

Circuit description of the Mozart transmitter.

The Mozart line of transmitters share several circuits between models. The transmitter itself consists of a VCO/PLL board, control board and RF amplifier board.

The VCO PLL board, contains all the frequency generation circuitry and is followed by the RF amplifier board which also contains the harmonic filtering circuitry. The power supply voltage for the RF amplifier stage of the board is 48Vdc. The RF amplifier board also contains RF protection and monitoring circuits that measure current draw, voltage output, SWR, and RF power output. The difference between models is the model of RF MOSFET used in this final stage.

The VCO consists of a varactor tuned Colpitts oscillator with 2 buffer stages and an additional series voltage regulator for the VCO/ buffer. The PLL/ VCO board not only is responsible for frequency control but has the driver stage for the power amplifier. The PLL uses a voltage tuned TCXO at 10 MHz as its reference.

RF AMPLIFIER MODULE FOR MOZART UP TO 3000W

GENERAL DESCRIPTION

Technical Specification Summary

Frequency Range	87.5 – 108 MHz	Temperature Range	-10 to +60 °C
Pout (min)	1100W	Max VSWR	65:1
Typ Gain	20.4 dB	Working Class	C
Typ. Efficiency	80%	Supply Voltage	50V

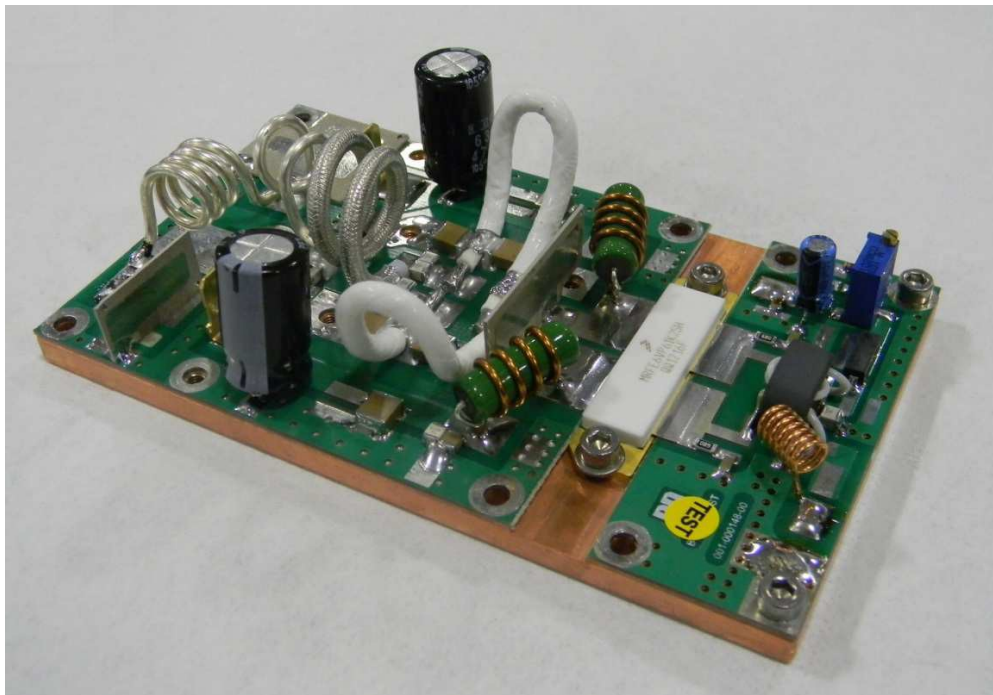
Device: MRFE6VP61K25H

General Description

Designed for FM radio transmitters, this amplifier incorporates microstrip technology and LDMOS device to enhance ruggedness and reliability. With more than 1100W power capability, this pallet can be used in compact 1kW transmitter or it can be combined with other ones to have higher power FM amplifiers only adding a power splitter and an output coupler.

It needs to be mounted to a proper heatsink suitable to exchange its dissipated power guaranteeing an adequate airflow also in the upper side to cool the matching components

Power Amplifier picture



Electrical Specifications

Parameter	Min.	Typ.	Max.	Units	Notes
Frequency	87.5		108	MHz	
Output power		1100		W	Fundamental output power
Power Input		10		W	
Power Gain	20	20.4	23	dB	@ 1100W and Pin = 10W
Drain BIAS Current		0.2		A	
Collector Efficiency		80		%	Load @ 50 Ω with variable VDC to maximize the efficiency
Input VSWR			65:1		
Power Gain Variation		± 1		dB	
F2 Second Harmonic	-45	-48		dB	

All specifications are valid for load impedance 50 Ohm

Charts

With input and output power constant and variation of the VDD voltage to optimize the efficiency

Freq. (MHz)	Power IN (W)	Ref. IN (W)	Power OUT (W)	Gain (dB)	ID (A)	VDD (V)	Effic. (%)
88.00	10	3.5	1100	20.41	28	47.2	83.2
98.00	10	1.5	1100	20.41	29.5	45.18	82.5
108.00	10	2.5	1100	20.41	27.5	49.8	80.3