STDES-SICGP4

Data brief

Testing platform of SiC MOSFETs in HiP247-4 package

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

Features

- Half-bridge structure assembled with power SiC MOSFETs in an HiP247-4 package
- Half-bridge driven by the STGAP2HS galvanic isolated gate driver optimized for SiC MOSFETs
- Isolated gate drivers supplied by an isolated fly-buck converter based on the L6986I
- Preset +18 V/-3 V supply voltage for output stage of isolated gate drivers
- Possibility to set a specific gate voltage, positive and negative level
- Possibility to set the gate resistor
- Low inductance sense resistor
- Prepared for a coaxial shunt resistor for a higher bandwidth of current measurement
- Specifications:
  - Max. DC input/output voltage: 1 kV
  - Input current level peak (duration up to 100 µs): 69 A

Product summary	
Testing platform of SiC MOSFET for packages HIP247-4	STDES-SICGP4
Silicon carbide Power MOSFET 1200 V, 21 mOhm typ., 91 A in an HiP247-4 package	SCTWA70N120G2V-4
Galvanically isolated 4 A single gate driver	STGAP2HSCMTR
38 V, 5W synchronous iso-buck converter	L6986ITR
Application	DC-DC Converters

Description

The STDES-SICGP4 reference design allows evaluating the switching and thermal performance of power SiC MOSFETs in an HiP247-4 (four-lead) package in a half-bridge topology.

The MOSFETs are controlled by isolated gate drivers. Drivers are supplied by isolated DC-DC converters.

The system requires the connection of an external inductor, a source, a load, an auxiliary supply, and PWM signals. It can be used to test operation in buck or boost configuration.

It is possible to use a low inductance shunt or to assemble a coaxial shunt to measure current through the low side MOSFET. In this perspective, the board can be used as a tool for double pulse test (DPT), to measure overshoot (voltage and current), speed (di/dt; dv/dt), and switching energy (E_{ON}; E_{OFF}; E_{RR}).

1 Schematic diagrams

Figure 1. STDES-SICGP4 main board circuit schematic - power section

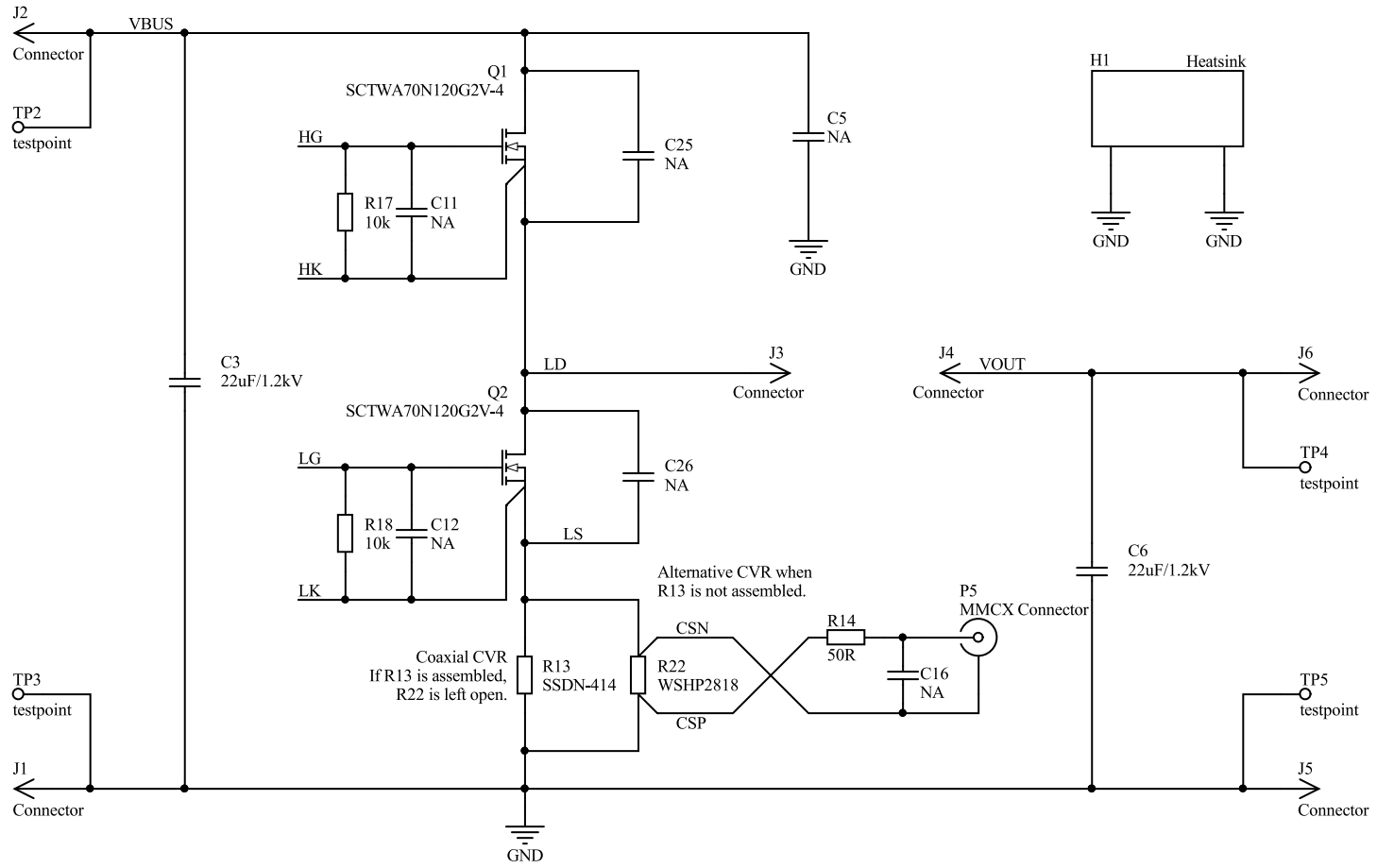


Figure 2. **STDES-SICGP4 main board circuit schematic - signal section**

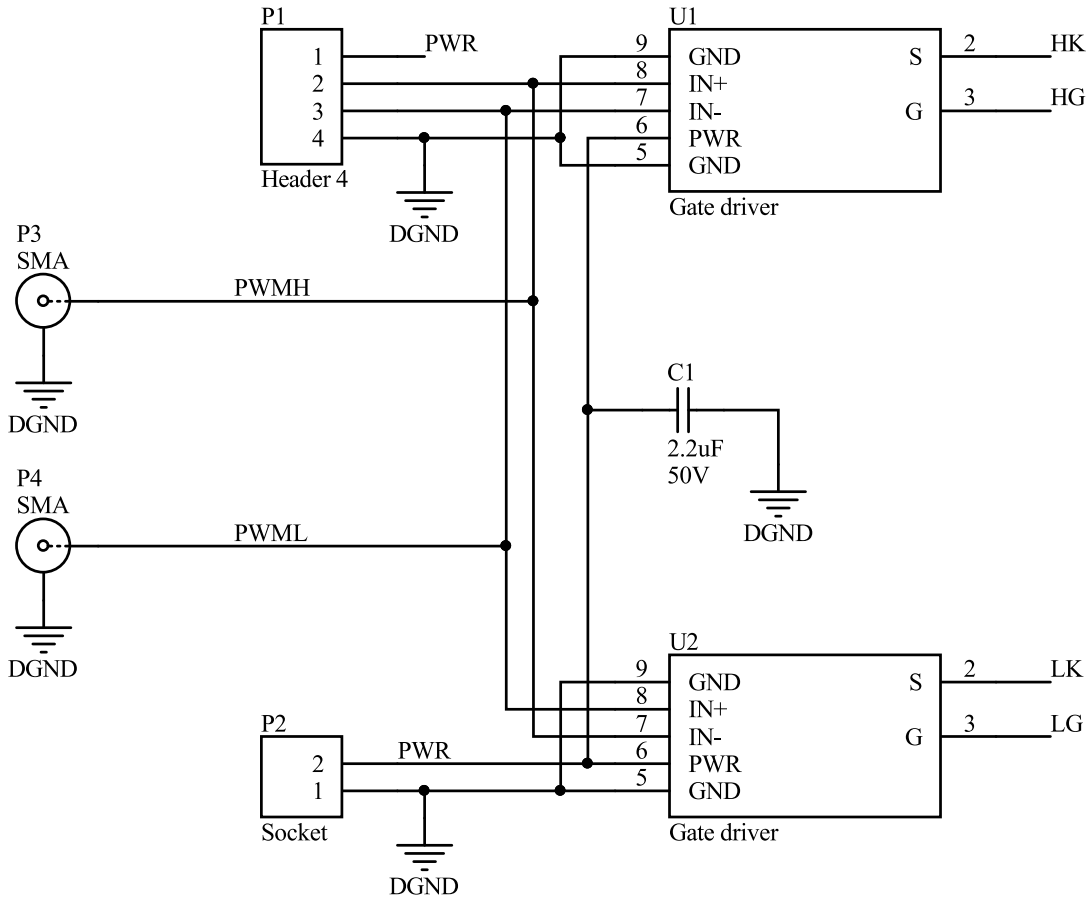


Figure 3. STDES-SICGP4 driver circuit schematic

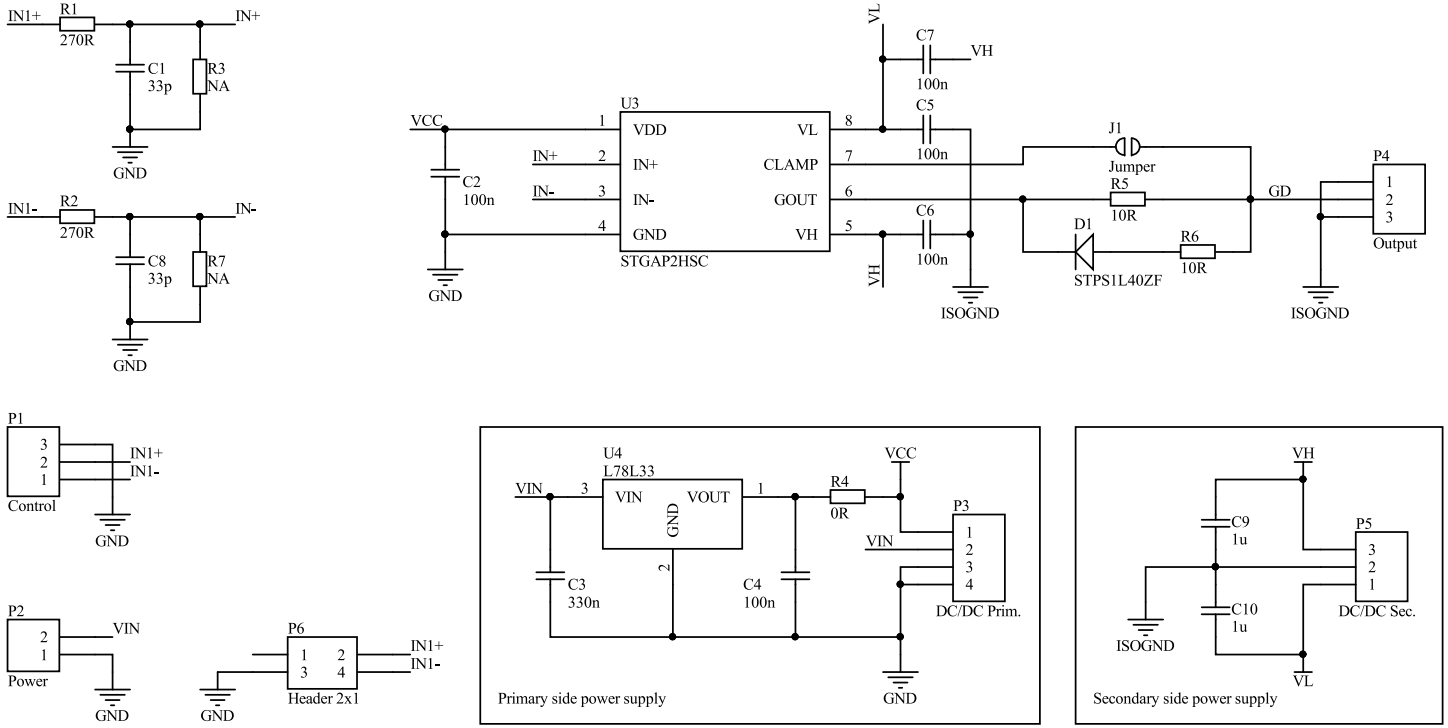
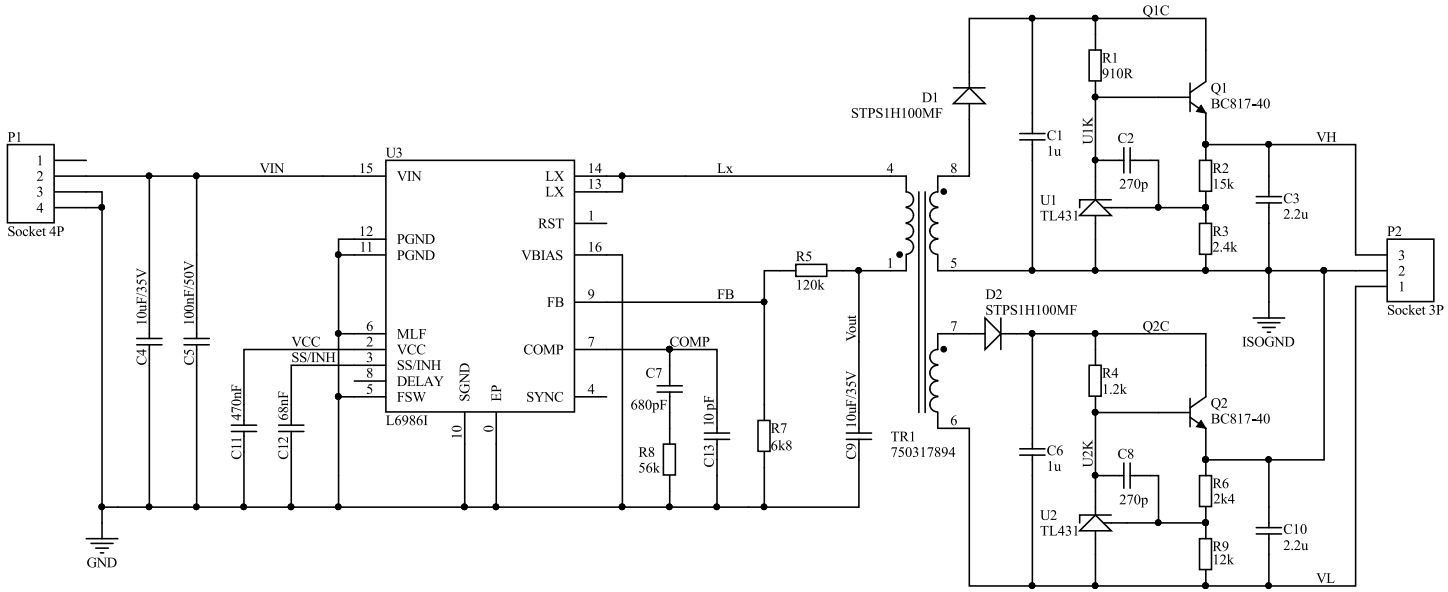


Figure 4. STDES-SICGP4 DC-DC isolated converter circuit schematic



Revision history

Table 1. **Document revision history**

Date	Revision	Changes
01-Dec-2022	1	Initial release.