



# 6BA6—3BA6—4BA6—12BA6

## PENTODE

FOR RF AND IF AMPLIFIER APPLICATIONS

**6BA6**  
**3BA6**  
**4BA6**  
**12BA6**  
 ET-T897A  
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### DESCRIPTION AND RATING

The 6BA6 is a miniature remote-cutoff pentode primarily designed for use as a high-gain radio-frequency or intermediate-frequency amplifier. Features include small size, low grid-plate capacitance, and high transconductance.

Except for heater ratings the 3BA6 and 4BA6 are identical to the 6BA6. In addition, they incorporate a controlled heater-warm-up characteristic which makes them especially suited for use in television receivers that employ series-connected heaters.

The 12BA6, which differs from the 6BA6 only in heater ratings and heater-cathode voltage ratings, is especially useful in a-c/d-c radio receivers.

#### GENERAL

##### Electrical

Cathode—Coated Unipotential

	3BA6	4BA6	6BA6	12BA6
Heater Voltage, AC or DC . . . . .	3.15	4.2	6.3	12.6 Volts
Heater Current . . . . .	0.6	0.45	0.3	0.15 Amperes
Heater Warm-up Time* . . . . .	11	11	....	... Seconds

Direct Interelectrode Capacitances

	With Shield†	Without Shield
Grid-Number 1 to Plate, maximum . . . . .	0.0035	0.0035 $\mu\mu\text{f}$
Input . . . . .	5.5	5.5 $\mu\mu\text{f}$
Output . . . . .	5.5	5.0 $\mu\mu\text{f}$

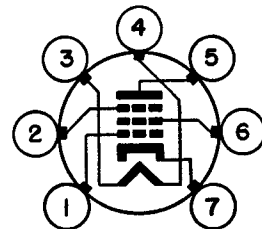
##### Mechanical

Mounting Position—Any

Envelope—T-5½, Glass

Base—E7-1, Miniature Button 7-Pin

#### BASIC DIAGRAM

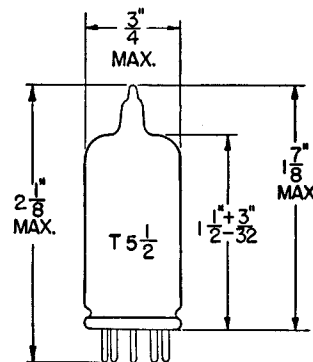


RETMA 7CC

#### TERMINAL CONNECTIONS

- Pin 1—Grid Number 1
- Pin 2—Internal Shield and Grid Number 3 (Suppressor)
- Pin 3—Heater
- Pin 4—Heater
- Pin 5—Plate
- Pin 6—Grid Number 2 (Screen)
- Pin 7—Cathode

#### PHYSICAL DIMENSIONS



RETMA 5-2



Supersedes ET-T897 dated 9-54

## MAXIMUM RATINGS

### DESIGN-CENTER VALUES

Plate Voltage . . . . .		300	Volts
Screen-Supply Voltage . . . . .		300	Volts
Screen Voltage—See Screen Rating Chart			
Positive DC Grid-Number 1 Voltage . . . . .		0	Volts
Negative DC Grid-Number 1 Voltage . . . . .		50	Volts
Plate Dissipation . . . . .		3.0	Watts
Screen Dissipation . . . . .		0.6	Watts
Heater-Cathode Voltage	<b>3BA6</b>		
Heater Positive with Respect to Cathode	<b>4BA6</b>		
DC Component . . . . .	<b>6BA6</b>	<b>12BA6</b>	
Total DC and Peak . . . . .	100	100	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak . . . . .	200	100	Volts

## CHARACTERISTICS AND TYPICAL OPERATION

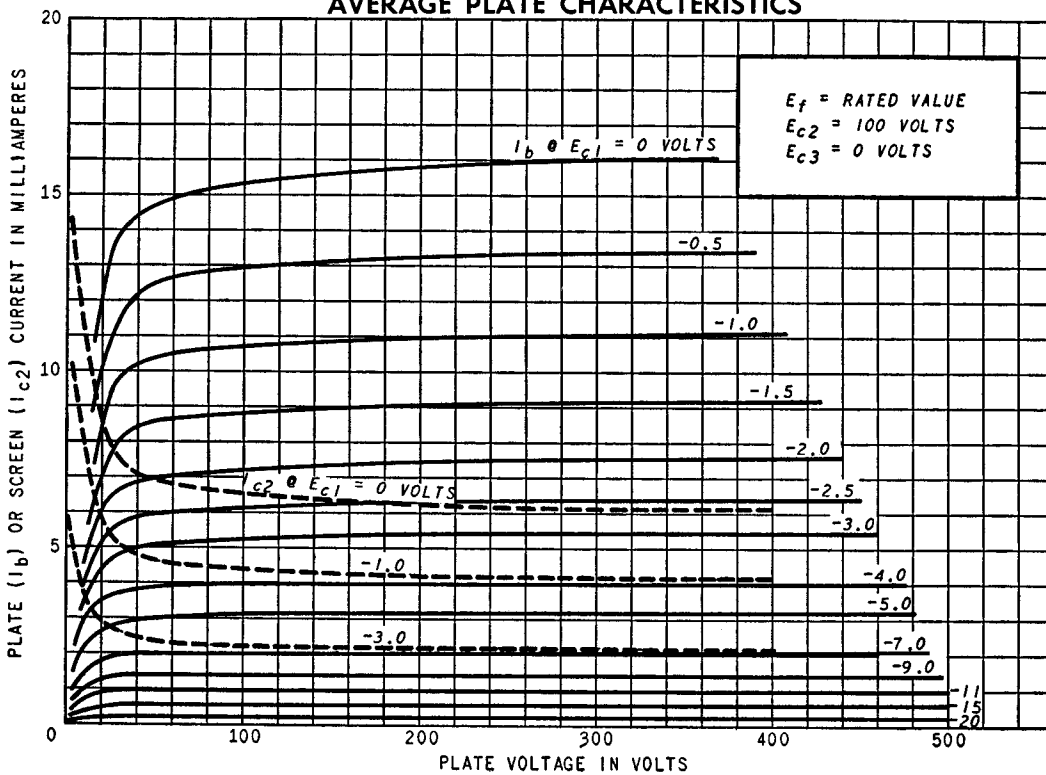
### CLASS A<sub>1</sub> AMPLIFIER

Plate Voltage . . . . .	100	250	Volts
Suppressor, Connected to Cathode at Socket			
Screen Voltage . . . . .	100	100	Volts
Cathode-Bias Resistor . . . . .	68	68	Ohms
Plate Resistance, approximate . . . . .	0.25	1.0	Megohms
Transconductance . . . . .	4300	4400	Micromhos
Plate Current . . . . .	10.8	11	Milliamperes
Screen Current . . . . .	4.4	4.2	Milliamperes
Grid-Number 1 Voltage, approximate			
$G_m = 40$ Micromhos . . . . .	-20	-20	Volts

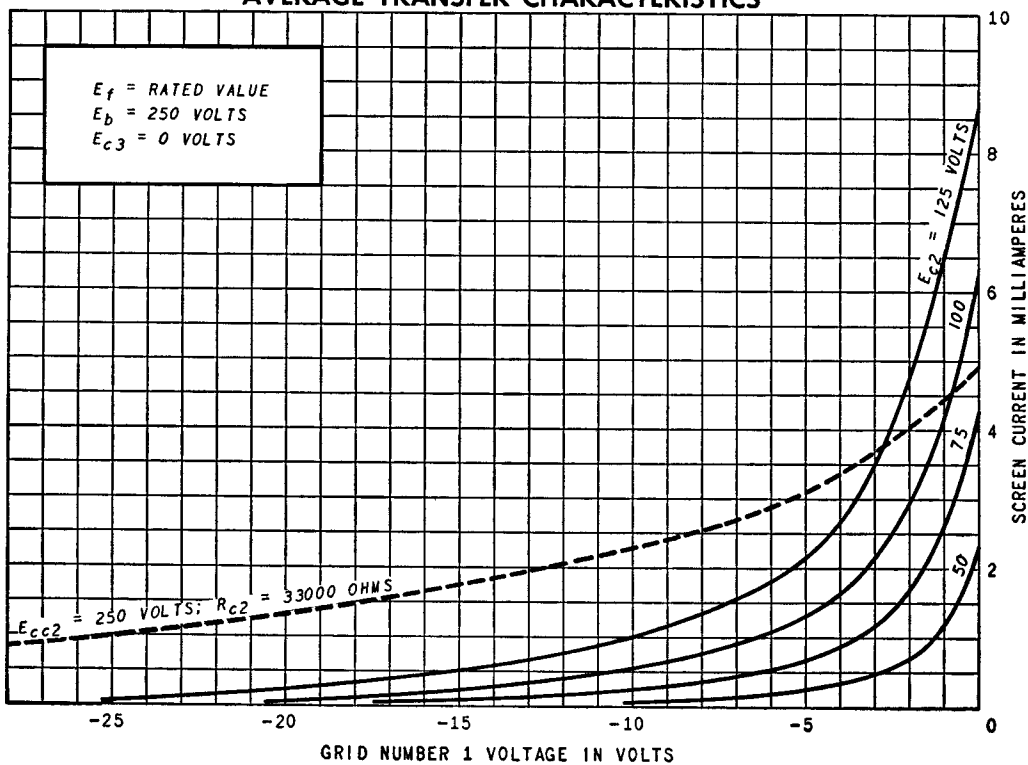
\* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† With external shield (RETMA 316) connected to pin 7.

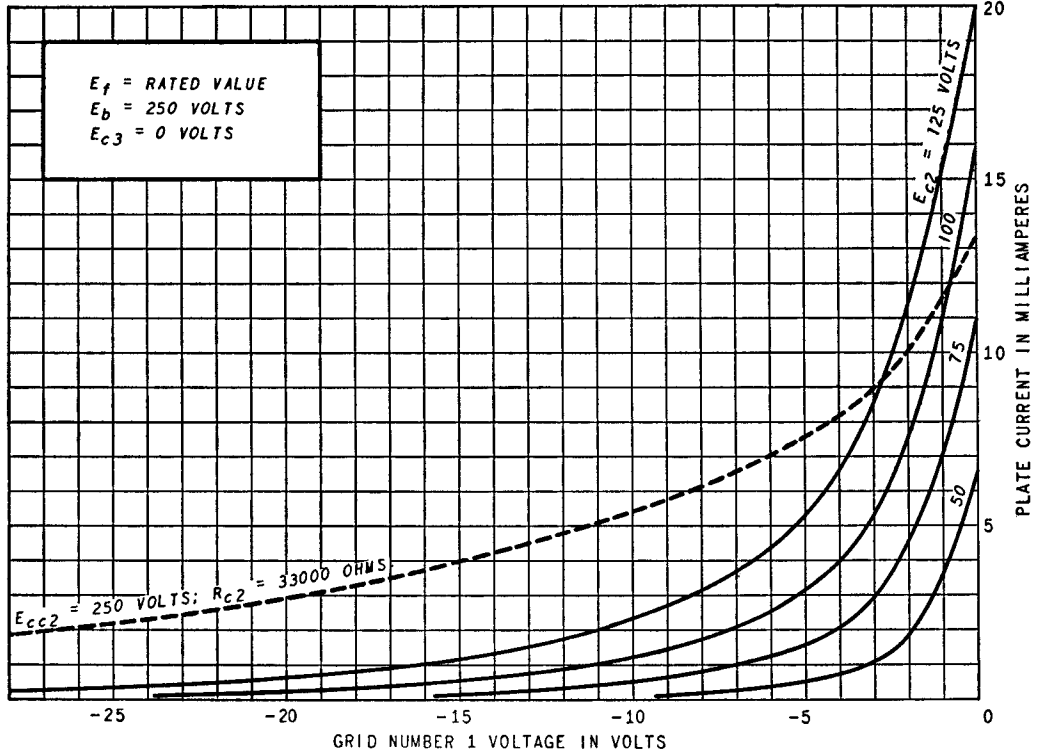
**AVERAGE PLATE CHARACTERISTICS**



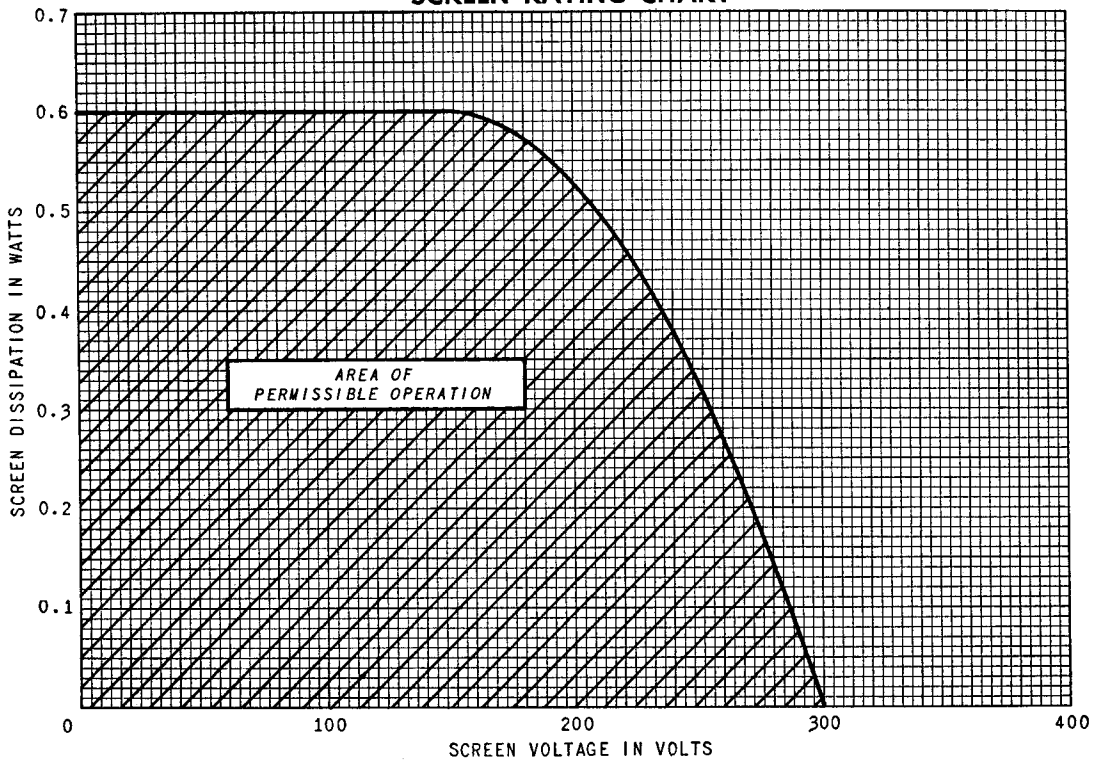
**AVERAGE TRANSFER CHARACTERISTICS**



**AVERAGE TRANSFER CHARACTERISTICS**



**SCREEN RATING CHART**



# AVERAGE TRANSFER CHARACTERISTICS

