12AQ5
BEAM POWER AMPLIFIER
7-Pin Miniature Type
TENTATIVE DATA

RCA-12AQ5 is a beam power amplifier of the 7-pin miniature type intended primarily for use as the output amplifier of automobile receivers operating from a 12-volt storage battery. It may also be used in the output stage of a-c operated radio receivers.

The 12AQ5 can provide high power output because of its high power sensitivity and high efficiency. For example, in class A1 amplifier service, a single 12AQ5 operated with a plate and grid-No.2 voltage of 250 volts, can deliver a maximum-signal power output of 4.5 watts with a peak driving voltage of only about 12 volts. These features together with relatively low plate-current drain make the 12AQ5 especially suitable for use in the output stage of automobile receivers.

Within its maximum ratings, the 12AQ5 is the performance equivalent of the larger glass type 12V6-GT.

GENERAL DATA

Electrical:
Heater, for Unipotential Cathode:
Voltage (A.C. or D.C.) 12.6 volts
Current 0.225 amp
Direct Inter electrode Capacitance
Grid-No.1 to Plate 0.35 μf
Input 8.3 μf
Output 8.2 μf

Mechanical:
Mounting Position Any
Maximum Overall Length 2-5/8"
Maximum Seated Length 2-3/8"
Length from Base Seat to Bulb Top (Excluding Tip) 2"+3/32"
Maximum Diameter 3/8"
Bulb Small-Button Miniature 7-Pin (JETEC No.E-7-1)
Base

AF POWER AMPLIFIER - Class A1

Maximum Ratings, Design-Center Values:
PLATE VOLTAGE 250 max. volts
GRID-No.2 VOLTAGE 250 max. volts
PLATE DISSIPATION 2 max. watts
GRID-No.2 INPUT 2 max. watts
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 90 max. volts
Heater positive with respect to cathode 90 max. volts
BULB TEMPERATURE (At hottest point on bulb surface) 250 max. °C

Typical Operation and Characteristics:
Plate Voltage 180 250 volts
Grid-No.2 Voltage 180 250 volts
Grid-No.1 (Control-Grid) Voltage -8.5 -12.5 volts
Peak AF Grid-No.1 Voltage 8.5 12.5 volts
Zero-Signal Plate Current 29 45 ma
Max.-Signal Plate Current 30 47 ma
Zero-Signal Grid-No.2 Current (Approx.) 3 4.5 ma
Max.-Signal Grid-No.2 Current (Approx.) 4 7 ma
Plate Resistance (Approx.) 58000 52000 ohms
Transconductance 3700 4100 μhos
Load Resistance 5500 5000 ohms
Total Harmonic Distortion 8 8 per cent
Max.-Signal Power Output 2.0 4.5 watts

Maximum Circuit Values:
Grid-No.1 - Circuit Resistance:
For fixed bias 0.1 max. megohm
For cathode bias 0.5 max. megohm

AF POWER AMPLIFIER - Class AB1

Maximum Ratings, Design-Center Values:
PLATE VOLTAGE 250 max. volts
GRID-No.2 VOLTAGE 250 max. volts
PLATE DISSIPATION 12 max. watts
GRID-No.2 INPUT 2 max. watts
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 90 max. volts
Heater positive with respect to cathode 90 max. volts

BULB TEMPERATURE (At hottest point on bulb surface) 250 max. °C

Typical Operation:
Unless otherwise indicated, values are for 2 tubes

Plate Voltage 250 volts
Grid-No.2 Voltage 250 volts
Grid-No.1 (Control-Grid) Voltage -15 volts
Peak AF Grid-No.1 Voltage 30 volts
Zero-Signal Plate Current 70 ma
Max.-Signal Plate Current 79 ma
Zero-Signal Grid-No.2 Current (Approx.) 5 ma
Max.-Signal Grid-No.2 Current (Approx.) 13 ma

Plate Resistance (Approx. per tube) 60000 ohms
Transconductance (Per tube) 3750 μhos
Effective Load Resistance (Plate to plate) 10000 ohms
Total Harmonic Distortion 5 per cent
Max.-Signal Power Output 10 watts

Maximum Circuit Values Per Tube:
Grid-No.1 Circuit Resistance 0.1 max. megohm
For cathode bias 0.5 max. megohm

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TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
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Operating Considerations
The maximum ratings in the tabulated data for the 12AQ5 are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in storage-battery-operated equipment provided the following stipulations are observed:

When storage-battery equipment is operated without a charger, it should be designed so that the published maximum values of plate voltage, grid-No.2 voltage, and dissipations, are never exceeded for a terminal potential at the battery source of 2.0 volts per cell. When storage-battery equipment is operated with a charger, it should be designed so that 90 per cent of the same maximum values is never exceeded for a terminal potential at the battery source of 2.2 volts.

![Fig. 1 - Average Plate Characteristics of Type 12AQ5](image1)

![Fig. 2 - Average Plate Characteristics of Type 12AQ5 connected as Triode](image2)
Fig. 3 - Operation Characteristics of Type 12A25

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