

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 JAPAN

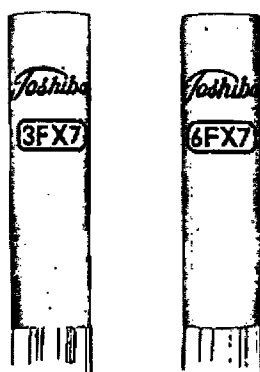
*Toshiba*

**E I A**

**REGISTRATION DATA**

Type **3FX7, 6FX7**

Date issued Mar. 31 1962



Toshiba 3FX7, 6FX7 are 8 pin subminiature, with shield can having indexing lugs, 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.

Toshiba 3FX7 is like Toshiba 6FX7 except that it has a 3.5-volt/600-milliampere heater for use in series string circuit.

**GENERAL DATA**

**Electrical:**

| Heater, for unipotential cathode:                    | 6 FX 7 | 3 FX 7     |            |
|------------------------------------------------------|--------|------------|------------|
| Voltage (AC and DC) .....                            | 6.3    | 3.5        | Volts      |
| Current .....                                        | 300    | 600        | ma         |
| Heater warm up time .....                            | —      | Approx. 11 | sec.       |
| Direct Interelectrode capacitances (with shield can) | Unit 1 | Unit 2     |            |
| Grid to plate: (g to p) .....                        | 2.05   | 1.45       | $\mu\mu f$ |
| Input: g to (h+k+is+sd) .....                        | —      | 3.1        | $\mu\mu f$ |
| Input: 1K to (h+lg+is+sd) Grounded Grid .....        | 5.5    | —          | $\mu\mu f$ |
| Output: p to (h+k+is+sd) .....                       | —      | 1.05       | $\mu\mu f$ |
| Output: 1P to (h+lg+is+sd) Grounded Grid .....       | 2.95   | —          | $\mu\mu f$ |
| Plate to Cathode: p to k .....                       | 0.16   | —          | $\mu\mu f$ |
| Heater to Cathode: h to k .....                      | 2.3    | 2.5        | $\mu\mu f$ |



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#### Mechanical :

|                              |        |
|------------------------------|--------|
| Operating position .....     | Any    |
| Maximum overall length ..... | 1.772" |
| Maximum Diameter .....       | 0.512" |
| Bulb.....                    | T 3    |
| Base .....                   | E 8—9  |

#### Maximum Ratings (Design Maximum Values) :

|                                                               |             |
|---------------------------------------------------------------|-------------|
| Plate Supply Voltage with Cut off Bias .....                  | 300 Volts   |
| Plate Voltage } each section .....                            | 100 Volts   |
| Plate Dissipation } .....                                     | 1.7 Watts   |
| Plate Dissipation (unit 1, Unit 2) .....                      | 3.2 Watts   |
| Cathode Current .....                                         | 20 ma       |
| Circuit Values : Grid Circuit Resistance (each section) ..... | 0.5 Megohms |
| 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 :

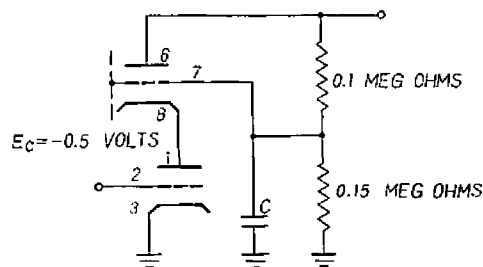
|                                                      |                 |
|------------------------------------------------------|-----------------|
| Class A1 Amplifier (each section)                    |                 |
| Plate Voltage .....                                  | 90 Volts        |
| Grid Voltage .....                                   | -1 Volts        |
| Amplification Factor .....                           | 36              |
| Plate Resistance.....                                | 3800 Ohms       |
| Transconductance.....                                | 9500 $\mu$ mhos |
| Plate Current .....                                  | 9.0 ma          |
| Grid Voltage, Approximate for $I_b = 10 \mu a$ ..... | -4 Volts        |

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

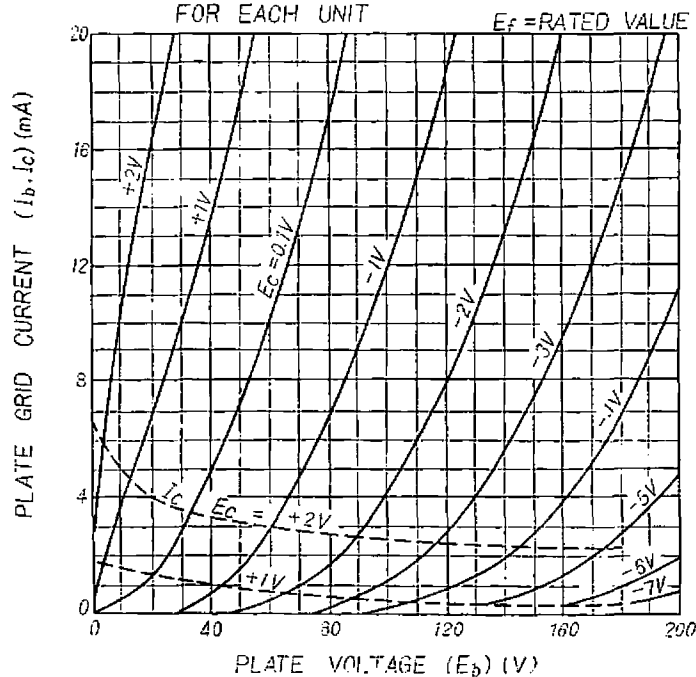
|                    |            |
|--------------------|------------|
| Plate Voltage..... | 165 Volts  |
| Grid Voltage.....  | -0.5 Volts |

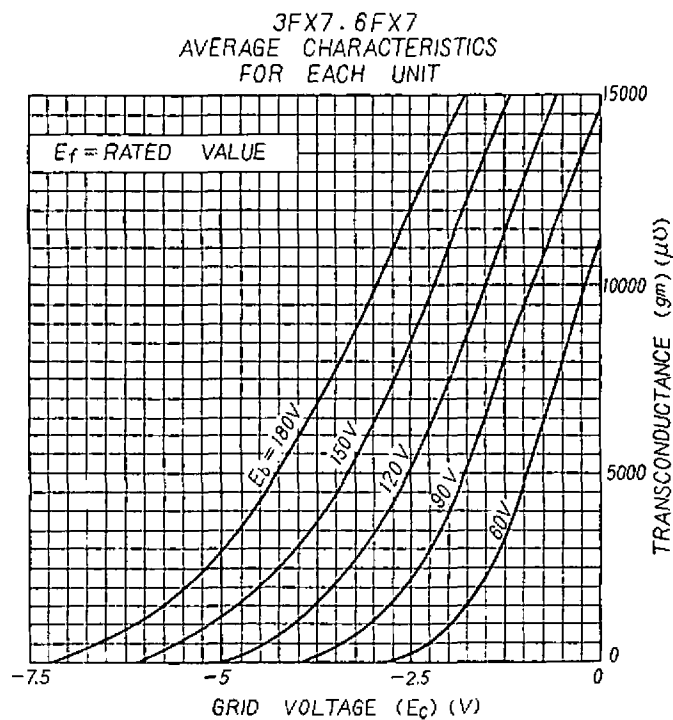
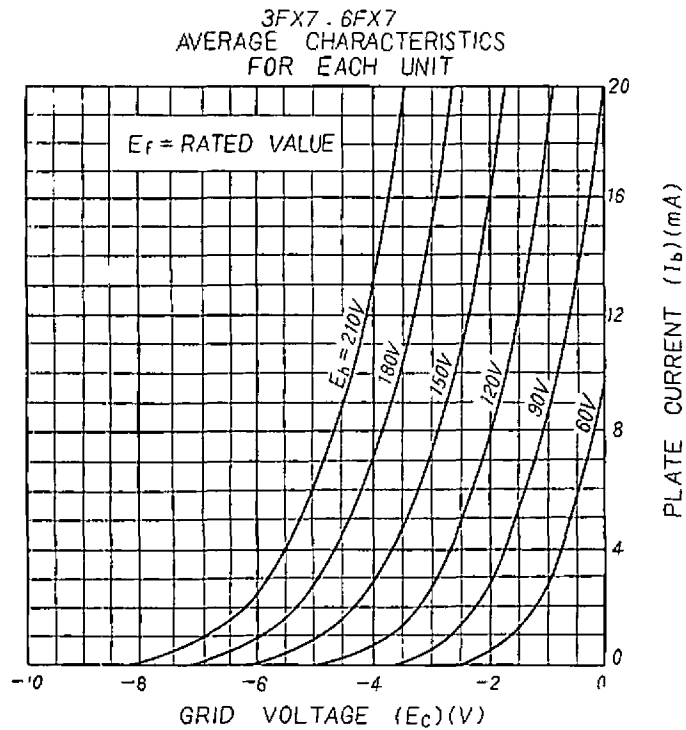
Transconductance ..... 13000  $\mu$  mhos  
Plate Current ..... 16.5 ma  
Grid Voltage, Approximate for  $g_m = 50 \mu$  mhos ..... -5 Volts

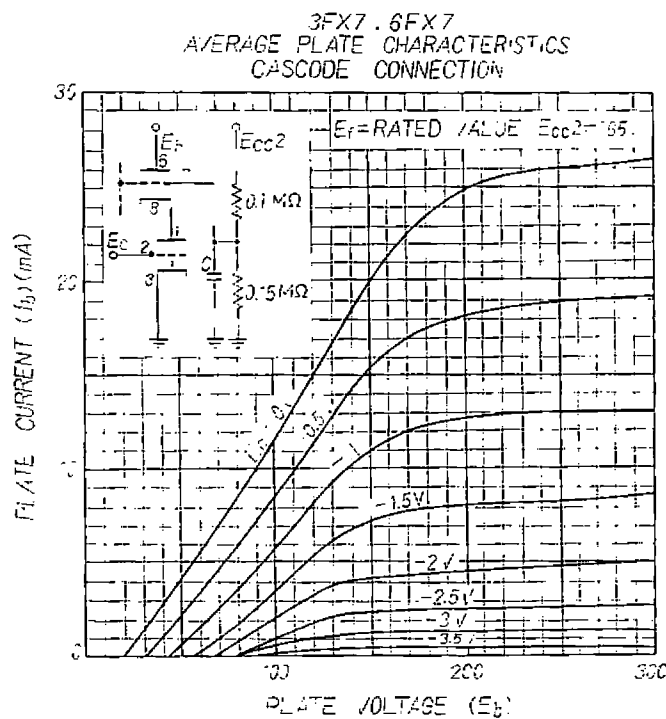
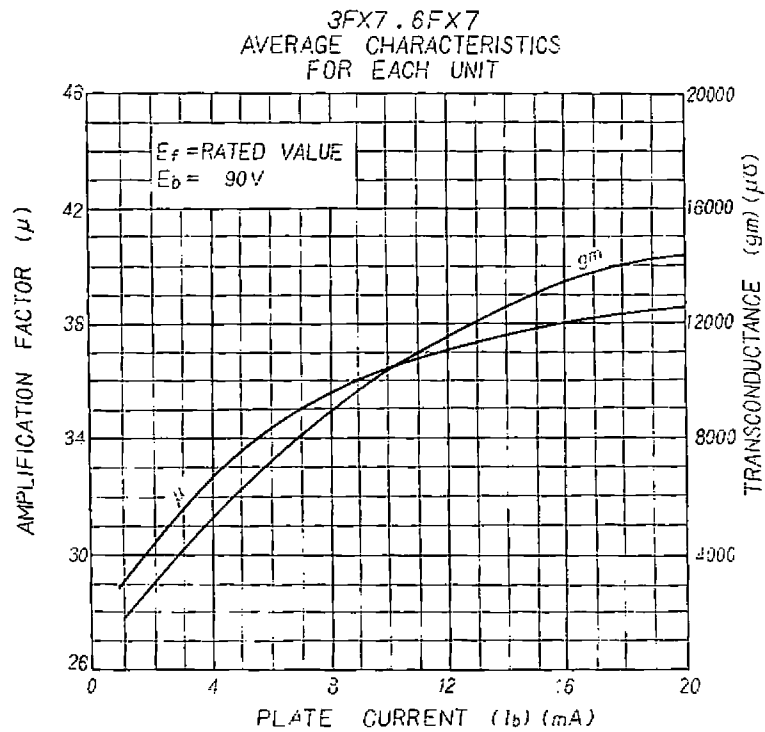
TYPICAL OPERATING CIRCUIT



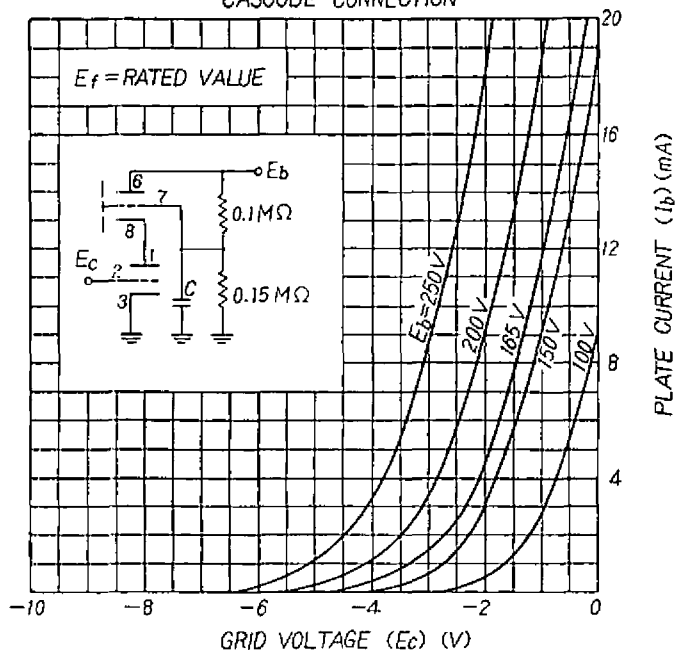
3F7.6FX7  
AVERAGE CHARACTERISTICS  
FOR EACH UNIT



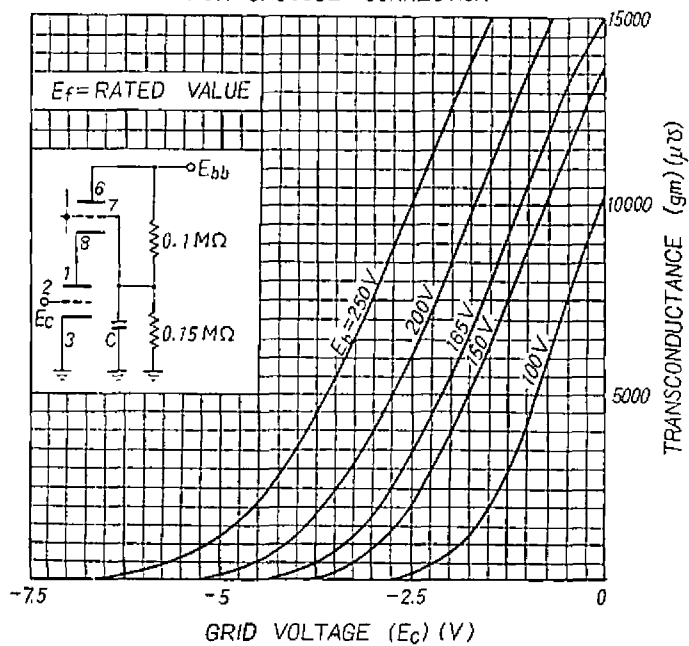




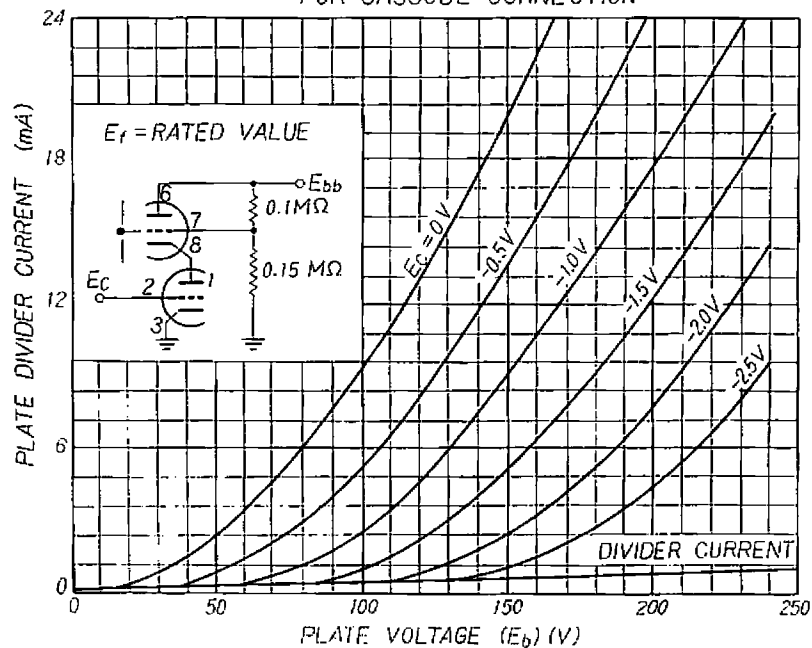
3FX7 . 6FX7  
AVERAGE PLATE CHARACTERISTICS  
CASCODE CONNECTION



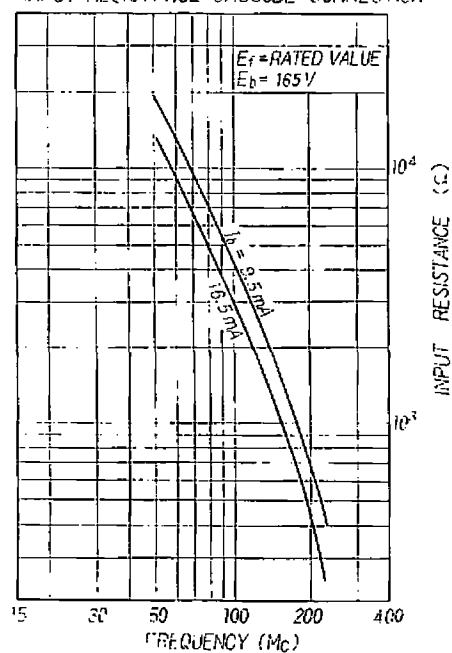
3FX7 . 6FX7  
AVERAGE CHARACTERISTICS  
FOR CASCODE CONNECTION



3FX7, 6FX7  
AVERAGE CHARACTERISTICS  
FOR CASCODE CONNECTION



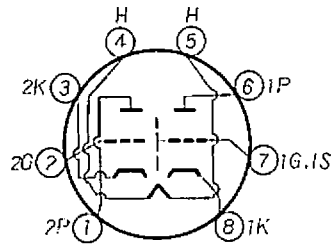
3FX7, 6FX7  
AVERAGE CHARACTERISTICS  
INPUT RESISTANCE CASCODE CONNECTION





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3FX7. 6FX7  
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

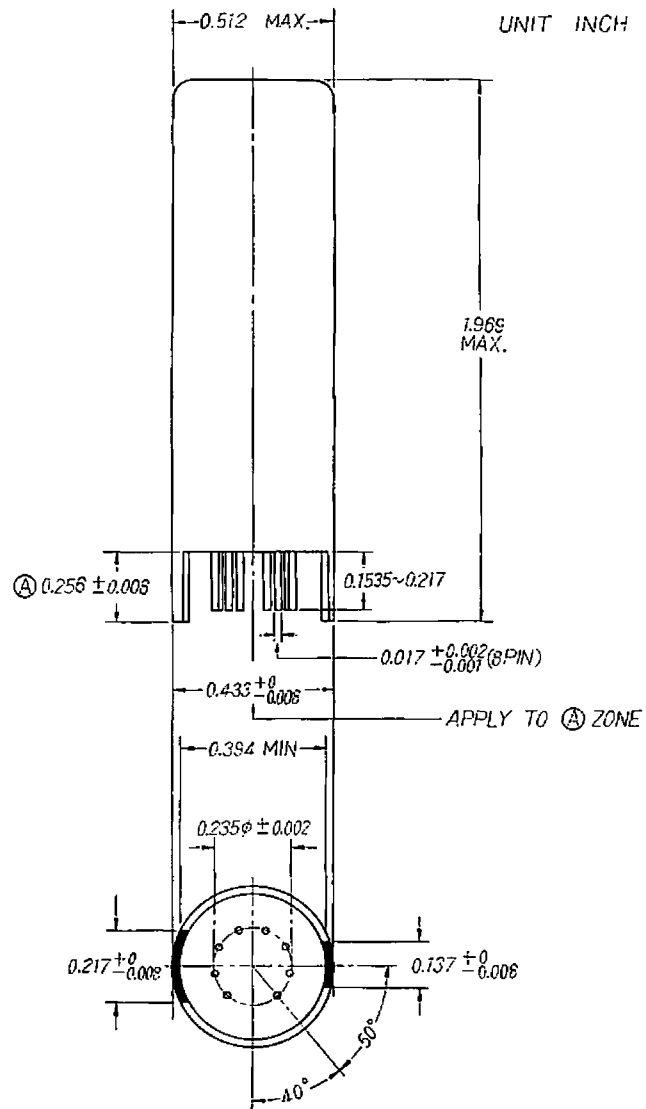
} Grounded Cathod  
Input Section

PIN 6: Unit 1 Plate  
PIN 7: Unit 1 Grid  
PIN 8: Unit 1 Cathode

} Grounded Grid  
Output Section

8LK

3FX7.6FX7  
DIMENSIONAL OUTLINE





*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.*