



**E I A**  
**REGISTRATION DATA**

Type **6HK8**

Date issued **May 30 1960**



Toshiba 6HK8 is a 9 Pin miniature, medium Mu twin triode, with high transconductance, low noise and low interelectrode capacitance, designed for use as a cascode amplifier in high gain tuners for television receivers. This tube is also useful RF amplifier and frequency converter for FM receivers.

**GENERAL DATA**

**Electrical :**

*Heater, for unipotential Cathode :*

Voltage (AC or DC) .....	6.3 volts
Current .....	400 ma.

*Direct Interelectrode Capacitances (with external shield):*

	unit 1	unit 2
Grid to plate: (g to p) .....	1.2	1.2 $\mu\mu\text{f}$
Input: g to (h+k+is+es) .....	3.3	3.3 $\mu\mu\text{f}$
Input: 1K to (h+lg+is+es) grounded grid .....	5.6	$\mu\mu\text{f}$
Output: P to (h+K+is+es) .....	1.1	1.3 $\mu\mu\text{f}$
Output: 1P to (h+lg+is+es) grounded grid .....	2.4	$\mu\mu\text{f}$
Plate to Heater: p to h .....	0.15	0.15 $\mu\mu\text{f}$
Cathode to Heater: K to h .....	2.5	2.5 $\mu\mu\text{f}$
Plate No. 1 to plate No. 2: 1p to 2p .....		0.01 $\mu\mu\text{f}$ max.
Plate No. 1 to plate No. 2, Grid No. 2: 1p to (2p, 2g) .....		0.03 $\mu\mu\text{f}$ max.

**Mechanical :**

Operating Position .....	Any
Maximum Overall Length .....	2 $\frac{3}{16}$ "
Maximum Seated Length .....	1 $\frac{5}{16}$ "
Length, Base Seat to Bulb Top (Excluding tip) .....	1 $\frac{1}{8}$ " $\pm$ $\frac{3}{32}$ "
Maximum Diameter .....	$\frac{7}{16}$ "
Bulb .....	T6- $\frac{1}{2}$
Base .....	Small-Button Noval 9-Pin (JEDEC No. E9-1)

**Maximum Ratings (Design Center Values) :**

Plate Supply Voltage with Cut Off Bias .....	300 volts
Plate Voltage .....	150 volts
Plate Dissipation .....	2.0 Watts
Cathode Current .....	20 ma
Circuit Values : Grid Circuit Resistance .....	0.5 Megohm
<b>Heater-Cathode Voltage</b>	
Heater Negative with Respect to Cathode, DC .....	200 volts
Total, DC and Peak .....	200 volts
Heater Positive with Respect to Cathode, DC .....	100 volts
Total, DC and Peak .....	200 volts

**Typical Operating Conditions and Characteristics :**

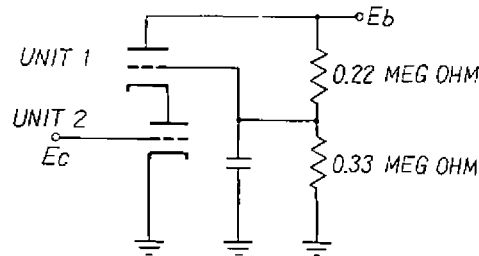
<b>Class A1 Amplifier (Each section)</b>	
Plate Voltage .....	90 volts
Grid Voltage .....	-1 volts
Amplification Factor .....	36
Plate Resistance .....	4500 ohms
Transconductance .....	8000 $\mu$ mhos
Plate Current .....	8.5 ma
Grid Voltage, Approximate for $I_b = 10 \mu a$ .....	-5.5 volts

**Cascode Amplifier (see typical operating circuit) :**

Plate Voltage .....	180 volts
Grid Voltage .....	-1 volts

Transconductance .....	9500 $\mu$ mhos
Plate Current .....	12 ma
Grid Voltage, Approximate for $g_m = 50 \mu$ mhos .....	-6 volts

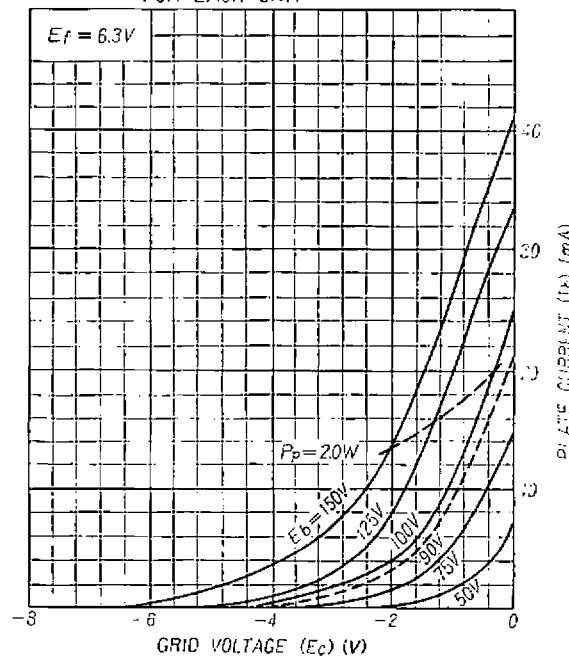
TYPICAL OPERATING CIRCUIT



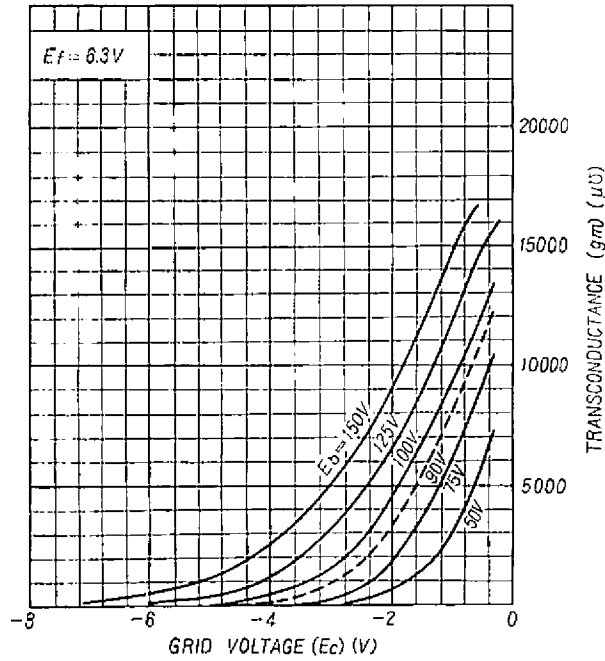
Mixer :

Plate Voltage .....	75	100	125	volts
Grid Voltage .....	0	0	0	
Grid Circuit Resistance .....	0.25	0.25	0.25	megohms
Exciting Grid Voltage .....	1.8	2.2	2.6	volts ac
Conversion Transconductance .....	3350	4200	5050	$\mu$ mhos
Plate Current .....	4.1	7.0	10.7	ma

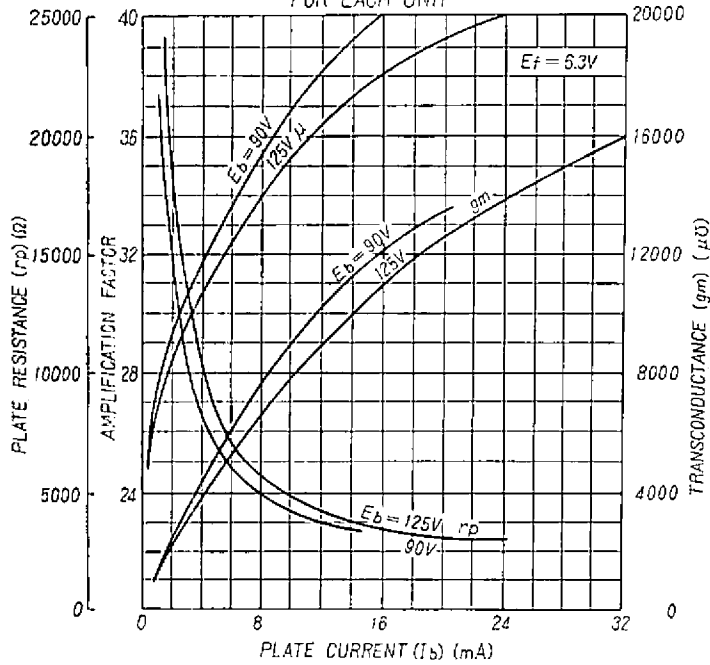
6HK8 AVERAGE CHARACTERISTICS FOR EACH UNIT



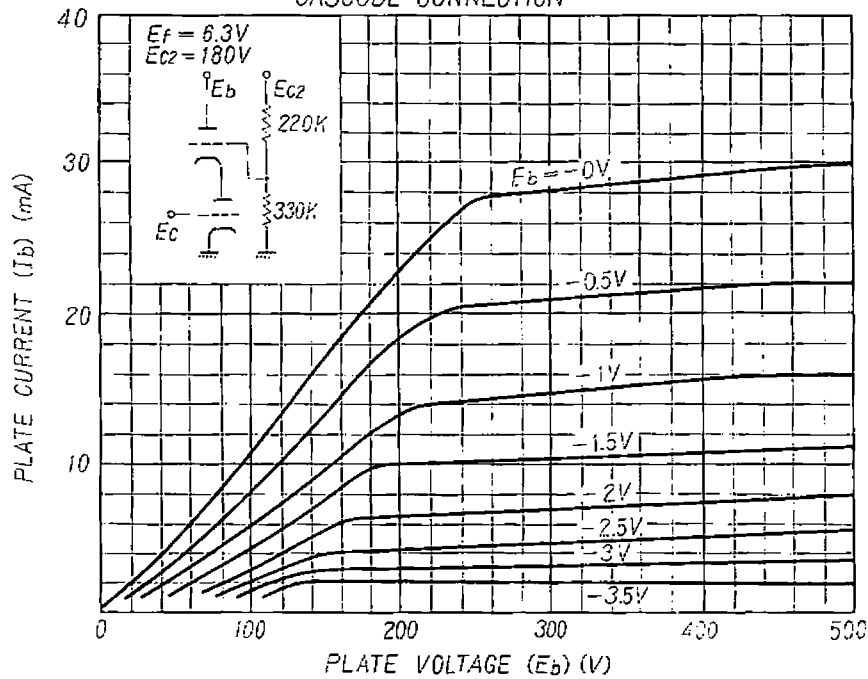
6HK8 AVERAGE CHARACTERISTICS FOR EACH UNIT



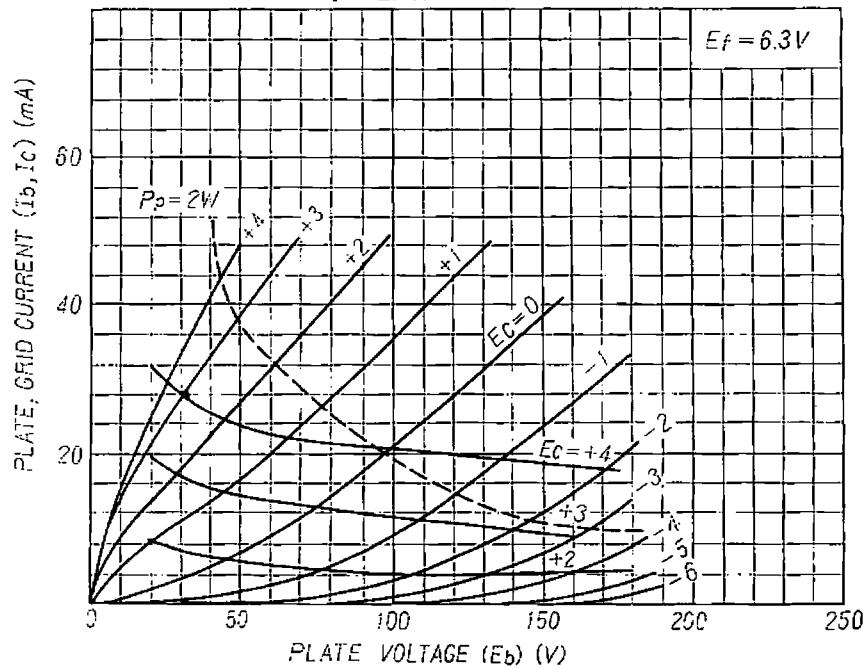
6HK8 AVERAGE CHARACTERISTICS FOR EACH UNIT



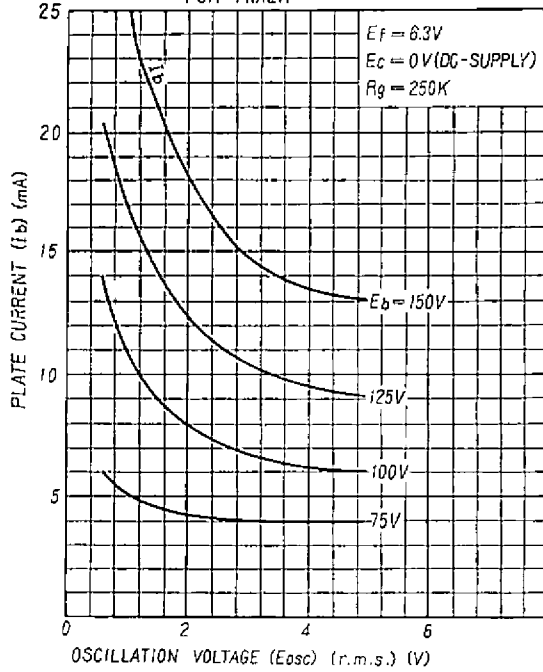
6HK8 AVERAGE PLATE CHARACTERISTICS  
CASCODE CONNECTION



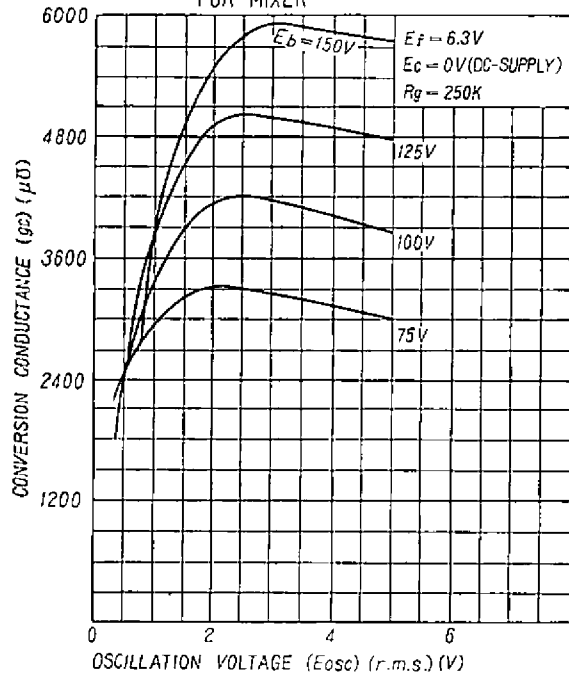
6HK8 AVERAGE PLATE CHARACTERISTICS  
FOR EACH UNIT



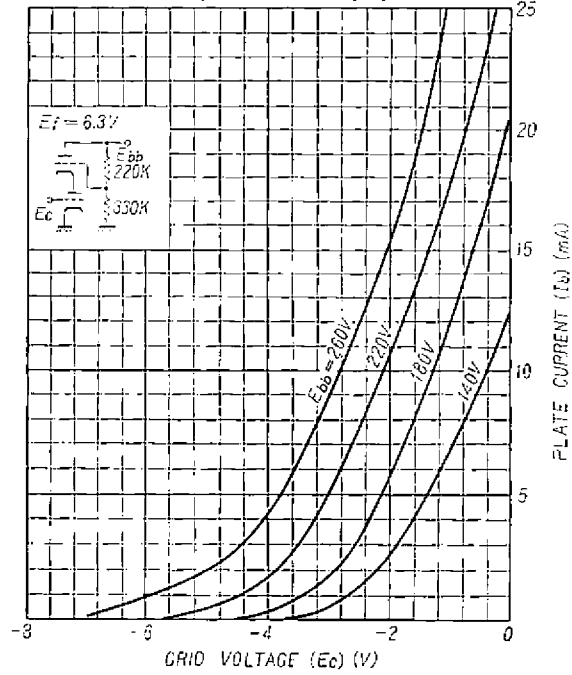
**5HX8 OPERATION CHARACTERISTICS FOR MIXER**



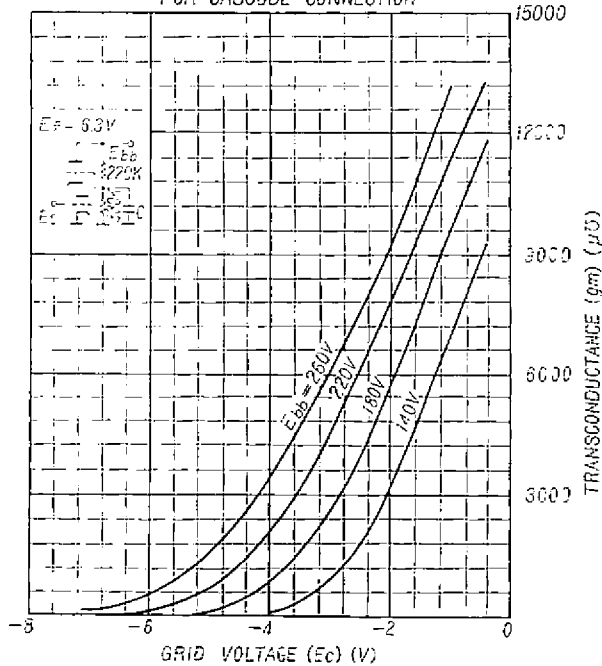
**6HX8 OPERATION CHARACTERISTICS FOR MIXER**



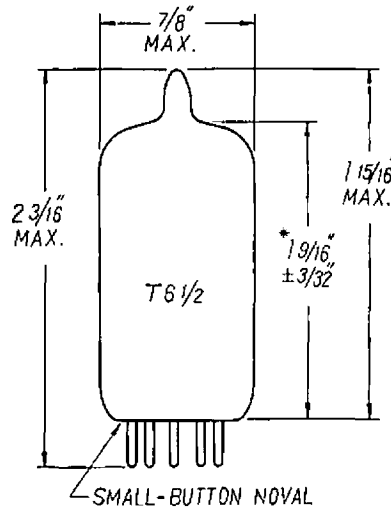
6HK8 AVERAGE CHARACTERISTICS  
FOR CASCODE CONNECTION



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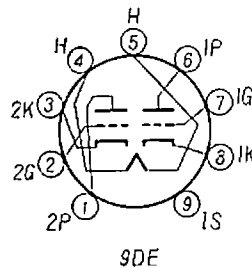
DIMENSIONAL OUTLINE



9-PIN BASE  
JEDEC NO. E9-1

\*MEASURED FROM BASE SEAT TO  
BULB TOP LINE AS DETERMINED  
BY RING GAUGE OF 7/16" I.D.

SOCKET CONNECTIONS  
BOTTOM VIEW



PIN 1: UNIT 2 PLATE }  
PIN 2: UNIT 2 GRID } GROUNDED CATHODE  
PIN 3: UNIT 2 CATHODE } INPUT SECTION  
PIN 4: HEATER  
PIN 5: HEATER

PIN 6: UNIT 1 PLATE }  
PIN 7: UNIT 1 GRID } GROUNDED GRID  
PIN 8: UNIT 1 CATHODE } OUTPUT SECTION  
PIN 9: INTERNAL SHIELD



*Toshiba*

TOKYO SHIBAURA ELECTRIC CO., LTD.

KAWASAKI JAPAN

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