4-250A/5D22

POWER TETRODE

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:		
Voltage	5.0	ac or dc volts
Current	14.5	amp
Transconductance (Approx.) for plate current of 100 ma.	4000	μmhos
Mu-Factor, Grid No.2 to Grid No.1	5.1	
Direct Interelectrode Capacitances:		
Grid No.1 to Plate[O]	0.12	μμf
Input	12.7	μμf
Output	4.5	μμf

[O] With no external shield and with base shell connected to ground.

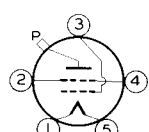
Mechanical:

Mounting Position	Vertical, base up or down
Overall Length	6-1/8" ± 1/4"
Seated Length	5-3/8" ± 1/4"
Maximum Diameter	3-9/16"
Cap	Skirted Small
Base[□]	Special Metal-Shell Giant 5-Pin
Basing Designation for BOTTOM VIEW	58K

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 . . . . . 5 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 30 Mc,

[□] Metal base shell should be grounded by means of suitable spring fingers.

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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 AB_1#

Maximum Ratings, *Absolute Values*:

DC PLATE VOLTAGE	4000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	600 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	350 max.	ma
PLATE DISSIPATION*	250 max.	watts
GRID-No.2 DISSIPATION*	35 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	3000	volts
DC Grid-No.2 Voltage▲. . .	500	500	500	500	volts
DC Grid-No.1 (Control-Grid) Voltage⊕. . .	-64	-88	-90	-93	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage. . .	128	176	180	186	volts
Zero-Signal DC Plate Cur..	120	110	120	120	ma
Max.-Signal DC Plate Cur..	400	405	430	417	ma
Zero-Signal DC Grid-No.2 Current. . .	-0.4	-0.3	-0.3	-0.2	ma
Max.-Signal DC Grid-No.2 Current. . .	23	22	13	10.5	ma
Effective Load Resistance (Plate-to-plate). . .	6250	9170	11400	15000	ohms
Max.-Signal Driving Power.	0	0	0	0	watts
Total Harmonic Distortion.	4	2.5	2	2.5	%
Max.-Signal Power Output (Approx.). . .	310	460	625	750	watts

Subscript 1 indicates that grid current does not flow during any part of input cycle.

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

AF POWER AMPLIFIER & MODULATOR - Class AB_2*

Maximum Ratings, *Absolute Values*:

DC PLATE VOLTAGE	4000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	600 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*	350 max.	ma
PLATE DISSIPATION*	250 max.	watts
GRID-No.2 DISSIPATION*	35 max.	watts

,▲,: See next page.

4-250A/5D22

POWER TETRODE

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	3000	volts
DC Grid-No.2 Voltage▲	300	300	300	300	volts
DC Grid-No.1 (Control-Grid) Voltage▲▲	-48	-48	-51	-53	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage	192	198	200	198	volts
Zero-Signal DC Plate Cur.	100	120	120	125	ma
Max.-Signal DC Plate Cur.	485	510	500	473	ma
Zero-Signal DC Grid-No.2 Current	0	0	0	0	ma
Max.-Signal DC Grid-No.2 Current	34	26	23	33	ma
Effective Load Resistance (Plate-to-plate)	5400	8000	10900	16000	ohms
Max.-Signal Av. Driving Power (Approx.)■	2.1	2.3	2.2	1.9	watts
Max.-Signal Peak Driving Power (Approx.)■	4.7	5.5	4.8	4.6	watts
Total Harmonic Distortion	3	4	4	4.5	%
Max.-Signal Power Output (Approx.)	428	650	840	1040	watts

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

▲ Obtained from a 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 class AB_2 stage. The effective resistance per grid-No.1 circuit of the class AB_2 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	3200 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	600 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-500 max.	volts
DC PLATE CURRENT	275 max.	ma
PLATE DISSIPATION	165 max.	watts
GRID-No.2 DISSIPATION	35 max.	watts
GRID-No.1 DISSIPATION	5 max.	watts

Typical Operation:

DC Plate Voltage	2500	3000	volts
DC Grid-No.2 Voltage†	400	400	volts
DC Grid-No.1 Voltage††	-200	-310	volts

†,††: See next page.

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POWER TETRODE

Peak RF Grid-No.1 Volt. (Approx.). .	255	365	. .	volts
DC Plate Current	200	225	. .	ma
DC Grid-No.2 Current	30	30	. .	ma
DC Grid-No.1 Current (Approx.)*. . .	9	9	. .	ma
Driving Power (Approx.)*	2.2	3.2	. .	watts
Power Output (Approx.)	375	510	. .	watts

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

†† 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 Telegraphy or FM Telephony

Key-down conditions per tube without amplitude modulation

Maximum Ratings, *Absolute Values*:

DC PLATE VOLTAGE	4000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	600 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE. . . .	-500 max.	volts
DC PLATE CURRENT	350 max.	ma
PLATE DISSIPATION.	250 max.	watts
GRID-No.2 DISSIPATION.	35 max.	watts
GRID-No.1 DISSIPATION.	5 max.	watts

Typical Operation:

DC Plate Voltage	2500	3000	4000	. .	volts
DC Grid-No.2 Voltage	500	500	500	. .	volts
DC Grid-No.1 Voltage	-150	-180	-225	. .	volts
Peak RF Grid-No.1 Voltage (Approx.).	220	265	303	. .	volts
DC Plate Current	300	345	312	. .	ma
DC Grid-No.2 Current	60	60	45	. .	ma
DC Grid-No.1 Current (Approx.)*	9	10	9	. .	ma
Driving Power (Approx.)* . . .	1.7	2.6	2.46	. .	watts
Power Output (Approx.)	575	800	1000	. .	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 4-250A/5D22 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

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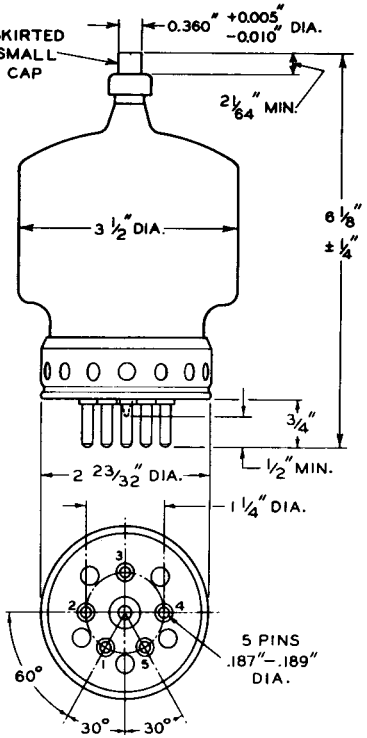
POWER TETRODE



4-250A

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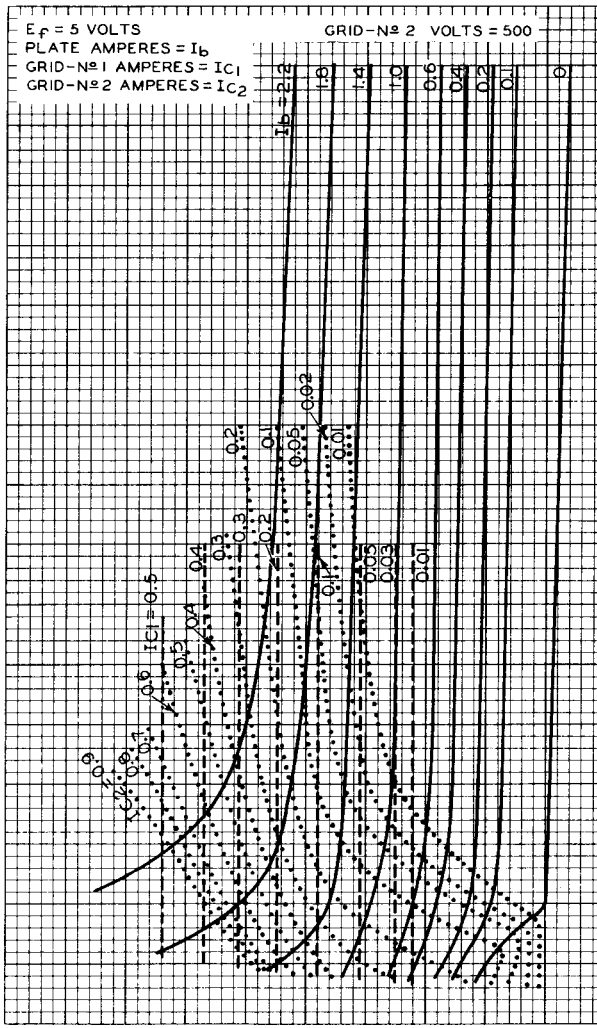
AVERAGE CONSTANT-CURRENT CHARACTERISTICS



SEPT. 23,1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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