Triple HV RF Driver Board CERFBOARD 1.0a

Developer's Guide

Chapter 1 Introduction to the CERFBOARD

OVERVIEW

The Raptor Engineering Triple HV RF Driver Board [CERFBOARD] is comprised of three 45MHz 1200V MOSFET switches and associated driver circuitry. It features an ultra-low 1200V to 0V transition time of <5ns, and is ideally suited for both class E RF amplifiers and research into high voltage transient effects. The IXYSRF IXZ308N120 switching devices are coupled with IXYSRF DEIC421 drivers, allowing lightning fast switching of pulsed high voltage loads at currents up to 40A.

The CERFBOARD can be readily used with any FPGA that makes a Digilent-compatible 40-pin expansion header available, such as the Raptor Engineering VDFPGA series of development boards. Extensive isolation between the driver and the input signals, as well as large independent groundplanes and the ultra-low-inductance DE375 packaging, eliminate source interference and self oscillation. Proprietary power rail tap circuitry protects the delicate isolation and drive chips from the effects of a nearby HV arc.

Usage is a simple as outputting a CMOS signal to the three input pins of the CERFBOARD. An additional auxiliary +12.0V power supply is required for proper operation; all other necessary power is drawn from the 40-pin interface. To avoid permanent hardware damage, **do not apply more than +13.0V continuously to the auxiliary power connector.**

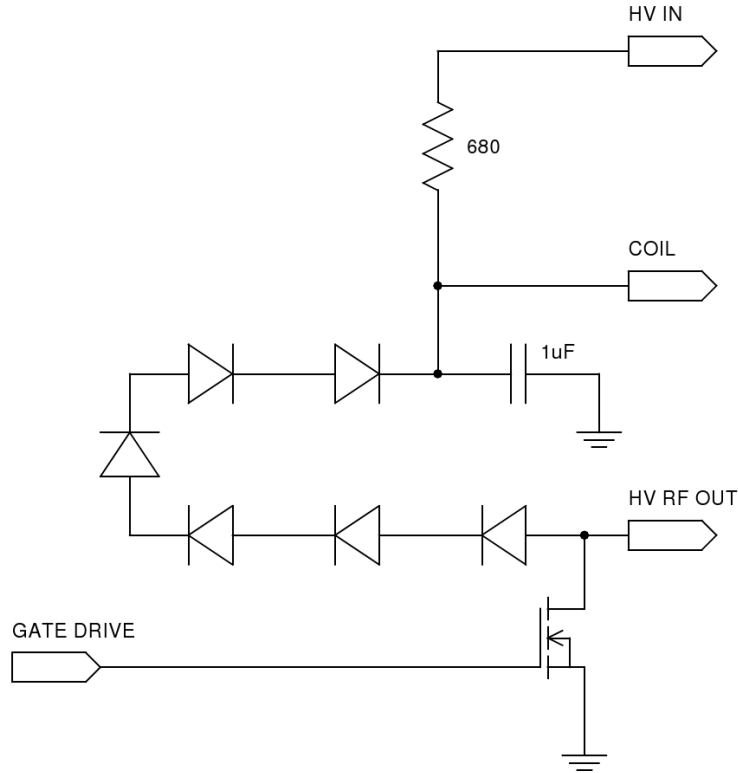Output connectors are high voltage SMA style; all other connections are standard 2-pin male headers.

HARDWARE
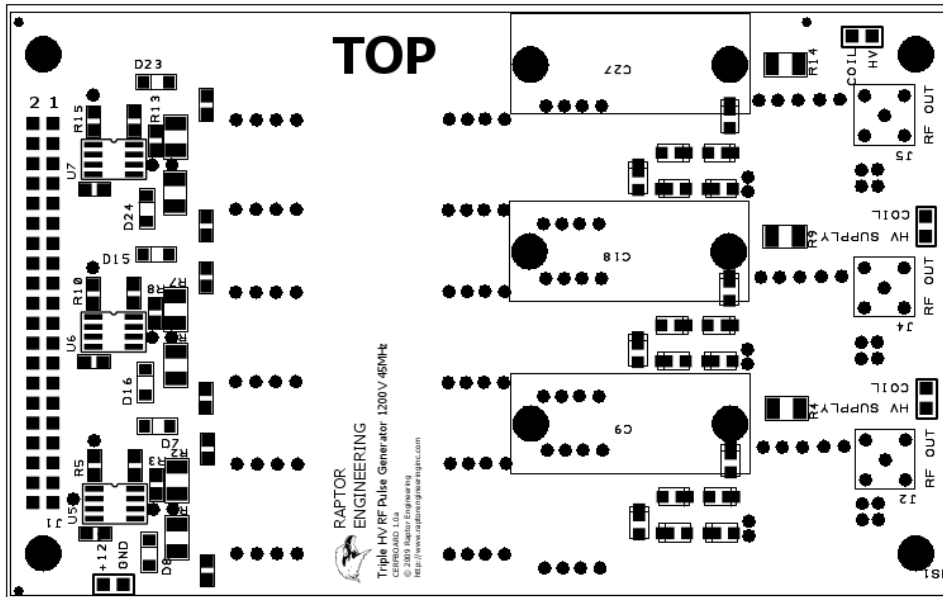
Interface Header Pin Number:	Pin Description:	Interface Header Pin Number:	Pin Description:
1	DGND	7	RF Channel 2 IN
3	+3.3V	9	RF Channel 3 IN
5	RF Channel 1 IN	All other pins	N/C

DRIVER STAGE SCHEMATIC

CERFBOARD UCF listing for VDFPGA Development Board:

```
NET "rf_out<0>" LOC = "B20";
NET "rf_out<1>" LOC = "C18";
NET "rf_out<2>" LOC = "B17";
```

If you encounter any hardware problems, please contact us at support@raptorengineeringinc.com.

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Designed and manufactured in the U.S.A.