Half Bridge Module

for use with

AF10 PWM-Generator

User Manual

AF10 – Half Bridge Module

User Manual

Contents

1   Introduction

To use the PWM-Generator AF10 with higher loads, the optional external Half Bridge Module can be used. It can be connected to the AF10 at its Extension socket (Variant *Engineering*).

The module can be used in *PushPull*, *Highside* Switch und *Lowside* Switch mode and is suitable for a lot of different applications.

Output currents up to 16A and input voltages up to 60V permit output power up to 960W. At lower power, switching frequencies up to 500kHz are possible.

The module has an internal overvoltage and overtemperature shutdown.

2   Connectors

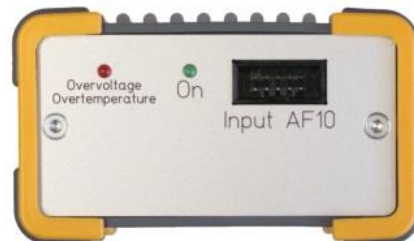GND: Common ground connector
OUT: Output of half bridge
0..40V: Input of external power supply

Input AF10:   port to the AF10-PWM-Generator
                 via a 10-pin ribbon cable

2.1 Input AF10

Pin-Nr.	Function
1	GND
2	Input HighSide Switch
3	Input LowSide Switch
4	-
5	-
6	-
7	-
8	GND
9	-
10	12V Power supply for internal drivers

3   Operation

3.1   Safety Notes

The module has overvoltage and overtemperature shutdown, but no overcurrent protection.

3.2   Overvoltage shutdown

At a supply voltage of about 70V, the module shuts down and the red error LED will be on. The internal MOSFETs are inactive now.

## 3.3   Overtemperature shutdown

The internal overtemperature shutdown protects the module only against slow rising chip temperatures. It comes active, if the close to the Highside-MOSFET mounted sensor detects a temperature above 70°C. The red error LED illuminates. After a cooling period (5..30s), the module comes back on.

3.4   Inactive State

If both internal MOSFETs are off (Output Off at AF10) a leakage current <1mA will flow from the power supply to the output of the module. This results in a rising output voltage at low loads. For sensitive loads use external Pullup/Pulldown-Resistors.

3.5   Safe Operating Area

Safe operation is ensured within the SOA. The SOA is valid, if $I_{Peak} < 1{,}3 \cdot I_{RMS}$
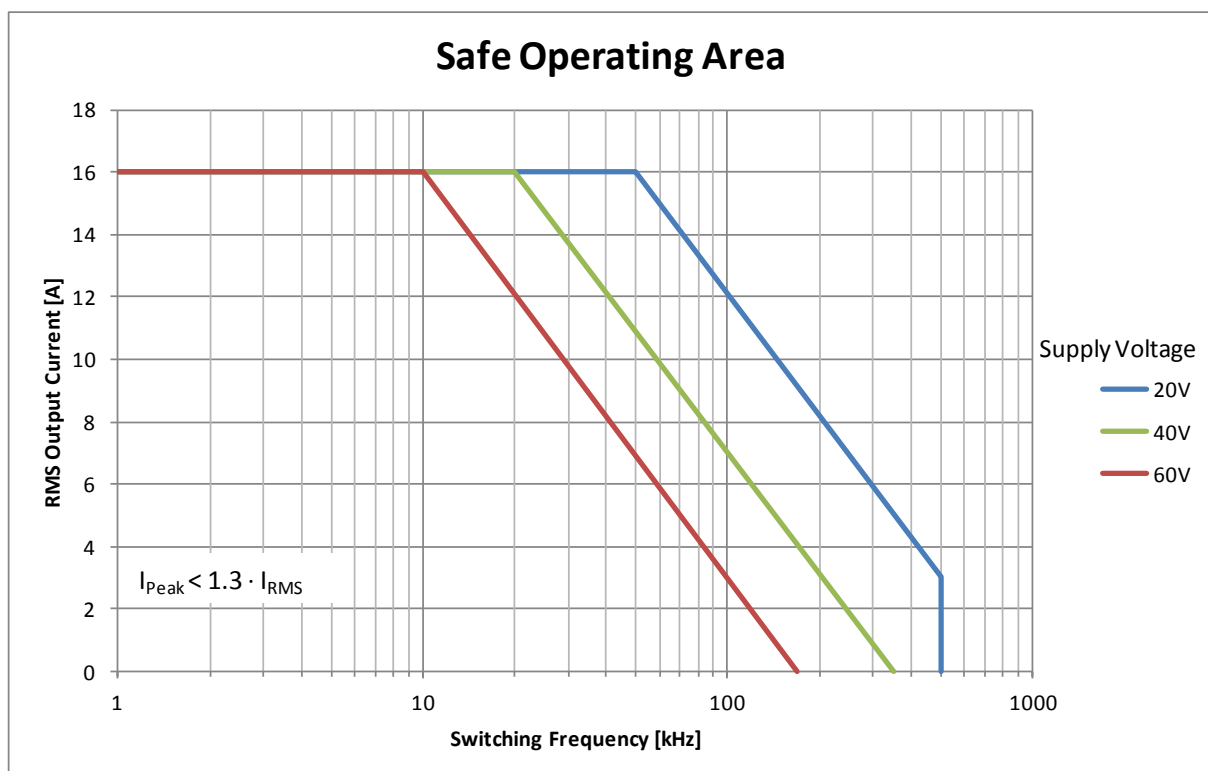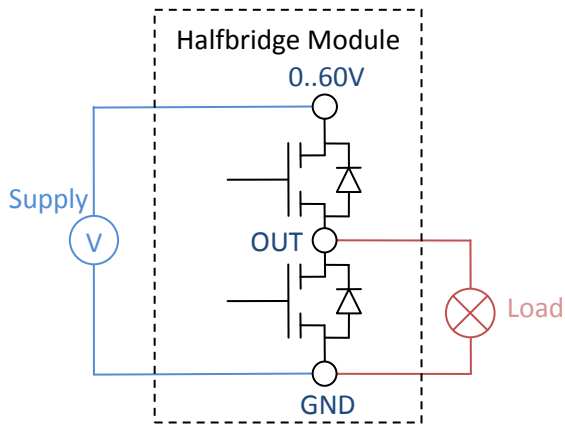
3.6 PushPull Operation

Set the extension mode in the AF10 to *PushPull*.

Important:

Never use dead times smaller than 100ns! A too low value leads to a bridge short circuit with high internal power dissipation. You can configure the dead time at the setup menu (PushPull-Deadtime) of the AF10.
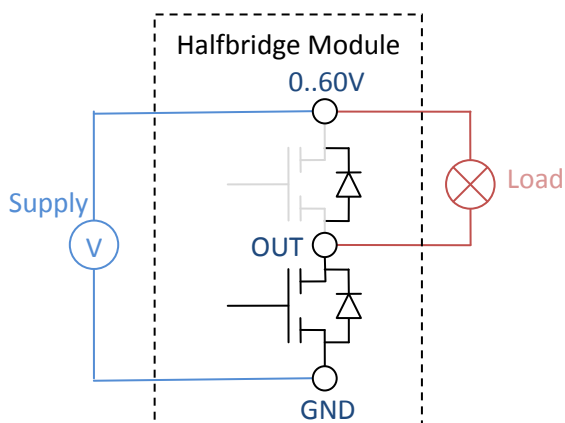
Connection diagram:

3.7 LowSide-Switch Operation

Set the extension mode in the AF10 to *LowSide-Switch*.

In this mode, the high side switch is not driven but its body diode remains active.
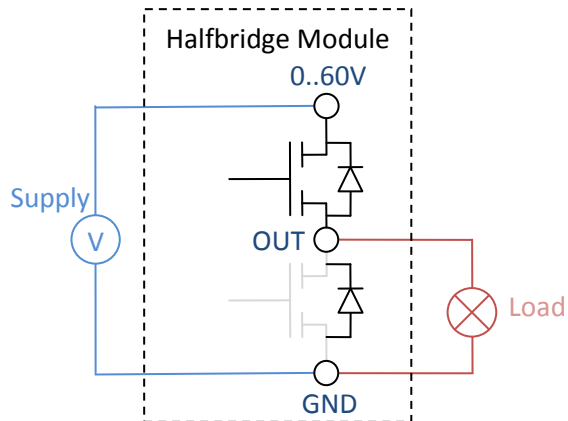
Typical connection diagram:

It is also possible, to leave the 0..60V connector open, but as a result the overvoltage shutdown doesn't work.

3.8 HighSide-Switch

Set the extension mode in the AF10 to *HighSide-Switch*.

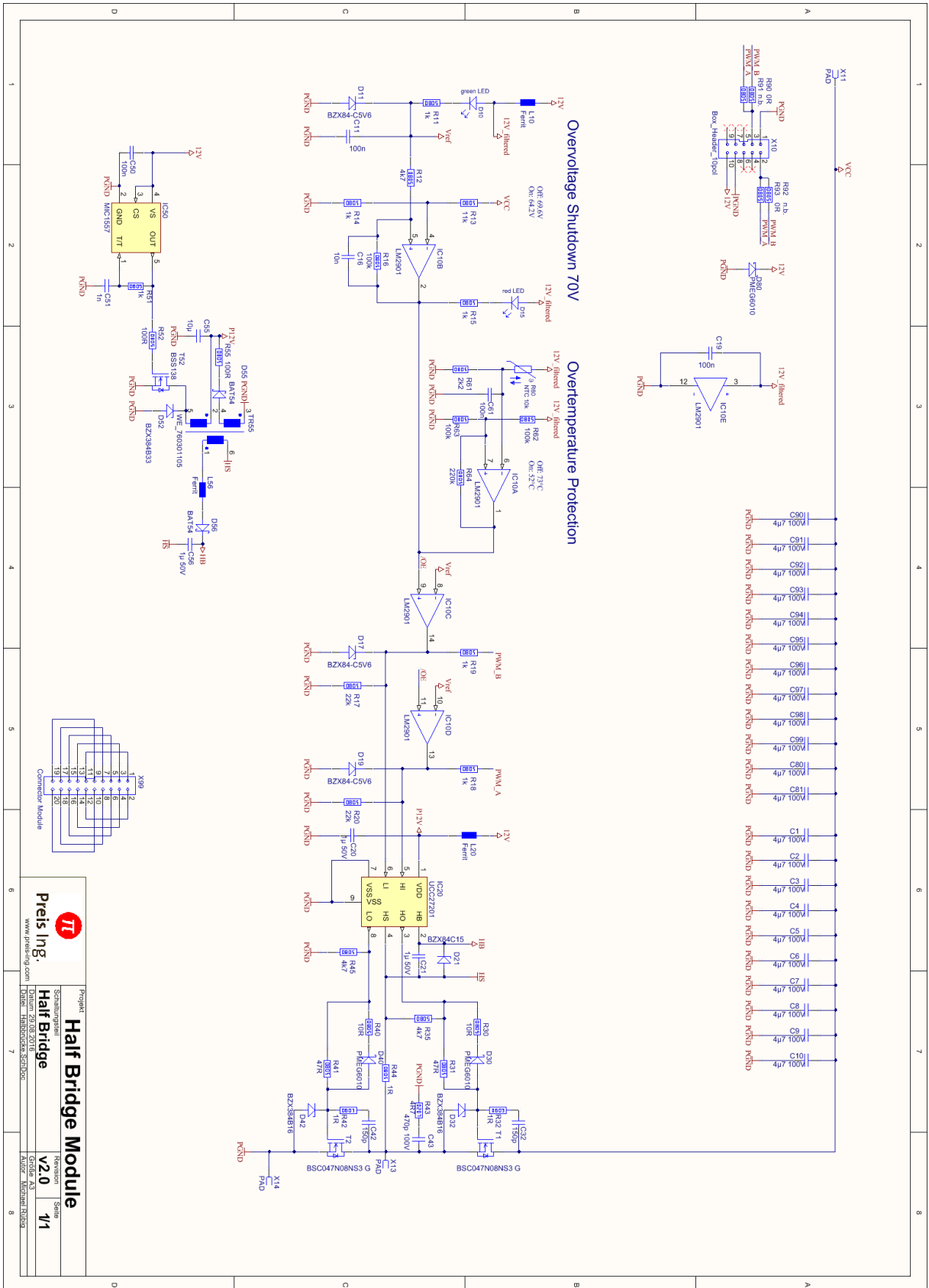In this mode, the low side switch is not driven but its body diode remains active.

Typical connection diagram:

4 Technical data

Ambient temperature	0°C ...40°C non condensing
Frequency	0 .. 500kHz (see also SOA)
Input voltage	0..60V (see also SOA)
Input current	16A max.
Output current	16A max.
Duty cycle	0..100%

5 Schematics

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