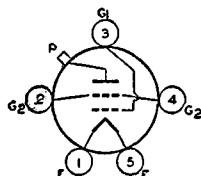


4-125A/ 4D21

BEAM POWER TUBE

Forced-air-cooled, thoriated-tungsten-filament type used as af power amplifier and modulator and as rf power amplifier and oscillator. May be used with full input up to 120 Mc

and with reduced input up to 250 Mc. Class C Telephony maximum CCS plate dissipation, 125 watts.



FILAMENT VOLTAGE (AC/DC).....	5.0	volts
FILAMENT CURRENT.....	6.5	amperes
TRANSCONDUCTANCE*.....	2450	μ mhos
MU-FACTOR, Grid No.2 to Grid No.1.....	5.9	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid-No.1 to plate (Base shell connected to ground).....	0.05	μ mf
Grid No.1 to filament, grid No.2, and base shell.....	10.8	μ mf
Plate to filament, grid No.2, and base shell.....	3.1	μ mf

* Plate volts, 2500; grid-No.2 volts, 400; plate milliamperes, 50.

AF POWER AMPLIFIER AND MODULATOR—Class AB₂

Maximum CCS Ratings:

DC PLATE VOLTAGE.....	3000 max	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE.....	400 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT [■]	225 max	ma
GRID-No.2 INPUT.....	20 max	watts
PLATE DISSIPATION [■]	125 max	watts

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
Maximum-Signal DC Plate Current.....	400	300	260	ma
Zero-Signal DC Grid-No.2 Current.....	0	0	0	ma
Maximum-Signal DC Grid-No.2 Current.....	34	5	6	ma
Effective Load Resistance (Plate to plate).....	7200	13600	22200	ohms
Maximum-Signal Average Driving Power (Approx.).....	2.5	1.4	1	watts
Maximum-Signal Peak Driving Power (Approx.).....	5.2	3.1	2.4	watts
Total Harmonic Distortion.....	2.5	1	2.2	per cent
Maximum-Signal Power Output (Approx.).....	350	350	400	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance.....	0.25 max	megohm
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■ Averaged over any audio-frequency cycle of sine-wave form.

PLATE-MODULATED RF POWER AMPLIFIER—Class C Telephony

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

Maximum CCS Ratings:

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

Typical Operation:

DC Plate Voltage.....	2000	2500	volts
DC Grid-No.2 Voltage [○]	350	350	volts
DC Grid-No.1 Voltage [○]	-220	-210	volts
Peak AF Grid-No.2 Voltage.....	210	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

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

σ Obtained preferably from grid-No.1 resistor or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telegraphy# and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum CCS Ratings:

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

Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

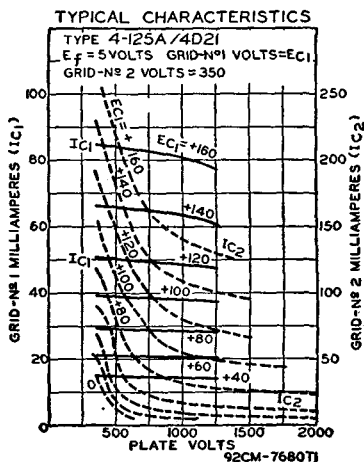
OPERATING CONSIDERATIONS

Type 4-125A requires Special Metal-Shell Giant five-contact socket such as E. F. Johnson Co. socket No. 122-275, or equivalent, and may be mounted in vertical position only, base up or down.

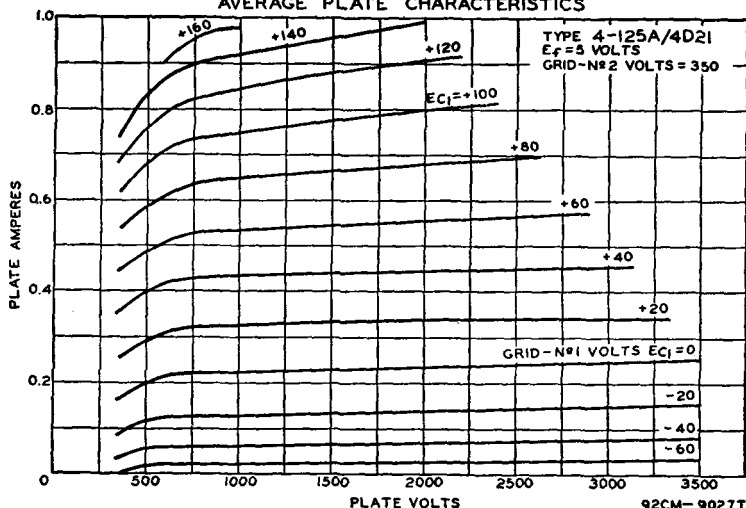
OUTLINE 30, *Outlines* Section.

For operation at 150 Mc, plate voltage should be reduced to 80 per cent of maximum rating; at 200 Mc, to 64 per cent; at 250 Mc, to 56 per cent. Plate shows an orange-red color when the tube is operated at maximum CCS ratings.

Adequate cooling must be provided for the seals and envelope of the 4-125A. In CCS applications, the temperature of the plate seal, as measured on the top of the plate cap, should not exceed 170°C. Use of a heat-radiating connector such as Eimac HR-6, or equivalent, on the plate cap is required when the ambient temperature exceeds 30°C. At frequencies above 30 Mc, special attention should be given to adequate cooling of the bulb and plate seal. A small fan directed toward the upper part of the bulb will generally provide sufficient cooling.



AVERAGE PLATE CHARACTERISTICS

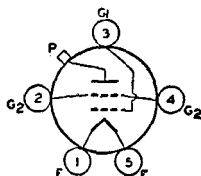


4-250A/ 5D22

BEAM POWER TUBE

Forced-air-cooled thoriated-tungsten-filament type used as af power amplifier and modulator and as rf power amplifier and oscillator. May be used with full input up to 110 Mc and

with reduced input up to 150 Mc. Class C Telegraphy maximum CCS plate dissipation, 250 watts.



FILAMENT VOLTAGE (AC/DC).....	5.0	volts
FILAMENT CURRENT.....	14.5	amperes
TRANSCONDUCTANCE*.....	4000	μmhos
MU-FACTOR, Grid-No.2 to Grid-No.1.....	5.1	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid-No.1 to plate (Base shell connected to ground).....	0.14 max	μuf
Grid-No.1 to filament, grid-No.2, and base shell.....	12.7	μuf
Plate to filament, grid-No.2, and base shell.....	4.5	μuf

* Plate volts, 2500; grid-No.2 volts, 500; plate milliamperes, 100.

AF POWER AMPLIFIER AND MODULATOR—Class AB₁

Maximum Ratings:

DC PLATE VOLTAGE.....	4000 max	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE.....	600 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT*.....	350 max	ma
Grid-No.2 INPUT*.....	35 max	watts
GRID-No.1 (CONTROL-GRID) INPUT*.....	10 max	watts
PLATE DISSIPATION.....	250 max	watts

Typical Operation (Values are for 2 tubes):

DC Plate Voltage.....	1500	2000	2500	3000	volts
DC Grid-No.2 Voltage*.....	600	600	600	600	volts
DC Grid-No.1 Voltage*.....	-95	-104	-110	-116	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage.....	128	176	180	186	volts
Zero-Signal DC Plate Current.....	120	110	120	120	ma
Maximum-Signal DC Plate Current.....	400	405	430	417	ma
Zero-Signal DC Grid-No.2 Current.....	-0.4	-0.3	-0.3	-0.2	ma
Maximum-Signal DC Grid-No.2 Current.....	23	22	13	10.5	ma
Effective Load Resistance (Plate to plate).....	6250	9170	11400	15000	ohms
Maximum-Signal Driving Power.....	0	0	0	0	watts
Total Harmonic Distortion.....	4	2.5	2	2.5	per cent
Maximum-Signal Power Output (Approx.).....	310	460	625	750	watts

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

▲ Obtained from a source having good regulation.

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

DC PLATE CURRENT.....	30 max	ma
DC GRID CURRENT.....	4 max	ma
PEAK PLATE INPUT.....	390000 max	watts
PLATE DISSIPATION.....	250 max	watts
PULSE LENGTH.....	5 max	μsec

BEAM POWER TUBE

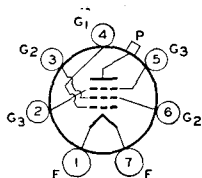
See type 4-125A/4D21.

4D21

BEAM POWER TUBE

Thoriated-tungsten-filament type used as af power amplifier and modulator and as rf power amplifier and oscillator. May be used with full input up to 75 Mc. For operation at 120

4E27/ 8001



Mc, plate voltage and plate input should be reduced to 75 per cent of maximum ratings; at 150 Mc, to 50 per cent. Class C Telegraphy maximum CCS plate dissipation, 75 watts. Requires Giant seven-contact socket and may be mounted in vertical position only, base up or down. OUTLINE 34, *Outlines* Section. Plate shows an orange-red color when the tube is operated at maximum CCS ratings.

FILAMENT VOLTAGE (AC/DC).....	5.0	volts
FILAMENT CURRENT.....	7.5	amperes
TRANSCONDUCTANCE (For plate current of 75 milliamperes).....	2800	μmhos
DIRECT INTERELECTRODE CAPACITANCES:		
Grid to plate (Base shell connected to ground).....	0.06	μf
Grid No.1 to filament, grid No.3, grid No.2, internal shield, and base shell....	12	μf
Plate to filament, grid No.3, grid No.2, internal shield, and base shell.....	6.5	μf

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telegraphy# and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum CCS Ratings:

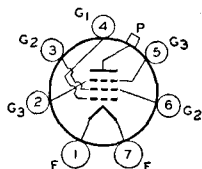
DC PLATE VOLTAGE.....	4000 max	volts
DC GRID-NO.2 (SCREEN-GRID) VOLTAGE.....	750 max	volts
DC GRID-NO.1 (CONTROL-GRID) VOLTAGE.....	-500 max	volts
DC PLATE CURRENT.....	150 max	ma
DC GRID-NO.2 CURRENT.....	30 max	ma
DC GRID-NO.1 CURRENT.....	25 max	ma
PLATE INPUT.....	300 max	watts
GRID-NO.2 INPUT.....	25 max	watts
PLATE DISSIPATION.....	75 max	watts

Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

BEAM POWER TUBE

Thoriated-tungsten-filament type used as af power amplifier and modulator and as rf power amplifier and oscillator. May be used at full input up to 75 Mc. Class C Telegraphy max-

4E27A/ 5-125B



imum CCS plate dissipation, 125 watts. Requires Giant seven-contact socket such as E. F. Johnson Co. socket No. 122-237, or equivalent, and may be mounted in vertical position only, base up or down. OUTLINE 35, *Outlines* Section. Plate shows a cherry-red color when the tube is operated at maximum CCS ratings.

FILAMENT VOLTAGE (AC/DC).....	5.0	volts
FILAMENT CURRENT.....	7.5	amperes
TRANSCONDUCTANCE*.....	2150	μmhos
MU-FACTOR, Grid No.2 to Grid No.1.....	5	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid No.1 to plate (Base shell connected to ground).....	0.1 max	μf
Grid No.1 to filament, grid No.3, grid No.2, and base shell.....	10.5	μf
Plate to filament, grid No.3, grid No.2, and base shell.....	4.7	μf

* Plate volts, 2500; grid-No.2 volts, 500; grid-No.3 volts, 0; plate milliamperes, 50.