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:**

<table>
<thead>
<tr>
<th></th>
<th>6FX7</th>
<th>3FX7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heater, for unipotential cathode:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage (AC and DC)</td>
<td>6.3</td>
<td>3.5</td>
</tr>
<tr>
<td>Current</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>Heater warm up time</td>
<td>—</td>
<td>Approx. 11 sec.</td>
</tr>
<tr>
<td>Direct Interelectrode capacitances (with shield can)</td>
<td>Unit 1</td>
<td>Unit 2</td>
</tr>
<tr>
<td>Grid to plate (g to p)</td>
<td>2.05</td>
<td>1.45</td>
</tr>
<tr>
<td>Input: g to (h+k+is+sd)</td>
<td>—</td>
<td>3.1</td>
</tr>
<tr>
<td>Input: 1K to (h+lg+is+sd) Grounded Grid</td>
<td>5.5</td>
<td>—</td>
</tr>
<tr>
<td>Output: p to (h+k+is+sd)</td>
<td>—</td>
<td>1.05</td>
</tr>
<tr>
<td>Output: 1P to (h+lg+is+sd) Grounded Grid</td>
<td>2.95</td>
<td>—</td>
</tr>
<tr>
<td>Plate to Cathode: p to k</td>
<td>0.16</td>
<td>—</td>
</tr>
<tr>
<td>Heater to Cathode: h to k</td>
<td>2.3</td>
<td>2.5</td>
</tr>
</tbody>
</table>

(1)

from JEDEC release #3801, July 23, 1962
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 A Amplifier (each section)
  - Plate Voltage: 90 Volts
  - Grid Voltage: −1 Volts
  - Amplification Factor: 36
  - Plate Resistance: 3800 Ohms
  - Transconductance: 9500 μmhos
  - Plate Current: 9.0 ma
  - Grid Voltage, Approximate for I b = 10 μa: −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 $gm = 50$ $\mu$ mhos ................................................. $-5$ Volts

**TYPICAL OPERATING CIRCUIT**

![Typical Operating Circuit Diagram]

$E_c = -0.5$ VOLTS

$0.1$ MEG OHMS

$0.15$ MEG OHMS

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3FX7, 6FX7
AVERAGE CHARACTERISTICS FOR EACH UNIT

$E_f =$ RATED VALUE

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PLATE GRID CURRENT ($I_b, I_c$) (mA)

PLATE VOLTAGE ($E_b$) (V)

(3)
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

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

Grounded Cathode
Input Section

Grounded Grid
Output Section

8LK
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.