

# Fast High Voltage Switch (Q-switch driver) Model: RPQ...-..HV.

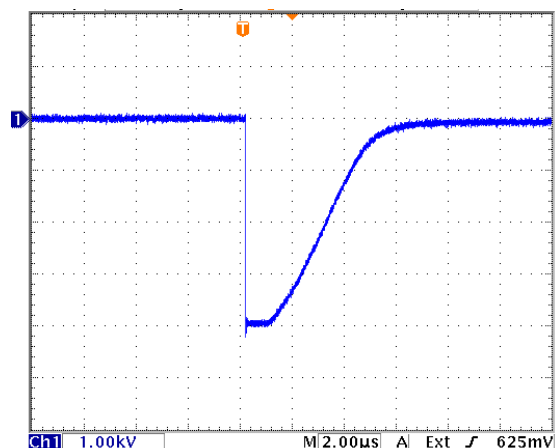
- ✓ **Compact design**
- ✓ **High repetition rate up to 20kHz**
- ✓ **Adjustable voltage up to 4.4 kV**
- ✓ **Fast switching time typical 2.5ns**
- ✓ **HV power supply included**
- ✓ **Easy Pockels cell pin connection**
- ✓ **No active cooling required**



The RPQ...-..HV. are a series of fast, high voltage drivers that operate at repetition rates up to 20 kHz without the need for forced air or water cooling. The drivers, which typically are used for driving Pockels cells, operate at a high voltage that is user adjustable up to -4.4 kV. The electrical rise time of the high voltage pulse is 2.5 nanoseconds with typical Pockels cell loads. Different versions of the driver either switch from 0 V to high voltage or from high voltage to 0 V. After switching, the voltage is held for approximately 1 microsecond before decaying back to the static value. The oscilloscope trace below shows the general features of the pulse. Easy to use HV pin connection and various mounting features allow simple mounting of the switch module to a variety of Pockels cell mounts and laser housings. The driver consists of a high voltage power supply and a gold-plated, fast-switching module; a 24 VDC power supply for powering the driver is available as an option.

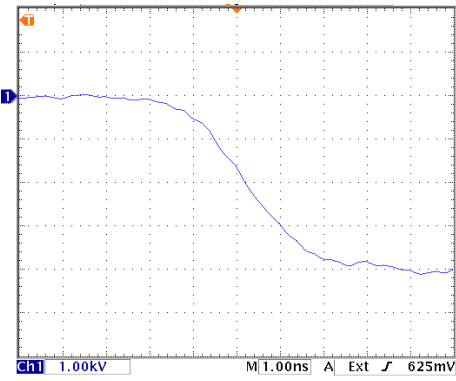
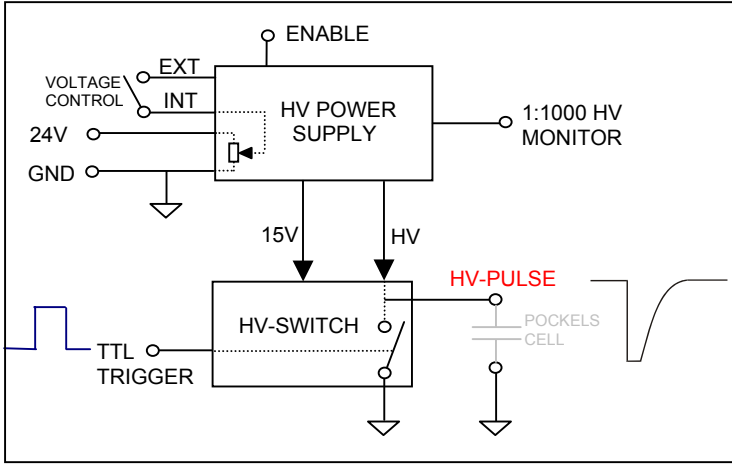
### Operating characteristics:

- Voltage 0V between cycles (HVL model) or  $\lambda/4$ -wave Voltage between cycles (HVH model)
- Adjustable High Voltage 2kV-4.4kV, depending on model
- Electrical switch time 10%-90% <3ns, typical 2.5ns (at 5pF, 10kHz, 20°C) at 20kHz <3.5ns
- Voltage holding on time  $\approx 1\mu\text{s}$  (alternative holding times are available)
- Slow recovery time around 5 $\mu\text{s}$
- Repetition rate: single shot to 10kHz or 20kHz.
- TTL trigger input, SMB connection
- Jitter < 200ps pulse to pulse



COMPLETE HV-CYCLE

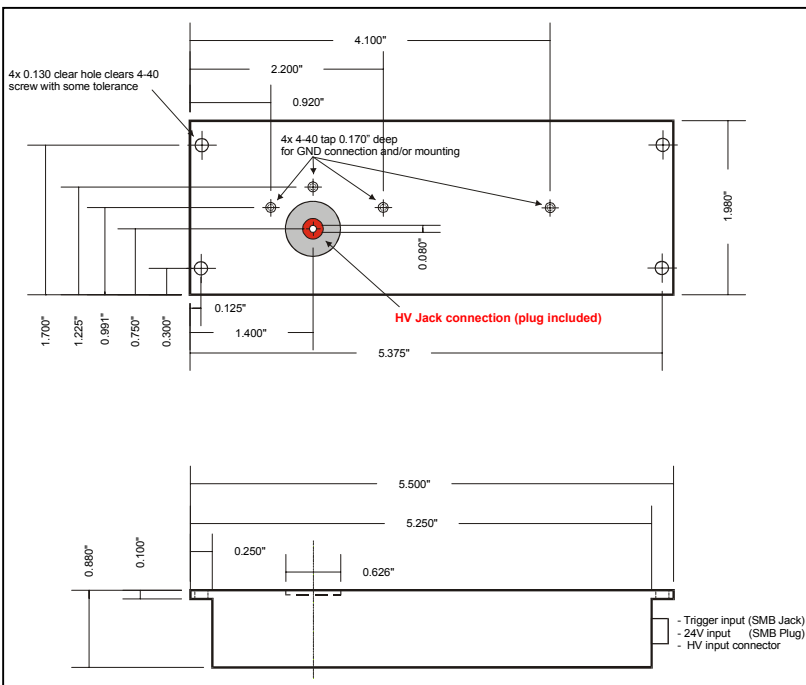
**SIMPLIFIED CIRCUIT**



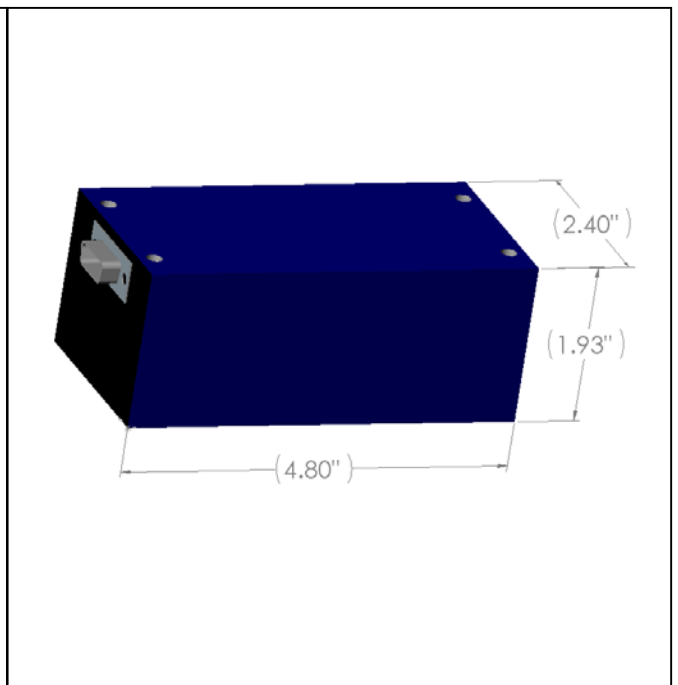
**2.5 ns typical switch time at 5kHz**  
**2.8ns typical switch time at 20kHz**

**FAST HV-TRANSITION**

**SWITCH MODULE LAYOUT**



**HV-POWER SUPPLY MODULE**

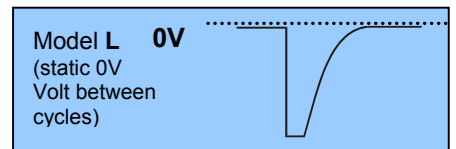
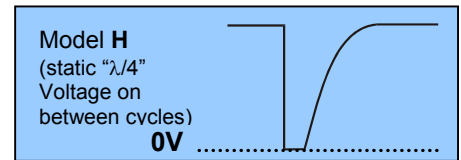


**Models:**

**RPQ . . . . HV .**

Voltage	<b>30</b> → 2.0kV-3.0kV	Repetition	<b>10</b> → 10kHz	Static Voltage	<b>H</b> → λ/4 V
Range:	<b>44</b> → 2.8kV-4.4kV	Rate :	<b>20</b> → 20kHz	Between cycles:	<b>L</b> → 0 V

\* higher and lower voltages available on request



Optional: 24VDC power supply, which runs off 110 VAC – 240 VAC, and test cable for the HV power supply. **P/N: RP24TC**