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HF-D 200

High Voltage Class-D Amplifier
for Paul Traps



Short Form Data Sheet

Features:

- **Fast Turn-On Characteristic, Symmetric Output Voltages**
- **Level Shift by DC-Offset**
- **Dipole Excitation**
- **Voltages up to 1.4MHz @ 200V_{pp}**

Description

Purpose of this device is the creation of high-frequency voltages up to 1.4MHz and 200V_{pp}, which will supply a trapping field to a radio-frequency-Paul Trap. Unlike classical resonant amplifiers, in this device the design principle allows for instant turn-on of the output amplitude virtually without any delay. This allows for in-flight capture of ions entering the trap. Thanks to the rugged medium-impedance outputs no 50 Ohm termination is required, simplifying the connection to ion traps, which are located in vacuum conditions. Furthermore a DC-Offset- and an input for Dipole-Excitation ease the operation with traps, since they supply possibilities for DC trapping potentials and motional excitations.

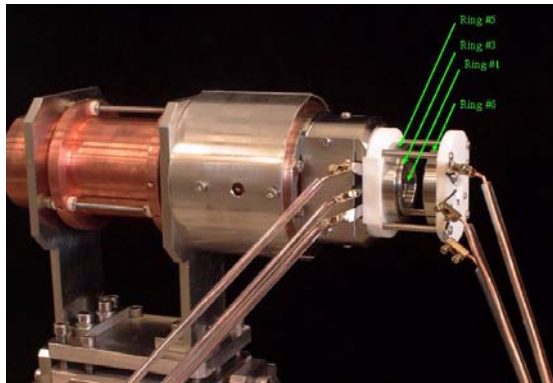


Fig.1: Paul Trap for in-flight capture
(Courtesy: D. Rodriguez)

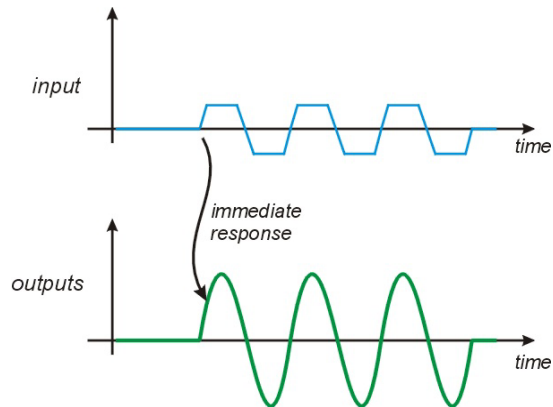


Fig.2: schematic diagram: avoidance of resonant elements enables ultra fast turn-on response

Characteristics Data and Operating Parameters

Parameter	Spec. value	Condition
Frequency Range	600 kHz ... 1.4 MHz	Over range 50 kHz...1.5 MHz
Inputs (BNC)		
Impedance	180 Ohm	
Voltage Range	18 V _{pp}	
Outputs (BNC)		
Voltage Range	0...200 V _{pp}	600 kHz < f < 1.4 MHz
Recommended capacitive load	< 145 pF	600 kHz < f < 1.4 MHz
Signal Input	Nominally 18V _{pp} , square wave	Input impedance: approx. 180 Ohm parallel to 2.1nF
Output DC-Offset range	± 120 V _{DC}	
Dipole Excitation	0 V...25 V _{pp} , AC only	Input impedance 50 Ohm
Power Supply	230 V ~ AC	
Operating temperature range	0°C...35°C	
External magnetic field	< 1.5 mT	
Weight	Approx. 5.2 kg	
Dimensions (width x height x length)	482 mm x 98 mm x 355 mm (19" rack mount version)	

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