



4-125A

4-125A/4D21

VHF POWER TETRODE

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 5.0 ac or dc volts

Current 6.5 amp

Transconductance (Approx.)

for plate current of 50 ma. 2450 μ mhos

Mu-Factor, Grid No.2 to

Grid No.1 6.2

Direct Interelectrode Capacitances:

Grid No.1 to Plate⁰ 0.05 μ ff

Input 10.8 μ ff

Output 3.1 μ ff

⁰ with no external shielding and with base shell connected to ground.

Mechanical:

Mounting Position Vertical, base up or down

Overall Length 5-7/16" \pm 1/4"

Seated Length 4-11/16" \pm 1/4"

Maximum Diameter 2-7/8"

Cap. Skirted Small

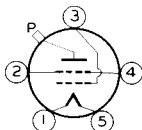
Base^a Special Metal-Shell Giant 5-Pin

Basing Designation for EOTTOM VIEW 5BK

Pin 1-Filament

Pin 2-Grid No.2

Pin 3-Grid No.1



Pin 4-Grid No.2

Pin 5-Filament

Cap - Plate

Forced-Air Cooling:

Through Base Toward Bulb 2 cfm ←

The specified air flow from a small fan or centrifugal blower should be applied simultaneously with filament power.

Of Bulb and Plate Seal:

Continuous Service: At frequencies below 30 Mc, relatively slow movement of air past the tube is sufficient to prevent exceeding the specified plate-seal temperature. At frequencies above 30 Mc, special attention should be given to adequate cooling of bulb and plate seal. A small fan directed toward the upper part of the bulb will generally provide sufficient cooling.

Intermittent Service: ("On" period does not exceed 5 minutes and is followed by "off" period of the same or greater duration): At frequencies below

^a metal base shell should be grounded by means of suitable spring fingers.

← Indicates a change

4-125A



4-125A / 4D21

VHF POWER TETRODE

30 Mc, forced-air cooling of the bulb and plate seal is not usually required if the ambient temperature is below 30°C, provided a heat-radiating plate connector is used and free circulation of air is provided.

Plate-Seal Temperature (Measured on top of plate cap):

Continuous Service	170 max.	°C
Intermittent Service (As defined above).	220 max.	°C

→ AF POWER AMPLIFIER & MODULATOR - Class AB₁#

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	600 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	225 max.	ma
PLATE DISSIPATION*	125 max.	watts
GRID-No.2 DISSIPATION*	20 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	volts
DC Grid-No.2 Voltage [▲]	600	600	600	volts
DC Grid-No.1 (Control-Grid) Voltage [⊕]	-90	-94	-96	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage.	180	188	192	volts
Zero-Signal DC Plate Current	60	50	50	ma
Max.-Signal DC Plate Current	222	240	232	ma
Zero-Signal DC Grid-No.2 Current	-1.0	-0.5	-0.3	ma
Max.-Signal DC Grid-No.2 Current	17	6.4	8.5	ma
Effective Load Resistance (Plate-to-plate).	10200	13400	20300	ohms
Driving Power.	0	0	0	watts
Total Harmonic Distortion.	5	2	2.6	%
Max.-Signal Power Output (Approx.).	158	230	330	watts

* Suscript 1 indicates that grid-no.1 current does not flow during any part of the input cycle.

⊕ Total effective grid-no.1-circuit resistance should not exceed 0.25 megohm.

AF POWER AMPLIFIER & MODULATOR - Class AE₂*

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	225 max.	ma
PLATE DISSIPATION*	125 max.	watts
GRID-No.2 DISSIPATION*	20 max.	watts

* Averaged over any audio-frequency cycle of sine-wave form.

▲, *; See next page.

→ Indicates a change.



4-125A

4-125A/4D2I

VHF POWER TETRODE

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	volts
DC Grid-No.2 Voltage [▲]	350	350	350	volts
DC Grid-No.1 (Control- Grid) Voltage ^{▲▲}	-41	-45	-43	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage.	282	210	178	volts
Zero-Signal DC Plate Current . . .	87	72	93	ma
Max.-Signal DC Plate Current . . .	400	300	260	ma
Zero-Signal DC Grid-No.2 Current .	0	0	0	ma
Max.-Signal DC Grid-No.2 Current .	34	5	6	ma
Effective Load Resistance (Plate-to-plate).	7200	13600	22200	ohms
Max.-Signal Av. Driving Power (Approx.) [□]	2.5	1.4	1	watts
Max.-Signal Peak Driving Power (Approx.) [□]	5.2	3.1	2.4	watts
Total Harmonic Distortion.	2.5	1	2.2	%
Max.-Signal Power Output (Approx.)	350	350	400	watts

▲ obtained from source having good regulation.

★ Subscript 2 indicates that grid current flows during some part of input cycle.

▲▲ obtained from fixed supply having dc resistance not exceeding 250 ohms.

□ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the AB₂ stage. The effective resistance per grid-No.1 circuit of the AB₂ stage should be held at a low value.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

Carrier conditions per tube for use with a max. modulation factor of 1.0

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	2500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-500 max.	volts
DC PLATE CURRENT	200 max.	ma
PLATE DISSIPATION.	85 max.	watts
GRID-No.2 DISSIPATION.	20 max.	watts
GRID-No.1 DISSIPATION.	5 max.	watts

Typical Operation:

DC Plate Voltage	2000	2500	volts
DC Grid-No.2 Voltage [†]	350	350	volts

† obtained preferably from a separate source modulated with the plate supply, or from the modulated plate supply through a series resistor.

← Indicates a change.

4-125A



4-125A/4D21 VHF POWER TETRODE

DC Grid-No.1 Voltage††	-220	-210	volts
Peak RF Grid-No.1 Voltage (Approx.) . . .	375	360	volts
DC Plate Current	150	152	ma
DC Grid-No.2 Current	33	30	ma
DC Grid-No.1 Current*	10	9	ma
Driving Power (Approx.)*	3.8	3.3	watts
Power Output (Approx.)	225	300	watts

†† For high-level modulated service, the use of partial grid-resistor bias is recommended. Bypass capacitors across the grid resistor should have a reactance at the highest modulation frequency equal to at least twice the grid-resistor value.

RF POWER AMPLIFIER & OSCILLATOR—

Class C Telephony or FM Telephony

Key-down conditions per tube without amplitude modulation

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-500 max.	volts
DC PLATE CURRENT	225 max.	ma
PLATE DISSIPATION.	125 max.	watts
GRID-No.2 DISSIPATION.	20 max.	watts
GRID-No.1 DISSIPATION.	5 max.	watts

Typical Operation:

DC Plate Voltage	2000	2500	3000	volts
DC Grid-No.2 Voltage	350	350	350	volts
DC Grid-No.1 Voltage	-100	-150	-150	volts
Peak RF Grid-No.1 Voltage (Approx.)	230	320	280	volts
DC Plate Current	200	200	167	ma
DC Grid-No.2 Current	50	40	30	ma
DC Grid-No.1 Current*	12	12	9	ma
Driving Power (Approx.)*	2.8	3.8	2.5	watts
Power Output (Approx.)	275	375	375	watts

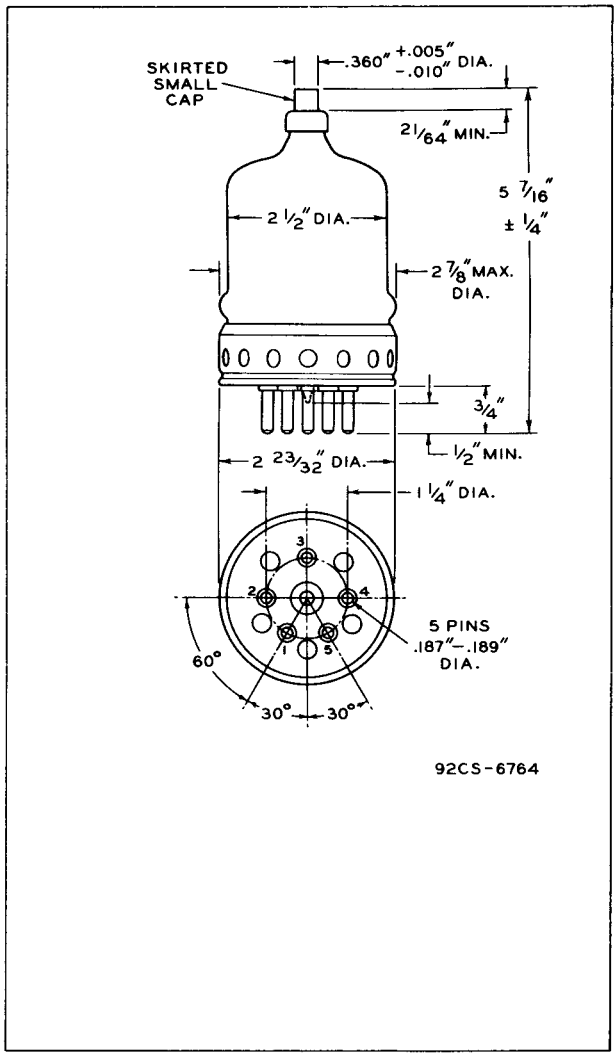
* For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.

Data on operating frequencies for the 4-125A/4D21 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



4-125A

4-125A/4D2I VHF POWER TETRODE

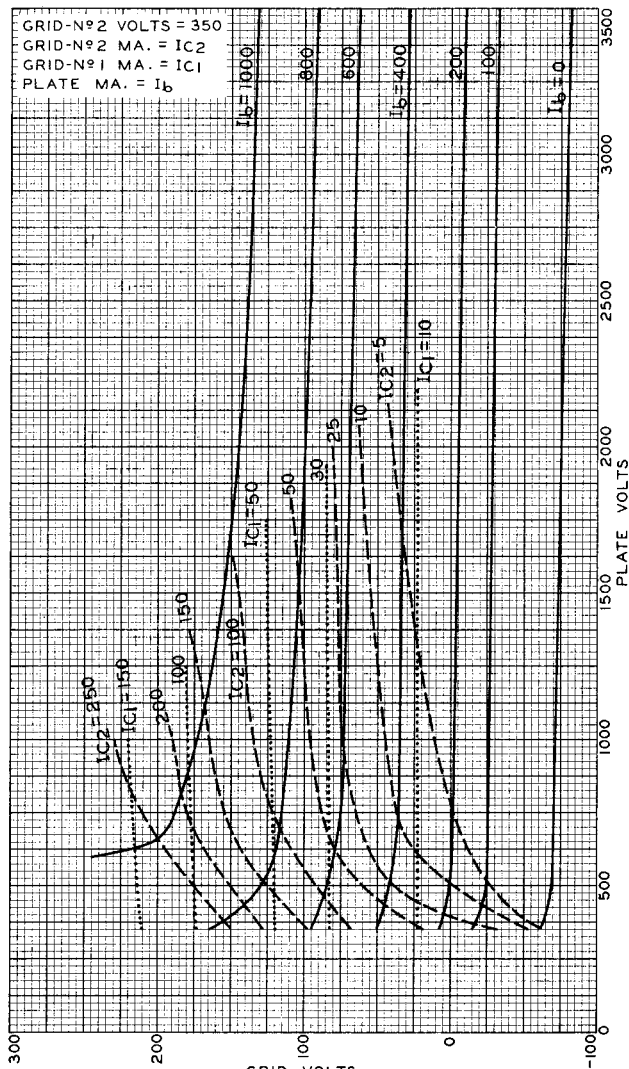


4-125A



4-125A/4D2I

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



MAY 21, 1946

TUBE DEPARTMENT

92CM-6767

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY