swapped by accident.

Product summary	
Testing platform for SiC based triple boost (650 V, 49 mΩ typ.) plus half-bridge topology (650 V, 23.5 mΩ typ.) in ACEPACK 2 power module A2TBH45M65W3-FC	STDES-A2TBH45M65
ACEPACK 2 power module, triple boost (650 V, 49 mΩ typ.) plus half-bridge topology (650 V, 23.5 mΩ typ.) SiC Power MOSFET gen. 3 with NTC and capacitance	A2TBH45M65W3-FC
Galvanically isolated gate driver for SiC MOSFETs with 10 A Source/ Sink current	STGAP3SXS
38 V, 5W synchronous iso-buck converter	L6986ITR
Applications	Solar inverters Microinverter

Schematic diagrams

Figure 1. STDES-A2TBH45M65 main board circuit schematic (1 of 3)

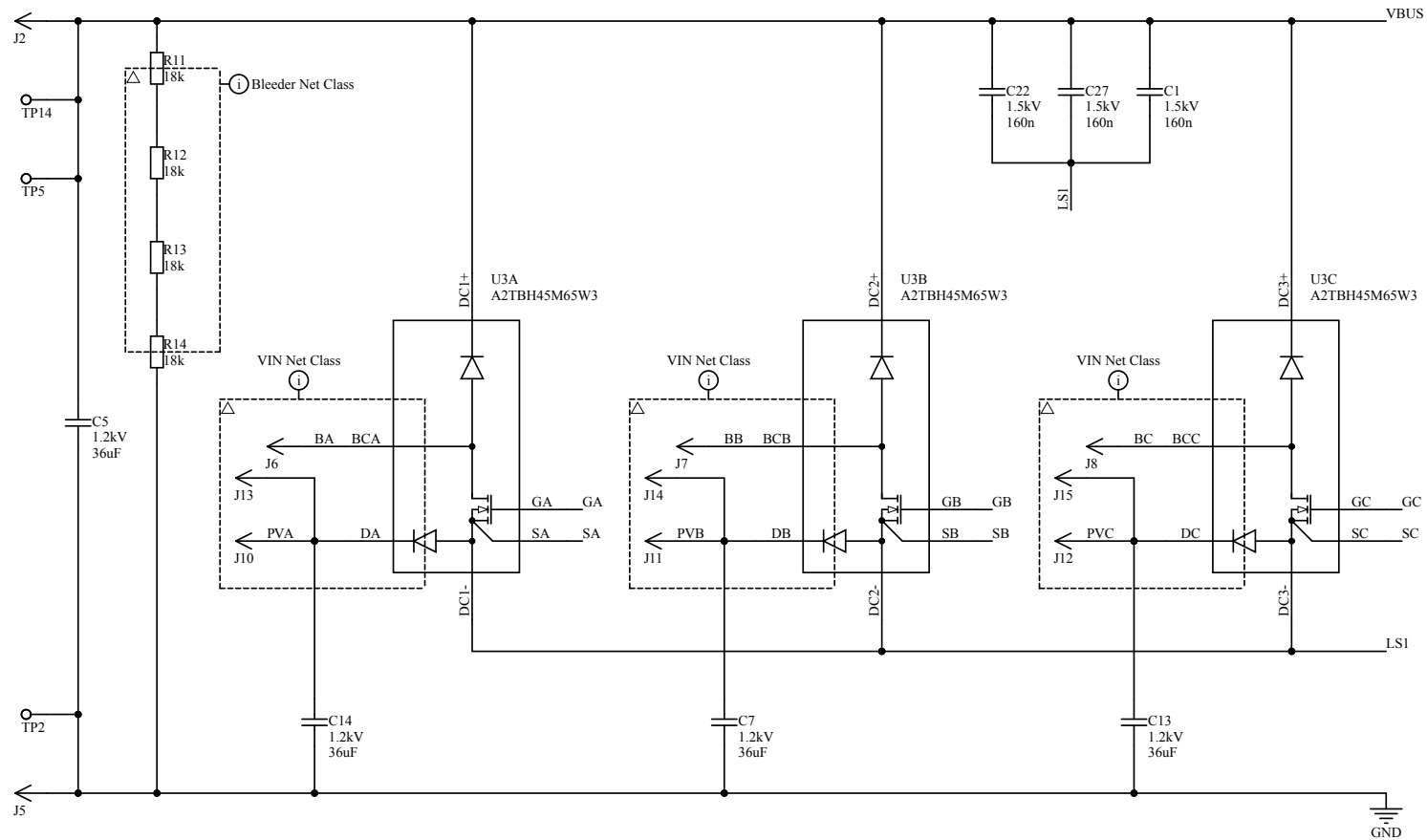


Figure 2. STDES-A2TBH45M65 main board circuit schematic (2 of 3)

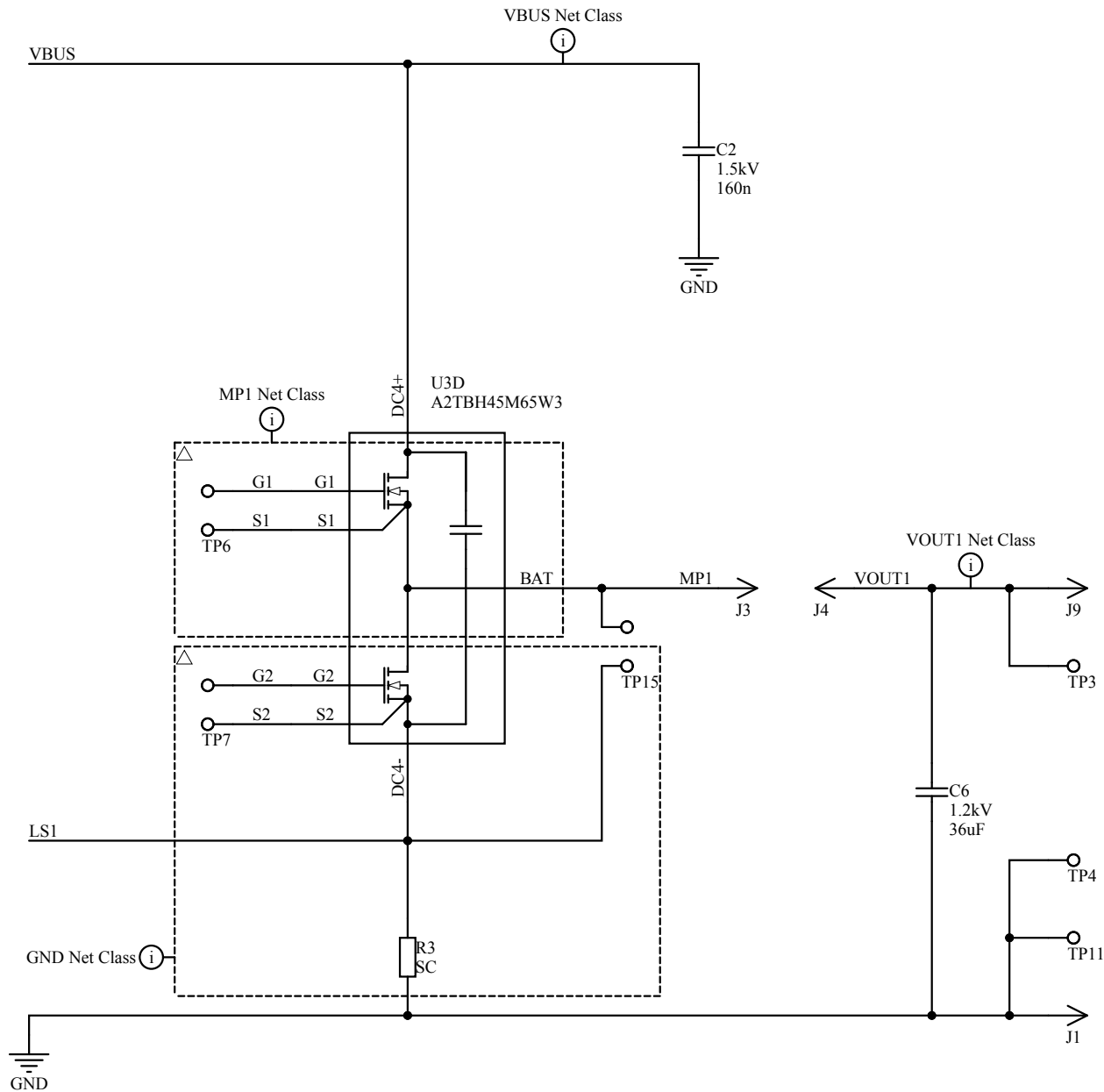


Figure 3. STDES-A2TBH45M65 main board circuit schematic (3 of 3)

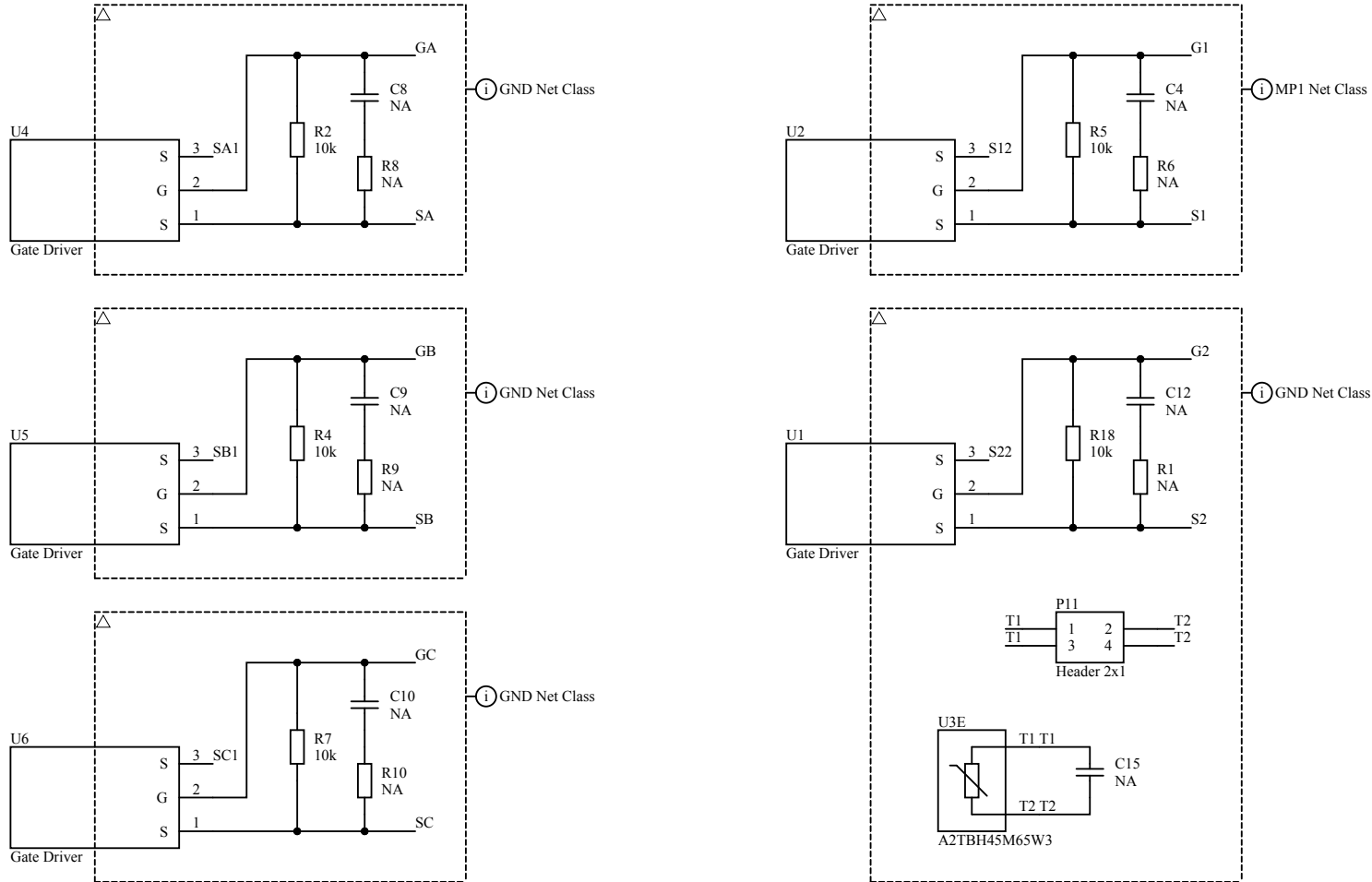


Figure 4. STDES-A2TBH45M65 synchronous iso-buck circuit schematic

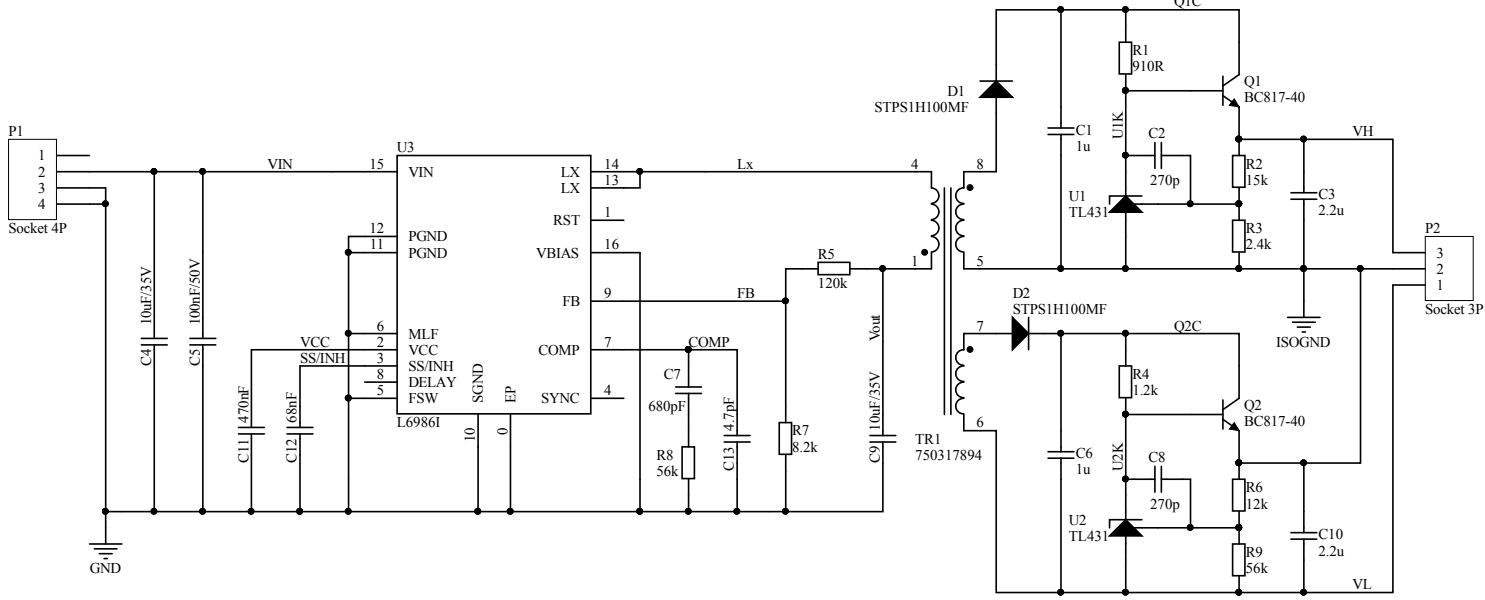
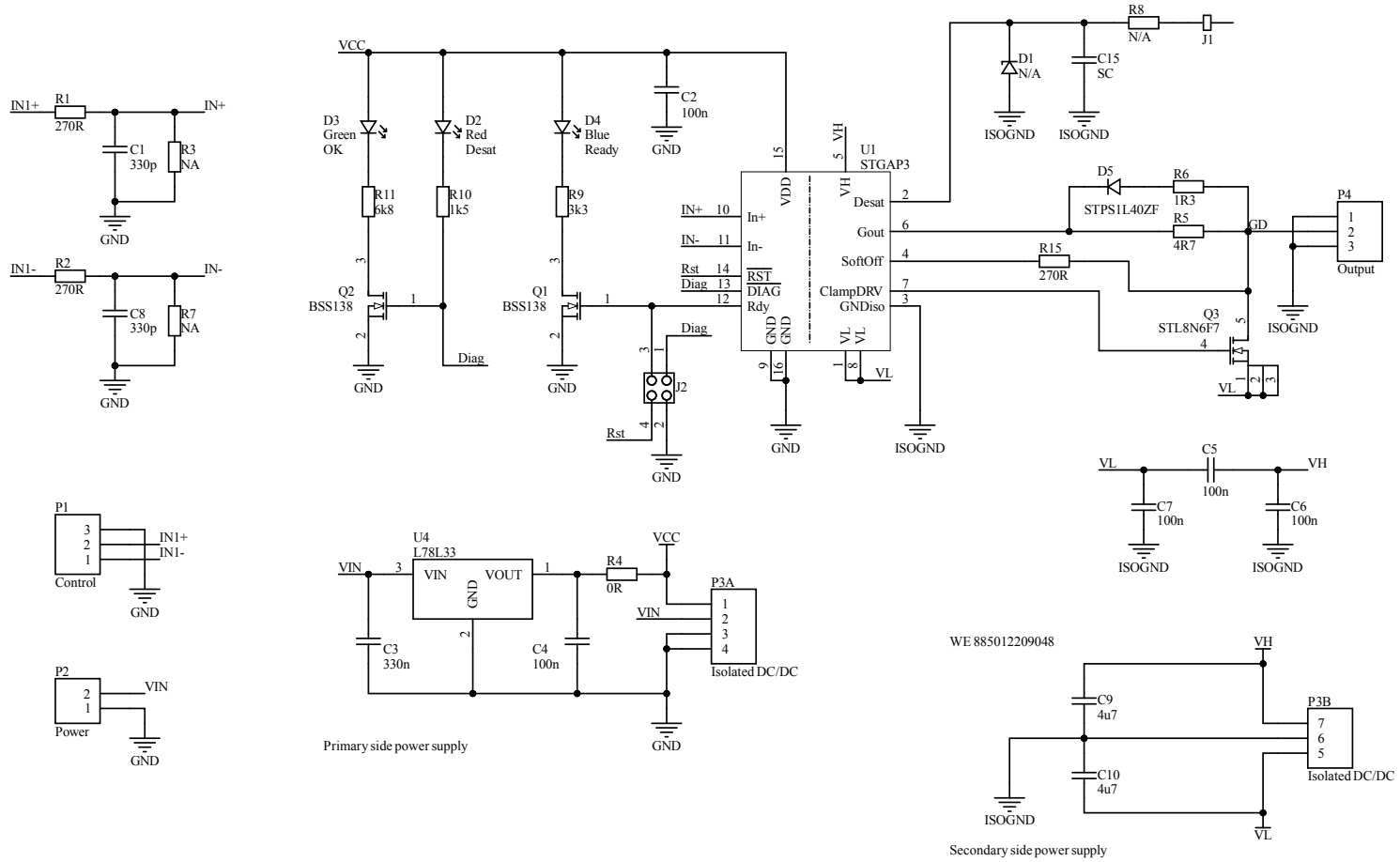


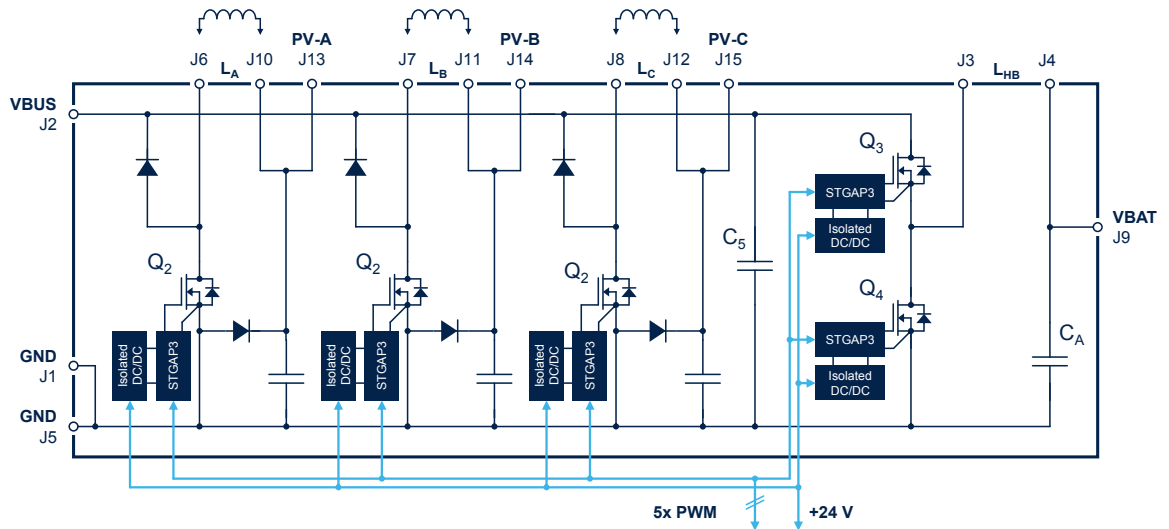
Figure 5. STDES-A2TBH45M65 gate driver circuit schematic



2 Concept of the testing platform

The testing platform provides a simple yet effective environment for fast and easy evaluation of high-power module **A2TBH45M65W3-FC**.

Figure 6. Simplified block diagram of the testing platform



The test platform is assembled with four isolated gate driver modules each with its own isolated DC-DC converter. The DC-DC converter supplies the secondary side of the gate drivers.

The input signals of the drivers are accessible through the header pins and are used to connect external control equipment to the test platform

Revision history

Table 1. Document revision history

Date	Revision	Changes
30-Apr-2025	1	Initial release.

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