

## TETRODE

Application: R.F. amplifier, suitable for  
single side-band applications.

Power output: 200W.

Frequency: 30Mc/s at full ratings.

Construction: Glass, natural cooling.

# QV08-100

This data should be read in conjunction with GENERAL OPERATIONAL  
RECOMMENDATIONS—TRANSMITTING VALVES which precede this  
section of the handbook.

## CATHODE

Indirectly heated

|       |     |   |
|-------|-----|---|
| $V_h$ | 6.3 | V |
| $I_h$ | 3.9 | A |

## MOUNTING POSITION

Vertical, or horizontal with plane of anode vertical

## CAPACITANCES

|            |       |     |
|------------|-------|-----|
| $C_{a-g1}$ | < 900 | mpF |
| $C_{g1-k}$ | 30    | pF  |
| $C_{a-k}$  | 12.7  | pF  |

## CHARACTERISTICS (measured at $V_a = 750V$ , $V_{g2} = 250V$ , $I_a = 100mA$ )

|               |     |      |
|---------------|-----|------|
| $g_m$         | 9.0 | mA/V |
| $\mu_{g1-r2}$ | 5.7 |      |

## COOLING

Natural cooling

|                        |     |    |
|------------------------|-----|----|
| $T_{bulb}$ max.        | 300 | °C |
| $T_{anode\ seal}$ max. | 220 | °C |
| $T_{pins}$ max.        | 180 | °C |

## WEIGHT

|                 |       |    |
|-----------------|-------|----|
| Valve only      | { 8   | oz |
|                 | { 220 | g  |
| Shipping weight | { 15  | oz |
|                 | { 400 | g  |

## ACCESSORIES

|             |          |
|-------------|----------|
| Base socket | 40211/01 |
| Anode cap   | 40619    |

### CLASS 'C' TELEGRAPHY

#### Limiting values (absolute ratings)

|                  |     |            |
|------------------|-----|------------|
| $f$ max.         | 30  | Mc/s       |
| $V_a$ max.       | 825 | V          |
| $I_k$ max.       | 450 | mA         |
| $i_{k(pk)}$ max. | 2.1 | A          |
| $V_{g2}$ max.    | 300 | V          |
| $-V_{g1}$ max.   | 150 | V          |
| $I_{g1}$ max.    | 30  | mA         |
| $p_a$ max.       | 100 | W          |
| $p_{g2}$ max.    | 12  | W          |
| $R_{g1-k}$ max.  | 25  | k $\Omega$ |
| $V_{h-k}$ max.   | 125 | V          |

#### Operating conditions

|                                     |           |      |
|-------------------------------------|-----------|------|
| $f$                                 | $\leq 30$ | Mc/s |
| $V_a$                               | 750       | V    |
| $I_a$                               | 385       | mA   |
| $V_{g2}$                            | 250       | V    |
| $I_{g2}$                            | 20        | mA   |
| $V_{g1}$                            | -90       | V    |
| $I_{g1}$                            | 7.0       | mA   |
| $p_a$                               | 85        | W    |
| $v_{in(pk)}$                        | 120       | V    |
| $P_{load(driver)}$                  | 2.5       | W    |
| $\eta_a$                            | 70        | %    |
| $P_{out}$                           | 200       | W    |
| $P_{load} (\eta_{transfer} = 85\%)$ | 170       | W    |

## CLASS 'C' ANODE AND SCREEN GRID MODULATION

## Limiting values (absolute ratings)

Carrier condition for a modulation factor of 1

|                  |     |            |
|------------------|-----|------------|
| $f$ max.         | 30  | Mc/s       |
| $V_a$ max.       | 650 | V          |
| $I_k$ max.       | 380 | mA         |
| $i_{k(pk)}$ max. | 1.8 | A          |
| $V_{g2}$ max.    | 300 | V          |
| $-V_{g1}$ max.   | 150 | V          |
| $I_{g1}$ max.    | 30  | mA         |
| $p_a$ max.       | 67  | W          |
| $p_{g2}$ max.    | 10  | W          |
| $R_{g1-k}$ max.  | 25  | k $\Omega$ |
| $V_{h-k}$ max.   | 125 | V          |

## Operating conditions

|                                     |           |      |
|-------------------------------------|-----------|------|
| $f$                                 | $\leq 30$ | Mc/s |
| $V_a$                               | 600       | V    |
| $I_a$                               | 300       | mA   |
| $V_{g2}$                            | 250       | V    |
| $I_{g2}$                            | 20        | mA   |
| $V_{g1}$                            | -100      | V    |
| $I_{g1}$                            | 4.0       | mA   |
| $p_a$                               | 50        | W    |
| $p_{g2}$                            | 5.0       | W    |
| $v_{in(pk)}$                        | 110       | V    |
| $P_{load(driver)}$                  | 3.0       | W    |
| $\eta_a$                            | 72        | %    |
| $P_{out}$                           | 130       | W    |
| $P_{load} (\eta_{transfer} = 85\%)$ | 110       | W    |

For 100% modulation

|              |     |   |
|--------------|-----|---|
| $P_{mod.}$   | 92  | W |
| $V_{g2(pk)}$ | 220 | V |

### CLASS 'B' R.F. AMPLIFIER (S.S.B.)

#### Limiting values (absolute ratings)

|                 |     |            |
|-----------------|-----|------------|
| $f$ max.        | 30  | Mc/s       |
| $V_a$ max.      | 825 | V          |
| $I_k$ max.      | 430 | mA         |
| $V_{g2}$ max.   | 350 | V          |
| $p_a$ max.      | 100 | W          |
| $p_{g2}$ max.   | 12  | W          |
| $R_{g1-k}$ max. | 25  | k $\Omega$ |
| $V_{h-k}$ max.  | 125 | V          |

#### Operating conditions (for two tone modulation)

The r.f. voltage is modulated by two sinusoidal a.f. signals of equal strength but different frequency.

|                              |           |      |
|------------------------------|-----------|------|
| $f$                          | $\leq 30$ | Mc/s |
| $V_a$                        | 750       | V    |
| $V_{g2}$                     | 310       | V    |
| * $V_{g1}$                   | -45       | V    |
| $I_{a(o)}$                   | 130       | mA   |
| $I_a$ (max. sig.)            | 270       | mA   |
| $I_{g2(o)}$                  | $< 5.0$   | mA   |
| $I_{g2}$ (max. sig.) approx. | 26        | mA   |
| $I_{g1}$                     | 0         | mA   |
| † $V_{in(pk)}$               | 45        | V    |
| $p_a$ (max. sig.)            | 90        | W    |
| $p_{g2}$ (max. sig.)         | 8.0       | W    |
| $\eta_a$                     | 55        | %    |
| $P_{out}$ (two tone)         | 110       | W    |
| P.E.P.                       | 220       | W    |

\*To be adjusted for  $I_{a(o)} = 130\text{mA}$

†To be adjusted for  $I_{g1} = 0\text{mA}$

## CLASS 'B' A.F. AMPLIFIER AND MODULATOR

## Limiting values (absolute ratings)

|                  |     |            |
|------------------|-----|------------|
| $V_a$ max.       | 825 | V          |
| $I_k$ max.       | 430 | mA         |
| $i_{k(pk)}$ max. | 600 | mA         |
| $V_{g2}$ max.    | 300 | V          |
| $-V_{g1}$ max.   | 150 | V          |
| $I_{g1}$ max.    | 30  | mA         |
| $p_a$ max.       | 100 | W          |
| $p_{g2}$ max.    | 12  | W          |
| $R_{g1-k}$ max.  | 25  | k $\Omega$ |
| $V_{h-k}$ max.   | 125 | V          |

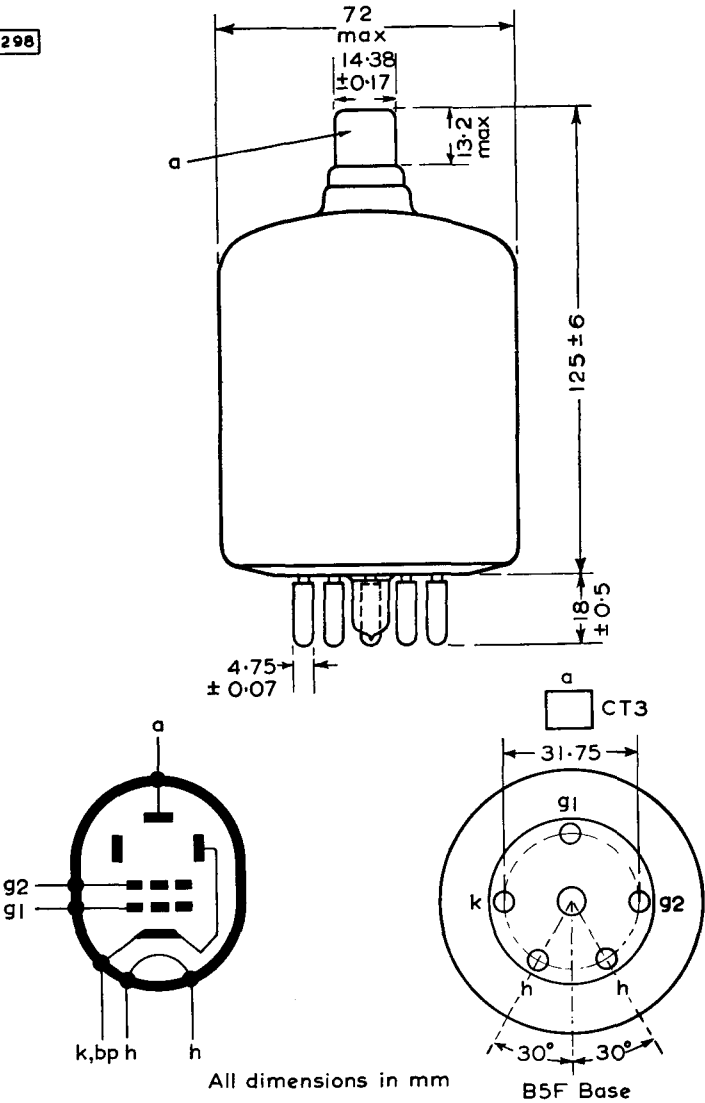
## Operating conditions (two valves)

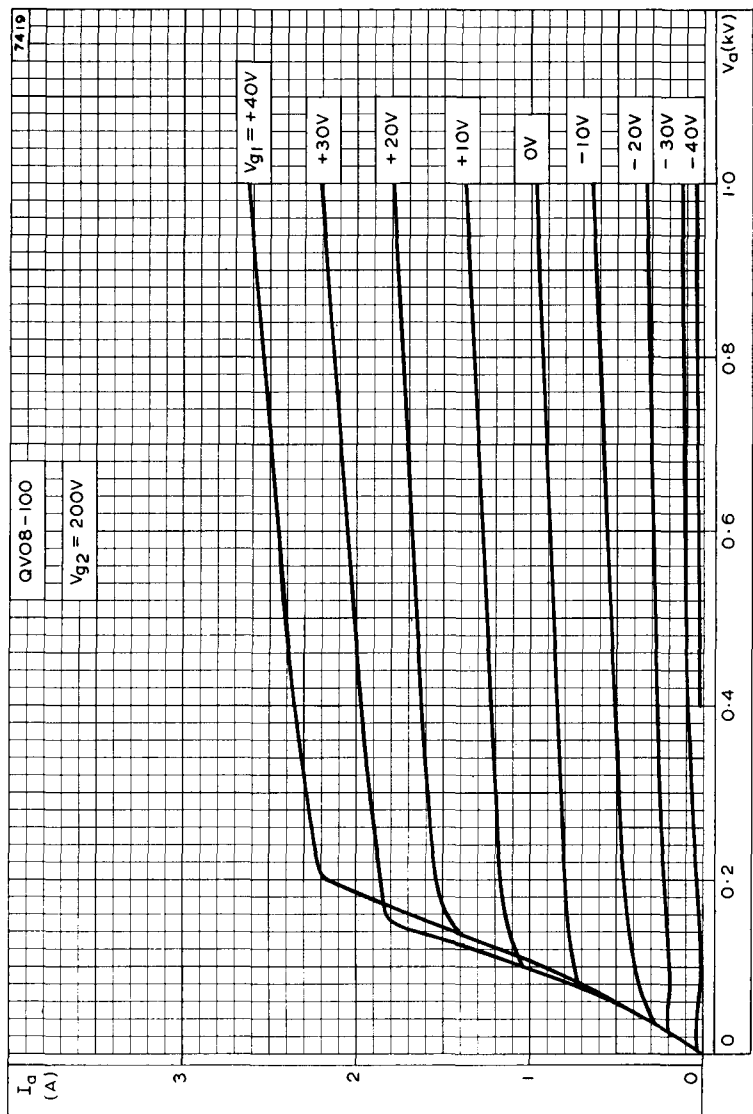
|                       |                |                |            |
|-----------------------|----------------|----------------|------------|
| $V_a$                 | 750            | 600            | V          |
| $V_{g2}$              | 250            | 250            | V          |
| $V_{g1}$              | -45            | -45            | V          |
| $I_{a(o)}$            | $2 \times 45$  | $2 \times 25$  | mA         |
| $I_a$ (max. sig.)     | $2 \times 280$ | $2 \times 235$ | mA         |
| $I_{g2(o)}$           | 0              | $2 \times 500$ | $\mu$ A    |
| $I_{g2}$ (max. sig.)  | $2 \times 40$  | $2 \times 24$  | mA         |
| $I_{g1}$ (max. sig.)  | $2 \times 1.0$ | $2 \times 0.5$ | mA         |
| $V_{in(g1-g1)r.m.s.}$ | 78             | 74             | V          |
| $p_a$                 | $2 \times 60$  | $2 \times 40$  | W          |
| $R_{a-a}$             | 3.6            | 3.5            | k $\Omega$ |
| $\eta_a$              | 71.5           | 71.5           | %          |
| $P_{out}$             | 300            | 200            | W          |
| $D_{tot}$             | 6.5            | 5.0            | %          |

# QV08-100

TETRODE

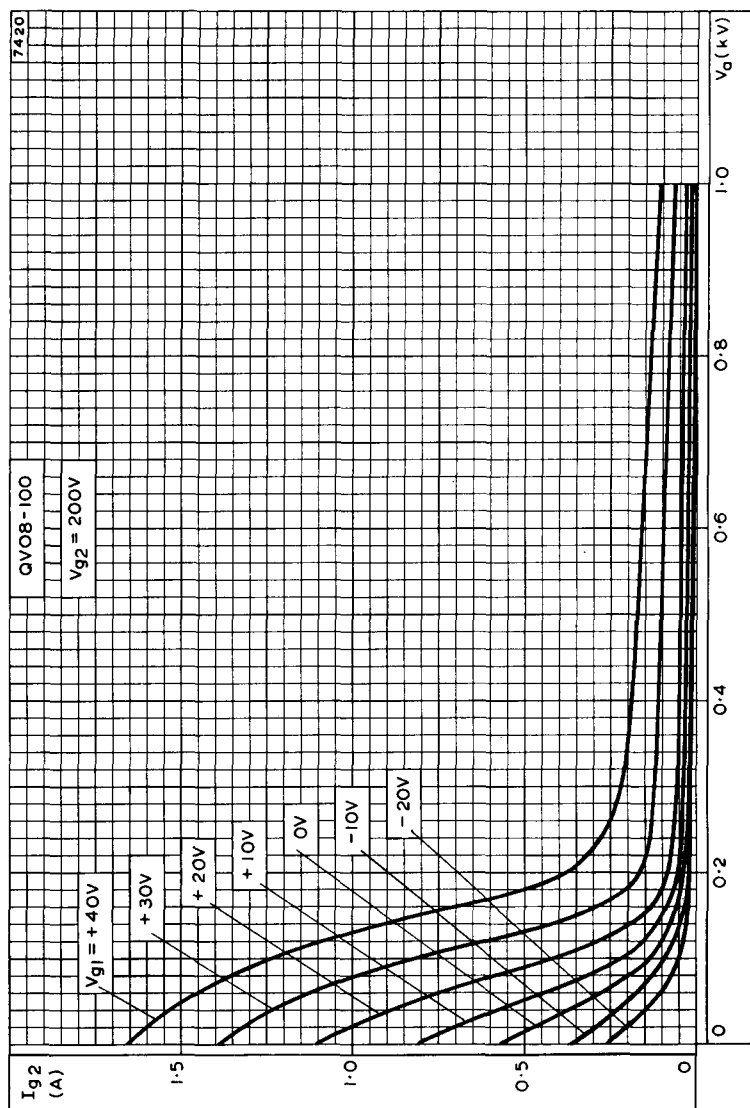
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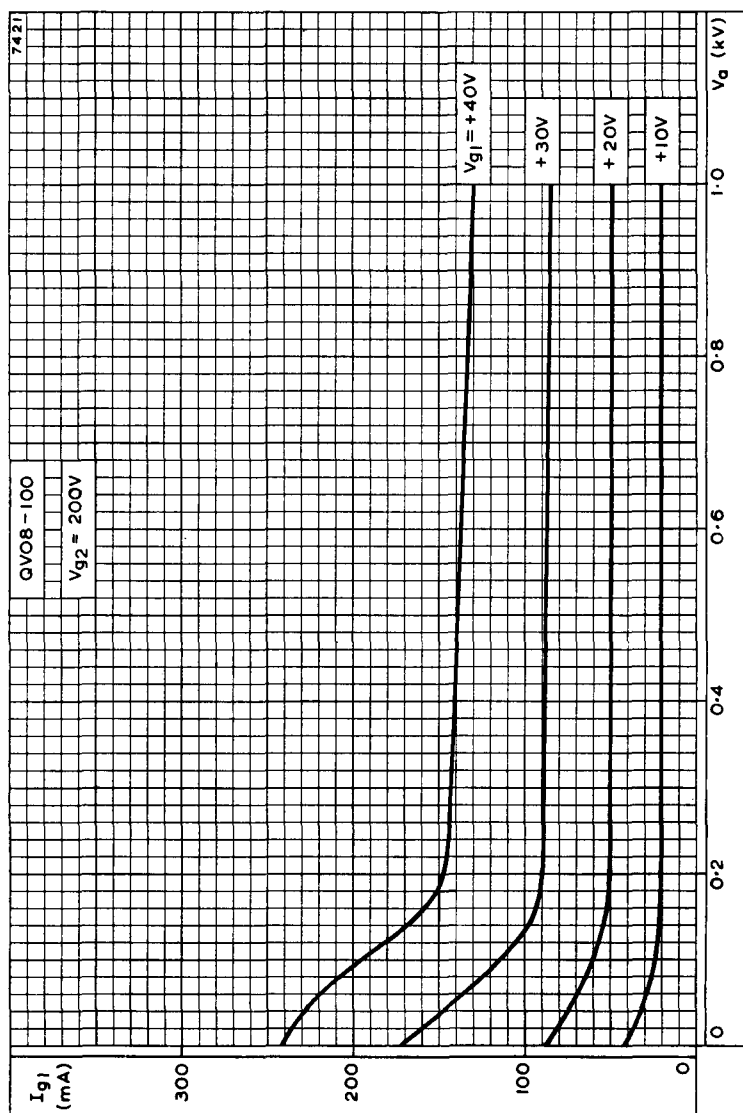


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 200V$

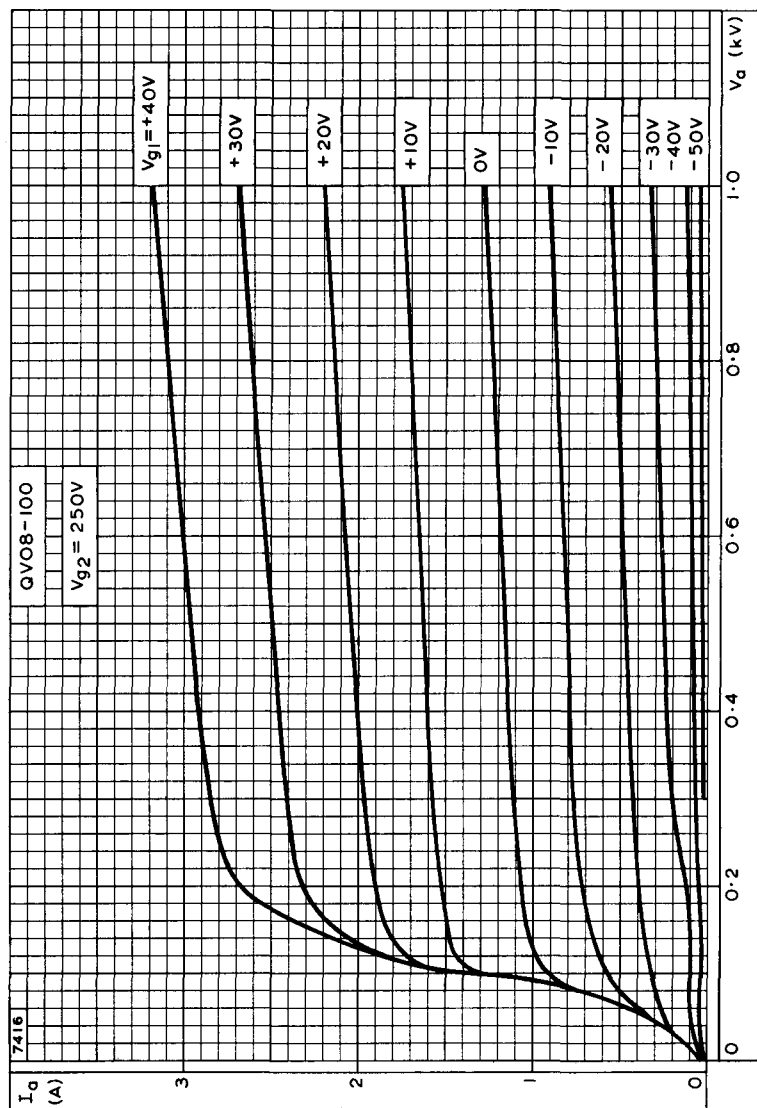




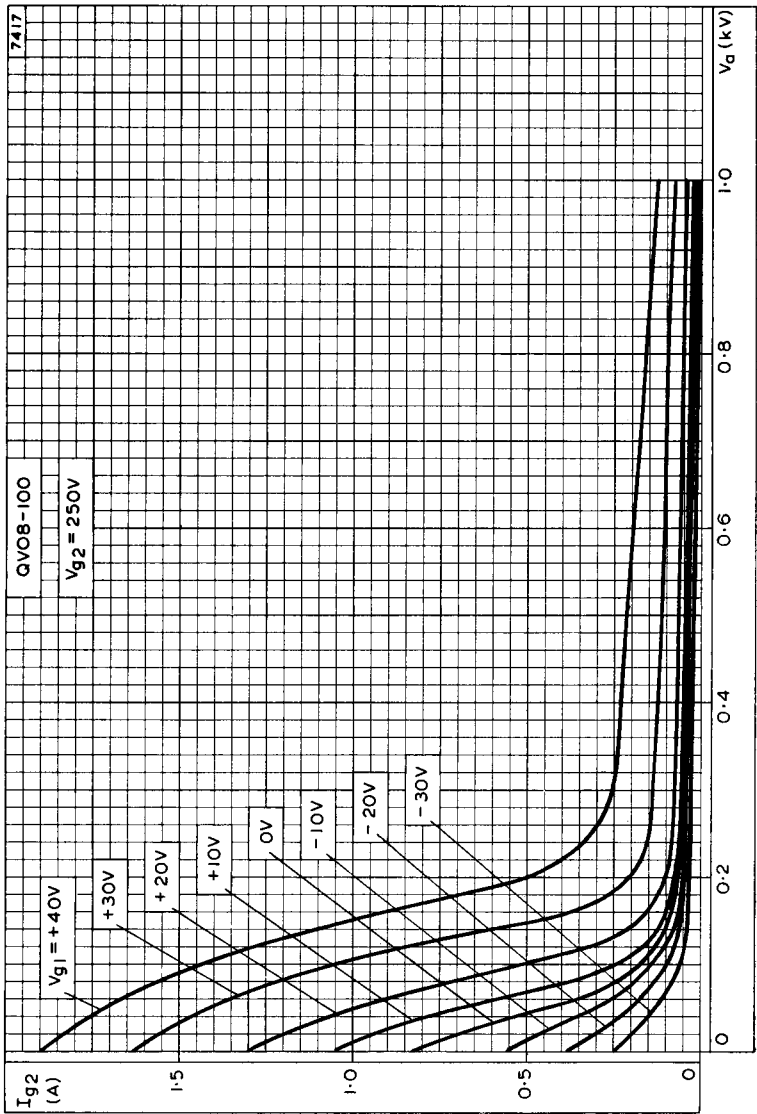
SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 200V$



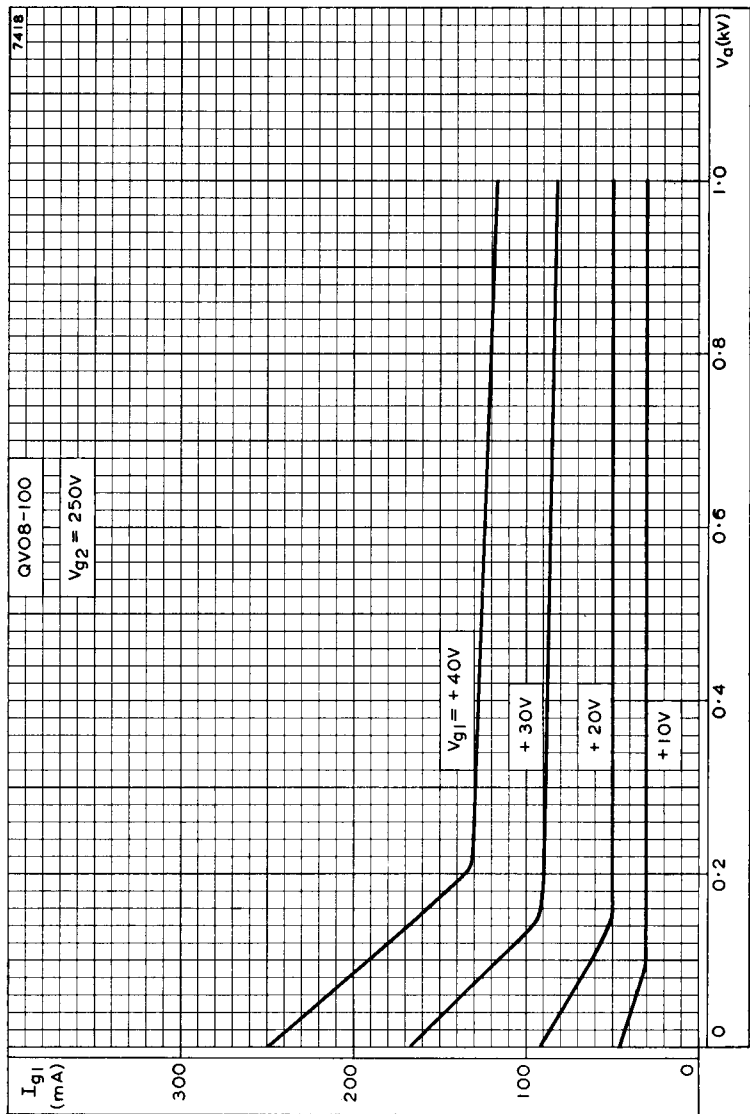
CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE  
WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 200V$



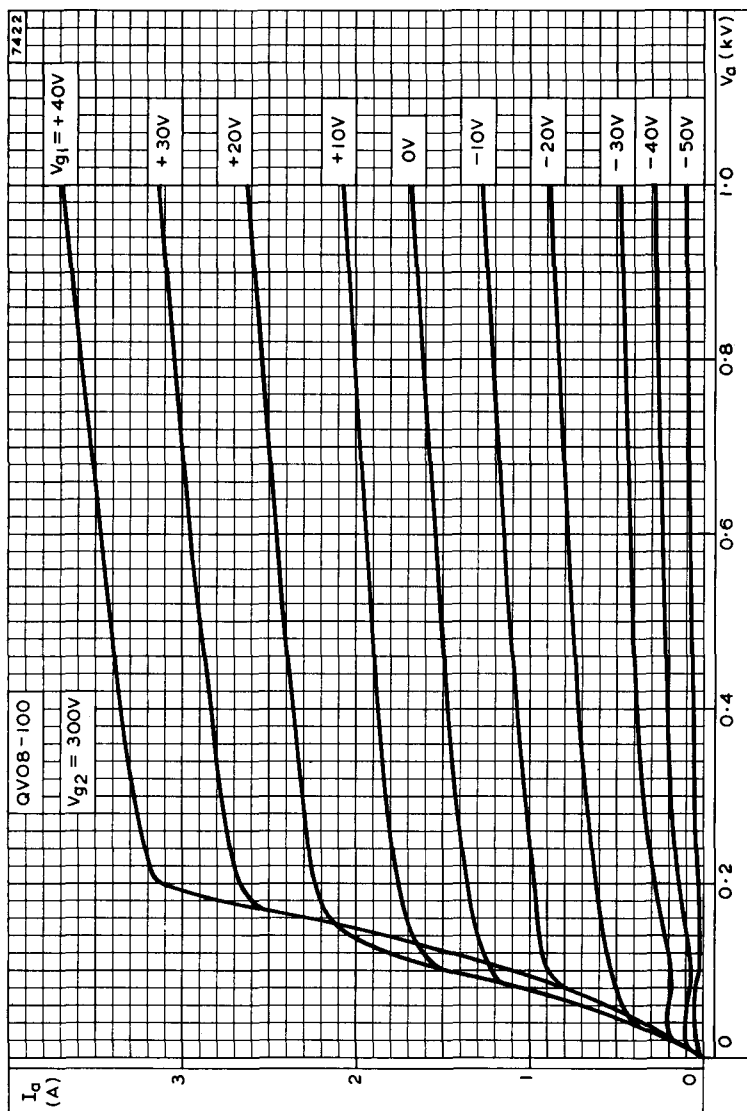
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 250V$



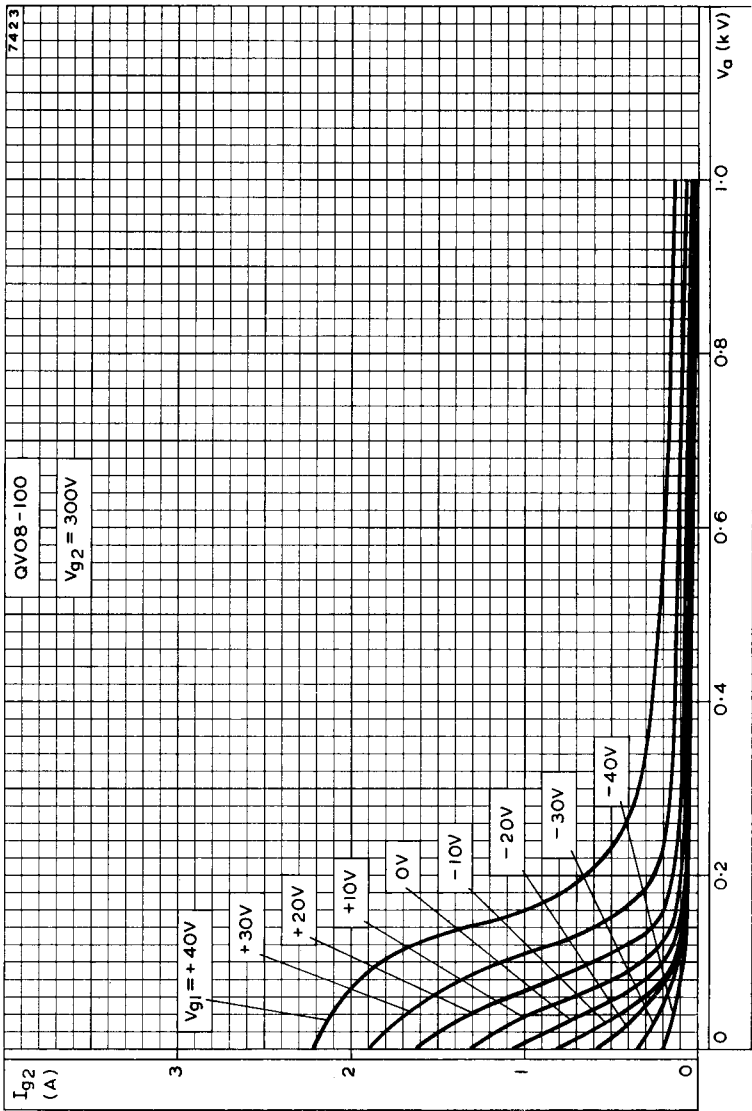
SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 250V$



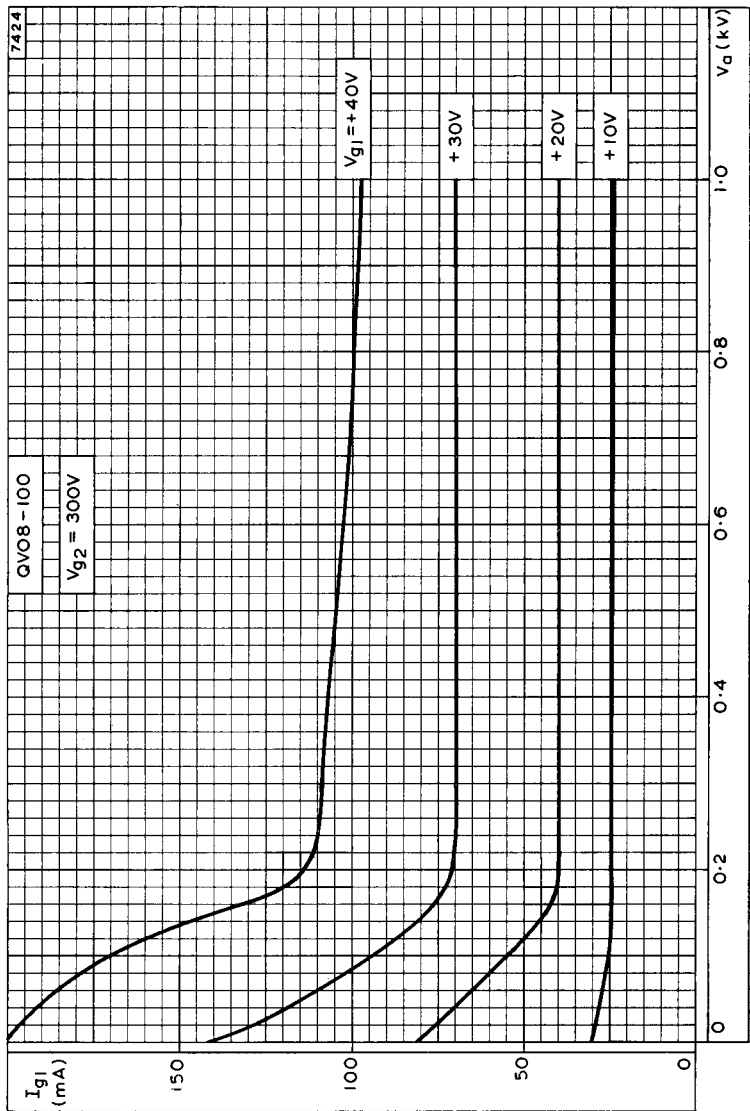
CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 250V$



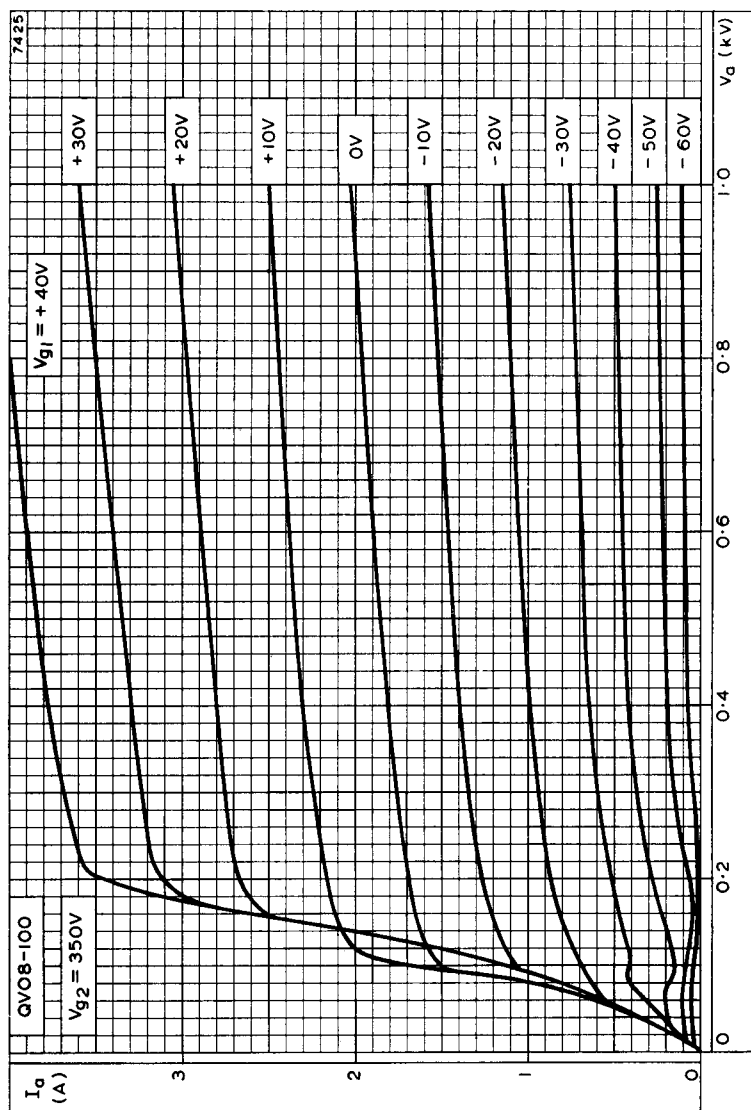
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH  
CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 300V$



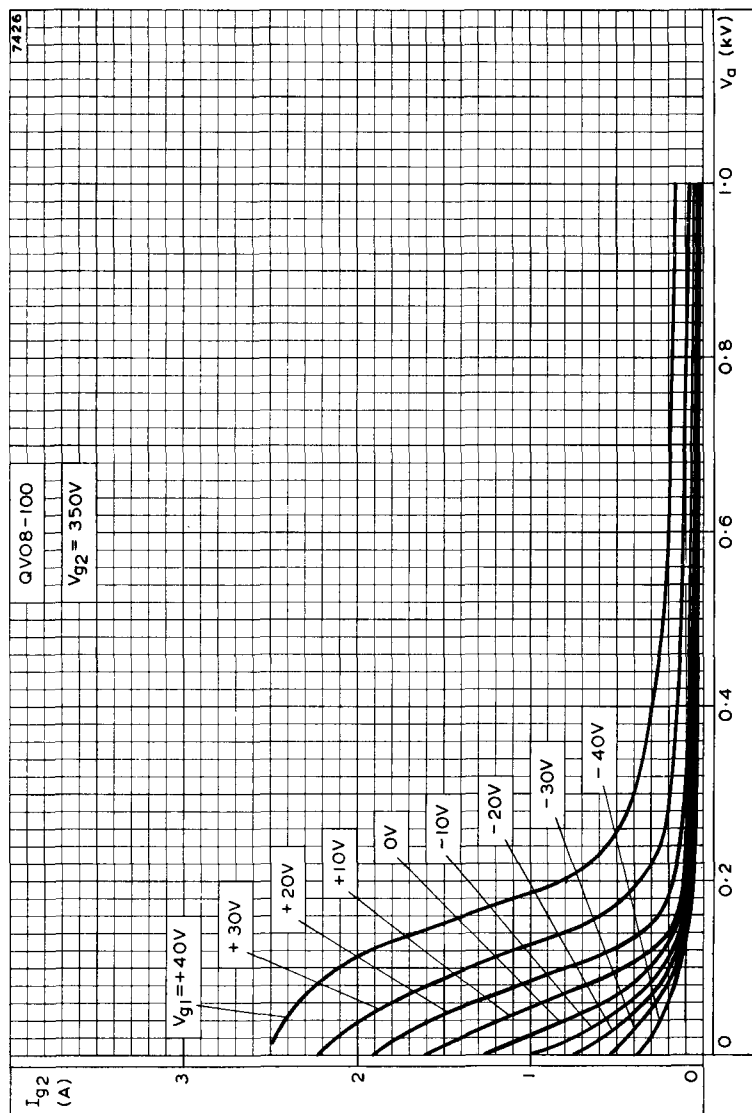
SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 300V$



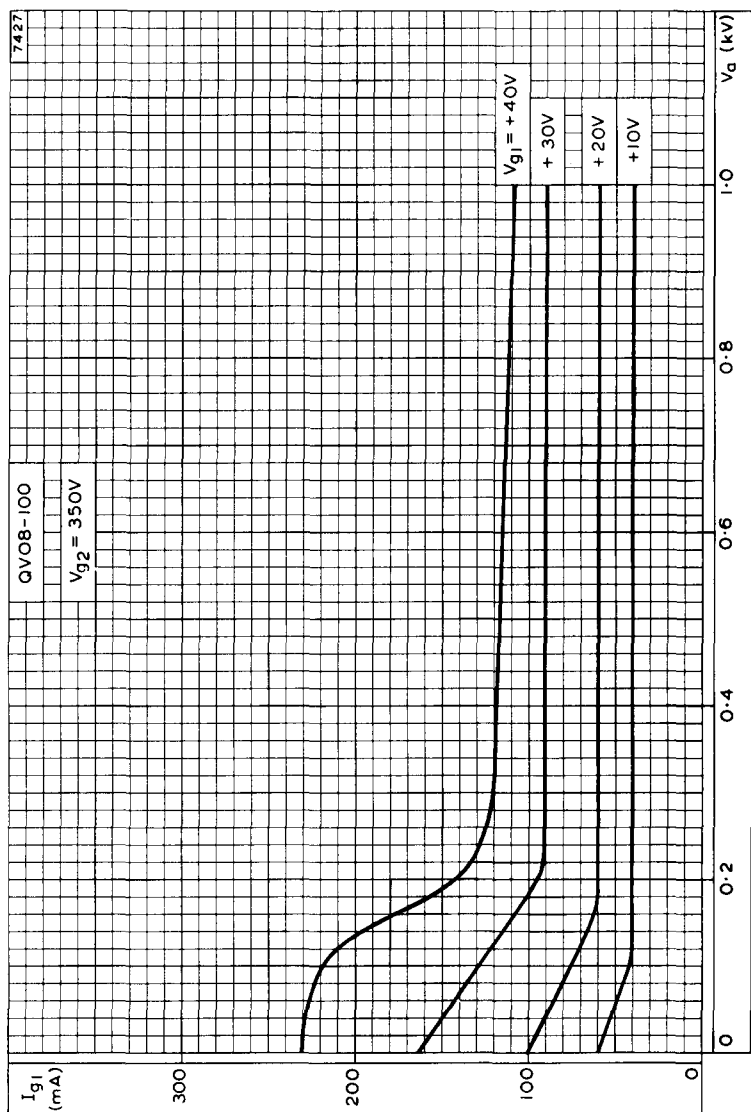
CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 300V$



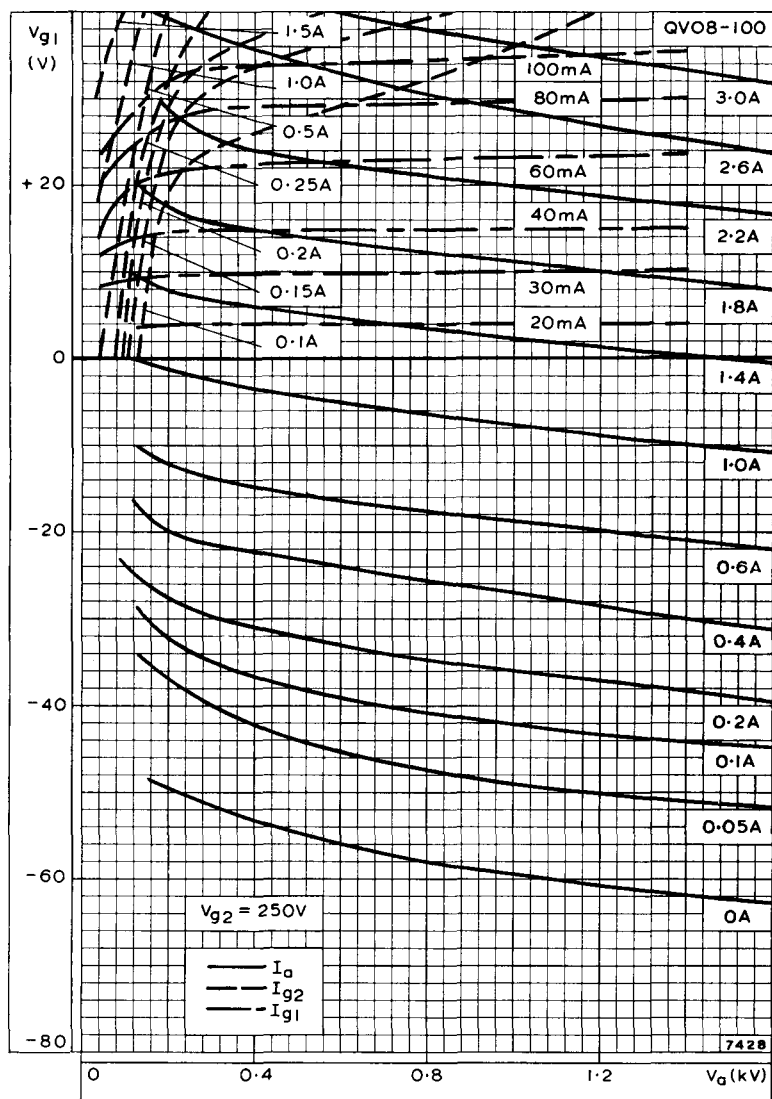
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 350V$



SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 350V$



CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER.  $V_{g2} = 350V$



CONSTANT CURRENT CURVES