

BeFAST G4 - Double pulse test Eval Kit for SiC semiconductors

Ordering number: AP-EVAL-UJ4C075018K4S

When ordering the AP-EVAL-UJ4C075018K4S customer receives a AP-EVAL-UF3SC120009K4S plus 2pcs. of UJ4C075018K4S and further passive Components (R,C) all individually packed.

The dual-pulse Test board can be used to analyze SiC FET for following applications

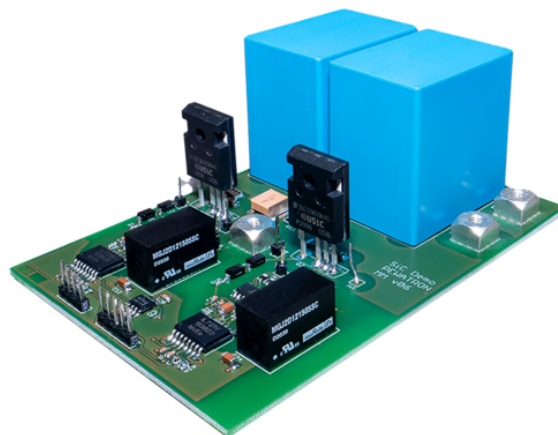
- DC/DC-Converter
- LLC converter
- Soft-switching
- Hot leg in TPPFC

AP-EVAL- UJ4C075018K4S one half bridge with the following components:

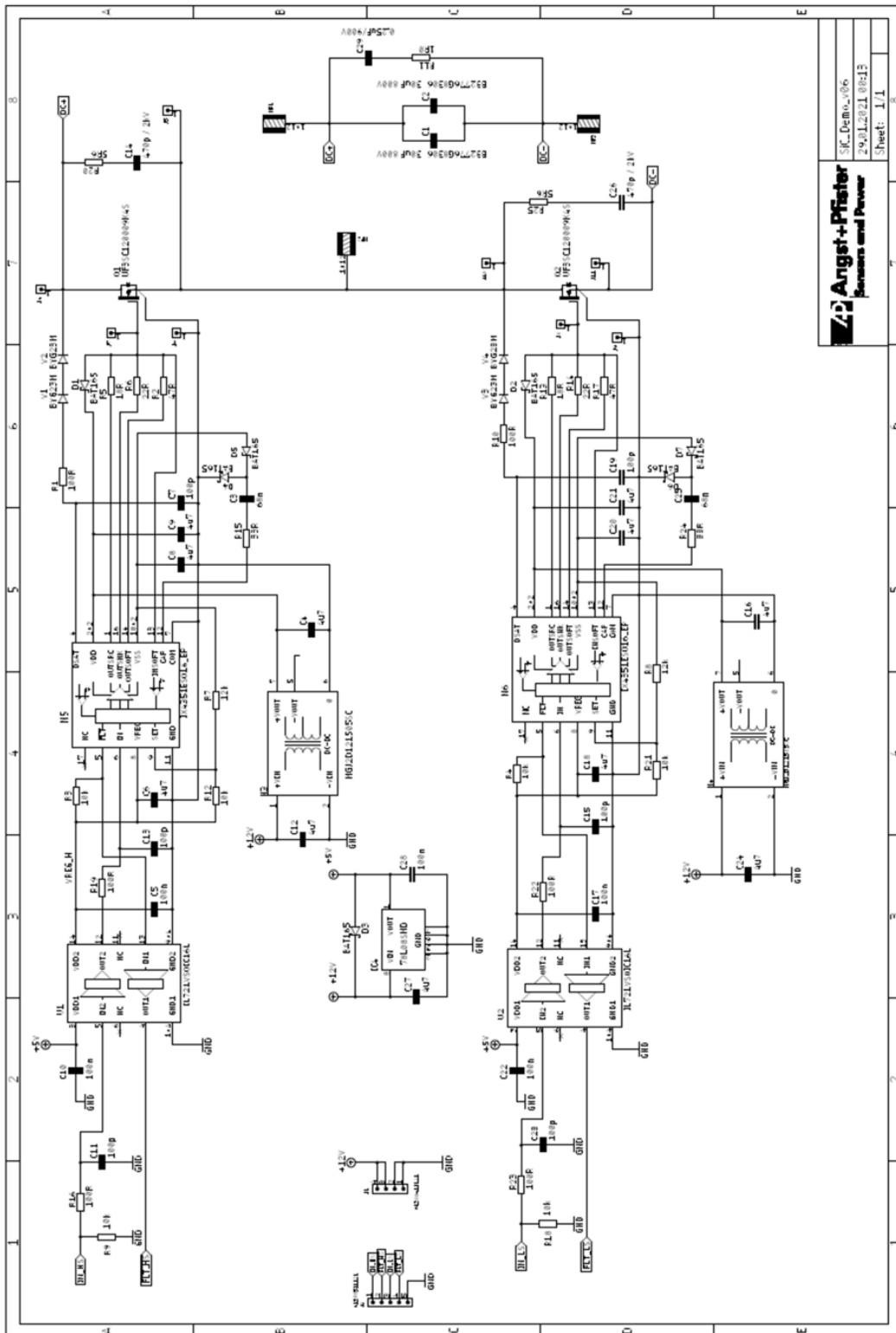
- Isolated gate control
- Isolated gate driver supply voltages
- SiC MOSFET's TO-247-4P
- DC Link Capacitor
- DESAT Function
- Failure message feedback
- Snubber

Technical data

Input voltage V_{DC}	24-400V _{DC}	Weight:	0.2 kg
Output voltage	up to 400V	Dimensions (LxWxH)	121mm x 82mm x 49mm
Peak output current (1ms)	100A		
Switching Frequency:	1-150kHz		
Intermediate circuit capacity	60-F/800V		
Supply voltage-	12Vdc	Cooling	Heat sink must be provided on the customer's side
Gate Driver			
Digital inputs	0-5V		
Digital outputs	0-5V		

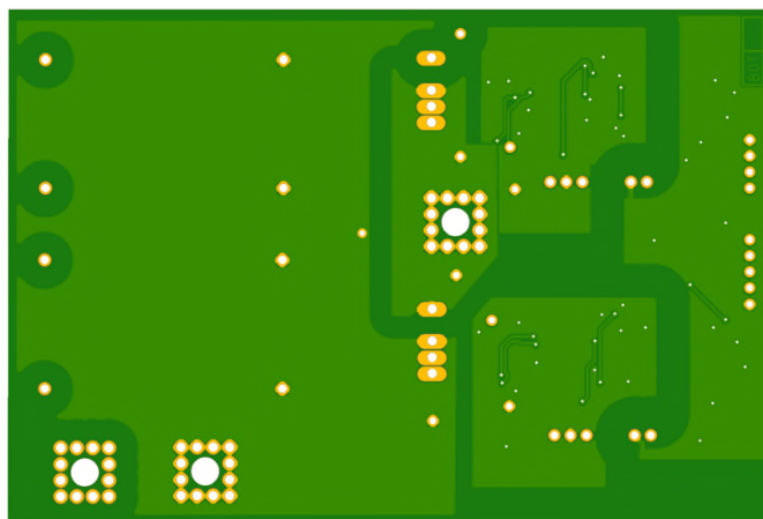
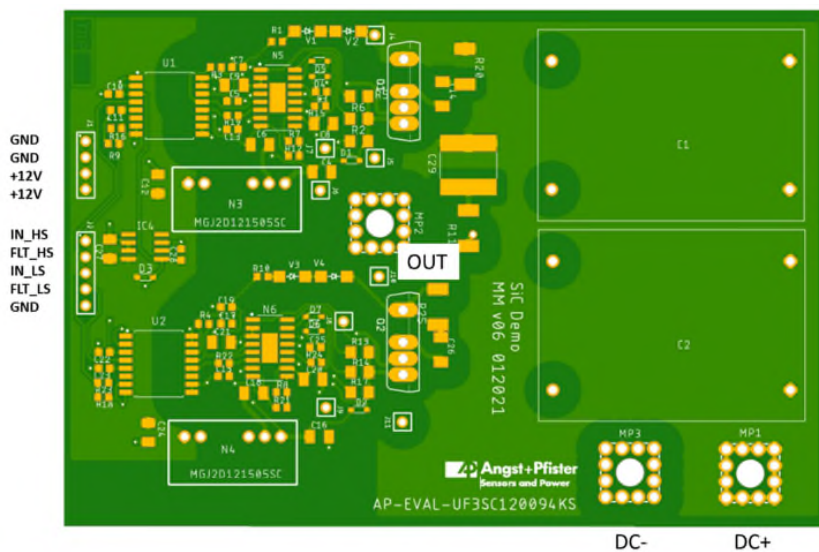


Schematic:



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Printed circuit board:**Migration to UJ4C075018K4S:**

To migrate the Gen 3 board from 1200V to a 750V solution both SiC FET TO-247-4L UF3SC120009K4S need to be replaced by two 750V SiC FET TO-247-4L UJ4C075018K4S.

In order to adopt the circuit to the performance following components also need to be modified.

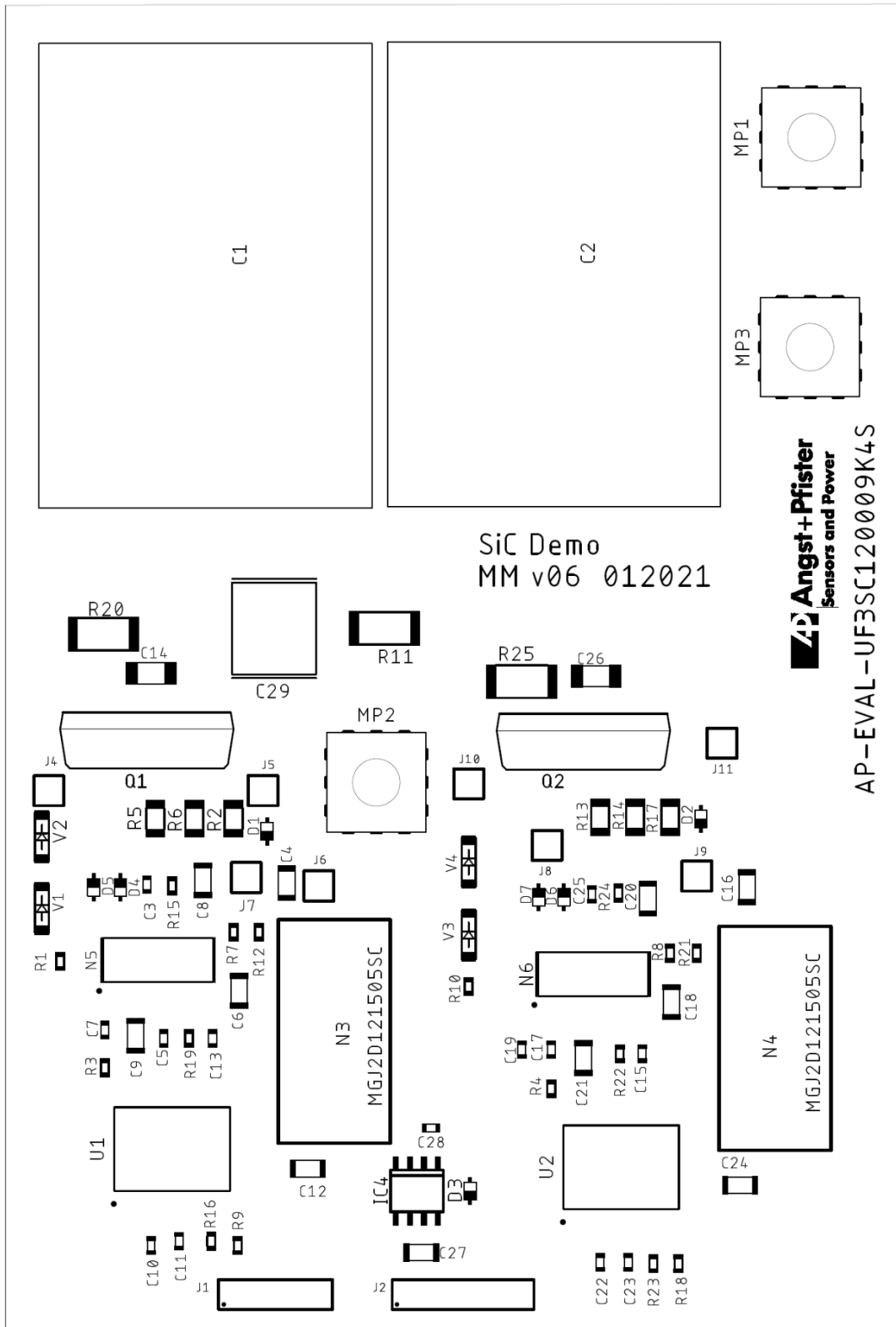
Resistors R5 and R13 to 2R2

Resistors R6 and R14 to 56R

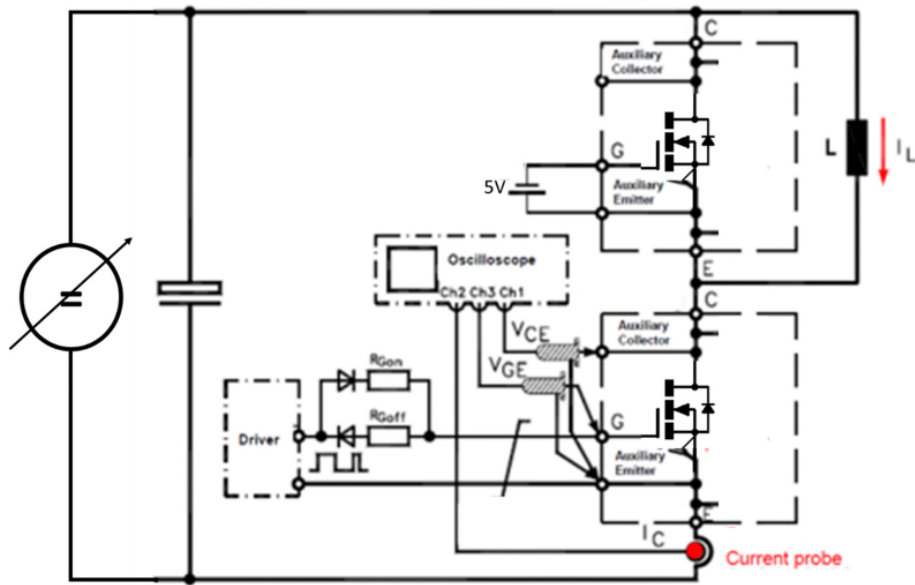
Resistors R25 and R20 to 4R7

Capacitors C14 and C26 do not need to be changed.

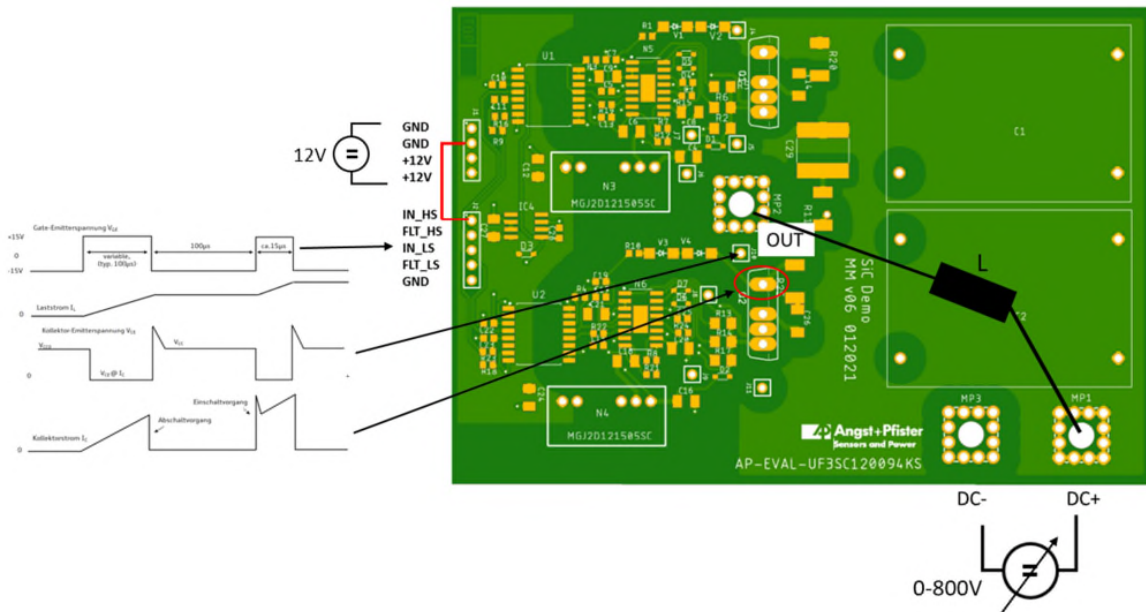
Layout diagram:



Block diagram - Double pulse test:

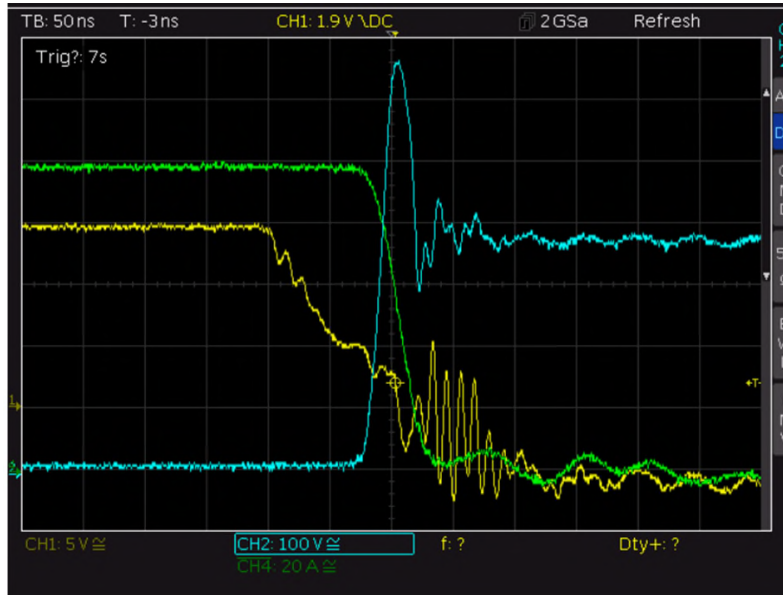


Connection plan and pulse sequence - Double pulse test:

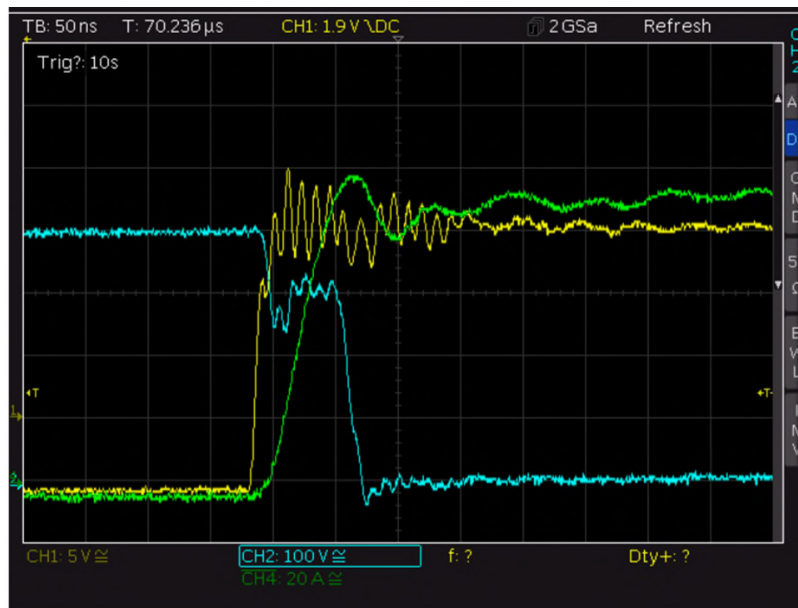


Test results using UJ4C075018K4S:

Measurement High-Side (SH) Turn-off at 400V and 100A



Measurement High-Side (SH) Turn-off at 400V and 100A





Precautions and warnings

This module is a ready-to-use power electronic half-bridge. Due to its functionality and operating requirements, the assembly can be operated with high voltages and currents. When operating with high voltages (>60Vdc),

therefore it is essential to make sure

- that you comply with the VDE regulations
- all safety guidelines are adhered to
- all connections are carefully executed
- suitable measuring instruments with regard to electrical voltage resistance and insulation strength can be used

and the commissioning may only be carried out by an appropriately trained specialist!
The assembly may only be operated in the laboratory area.

Since the application of the assembly is beyond our control, we do not assume any claims arising from consequential damages.

Important notes:

This data sheet contains statements about the suitability of our product for specific applications. These statements are based on our knowledge of typical requirements that are often made to our products in the relevant application areas. However, we expressly point out that such statements cannot be considered as binding statements about the suitability of our products for a particular customer application, as we are usually unfamiliar with the targeted use.

Therefore, it is ultimately always up to the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application. We would also like to point out that in individual cases the electronics may malfunction, since component errors or failures of the components cannot be completely excluded before the end of their normal service life according to the current state of the art, even if they are operated as indicated. In the case of customer applications that require a very high level of operational safety, and in particular in the case of customer applications where a malfunction or failure of an electronic component may endanger the life or health of human beings, appropriate measures must be taken to ensure that third parties do not suffer injury or damage if an electronic component does not function or fails.

We are constantly striving to improve our products. Therefore, the product and product specification described in this datasheet may change from time to time.

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