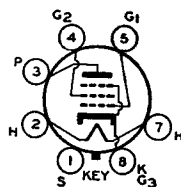


RCA-6F6

POWER-AMPLIFIER PENTODE



The 6F6 is a heater-cathode power-amplifier pentode of the All-Metal type for use in the audio-output stage of a-c receivers. It is capable of giving large power output with a relatively small input voltage. Because of the heater-cathode construction, uniformly low hum-level is attainable in power-amplifier design.

CHARACTERISTICS

HEATER VOLTAGE (A. C. or D. C.).....	6.3	Volts
HEATER CURRENT	0.7	Ampere
BASE	Small Wafer Octal 7-Pin	

As Single-Tube Class A₁ Amplifier—Pentode Connection

PLATE VOLTAGE	250	315* max.	Volts
SCREEN VOLTAGE (Grid No. 2).....	250	315* max.	Volts
GRID VOLTAGE (Grid No. 1).....	-16.5	-22	Volts
PLATE CURRENT	34	42	Milliamperes
SCREEN CURRENT	6.5	8	Milliamperes
PLATE RESISTANCE (Approximate).....	80000	75000	Ohms
AMPLIFICATION FACTOR (Approx.).....	200	200	
TRANSCONDUCTANCE	2500	2650	Micromhos
LOAD RESISTANCE	7000	7000	Ohms
TOTAL HARMONIC DISTORTION.....	7	7	Per cent
POWER OUTPUT	3	5	Watts

As Single-Tube Class A₁ Amplifier—Triode Connection (Screen tied to plate)

PLATE VOLTAGE†	250	Volts
GRID VOLTAGE	-20	Volts
PLATE CURRENT	31	Milliamperes
PLATE RESISTANCE	2600	Ohms
AMPLIFICATION FACTOR	7	
TRANSCONDUCTANCE	2700	Micromhos
LOAD RESISTANCE	4000	Ohms
TOTAL HARMONIC DISTORTION.....	5	Per cent
POWER OUTPUT	0.85	Watt

Under the above maximum voltage conditions, transformer or impedance input-coupling devices are recommended. If resistance-coupling is used, refer to last paragraph of APPLICATION.

* Not recommended for automobile service or other similar services where heater voltage can rise more than 10% above rated value.

† Maximum plate voltage=315 volts.

As Push-Pull Class AB₂ Amplifier—Pentode Connection

Unless otherwise specified, values are for two tubes.

	Fixed Bias	Self-Bias	
PLATE VOLTAGE	375 max.	375 max.	Volts
SCREEN VOLTAGE	250 max.	250 max.	Volts
GRID VOLTAGE	-26 min.	—	Volts
SELF-BIAS RESISTOR	—	340 min.	Ohms
PEAK A-F GRID-TO-GRID VOLTAGE.....	82	94	Volts

ZERO-SIGNAL PLATE CURRENT.....	34	54	Milliamperes
ZERO-SIGNAL SCREEN CURRENT.....	5	8	Milliamperes
LOAD RESISTANCE (Per Tube).....	2500	2500	Ohms
EFFECTIVE LOAD RESISTANCE (Plate-to-plate).....	10000	10000	Ohms
TOTAL HARMONIC DISTORTION.....	5	5	Per cent
POWER OUTPUT (Approx.).....	19*	19†	Watts

Under the above maximum voltage conditions, transformer or impedance input-coupling devices must be used.

* With one triode-connected 6F6 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 3.32. The plate, screen and grid supply have negligible resistance.

† With one triode-connected 6F6 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 2.5. The plate and screen supply have negligible resistance. The value given for the self-bias resistor is determined for a minimum grid bias of -21 volts.

As Push-Pull Class AB₂ Amplifier—Triode Connection (Screen tied to plate)

Unless otherwise specified, values are for two tubes.

	Fixed Bias	Self-Bias	
PLATE VOLTAGE	350 max.	350 max.	Volts
GRID VOLTAGE	-38	—	Volts
SELF-BIAS RESISTOR	—	730 min.	Ohms
PEAK A-F GRID-TO-GRID VOLTAGE.....	123	132	Volts
ZERO-SIGNAL PLATE CURRENT.....	45	50	Milliamperes
LOAD RESISTANCE (Per Tube).....	1500	2500	Ohms
EFFECTIVE LOAD RESISTANCE (Plate-to-plate).....	6000	10000	Ohms
TOTAL HARMONIC DISTORTION.....	7	7	Per cent
POWER OUTPUT (Approx.).....	18°	14‡	Watts

Under the above maximum voltage conditions, transformer or impedance input-coupling devices must be used.

° With one triode-connected 6F6 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 1.67. The plate and grid supply have negligible resistance.

‡ With one triode-connected 6F6 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 1.29. The plate supply has negligible resistance. The value given for the self-bias resistor is determined for a minimum grid bias of -36.5 volts.

INSTALLATION

The base pins of the 6F6 fit the standard octal socket which may be installed to hold the tube in any position.

For heater operation and cathode connection, refer to type 42.

APPLICATION

As a Class A power-amplifier pentode, the 6F6 may be used either singly or in push-pull. Recommended operating conditions are given under CHARACTERISTICS. If a single 6F6 is operated at a plate voltage of 250 volts, the self-bias resistor should have a value of approximately 410 ohms; at 315 volts, 440 ohms. For two tubes in the same stage, the value of the self-bias resistor should be approximately one-half that for a single tube.

As a Class A power-amplifier triode, the 6F6 may be used either singly or in push-pull. For this service the screen is connected to the plate. Recommended operating conditions are given under CHARACTERISTICS. When a single 6F6 is operated as a Class A triode at a plate voltage of 250 volts, the self-bias resistor should have a value of approximately 650 ohms. For two tubes in the same stage, the value of the self-bias resistor should be approximately one-half that for a single tube.

As a Class AB power-amplifier triode or pentode, the 6F6 should be operated as shown under the CHARACTERISTICS. The values shown cover operation with fixed-bias and with self-bias, and have been determined on the basis of some

grid-current flow during the most positive swing of the input signal and of cancellation of second-harmonic distortion by virtue of the push-pull circuit.

The type of input coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.05 megohm, fixed bias may be used; for higher values, self-bias is required. With self-bias, the grid circuit may have a resistance as high as, but not greater than, 0.5 megohm provided the heater voltage is not allowed to rise more than 10% above rated value under any condition of operation.

