



814

TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage. 10 ± 0.5 ac or dc volts

Current. 3.25 amp

Transconductance (Approx.)

for plate current of 39 ma. 3300 μmhos

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate 0.15 max. μμf ←

Input. 13.5 μμf

Output 13.5 μμf

^o Without external shielding.

Mechanical:

Mounting Position. Vertical, base down; Horizontal,
pins 2 & 4 in vertical plane

Overall Length 7-7/16" ± 1/4"

Seated Length. 6-13/16" ± 1/4"

Maximum Diameter 2-1/16"

Bulb T-16

Cap. Small

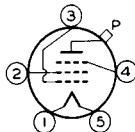
Base Medium-Shell Small 5-Pin, Micanol

Basing Designation for BOTTOM VIEW 5J

Pin 1 - Filament

Pin 2 - Grid No.2

Pin 3 - Grid No.1



Pin 4 - Grid No.3

Pin 5 - Filament

Cap - Plate

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts ←
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	400 max.	volts
DC PLATE CURRENT	60 max.	60 max.	ma
PLATE INPUT.	75 max.	90 max.	watts
GRID-No.2 INPUT.	6.7 max.	6.7 max.	watts
PLATE DISSIPATION.	50 max.	60 max.	watts

Typical Operation:

DC Plate Voltage	1000	1250	1500	..	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	..	volts
DC Grid-No.2 Voltage	200	200	250	..	volts
DC Grid-No.1 (Control- Grid) Voltage [⊕]	-28	-28	-35	..	volts

[•], ^{••}, †, ⊕: See next page.

← indicates a change.



TRANSMITTING BEAM POWER AMPLIFIER

	CCS*		ICAS**	
Peak RF Grid-No.1 Voltage. . .	50	50	56 . .	volts
DC Plate Current	60	60	60 . .	ma
DC Grid-No.2 Current	1.3	1	1.5 . .	ma
DC Grid-No.1 Current (Approx.)*	1.8	1.8	1.5 . .	ma
Driving Power (Approx.) [□] * . .	0.65	0.65	0.85 . .	watt
Power Output (Approx.) . . .	20	25	30 . .	watts

GRID-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:

	CCS*		ICAS**	
→ DC PLATE VOLTAGE	1250 max.		1500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.		400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-250 max.		-250 max.	volts
DC PLATE CURRENT	60 max.		60 max.	ma
PLATE INPUT.	75 max.		90 max.	watts
GRID-No.2 INPUT.	6.7 max.		6.7 max.	watts
PLATE DISSIPATION.	50 max.		60 max.	watts

Typical Operation:

DC Plate Voltage	1000	1250	1500 . .	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0 . .	volts
DC Grid-No.2 Voltage	200	200	250 . .	volts
DC Grid-No.1 Voltage [Ⓟ]	-100	-100	-120 . .	volts
→ Peak RF Grid-No.1 Voltage. . .	129	129	150 . .	volts
Peak AF Grid-No.1 Voltage. . .	64	64	90 . .	volts
DC Plate Current	60	60	60 . .	ma
DC Grid-No.2 Current	2	1.4	3 . .	ma
DC Grid-No.1 Current (Approx.)*	3	2.8	2.5 . .	ma
Driving Power (Approx.) [□] * . .	2.5	2.3	4.2 . .	watts
Power Output (Approx.) . . .	25	29	35 . .	watts

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:

	CCS*		ICAS**	
→ DC PLATE VOLTAGE	1000 max.		1250 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.		400 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-300 max.		-300 max.	volts

□ At crest of audio-frequency cycle with a modulation factor of 1.0.

•, **, †, Ⓟ, *: See next page.

→ Indicates a change.



814

814

TRANSMITTING BEAM POWER AMPLIFIER

	CCS*		ICAS**	
DC PLATE CURRENT	120	max.	150	max. ma
DC GRID-No.1 CURRENT	15	max.	15	max. ma
PLATE INPUT.	120	max.	180	max. watts
GRID-No.2 INPUT.	6.7	max.	6.7	max. watts
PLATE DISSIPATION.	34	max.	50	max. watts

Typical Operation:

DC Plate Voltage	900	1000	1250	..	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	..	volts
DC Grid-No.2 Voltage ^{▲▲}	300	300	300	..	volts
	40000	40000	48000	..	ohms
DC Grid-No.1 Voltage†† [⊕]	-150	-150	-150	..	volts
	15000	15000	15000	..	ohms
Peak RF Grid-No.1 Voltage.	215	222	222	..	volts
DC Plate Current	120	120	144	..	ma
DC Grid-No.2 Current	15	17.5	20	..	ma
DC Grid-No.1 Current (Approx.)*	10	10	10	..	ma
Driving Power (Approx.)*	2	2	2	..	watts
Power Output (Approx.)	76	87	130	..	watts

▲▲ obtained preferably from modulated plate-voltage supply through resistor of value shown.

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[⊕]

Maximum Ratings, Absolute Values:

	CCS*		ICAS**	
DC PLATE VOLTAGE	1250	max.	1500	max. volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400	max.	400	max. volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-300	max.	-300	max. volts
DC PLATE CURRENT	150	max.	150	max. ma
DC GRID-No.1 CURRENT	15	max.	15	max. ma
PLATE INPUT.	180	max.	225	max. watts
GRID-No.2 INPUT.	10	max.	10	max. watts
PLATE DISSIPATION.	50	max.	65	max. watts

Typical Operation:

DC Plate Voltage	1000	1250	1500	..	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	..	volts
DC Grid-No.2 Voltage ^{■ ■ ⊕}	300	300	300	..	volts
	40000	42000	50000	..	ohms
DC Grid-No.1 Voltage†† [⊕]	-70	-80	-90	..	volts
	7000	8000	9000	..	ohms
Peak RF Grid-No.1 Voltage.	395	455	490	..	ohms
	150	165	170	..	volts

●, ⊕, †, ⊕, ††, ■, ■ ■, ⊕: See next page.

← Indicates a change.



TRANSMITTING BEAM POWER AMPLIFIER

	CCS*		ICAS**	
DC Plate Current	150	144	150	ma
DC Grid-No.2 Current	17.5	22.5	24	ma
DC Grid-No.1 Cur. (Approx.)*	10	10	10	ma
Driving Power Approx.)*.	1.35	1.5	1.5	watts
Power Output (Approx.)	100	130	160	watts

• Continuous Commercial Service.

** Intermittent Commercial & Amateur Service.

† Connect grid No.3 to mid-point of filament operated on ac, or to the negative end of filament operated on dc.

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

†† Obtained preferably from grid-No.1 resistor, although combination of either grid-No.1 resistor and cathode resistor or grid resistor and fixed supply may be used.

■ Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

■ Obtained from a separate source, from the plate-voltage supply with a voltage divider, or through a series resistor (40000, 42000, 50000).

⊕ If preceding stage is keyed, partial fixed-bias is required.

⊙ For ac filament supply.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	3.10	3.40	amp
Grid No.1—Plate Capacitance	-	-	0.15	μf
Input Capacitance	-	11.1	15.9	μf
Output Capacitance	-	10.1	16.9	μf
Plate Current	1,2	30	48	ma
Grid-No.2 Current	1,2	-	3.5	ma
Grid-No.1 Current	1,3	22	52	ma
Power Output	1,4	120	-	watts

NOTE 1: DC filament volts = 10.0.

NOTE 2: With dc plate voltage of 1250 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 300 volts; and dc grid-No.1 voltage of -19 volts.

NOTE 3: With dc plate voltage of 175 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 175 volts; and dc grid-No.1 voltage of +65 volts.

NOTE 4: With dc plate voltage of 1250 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 300 volts; plate current of 150 ma., grid-No.1 current of 10-15 ma.; grid-No.1 resistor of 8000 ±10% ohms; and frequency of 15 Mc.

OUTLINE DIMENSIONS for Type 814 are the same as those for Type 828.

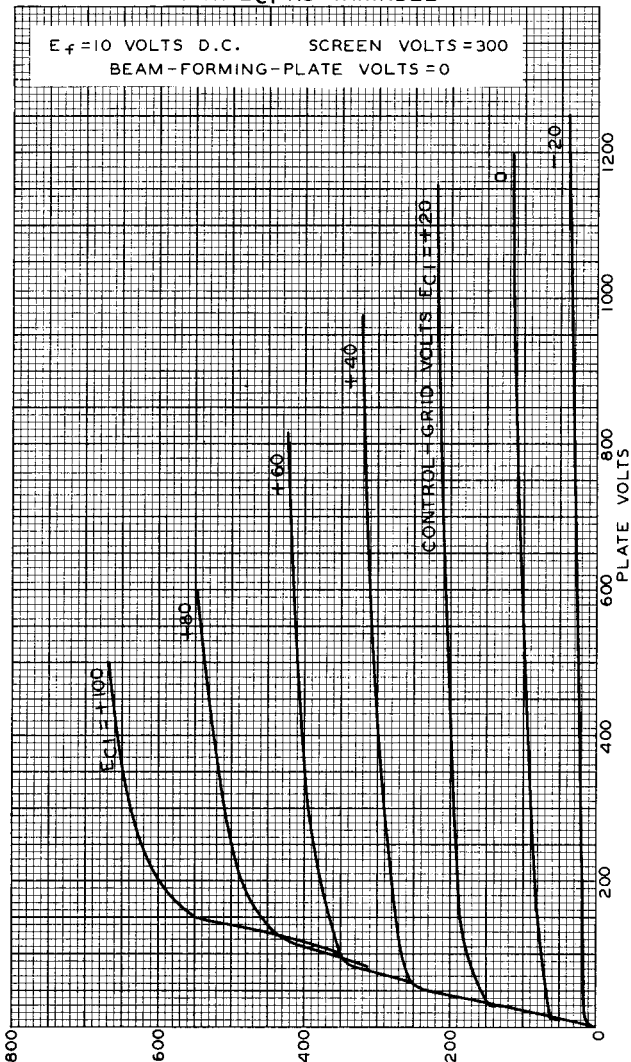
Data on operating frequencies for the 814 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

→ Indicates a change.



814

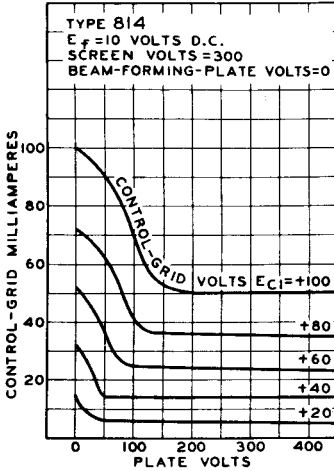
AVERAGE PLATE CHARACTERISTICS WITH E_{c1} AS VARIABLE





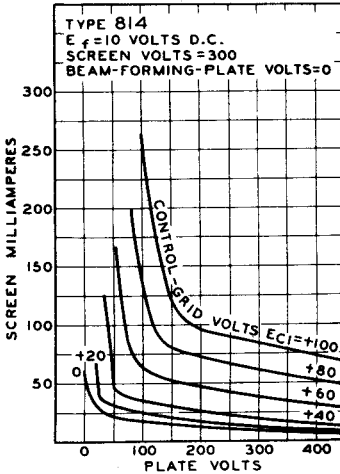
TRANSMITTING BEAM POWER AMPLIFIER

AVERAGE CHARACTERISTICS



92C-4846

AVERAGE CHARACTERISTICS



92C-4847