TETRODE POWER AMPLIFIER OSCILLATOR

The RK-49 is a heater type aligned grid beam power amplifier tube having an isolated base. The use of aligned grids reduces the ratio of screen current to plate current and allows more efficient utilization of the total space current. The electrical characteristics are similar to those of the type 6LG6.

HEATER RATING

Heater Volt. 6.3 volts
Heater Current...........................................

DIRECT INTERELECTRODE CAPACITANCES

Grid to Plate................................. 1.4 μf
Input ........................................... 11.5 μf
Output........................................... 10.6 μf

R-F POWER AMPLIFIER OR OSCILLATOR—CLASS C

MAGNAMICS RATINGS

D-C Plate Voltage—Telephony..................... 400 volts
D-C Plate Voltage—Telephony—With Control Grid Mod. ... 400 volts
With Plate or Plate and Screen Modulation .......... 300 volts
D-C Screen Voltage................................ 300 volts
D-C Plate Current............................... 100 ma
D-C Control Grid Current........................ 6 ma
Plate Dissipation................................. 21 watts
Screen Dissipation................................ 3.5 watts

TYPICAL OPERATION

D-C Plate Voltage........ 400 300 300 300 400 volts
D-C Screen Voltage...... 250 200 200 250 250 volts
D-C Control Grid Voltage...... -40 -45 -45 -50 -50 volts
D-C Plate Current........ 55 60 60 95 95 ma
D-C Screen Current........ 4 18 15 8 8 ma
D-C Control Grid Current...... 0.5 6 5 3 3 ma
Screen Resitor................. 0 5000 6700 6700 6700 ohms
Peak R-F Input Voltage...... 47 64 64 80 80 volts
R-F Driving Power........ 0.3 0.3 0.2 0.2 watts
Carrier Power Output...... 7 12 13 25 watts
Peak A-F Voltage—Plate...... 300 300 300 volts
Peak A-F Voltage—Grid.... 25 7 11 200 volts
A-F Modulating Power...... 0.15 0.15 0.11 0.11 watts
Peak Power Output........ 28 48 48 52 watts

AVG. PLATE AMPLITUDE CHARACTERISTICS

E₁p = 6.3 VDC
E₂p = 250 VDC
E₃p = 50 VDC

AVG. POWER AMPLITUDE CHARACTERISTICS

D-C Plate Voltage—Volts

R-F POWER AMPLIFIER—CLASS B—TELEPHONY

MAXIMUM RATINGS

D-C Plate Voltage.................. 400 volts
D-C Screen Voltage............... 300 volts
D-C Plate Current (Carrier)...... 75 ma
D-C Plate Current (Carrier)...... 3 ma
Screen Dissipation (Carrier)..... 3.5 watts

TYPICAL OPERATION

D-C Plate Voltage.................. 400 volts
D-C Screen Voltage............... 250 volts
D-C Plate Current............... 30 volts
D-C Screen Current............... 5 ma
D-C Grid Current.................. 0.1 ma
Peak R-F Input Voltage........... 60 volts
R-F Driving Power............... 0.5 watts
Carrier Power Output............... 0 watts
Peak Power Output............... 20 watts

AVG. POWER AMPLITUDE CHARACTERISTICS

D-C Plate Voltage—Volts

OPERATING NOTES

The RK-49 may be operated at the maximum ratings at frequencies up to 15 megacycles. Above 15 megacycles the reduced efficiency realized requires that the plate voltage be reduced to a maximum of 300 volts to prevent the plate dissipation from exceeding the maximum rated value. The operation of the tube at frequencies higher than 60 megacycles is not recommended.

EXCITATION

The Class C amplifier characteristic curves show the power output, plate current and screen current plotted vs. excitation as denoted by the d-c control grid current in milliamperes. The power output flattens off around 3 or 4 ma. of grid current with very little gained above those values. The screen dissipation increases with excitation and for this reason the excitation should be kept at a reasonable value.

SHIELDING

Shielding of the grid input tuning system from the plate tuning apparatus is desirable and will provide improved stability. Due to the high grid to plate capacitance, the RK-49 requires neutralization.

BIAS

At least 25 volts of fixed bias should be used with 400 volts on the plate to protect the tube in case of failure of the bias or excitation. Additional bias may be obtained by the use of a grid or cathode resistor.

CRYSTAL OSCILLATOR

When the RK-49 is used as a crystal controlled oscillator, a 10000 ohm grid leak and a 400 ohm cathode resistor are recommended to give maximum power output and easy starting.

PLATE TEMPERATURE

The plate of the RK-49 will not show color when operated at the maximum rated plate dissipations. Dissipations above the rated value should be avoided.