

Are RF power amplifiers suitable for scientific accelerators?

System components test results are discussed. A comparison of the state-of-the-art vacuum tube and solid-state technologies of RF power amplifiers for scientific accelerators is given. high frequency solid-state transistors lead to the expansion of solid-state technology on the RF amplifiers market.

What are high frequency solid-state transistors?

high frequency solid-state transistors lead to the expansion of solid-state technology on the RF amplifiers market. Developing Si,SiC,GaN,GaAs LDMOS,FET transistors allow building not only the drivers for vacuum tubes, but to substitute the entire RF systems.

What is the structure of RF generating system?

The system structure is presented on Fig. 1. It consists of a 19-inch cabinets with a docking station for several RF generating modules, the power combiner with RF switches for failed RFM disconnection, power supply and capacitor blocks to feed the RF modules with electrical energy required for the pulse, the control system and cooling system.

Can a solid-state amplifier be produced in series?

All other subsystems should be kept the same for wide range of frequencies (from tens of MHz up to 1.3 GHz) and powers (from tens of kilowatts up to megawatt range) and hence can be produced in series. Figure 1: The general architecture of Siemens' solid-state amplifier.

How does a RF module work?

The module consists of four 2kW pallets with high power LDMOS transistors. The pallets are placed at one side of water cooled radiator together with the output matching circuit and power sensors. The input and output RF circuits are made on the PCB to avoid the manual tuning and hence decrease the production costs.

Why should you choose a RF generator?

The efficient power combination and use of state-of-the-art transistors ensures high overall efficiency of the generator which is more than 55% from the wall plug (up to 65% at ~50-100 MHz). The RF modules and capacitors are placed in different blocks allowing to change the duty cycle up to CW operation easily.

In this report the characteristic features of the modular components of three samples of solid state RF amplifiers are presented, focusing on multi transistor amplifier ...

Solid State Broadband High Power Amplifier 2210 150 - 450 MHz / 12 kilowatts Peak 316 W. Florence Ave. Inglewood, CA 90301 Ph. 1 (310) 412-8100 Fax. 1 (310) 412 ...

Packages: plastic (cheaper) and ceramic (traditionally more reliable). Pout=1250W possible today at low frequencies. LDMOS is the cheapest technology up to 3GHz. Other ...

of high power solid state RF amplifiers covering the power range of up to 150 kW for a frequency span of 72 to 3000 MHz The goal of this program is to provide modern RF ...

Radio-frequency; RF power; RF amplifier; solid state amplifier; RF power combiner, cavity combiner. Introduction . The aim of this lecture was to introduce some ...

Wolfgang Anders, HZB Berlin RF Power Sources for ERLs ERL2011 14. Architecture of klystron / IOT / solid state power sources Special FEL and ERL accelerators ...

Solid-state RF power has been used for decades in 1-500MHz ISM applications. However, power generation in the important 915MHz, 2.45GHz, and 5.8GHz ISM ... is ...

redesign of the RF module and the power combiner only. _____ *Work supported by: Skolkovo Foundation, Russia. Proceedings of LINAC2014, Geneva, ...

We present the current status of FAR-TECH's Solid State RF Power Source for the Jefferson Laboratory CEBAF Linac. This power source design features up to 8 kW CW RF ...

Few years back, utility of Solid State Power Amplifier (SSPA), at Radio frequency, was limited to driver amplifier [1], providing few hundreds of watts, for driving vacuum tube ...

Solid state amplifiers are being increasingly used as RF power sources in accelerators around the world. Two solid state amplifiers with different output power and ...

It also explores the future of high-power, solid-state amplifiers as rf sources for accelerator structures. During the past few years the Defense and Electronics Center of Westinghouse ...

widely used as a power source in fusion reactors, has the potential to be used for high-frequency accelerators. Solid-state r.f. power transistors operate at voltages from tens to ...

to realizing solid-state RF energy's true potential as a clean, highly efficient and controllable heat and power source." The membership of this organization is truly impressive, ...

voltage to the rf sources (solid-state switch, modulator, IGBTs, etc) must be located as close as reasonably possible to the rf sources to minimize the energy stored in the high ...

CAS - Power Converters 10 May 2014 Jörn Jacob: RF solid state amplifiers 6 RF power sources for accelerating cavities Tetrodes Diacode Transistor modules 160 to 1000 W / ...

operation pose different challenges to the RF sources both modes of operation will be treated. Modulator E

ciency Most high-power RF sources need a High-voltage (HV) ...

Take a closer look at Mini-Circuits' first solid state power amplifier for RF and microwave energy, ZHL-2425-250X+. In this deep dive, we'll explore some of the unique design features and capabilities that make this new model ...

Keywords: RF amplifier, Solid-state amplifier, Power combiner and divider, Directional coupler Received 12 April 2012; Revised 1 August 2012; first published online 19 ...

We present a newly developed compact and cost effective SSPA with megawatt range output power and scalable architecture. System components test results are discussed. ...

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