

T O K Y O S H I B A U R A E L E C T R I C C O . , L T D .
KAWASAKI J P A A N

Toshiba

E I A
REGISTRATION DATA

Type **6 H K 8**

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 $\frac{3}{8}$ "
Maximum Seated Length	1 $\frac{5}{8}$ "
Length, Base Seat to Bulb Top (Excluding tip)	1 $\frac{1}{8}$ " $\pm$ $\frac{3}{32}$ "
Maximum Diameter	$\frac{7}{8}$ "
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
Heater-Cathode Voltage	
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 :

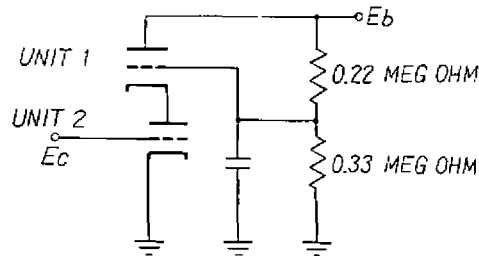
Class A1 Amplifier (Each section)	
Plate Voltage	90 volts
Grid Voltage	-1 volts
Amplification Factor	36
Plate Resistance	4500 ohms
Transconductance	8000 μ mhos
Plate Current	8.5 ma
Grid Voltage, Approximate for $I_b = 10 \mu a$	-5.5 volts

Cascode Amplifier (see typical operating circuit) :

Plate Voltage	180 volts
Grid Voltage	-1 volts

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

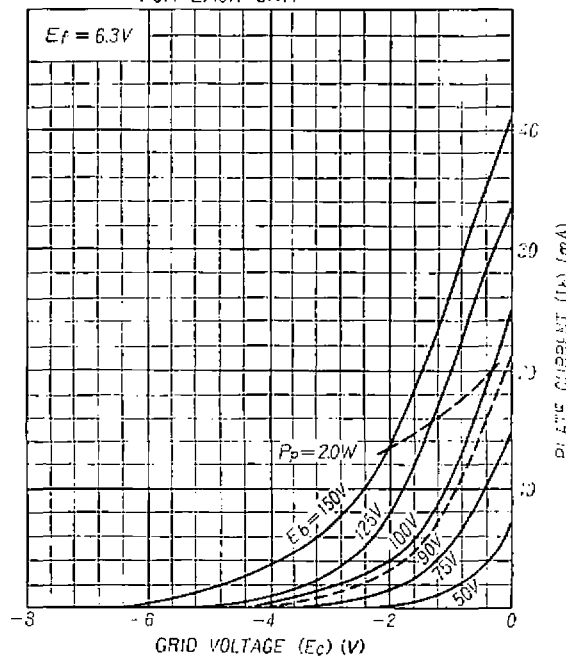
TYPICAL OPERATING CIRCUIT



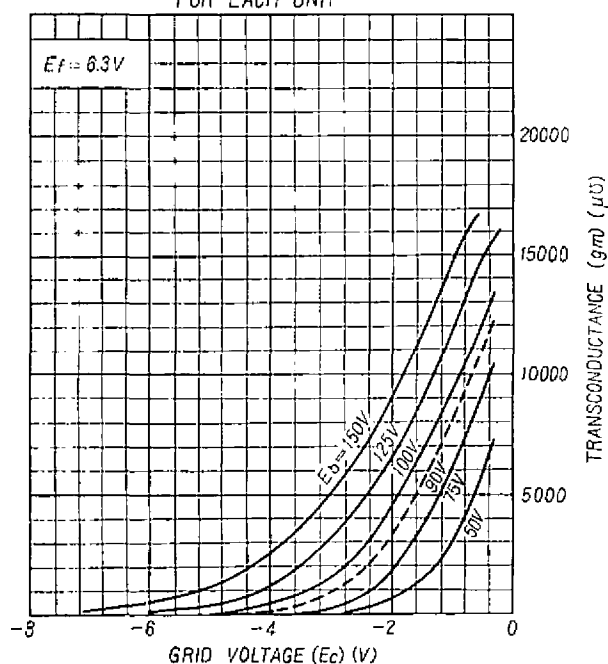
Mixer :

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	μ mhos
Plate Current	4.1	7.0	10.7	ma

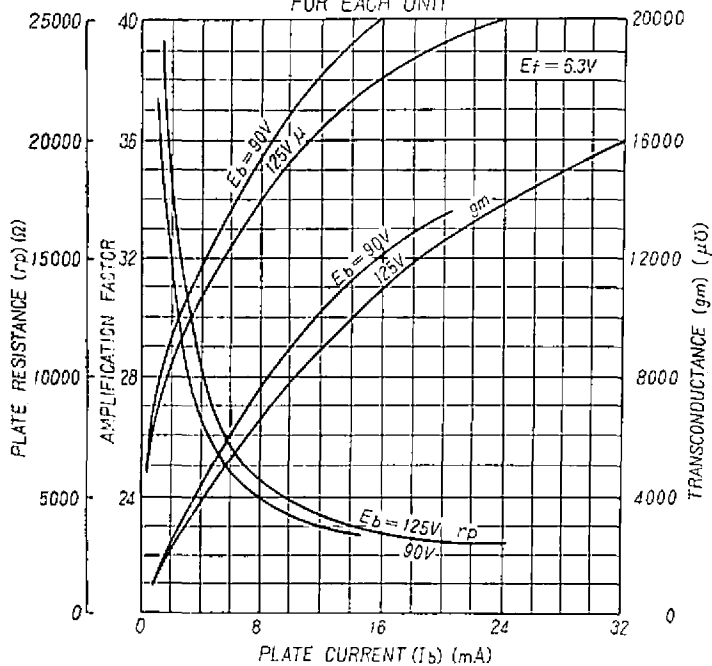
**6HK8 AVERAGE CHARACTERISTICS
 FOR EACH UNIT**



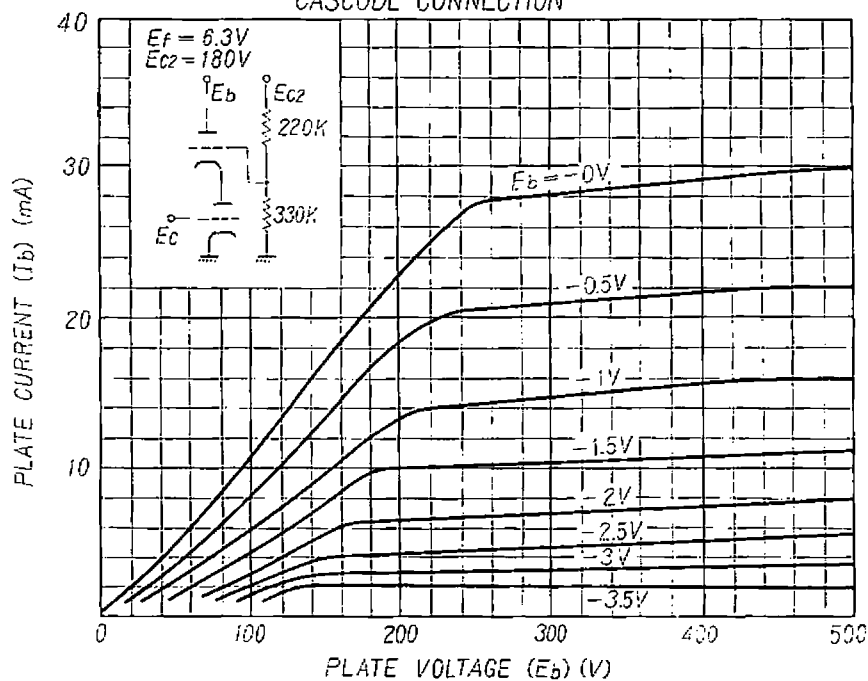
6HK8 AVERAGE CHARACTERISTICS
FOR EACH UNIT



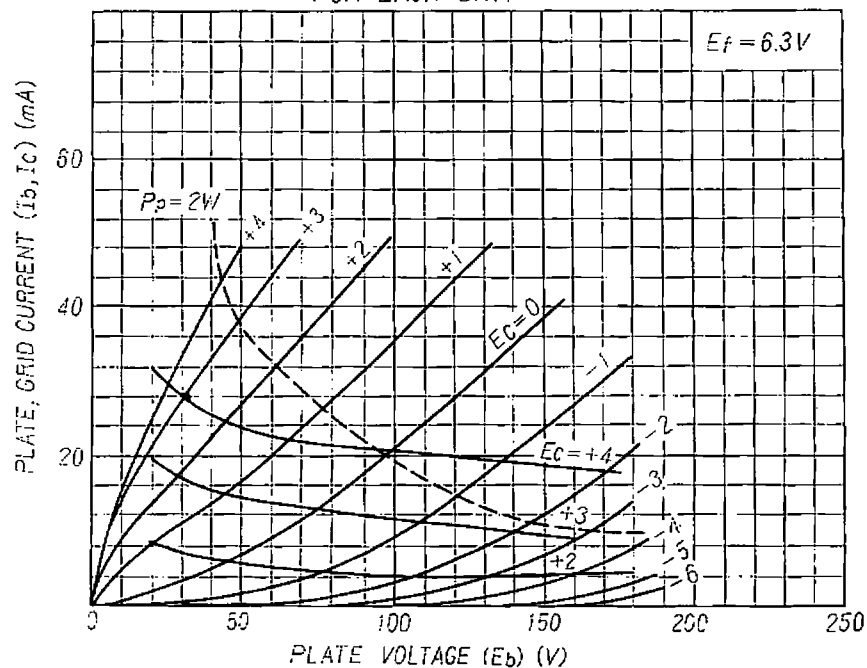
6HK8 AVERAGE CHARACTERISTICS
FOR EACH UNIT



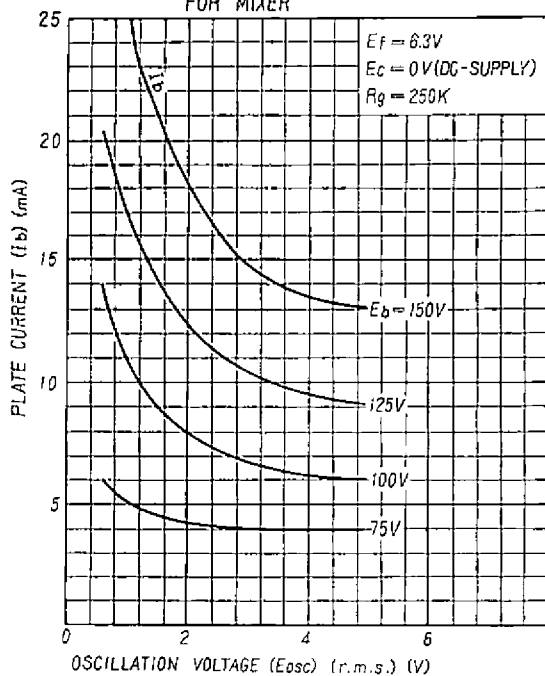
6HK8 AVERAGE PLATE CHARACTERISTICS
CASCODE CONNECTION



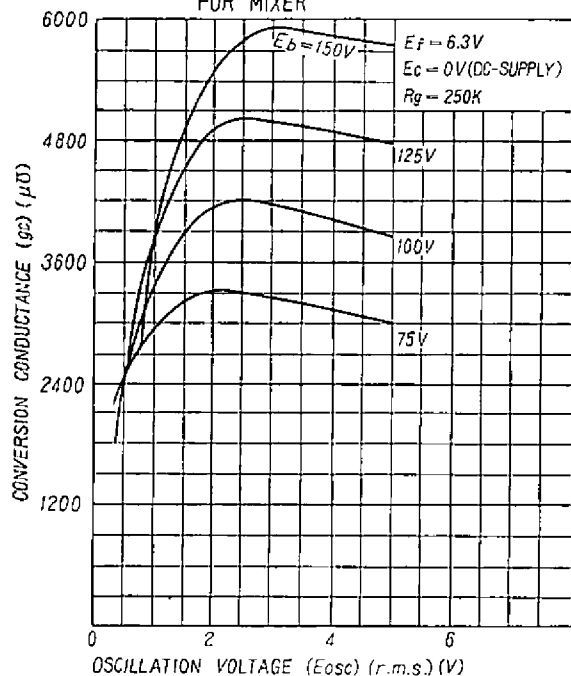
6HK8 AVERAGE PLATE CHARACTERISTICS
FOR EACH UNIT



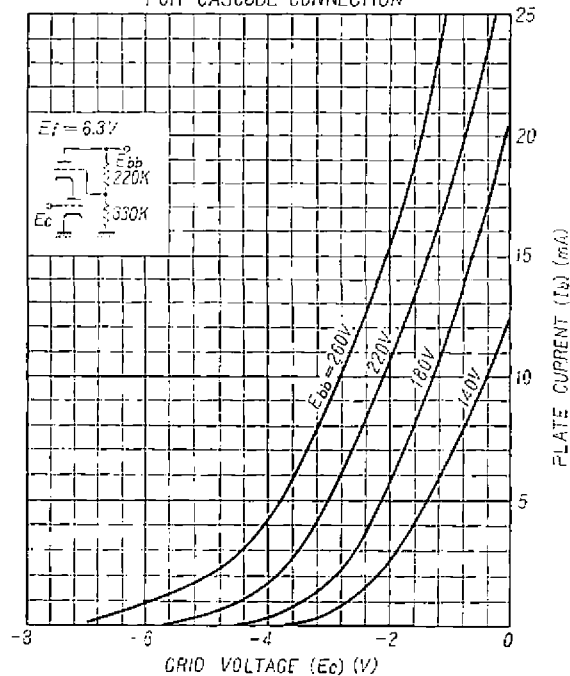
5HK8 OPERATION CHARACTERISTICS
FOR MIXER



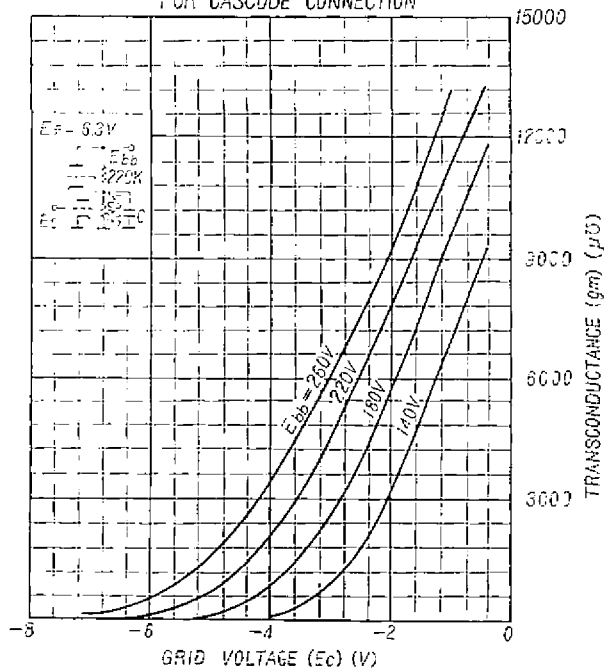
6HK8 OPERATION CHARACTERISTICS
FOR MIXER



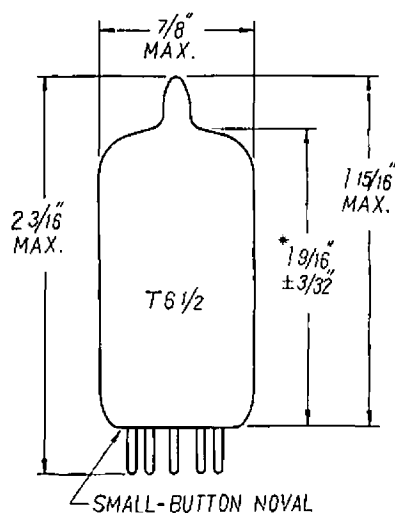
6HK8 AVERAGE CHARACTERISTICS
FOR CASCODE CONNECTION



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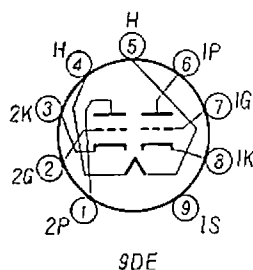
DIMENSIONAL OUTLINE



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
PIN 3: UNIT 2 CATHODE
PIN 4: HEATER
PIN 5: HEATER

} GROUNDED CATHODE
INPUT SECTION

PIN 6: UNIT 1 PLATE
PIN 7: UNIT 1 GRID
PIN 8: UNIT 1 CATHODE
PIN 9: INTERNAL SHIELD

} GROUNDED GRID
OUTPUT SECTION

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TOKYO SHIBAURA ELECTRIC CO., LTD.

KAWASAKI JAPAN



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All inquiries as to the data should be addressed to Tokyo Shibaura Electric Co., Ltd., Lamp and Tube Manufacturing and Sales Division, 72 Horikawacho, Kawasaki, Kanagawa-ken, Japan.