

## R.F. PENTODE

# EF97

Pentode with variable mutual conductance for use as r.f. amplifier, i.f. amplifier and mixer in equipment operating directly from a 6V, 12V or 24V battery, on or off charge.

### HEATER

|       |     |    |
|-------|-----|----|
| $V_h$ | 6.3 | V  |
| $I_h$ | 300 | mA |

### CAPACITANCES

|             |     |     |
|-------------|-----|-----|
| $C_{out}$   | 4.0 | pF  |
| $C_{in}$    | 6.5 | pF  |
| $C_{a-g1}$  | 15  | mpF |
| $C_{g1-g2}$ | 3.0 | pF  |

### CHARACTERISTICS

|             |      |      |      |      |      |      |
|-------------|------|------|------|------|------|------|
| $V_a$       | 6.3  | 6.3  | 12.6 | 12.6 | 25   | V    |
| $V_{g3}$    | 0    | 0    | 0    | 0    | 0    | V    |
| $V_{g2}$    | 1.6  | 3.2  | 3.2  | 6.3  | 6.3  | V    |
| $V_{g1}$    | †    | †    | †    | †    | †    | V    |
| $I_a$       | 0.4  | 1.0  | 1.0  | 3.0  | 3.3  | mA   |
| $I_{g2}$    | 0.15 | 0.4  | 0.35 | 1.1  | 0.95 | mA   |
| $g_m$       | 0.5  | 1.0  | 1.1  | 1.9  | 2.1  | mA/V |
| $r_a$       | 200  | 70   | 200  | 150  | 50   | kΩ   |
| * $V_{g1}$  | -2.5 | -2.5 | -2.5 | -3.5 | -3.5 | V    |
| ** $V_{g1}$ | -3.5 | -4.0 | -4.0 | -5.0 | -5.0 | V    |
| $R_{eq}$    | 15   | 8.0  | 7.0  | 5.5  | 5.0  | kΩ   |

†Obtained by grid current biasing,  $R_{g1} = 10M\Omega$

\*For 10 : 1 reduction in  $g_m$

\*\*For 20 : 1 reduction in  $g_m$

### OPERATING CONDITIONS AS R.F. MIXER (r.f. voltage on $g_1$ , oscillator voltage on $g_3$ )

|                   |      |      |      |      |
|-------------------|------|------|------|------|
| $V_b$             | 6.3  | 12.6 | 25   | V    |
| $R_{g2}$          | 4.7  | 3.9  | 12   | kΩ   |
| $R_{g3}$          | 100  | 100  | 100  | kΩ   |
| $V_{osc(r.m.s.)}$ | 5.0  | 10   | 10   | V    |
| $V_{g1}$          | †    | †    | †    | V    |
| $I_a$             | 0.42 | 1.1  | 1.5  | mA   |
| $I_{g2}$          | 0.6  | 1.6  | 1.5  | mA   |
| $I_{g3}$          | 27   | 62.5 | 50   | μA   |
| $g_c$             | 300  | 550  | 655  | μA/V |
| $r_a$             | 49   | 47   | 47   | kΩ   |
| $R_{eq}$          | 55   | 40   | 40   | kΩ   |
| * $V_{g1}$        | -2.5 | -3.5 | -3.0 | V    |
| ** $V_{g1}$       | -3.5 | -5.0 | -4.0 | V    |

†Obtained by grid current biasing,  $R_{g1} = 10M\Omega$

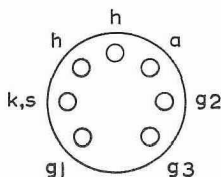
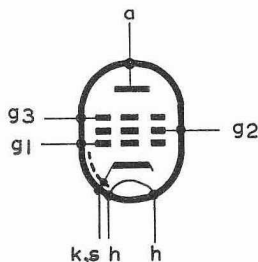
\*For 10 : 1 reduction in  $g_m$

\*\*For 20 : 1 reduction in  $g_m$

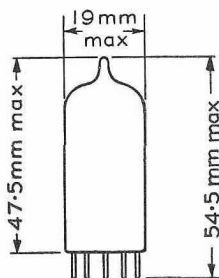
### LIMITING VALUES

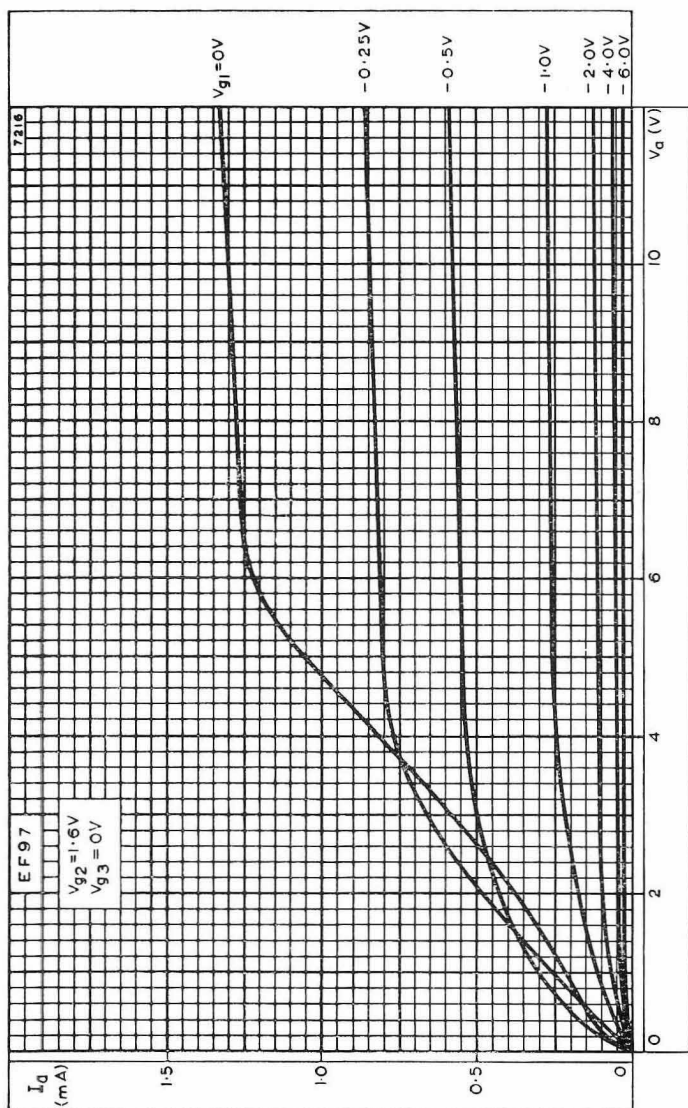
|                |     |           |
|----------------|-----|-----------|
| $V_a$ max.     | 50  | V         |
| $P_a$ max.     | 500 | mW        |
| $V_{g3}$ max.  | 50  | V         |
| $V_{g2}$ max.  | 50  | V         |
| $P_{g2}$ max.  | 500 | mW        |
| $I_k$ max.     | 15  | mA        |
| $R_{g1}$ max.  | 22  | $M\Omega$ |
| $R_{g3}$ max.  | 5.0 | $M\Omega$ |
| $V_{h-k}$ max. | 50  | V         |

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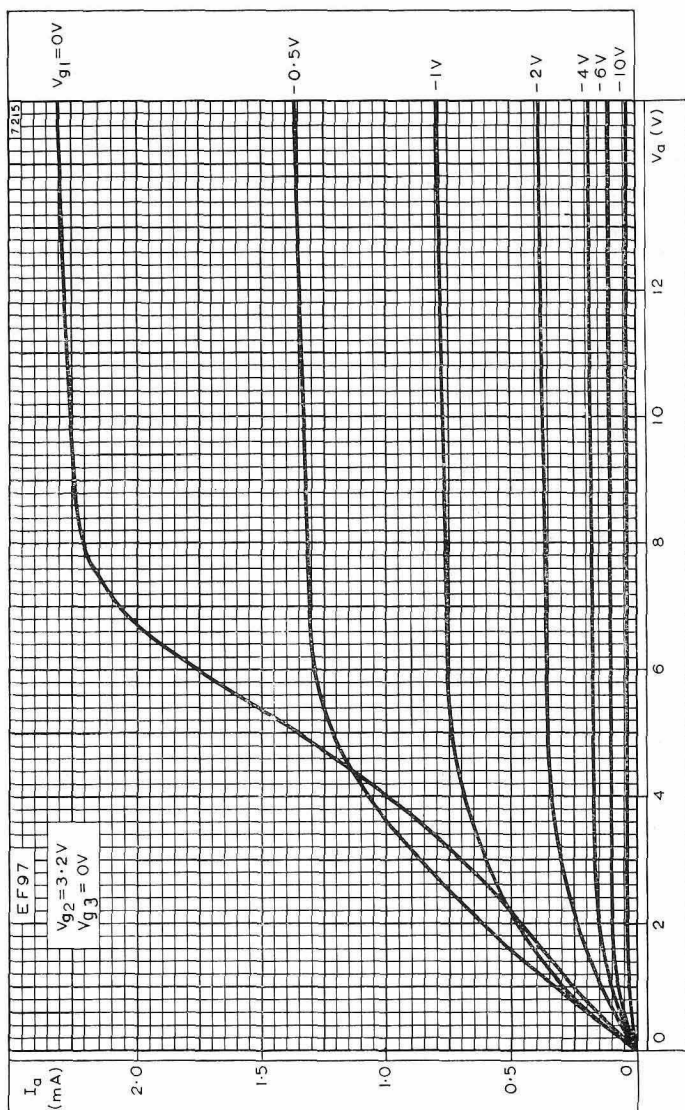


B7G Base

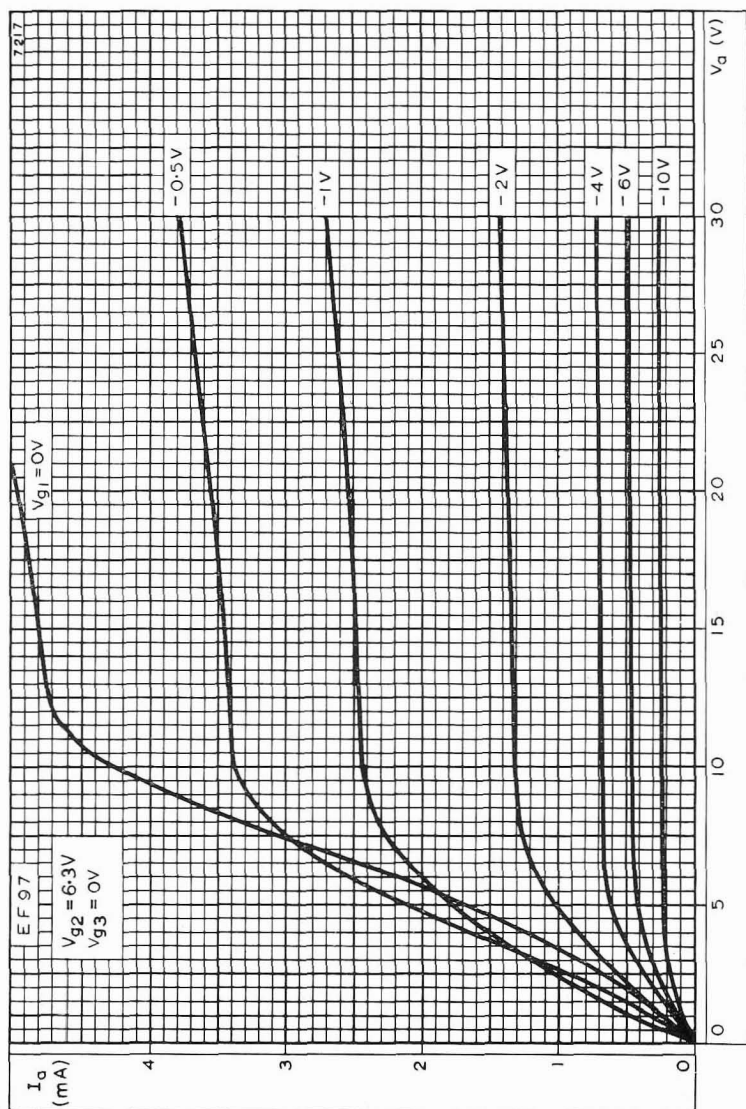




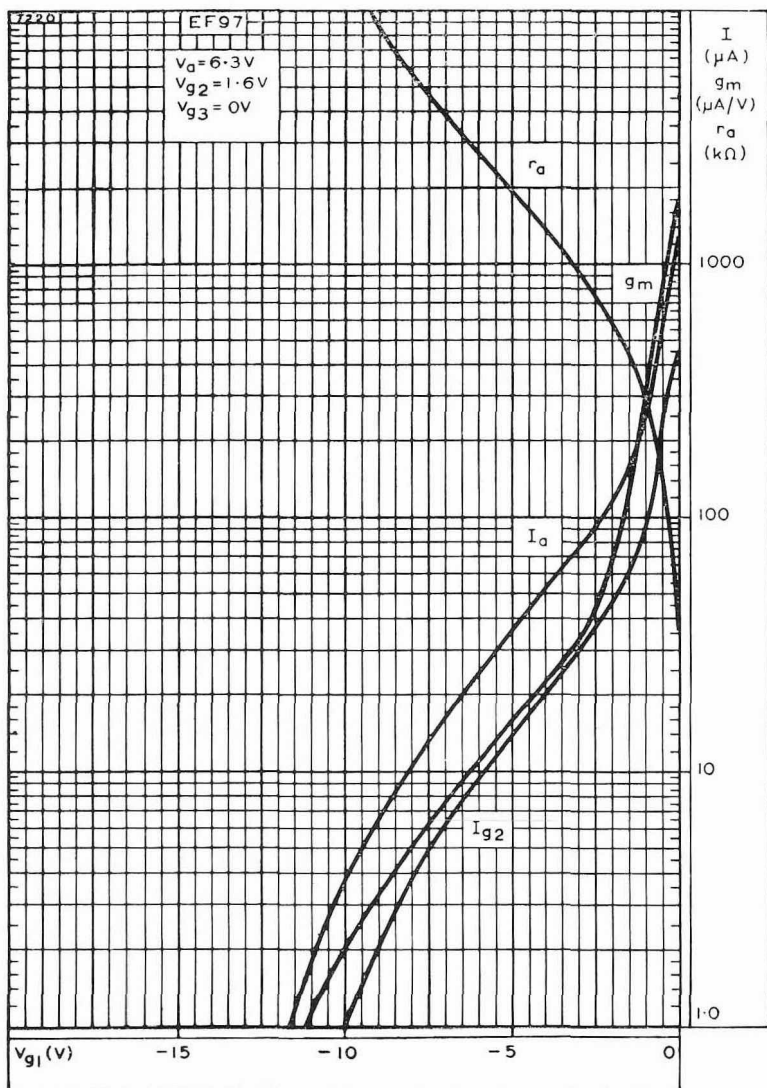
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH  
CONTROL-GRID VOLTAGE AS PARAMETER  $V_{g2} = 1.6V$



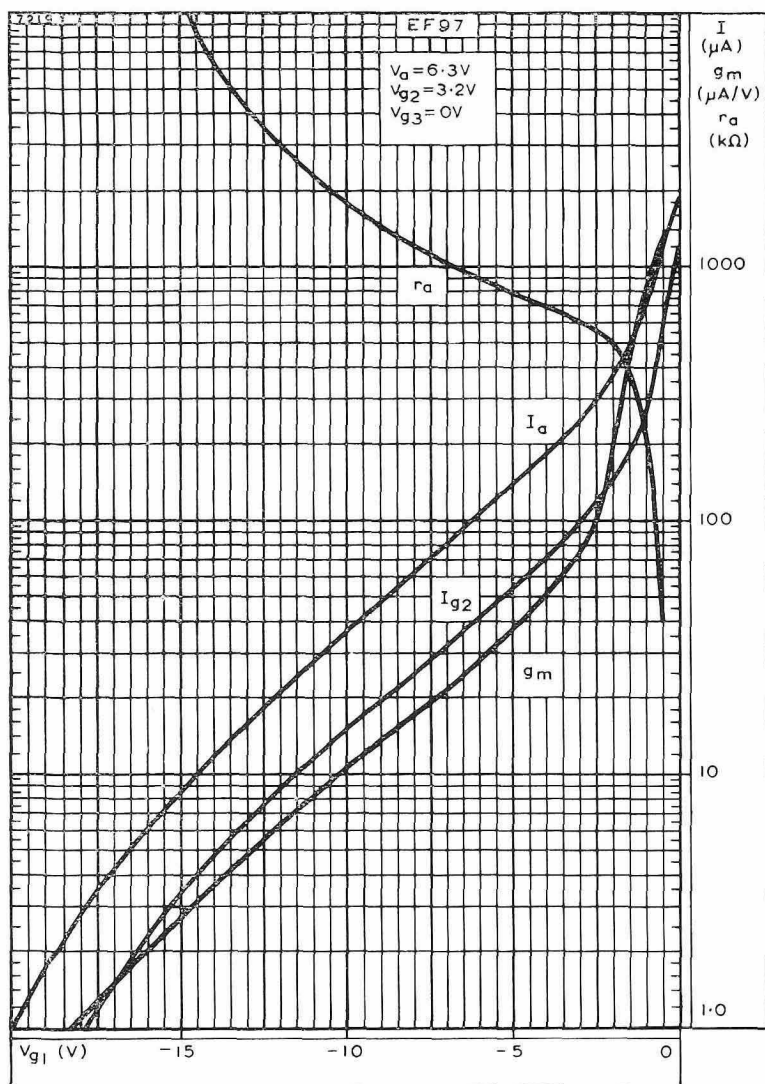
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 3.2V$



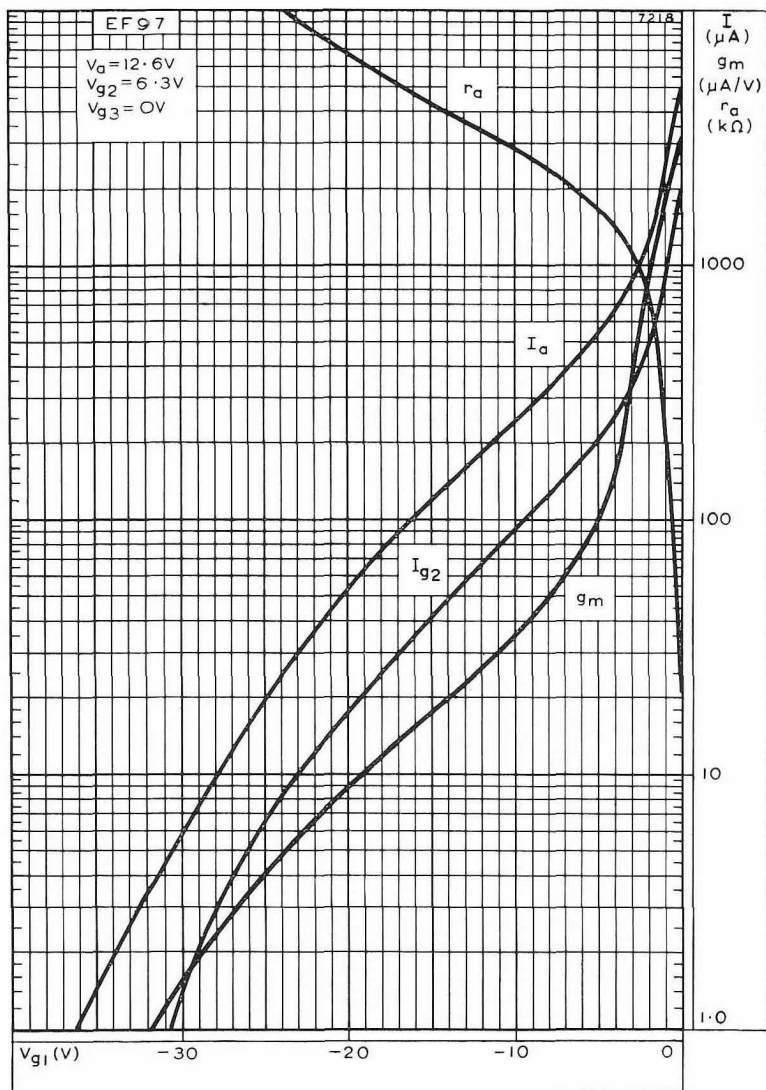
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 6.3V$



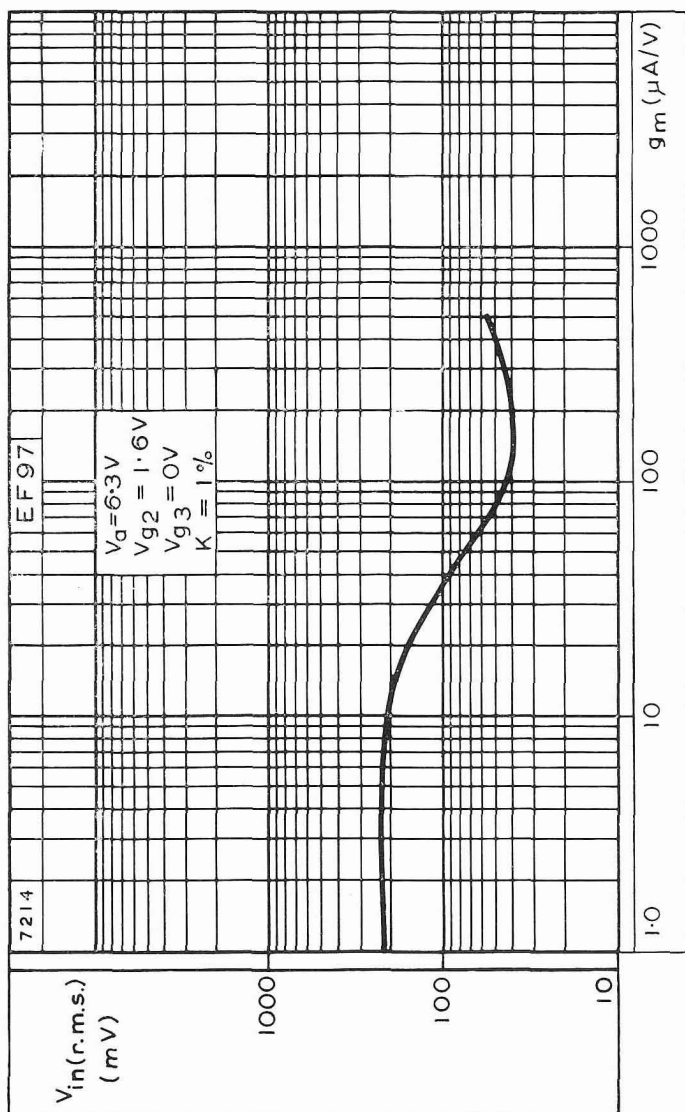
ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE AND ANODE IMPEDANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE.  
 $V_a = 6.3V, V_{g2} = 1.6V$

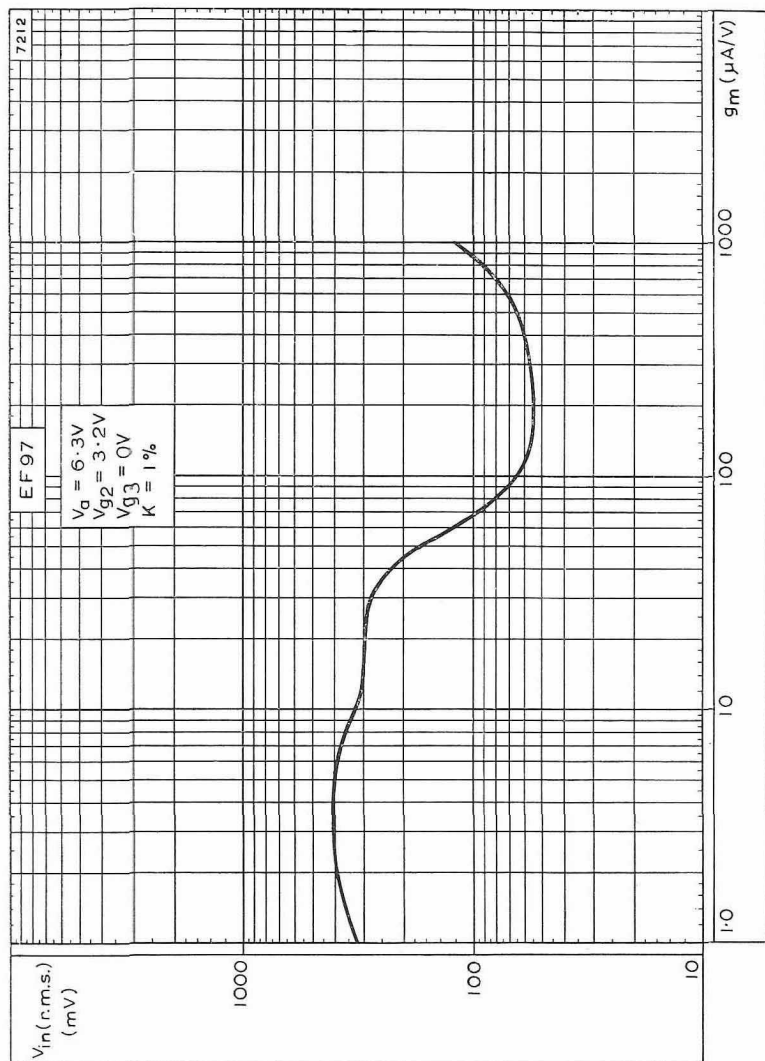


ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE AND ANODE IMPEDANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE.  
 $V_a = 6.3V$ ,  $V_{g2} = 3.2V$

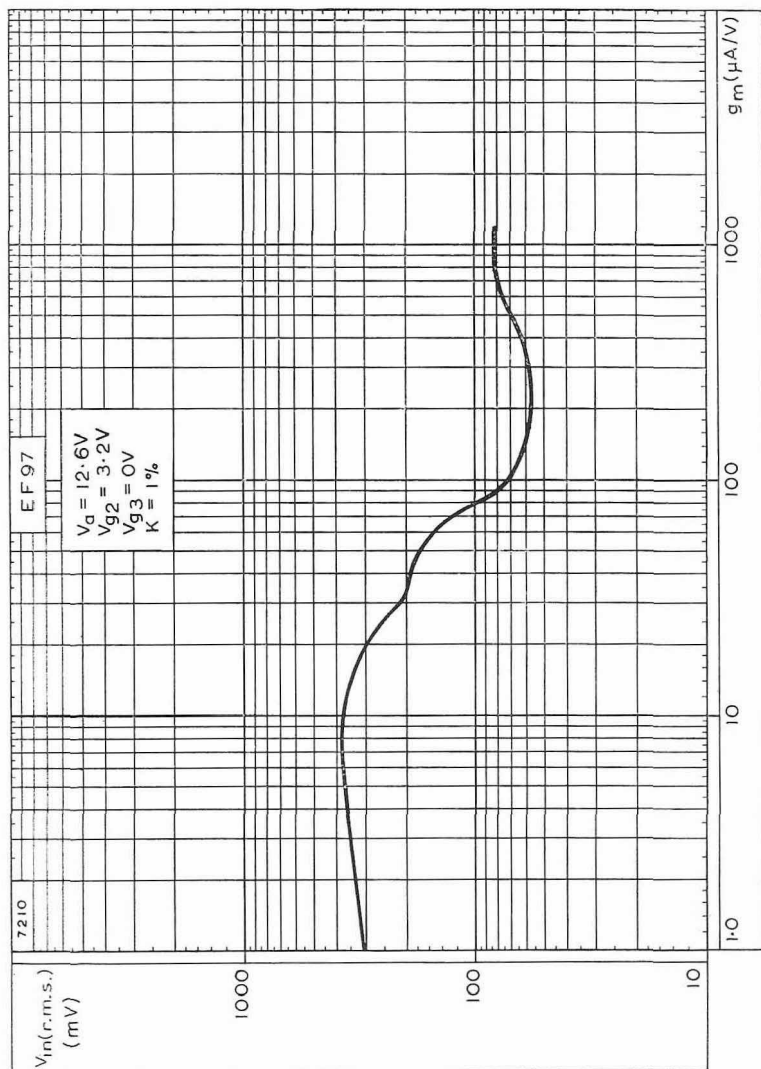


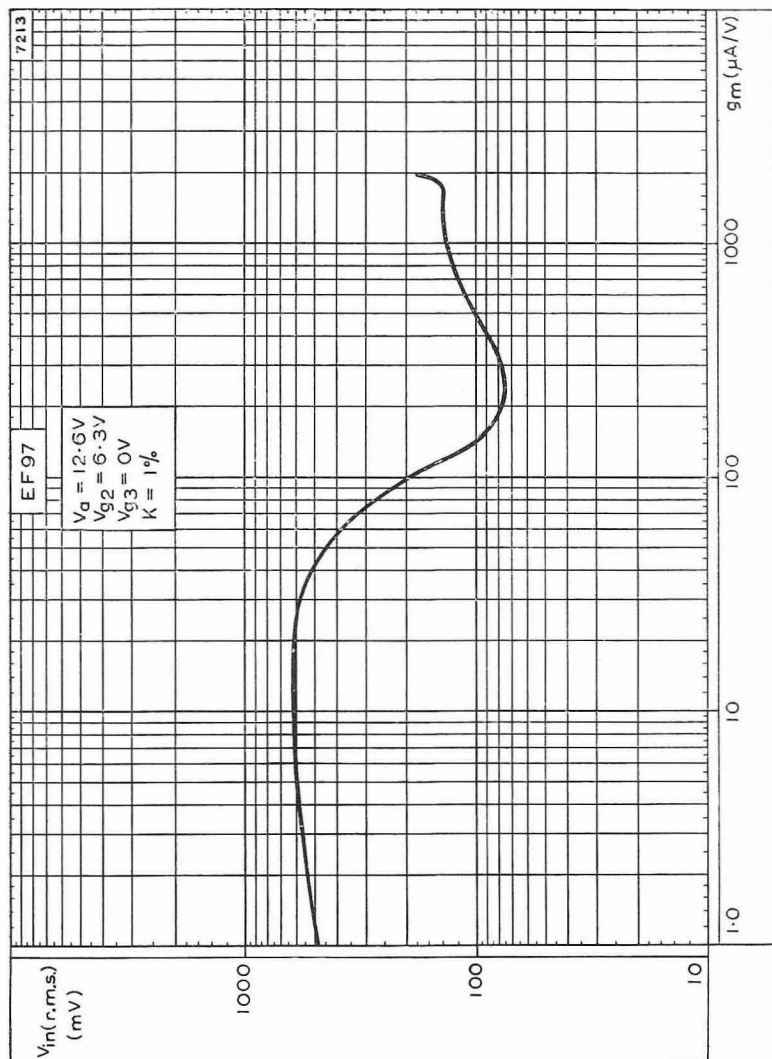
ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE AND ANODE IMPEDANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE.  
 $V_a = 12.6V$ ,  $V_{g2} = 6.3V$

CROSS-MODULATION CURVE.  $V_a = 6.3V$ ,  $V_{g2} = 1.6V$

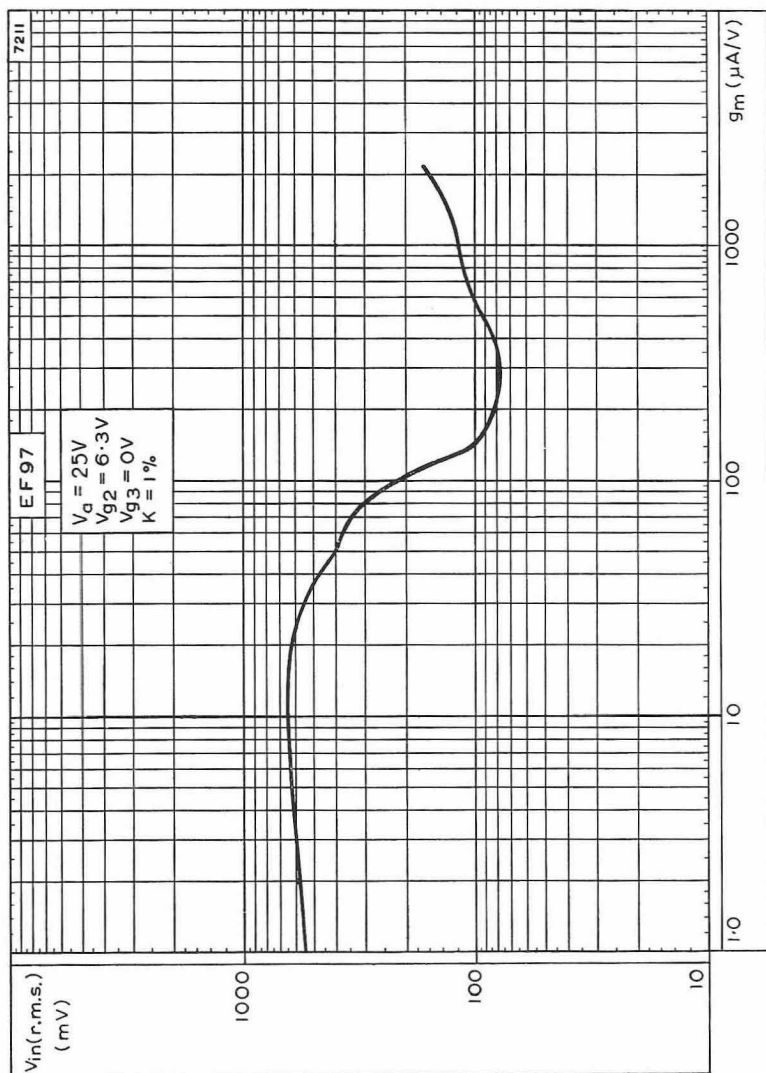


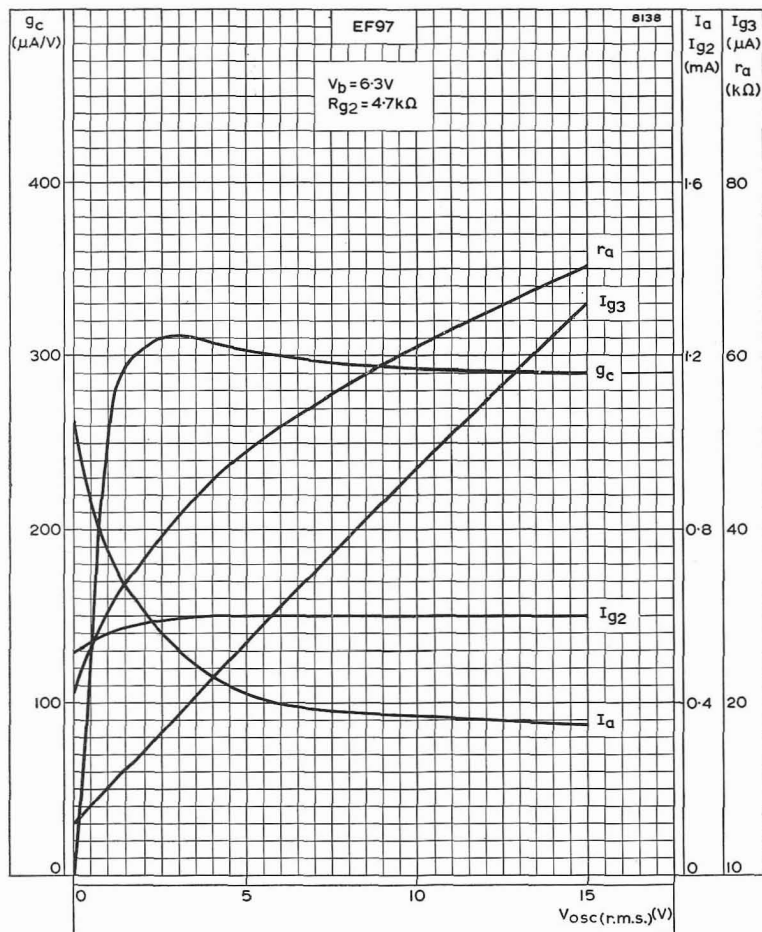
CROSS-MODULATION CURVE.  $V_a = 6.3V$ ,  $V_{g2} = 3.2V$

CROSS-MODULATION CURVE.  $V_a = 12.6V$ ,  $V_{g2} = 3.2V$



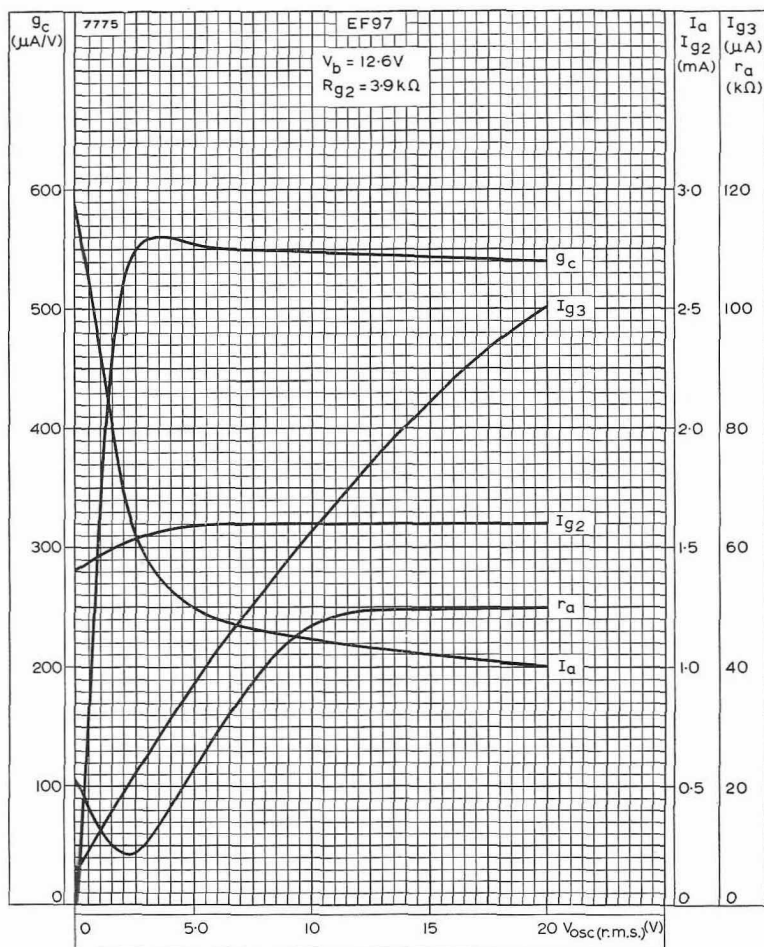
CROSS-MODULATION CURVE.  $V_a = 12.6V$ ,  $V_{g2} = 6.3V$

CROSS-MODULATION CURVE.  $V_a = 25V$ ,  $V_{g2} = 6.3V$

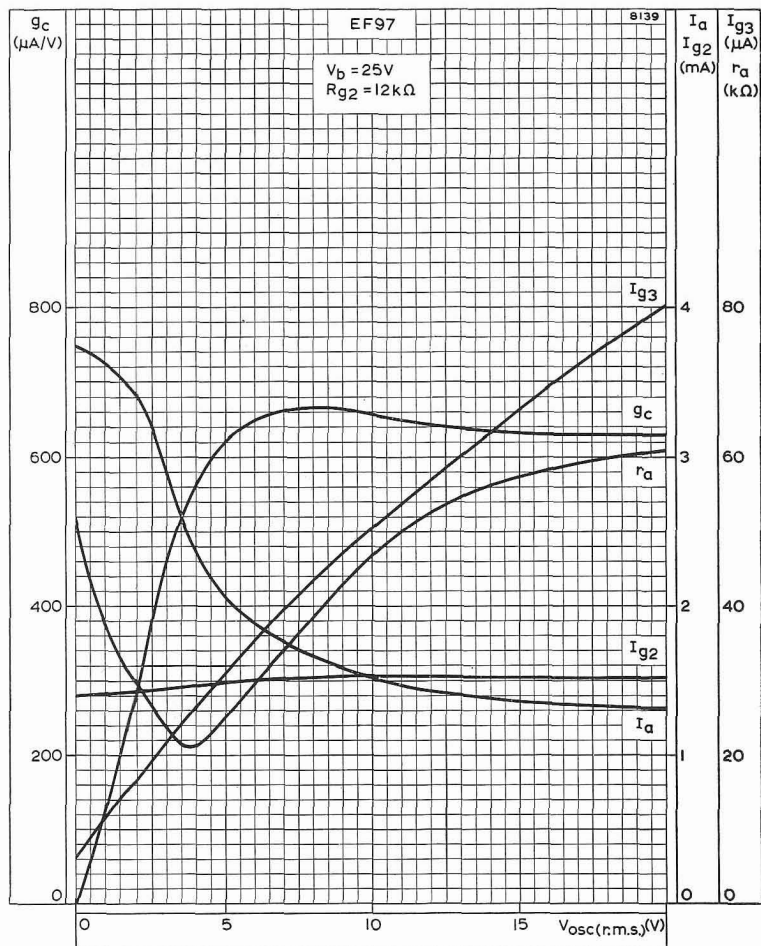


PERFORMANCE CURVES AS R.F. MIXER.

$V_b = 6.3V$ ,  $R_{g2} = 4.7k\Omega$



PERFORMANCE CURVES AS R.F. MIXER.  
 $V_b = 12.6V$ ,  $R_{g2} = 3.9k\Omega$



PERFORMANCE CURVES AS R.F. MIXER.

$V_b = 25V$ ,  $R_{g2} = 12k\Omega$