# RCA TUBE HANDBOOK HB-3

# RECEIVING TUBE SECTION—Part 2

***Type 6A3 and beyond***

In this section, data are given for those types of RCA tubes employed primarily in broadcast and home-television receivers. These types are also used in many other applications.

*For further Technical Information, write to Commercial Engineering, Tube Department, Radio Corporation of America, Harrison, N. J.*

7-52

RECEIVING TUBES—PART 2

# 6A3

## POWER AMPLIFIER TRIODE

| | | |
|---|---|---|
| Filament | Coated | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 1.0 | amp. |
| Maximum Overall Length | | 5-3/8" |
| Maximum Seated Height | | 4-3/4" |
| Maximum Diameter | | 2-1/16" |
| Bulb | | ST-16 |
| Base | | Medium 4-Pin |
| Pin 1 - Filament | | Pin 3 - Grid |
| Pin 2 - Plate | | Pin 4 - Filament |
| Mounting Position | | Any |


BOTTOM VIEW (4D)

### SINGLE-TUBE AMPLIFIER

*Typical Operation and Characteristics - Class $A_1$ Amplifier:*

| | | |
|---|---|---|
| Plate | 250 max. | volts |
| Grid* | -45 | volts |
| Plate Cur. | 60 | ma. |
| Amp. Factor | 4.2 | |
| Plate Res. | 800 | ohms |
| Transcond. | 5250 | umh |
| Load Res. | 2500 | |
| Second Har. Dist. | 5 | |
| Power Output | 3.2 | |

### PUSH-PULL AMPLIFIER

*Unless otherwise specified, values are for two*

| *Typical Operation:* | *Fixed Bias* | *Cathode-Bias* | |
|---|---|---|---|
| Plate | 325 max. | 325 max. | volts |
| Grid* | -68 | -- | volts |
| Cathode-Bias Resistor | - | 850 | ohms |
| Zero-Sig. Plate Cur. | 80 | 80 | ma. |
| Load Res. (per tube) | 750 | 1250 | ohms |
| Effective Load Res. (plate to plate) | 3000 | 5000 | ohms |
| Total Har. Dist. | 2.5 | 5.0 | % |
| Power Output | 15 | 10 | watts |

If a single 6A3 is operated cathode-biased, the cathode-biasing resistor should be 750 ohms approx.

The type of 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, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

* Grid voltage referred to mid-point of a-c operated filament.

*Curves for the 6A3 are essentially the same as those shown for type 2A3.*



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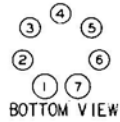
# RCA-6A6

## CLASS B TWIN AMPLIFIER

| | | |
|---|---|---|
| Heater | Coated Unipotential Cathode | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 0.8 | amp. |
| Maximum Overall Length | | 4-11/16" |
| Maximum Diameter | | 1-13/16" |
| Bulb | | ST-14 |
| Base | | Medium 7-Pin |

Pin 1-Heater
Pin 2-Plate (Triode $T_2$)
Pin 3-Grid (Triode $T_2$)
Pin 4-Cathode



BOTTOM VIEW

Pin 5-Grid (Triode $T_1$)
Pin 6-Plate (Triode $T_1$)
Pin 7-Heater

*For convenience, one triode unit is identified as $T_1$; the other as $T_2$.*

*For additional curves and data, see Types 6N7 and 53, and the RESISTANCE-COUPLED AMPLIFIER CHART. The operating conditions and characteristics of the 6A6 are identical with those of the 6N7 and 53.* ←

← Indicates a change

6A6

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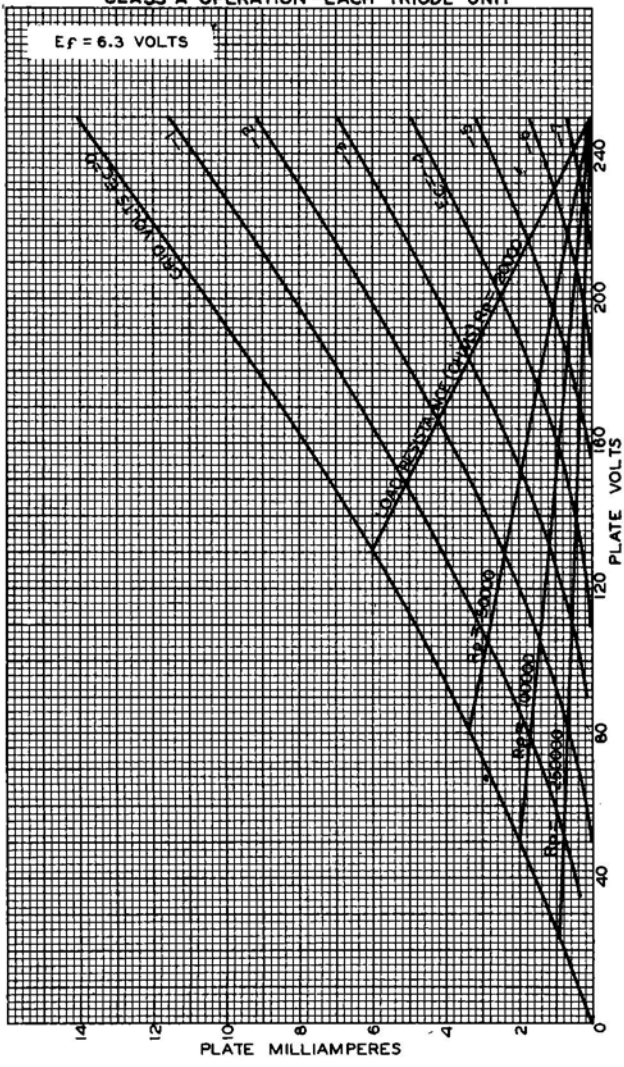
RCA-6A6

# AVERAGE PLATE CHARACTERISTICS

## CLASS A OPERATION-EACH TRIODE UNIT




FEB. 5, 1935

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92C-4375

6A7

# PENTAGRID CONVERTER

| | | | |
|---|---|---|---|
| Heater■ | Coated Unipotential Cathode | | |
| Voltage | 6.3 | a-c or d-c | volts |
| Current | 0.3 | | amp. |
| Direct Interelectrode Capacitances: | | | |
| Grid #4 to Plate | | 0.3° | μμf |
| Grid #4 to Grid #2 | | 0.15° | μμf |
| Grid #4 to Grid #1 | | 0.15° | μμf |
| Grid #1 to Grid #2 | | 1.0 | μμf |
| Grid #4 to All Other Electrodes (R-F Input) | | 8.5 | μμf |
| Grid #2 to All Other Electrodes(Osc. Output) | | 5.5 | μμf |
| Grid #1 to All Other Electrodes (Osc. Input) | | 7.0 | μμf |
| Plate to All Other Electrodes (Mixer Output) | | 9.0 | μμf |
| Overall Length | | 4-9/32" to 4-17/32" | |
| Seated Height | | 3-21/32" to 3-29/32" | ← |
| Maximum Diameter | | 1-9/16" | |
| Bulb | | ST-12 | |
| Cap | | Small Metal | |
| Base | | Small 7-Pin▲ | |
| Pin 1 - Heater | | Pin 5 - Grid #1 | |
| Pin 2 - Plate | | Pin 6 - Cathode | |
| Pin 3 - Grids #3 & #5 | | Pin 7 - Heater | |
| Pin 4 - Grid #2 | | Cap - Grid #4 | |
| Mounting Position | | Any | |

BOTTOM VIEW (7C)

*Maximum Ratings, Typical Operating Conditions, and Curves are the same as for Type 6A8.*

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
° With shield-can connected to cathode.
▲ Requires different socket than medium 7-pin base.

← Indicates a change.

6A7S

6A7S
6A8
6A8-G
6A8-GT

# PENTAGRID CONVERTER

RENEWAL TYPE FOR MAJESTIC RECEIVERS

| | | |
|---|---|---|
| Heater ■ | Coated Unipotential Cathode | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 0.3 | amp. |
| Overall Length | | 4-9/32" to 4-17/32" |
| Seated Height | | 3-21/32" to 3-29/32" |
| Maximum Diameter (without shield) | | 1-9/16" |
| Bulb (with form-fitting shield) | | ST-12 |
| Cap | | Small Metal |
| Base ▲* | | Small 7-Pin |

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
▲ Requires a different socket than the medium 7-pin base.
* Basing arrangement is the same as for the 6A7, except that the external shield on the 6A7S is connected to cathode.

*Typical Operating Conditions and Curves for the 6A7S are the same as for Type 6A8.*

# 6A8, 6A8-G, 6A8-GT

# PENTAGRID CONVERTER

| | | |
|---|---|---|
| Heater ■ | Coated Unipotential Cathode | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 0.3 | amp. |

| Direct Interelectrode Cap.° | 6A8 | 6A8-G | 6A8-GT | |
|---|---|---|---|---|
| Grid #4 to Plate | 0.06 | 0.26 | 0.26 | μμf |
| Grid #4 to Grid #2 | 0.1 | 0.19 | 0.19 | μμf |
| Grid #4 to Grid #1 | 0.09 | 0.16 | 0.16 | μμf |
| Grid #1 to Grid #2 | 0.8 | 1.1 | 1.1 | μμf |
| Grid #4 to All Other Electrodes (R-F Input) | 12 | 9.5 | 9.5 | μμf |
| Grid #2 to All Other Electrodes Except Grid #1 (Osc. Output) | 5 | 4.6 | 4.6 | μμf |
| Grid #1 to All Other Electrodes Except Grid #2 (Osc. Input) | 6.5 | 6 | 6 | μμf |
| Plate to All Other Electrodes (Mixer Output) | 12 | 12 | 12 | μμf |
| Overall Length | 3-1/8" max. | 4-7/32" to 4-15/32" | 3-5/16" max. | |
| Seated Height | 2-9/16" max. | 3-21/32" to 3-29/32" | 2-3/4" max. | |
| Maximum Diameter | 1-5/16" | 1-9/16" | 1-5/16" | |
| Bulb | Metal Shell, MT-8 | ST-12 | T-9 | ← |
| Cap | Miniature | Skirted Min. | Skirted Min. Style C | |

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
° With shell of 6A8 connected to cathode, and with close-fitting shield on 6A8-G and 6A8-GT connected to cathode.

← Indicates a change.



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6A8
6A8-G
6A8-GT

# 6A8, 6A8-G, 6A8-GT

## PENTAGRID CONVERTER

(continued from preceding page)

| | 6A8 | 6A8-G | 6A8-GT |
|---|---|---|---|
| Base | Small Wafer Octal 8-Pin | Small Shell Octal 8-Pin | Small Wafer Octal 8-Pin, Sleeve |
| Basing Designation | 8A | G-8A | GT-8A |

Pin 1 – 6A8, Shell; 6A8-G, No Con.; 6A8-GT, Base Sleeve
Pin 2 – Heater
Pin 3 – Plate
Pin 4 – Grids #3 & #5
Pin 5 – Grid #1
Pin 6 – Grid #2
Pin 7 – Heater
Pin 8 – Cathode
Cap – Grid #4

BOTTOM VIEW

Mounting Position: Any

### CONVERTER SERVICE

| | | | |
|---|---|---|---|
| Plate Voltage | | 300 max. | volts |
| Screen (Grids #3 & #5) Voltage | | 100 max. | volts |
| Screen Supply Voltage | | 300 max. | volts |
| Anode-Grid (Grid #2) Voltage | | 200 max. | volts |
| Anode-Grid Supply Voltage* | | 300 max. | volts |
| Control-Grid (Grid #4) Voltage | | 0 min. | volts |
| Plate Dissipation | | 1.0 max. | watt |
| Screen Dissipation | | 0.3 max. | watt |
| Anode-Grid Dissipation | | 0.75 max. | watt |
| Total Cathode Current | | 14 max. | ma. |
| Typical Operation: | | | |
| Plate Voltage | 100 | 250 | volts |
| Screen Voltage | 50 | 100 | volts |
| Anode-Grid Voltage | 100 | – | volts |
| Anode-Grid Supply Voltage | – | 250* | volts |
| Control-Grid Voltage | -1.5 | -3 | volts |
| Osc.-Grid (Grid #1) Resistor | 50000 | 50000 | ohms |
| Plate Resistance | 0.6 | 0.36 approx. | ohms |
| Conversion Transconductance | 360 | 550 | µmhos |
| Conver. Transcond. (approx.) with Control-Grid Bias of -20 volts | 3 | – | µmhos |
| Conver. Transcond. (approx.) with Control-Grid Bias of -35 volts | – | 6 | µmhos |
| Plate Current | 1.1 | 3.5 | ma. |
| Screen Current | 1.3 | 2.7 | ma. |
| Anode-Grid Current | 2 | 4 | ma. |
| Oscillator-Grid Current | 0.25 | 0.4 | ma. |
| Total Cathode Current | 4.6 | 10.6 | ma. |

NOTE: The transconductance of the oscillator portion (not oscillating) is 1150 micromhos under the following conditions: plate volts, 250; screen volts, 55; control-grid volts, -2; anode-grid volts, 100; and oscillator-grid volts, -1. ◄

* Anode-grid supply voltages in excess of 200 volts require use of 20000-ohm voltage-dropping resistor by-passed by 0.1 µf condenser.

*For Typical Circuit and Coil Design Details, refer to Type 2A7.*

◄ Indicates a change.



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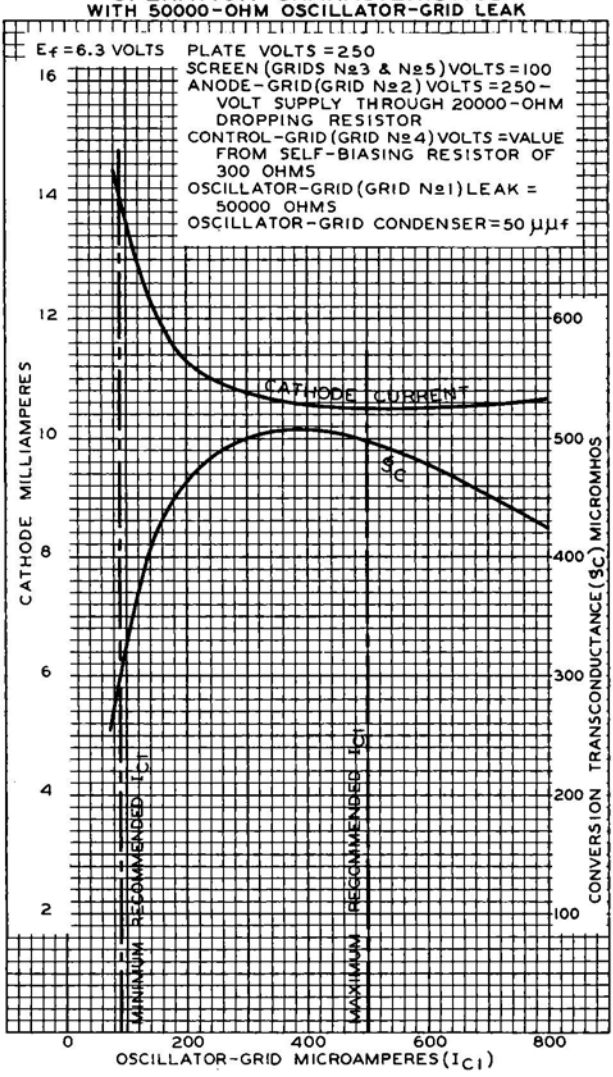
# 6A8

## OPERATION CHARACTERISTICS
### WITH 50000-OHM OSCILLATOR-GRID LEAK



# 6AB4

## HIGH-MU TRIODE

MINIATURE TYPE PARTICULARLY SUITABLE FOR CATHODE-DRIVE CIRCUITS

### GENERAL DATA

**Electrical:**

Heater, for Unipotential Cathode:

| | | | |
|---|---|---|---|
| Voltage | 6.3 | | ac or dc volts |
| Current | 0.15 | | amp |
| Direct Interelectrode Capacitances: | *Without External Shield* | *With External Shield No. 316 Tied to Cathode* | |
| Grid to Plate | 1.5 | 1.5 | μμf |
| Grid to Heater and Cathode. | 2.2 | 2.2 | μμf |
| Plate to Heater and Cathode. | 0.5 | 1.4 | μμf |
| Heater to Cathode | 2.9 | 2.9 | μμf |
| Plate to Cathode. | 0.24 | 0.2 | μμf |
| Cathode to Heater and Grid. | 5.0 | 5.2 | μμf |
| Plate to Heater and Grid. | 1.7 | 2.6 | μμf |

**Mechanical:**

Mounting Position . . . . . Any
Maximum Overall Length . . . . . 2-1/8"
Maximum Seated Length . . . . . 1-7/8"
Length, Base Seat to Bulb Top (Excluding tip) . . . . 1-1/2" ± 3/32"
Maximum Diameter. . . . . 3/4"
Bulb . . . . . T-5-1/2
Base . . . . . Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW. . . . . 5CE

Pin 1 - Plate
Pin 2 - Internal Shield
Pin 3 - Heater
Pin 4 - Heater


Pin 5 - No Connection
Pin 6 - Grid
Pin 7 - Cathode

### AMPLIFIER - Class $A_1$

**Maximum Ratings,** *Design-Center Values:*

| | | |
|---|---|---|
| PLATE VOLTAGE | 300 max. | volts |
| GRID VOLTAGE: | | |
| Negative bias value | 50 max. | volts |
| Positive bias value | 0 max. | volts |
| PLATE DISSIPATION | 2.5 max. | watts |
| PEAK HEATER-CATHODE VOLTAGE: | | |
| Heater negative with respect to cathode | 90 max. | volts |
| Heater positive with respect to cathode | 90 max. | volts |

**Characteristics:**

| | | | |
|---|---|---|---|
| Plate Voltage | 100 | 250 | volts |
| Cathode-bias Resistor | 270 | 200 | ohms |
| Internal Shield | Connected to ground | | |
| Amplification Factor. | 60 | 60 | |

← Indicates a change

6AB4

# 6AB4

## HIGH-MU TRIODE

| | | | |
|---|---|---|---|
| Plate Resistance (Approx.). . | 15000 | 10900 | ohms |
| Transconductance. . . . . | 4000 | 5500 | μmhos |
| Grid Bias (Approx.) for plate current of 10 μamp. . | -5 | -12 | volts |
| Plate Current . . . . . | 3.7 | 10 | ma |

CURVES
for the 6AB4 are the same
as those for each unit of Type 12AT7



TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AB5

# 6AB5/6N5

## ELECTRON-RAY TUBE

INDICATOR TYPE WITH TRIODE UNIT

| | | |
|---|---|---|
| Heater■ | Coated Unipotential Cathode | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 0.15 | amp. |
| Overall Length | | 3-13/16" to 4-3/16" |
| Maximum Seated Height | | 3-9/16" ← |
| Maximum Diameter | | 1-3/16" ← |
| Bulb | | T-9 ← |
| Base | | Small 6-Pin |
| Pin 1 - Heater | | Pin 4 - Target |
| Pin 2 - Plate | | Pin 5 - Cathode |
| Pin 3 - Grid | | Pin 6 - Heater |
| Mounting Position | BOTTOM VIEW (6R) | Any |


### MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

| | | | |
|---|---|---|---|
| Plate-Supply Voltage | | 180 max. | volts |
| Target Voltage | | 180 max.<br>100 min. | volts<br>volts |
| Typical Operation: | | | |
| Plate and Target Supply | 135 | 135 | volts |
| Series Triode-Plate Resistor□ | 0.25 | 1.0 | megohm |
| Target Current ‡△ | 2 | 1.9 | ma. |
| Triode-Plate Current△ | 0.5 | 0.13 | ma. |
| Triode-Grid Voltage (approx.) | | | |
| For shadow angle of 0° | -10 | -15.5 | volts ← |
| For shadow angle of 90° | 0 | 0 | volts |

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
□ Designated as R in circuit diagram under Type 6E5.
‡ Subject to wide variations.
△ For triode-grid bias of 0 volts.
← Indicates a change.



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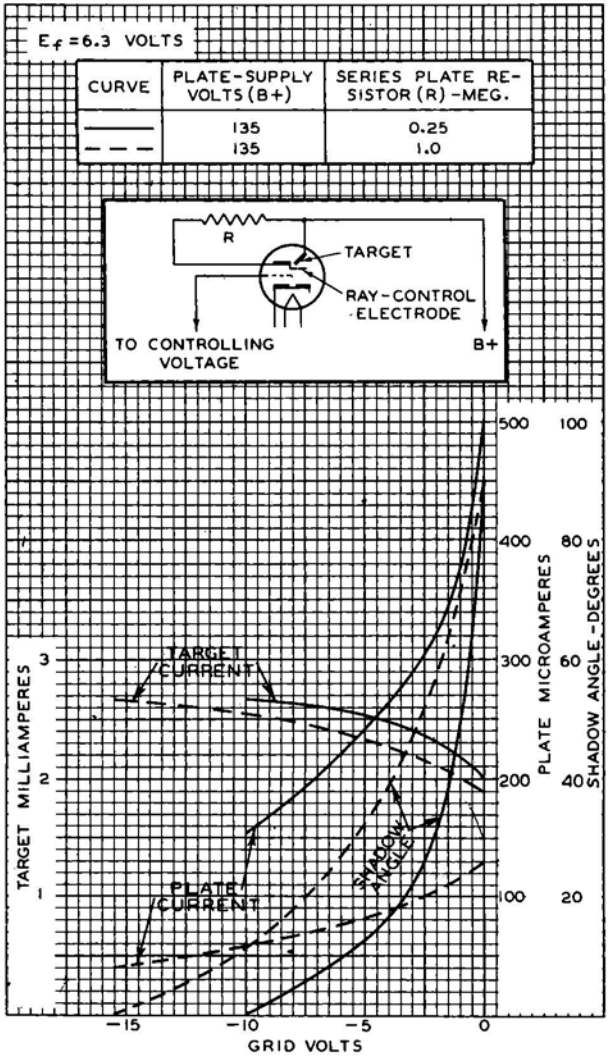
# 6AB5

## AVERAGE CONTROL CHARACTERISTICS



6AB7

# 6AB7/1853

## TELEVISION AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE

| | | |
|---|---|---|
| Heater★ | Coated Unipotential Cathode | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 0.45 | amp. |
| Direct Interelectrode Capacitances:° | | |
| Grid to Plate | 0.015 max. | μμf |
| Input | 8 | μμf |
| Output | 5 | μμf |
| Maximum Overall Length | | 2-5/8" |
| Maximum Seated Height | | 2-1/16" |
| Maximum Diameter | | 1-5/16" |
| Bulb | | Metal Shell, MT-8 |
| Base | | Small Wafer Octal 8-Pin |
| Pin 1 - Shell | | Pin 5 - Cathode |
| Pin 2 - Heater | | Pin 6 - Screen |
| Pin 3 - Suppressor | | Pin 7 - Heater |
| Pin 4 - Grid | | Pin 8 - Plate |
| Mounting Position | BOTTOM VIEW (8N) | Any |


### AMPLIFIER

| | | |
|---|---|---|
| Plate Voltage | 300 max. | volts |
| Screen Voltage | 200 max. | volts |
| Screen-Supply Voltage | 300 max. | volts |
| Plate Dissipation ⊕ | 3.75 max. | watts ← |
| Screen Dissipation | 0.65 max. | watt |

*Typical Operation and Characteristics - Class $A_1$ Amplifier:*

| | Condition I* | Condition II** | |
|---|---|---|---|
| Heater★ | 6.3 | 6.3 | volts |
| Plate | 300 | 300 | volts |
| Suppressor □ | 0 | 0 | volts |
| Screen-Supply # | 200 | 300 | volts |
| Series Screen Resistor | - | 30000 | ohms |
| Grid ## ● | -3 | -3 | min. volts |
| Plate Res. | 0.7 | 0.7 | approx. megohm |
| Transcond. | 5000 | 5000 | μmhos |
| Grid Bias for transcond. = 50 μmhos | -15 | -22.5 | volts |
| Plate Cur. | 12.5 | 12.5 | ma. |
| Screen Cur. | 3.2 | 3.2 | ma. |

° With shell connected to cathode.
* Condition I is with fixed screen supply.
** Condition II is with series screen resistor.
\# Screen-supply voltages in excess of 200 volts require the use of a series-dropping resistor to limit the voltage at the screen to 200 volts when the plate current is at its normal value of 12.5 milliamperes.
● May be obtained with cathode-bias resistor having a minimum value of 190 ohms.
\#\# The d-c resistance in the grid circuit should not exceed 0.25 megohm with fixed bias, or 0.5 megohm with full cathode bias and a series screen resistor.
⊕ Precautions should be taken to insure that dissipation rating is not exceeded with expected line-voltage fluctuations, expecially in the case of fixed-bias operation.
□ The suppressor should be connected in r-f and i-f stages directly to ground to minimize feedback.
★ The potential difference between heater and cathode should be kept as low as possible.
Note: It is characteristic of a high gm tube to show appreciable changes of input capacitance and input conductance with plate current. In high-frequency circuits, it is necessary to take precautions to minimize this effect.

← Indicates a change.



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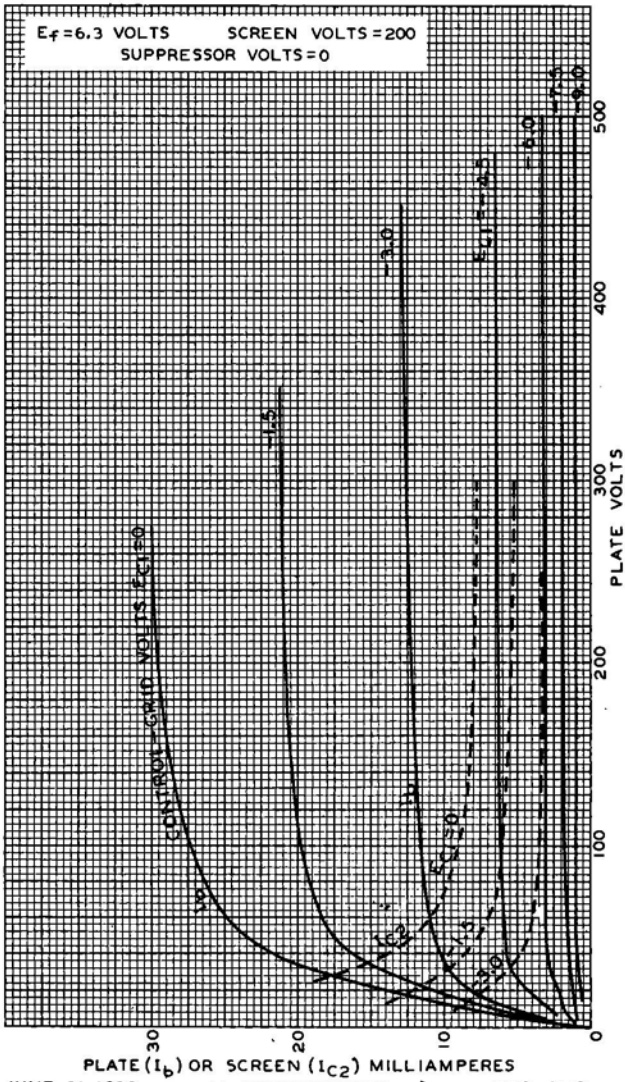
6AB7

# 6AB7

## AVERAGE PLATE CHARACTERISTICS




JUNE 21, 1938 RCA RADIOTRON DIVISION 92C-6140

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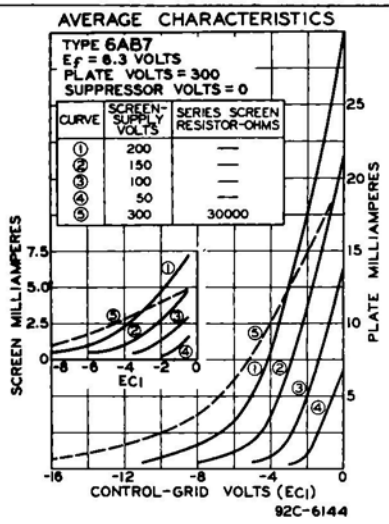
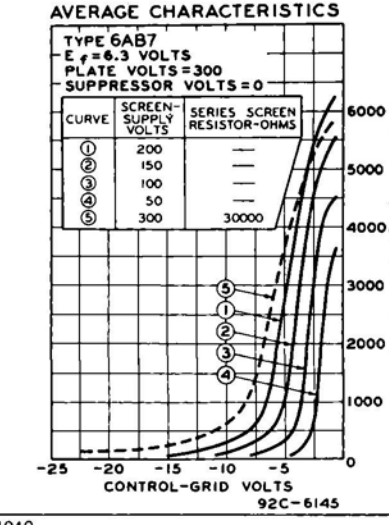
# 6AB7

## TELEVISION AMPLIFIER PENTODE

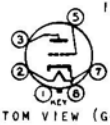


# 6AC5-GT/6AC5-G

# HIGH-MU POWER AMPLIFIER TRIODE

| | | |
|---|---|---|
| Heater ■ | Coated Unipotential Cathode | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 0.4 | amp. |
| Maximum Overall Length | | 3-5/16" |
| Maximum Seated Height | | 2-3/4" ← |
| Maximum Diameter | | 1-5/16" |
| Bulb | | T-9 |
| Base | | Intermed.Shell Octal 6-Pin |
| Pin 1 - No Connection | | Pin 5 - Grid |
| Pin 2 - Heater | | Pin 7 - Heater |
| Pin 3 - Plate | | Pin 8 - Cathode |
| Mounting Position | | Any |




BOTTOM VIEW (G-6Q)

## Characteristics

| | | |
|---|---|---|
| Plate Voltage | 250 max. | volts |
| Grid Voltage | +13 | volts |
| Amplification Factor | 125 | |
| Plate Resistance | 36700 | ohms |
| Transconductance | 3400 | µmhos |
| Plate Current | 32 | ma. |
| Grid Current | 5 | ma. |

## Amplifier

| | | |
|---|---|---|
| Plate Voltage | 250 max. | volts |
| Peak Plate Current (per tube) | 110 max. | ma. |
| Average Plate Dissipation | 10 max. | watts |
| *Typical Operation - Class B Power Amplifier:* | | |
| *Unless otherwise specified, values are for 2 tubes* | | |
| Plate Voltage | 250 | volts |
| Grid Voltage | 0 | volts |
| Peak A-F Grid-to-Grid Voltage | 70 | volts |
| Zero-Signal D-C Plate Current | 5 | ma. |
| Effective Load Res. (plate to plate) | 10000 | ohms |
| Peak Power Input | 950 | mw. |
| Power Output | 8 approx. | watts |
| *Dynamic-Coupled Class $A_1$ Amplifier - With Type 76 as Driver:* | | |
| Plate-Supply Voltage | 250 | volts |
| Grid Voltage | ▲ | volts |
| Average Plate Current | 32 | ma. |
| Average Plate Current of Driver | 5.5 | ma. |
| Input Signal to Driver (RMS) | 16.5 | volts |
| Driver Grid Resistor | 1.0 max. | megohm |
| Load Resistance | 7000 | ohms |
| Harmonic Distortion | 10 | % |
| Power Output * | 3.7 | watts |

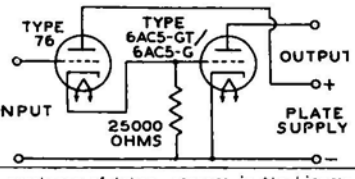
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Bias voltage for both the 6AC5-GT/6AC5-G and the driver is developed by the Dynamic-Coupled connection shown in the circuit arrangement. The total d-c resistance in the grid circuit of the driver should not exceed 1.0 megohm. The main purpose of the 25000-ohm resistor is to prevent a current surge occurring while the tube is warming up.

* When driver is operated up to the grid-current point, it is possible to obtain a power output of 4.3 watts with approximately 16% distortion.

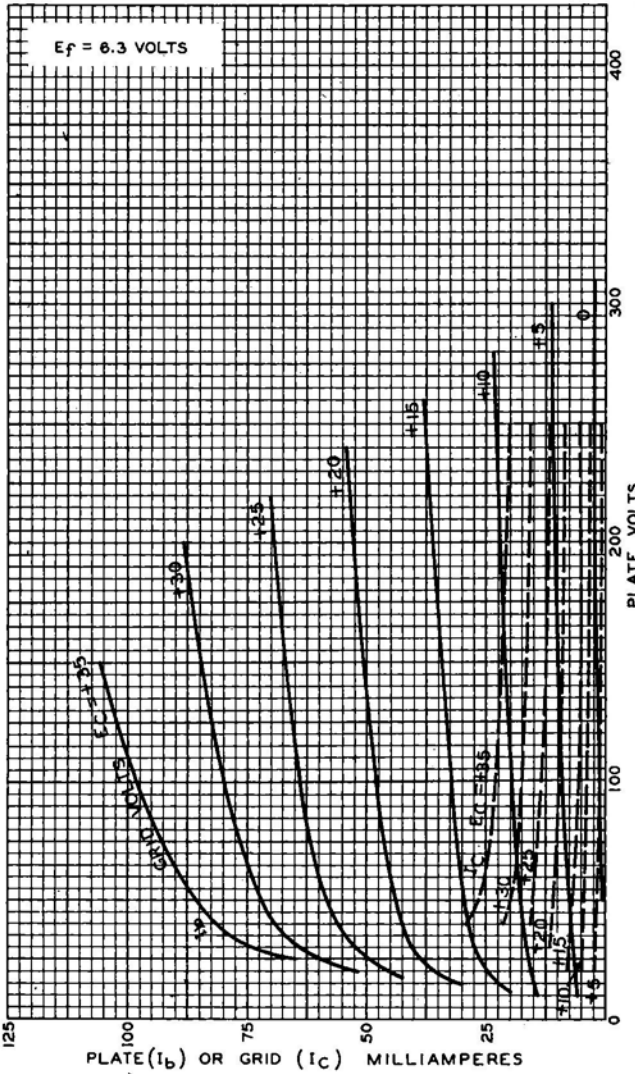
← Indicates a change.

**DYNAMIC-COUPLED CONNECTION**



# 6AC5-GT

## AVERAGE PLATE CHARACTERISTICS




OCT. 18, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4840

6AC7

# 6AC7/1852

# TELEVISION AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE

| | | |
|---|---|---|
| Heater★ | Coated Unipotential Cathode | |
| Voltage | 6.3 | a-c or d-c volts |
| Current | 0.45 | amp. |
| Direct Interelectrode Capacitances:° | | |
| Grid to Plate | 0.015 max. | μμf |
| Input | 11 | μμf |
| Output | 5 | μμf |
| Maximum Overall Length | | 2-5/8" |
| Maximum Seated Height | | 2-1/16" |
| Maximum Diameter | | 1-5/16" |
| Bulb | | Metal Shell, MT-8 |
| Base | | Small Wafer Octal 8-Pin |
| Pin 1 - Shell | | Pin 5 - Cathode |
| Pin 2 - Heater | | Pin 6 - Screen |
| Pin 3 - Suppressor | | Pin 7 - Heater |
| Pin 4 - Grid | | Pin 8 - Plate |
| Mounting Position | BOTTOM VIEW (8N) | Any |


## AMPLIFIER

| | | |
|---|---|---|
| Plate Voltage | 300 max. | volts |
| Screen Voltage | 150 max. | volts |
| Screen-Supply Voltage | 300 max. | volts |
| Plate Dissipation | 3.02 max. | watts ← |
| Screen Dissipation | 0.38 max. | watt |

*Typical Operation and Characteristics - Class $A_1$ Amplifier:*

| | *Condition I** | *Condition II*** | |
|---|---|---|---|
| Plate Voltage | 300 | 300 | volts |
| Suppressor□ | 0 | 0 | volts |
| Screen-Supply # | 150 | 300 | volts |
| Screen Series Resistor | - | 60000 | ohms |
| Cathode-Bias Resistor ## | 160 | 160 | min. ohms |
| Plate Res. | 1.0 | 1.0 | approx. megohm ← |
| Transcond. | 9000 | 9000 | μmhos |
| Plate Cur. | 10 | 10 | ma. |
| Screen Cur. | 2.5 | 2.5 | ma. |

° With shell connected to cathode.

\# Screen-supply voltages in excess of 150 volts require the use of a series-dropping resistor to limit the voltage at the screen to 150 volts when the plate current is at its normal value of 10 milliamperes.

* Condition I with fixed screen supply gives a sharp cut-off characteristic.

** Condition II with series screen resistor gives an extended cut-off characteristic for applications where gain is controlled by variation of grid bias.

\#\# Cathode-bias resistor should be adjusted to give a plate current of 10 ma. The d-c resistance in the grid circuit should not exceed 0.25 megohm when the screen voltage is obtained from a fixed source. When a series screen resistor is used with full cathode bias, the d-c resistance in the grid circuit may be as high as 0.5 megohm.

★ The potential difference between heater and cathode should be kept as low as possible.

□ The suppressor should be connected in r-f and i-f stages directly to ground to minimize feedback.

NOTE: It is characteristic of a high gm tube to show appreciable changes of input capacitance and input conductance with plate current. In high-frequency circuits, it will be necessary to take precautions to minimize this effect. The use of the 6AC7 as a high-gain audio amplifier is not recommended unless the heater is operated from a battery source.

← Indicates a change.



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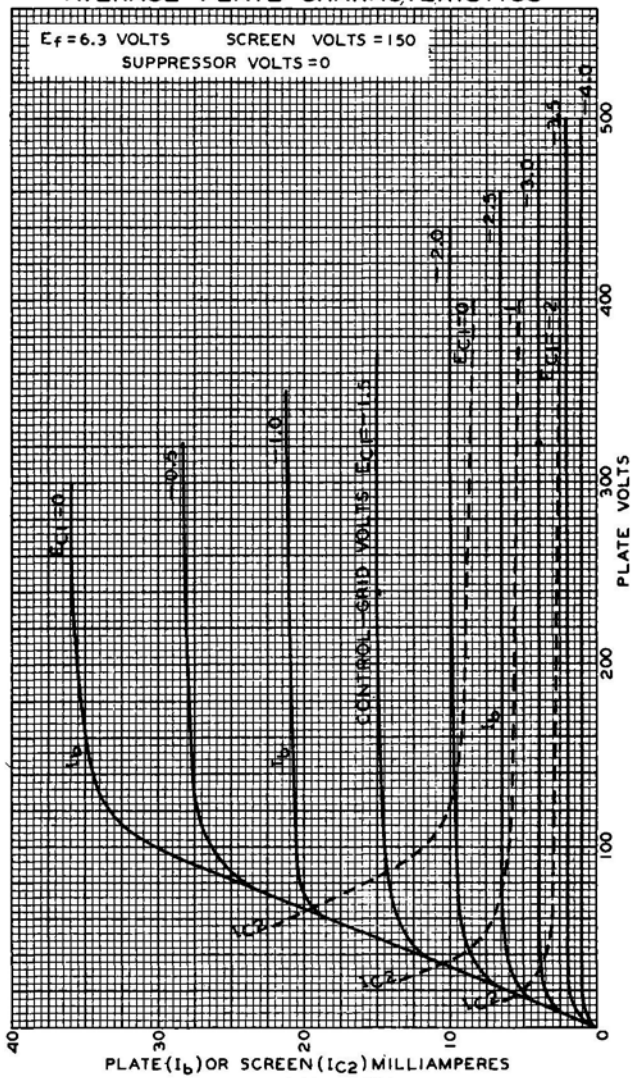
6AC7

# 6AC7

## AVERAGE PLATE CHARACTERISTICS




JUNE 17, 1938

RCA RADIOTRON DIVISION
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92C-6139

# 6AC7

## AVERAGE PLATE CHARACTERISTICS