

# R.F. POWER DOUBLE TETRODE

# QQV03-10

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225 Mc/s.

## CATHODE

Indirectly heated

|           | Series | Parallel |       |
|-----------|--------|----------|-------|
| $*V_h$    | 12.6   | 6.3      | V     |
| $I_h$     | 0.42   | 0.83     | A     |
| $t_{h-k}$ |        | 22       | sec ← |

\*Emergency operation of the heater down to 5.3V (10.6V) and up to 7.8V (15.6V) is permissible.

## MOUNTING POSITION

Any

When the valve is mounted in a horizontal position it is essential that pins 2 and 7 are placed in a vertical plane.

For reasons of cooling and the performance of the valve at v.h.f. the use of a closed screening can is not permissible.

## CAPACITANCES

|                                       |      |    |
|---------------------------------------|------|----|
| $*C_{a-g1}$ (each section)            | <0.1 | pF |
| $C_{g1-all}$ (each section)           | 6.2  | pF |
| $C_{a-all}$ (each section)            | 2.6  | pF |
| $C_{out}$ (two sections in push-pull) | 1.5  | pF |
| $C_{in}$ (two sections in push-pull)  | 5.0  | pF |

\*Internally neutralised for push-pull operation.

## CHARACTERISTICS (each section) measured at $I_a=30mA$

|               |     |      |
|---------------|-----|------|
| $g_m$         | 3.3 | mA/V |
| $\mu_{g1-a2}$ | 7.5 |      |

## COOLING

Radiation and convection

|                 |     |      |
|-----------------|-----|------|
| $T_{bulb}$ max. | 225 | °C   |
| $T_{pin}$ max.  | 120 | °C ← |

# QQV03-10

## R.F. POWER DOUBLE TETRODE

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225 Mc/s.

### OPERATION AS SINGLE VALVE R.F. POWER AMPLIFIER OR OSCILLATOR (CLASS "C" TELEGRAPHY OR F.M. TELEPHONY)

#### Limiting Values

|                  |                |    |
|------------------|----------------|----|
| $V_a$ max.       | 300            | V  |
| $p_a$ max.       | $2 \times 5.0$ | W  |
| $V_{g2}$ max.    | 200            | V  |
| $p_{g2}$ max.    | $2 \times 1.0$ | W  |
| $I_{g1}$ max.    | $2 \times 3.0$ | mA |
| $p_{g1}$ max.    | 200            | mW |
| $I_k$ max.       | $2 \times 50$  | mA |
| $i_{k(pk)}$ max. | $2 \times 225$ | mA |
| $-V_{g1}$ max.   | 150            | V  |
| $V_{h-k}$ max.   | 100            | V  |

#### Typical Operating Conditions

|                     |                |                |                |                |      |
|---------------------|----------------|----------------|----------------|----------------|------|
| $f$                 | 100            | 175            | 175            | 200            | Mc/s |
| $V_a$               | 300            | 200            | 250            | 300            | V    |
| $*V_{g2}$           | 175            | 150            | 175            | 175            | V    |
| $*V_{g1}$           | -40            | -40            | -40            | -40            | V    |
| $I_a$               | $2 \times 38$  | $2 \times 35$  | $2 \times 35$  | $2 \times 38$  | mA   |
| $I_{g2}$            | $2 \times 2.5$ | $2 \times 1.5$ | $2 \times 1.5$ | $2 \times 1.5$ | mA   |
| $I_{g1}$            | $2 \times 2.0$ | $2 \times 1.8$ | $2 \times 1.5$ | $2 \times 1.5$ | mA   |
| $P_{load (driver)}$ | 250            | 500            | 400            | 500            | mW   |
| $v_{in(g1-g1)pk}$   | 110            | 115            | 105            | 110            | V    |
| $p_a$               | $2 \times 3.4$ | $2 \times 3.0$ | $2 \times 3.0$ | $2 \times 4.5$ | W    |
| $P_{out}$           | 16             | 8.5            | 11             | 14             | W    |
| $P_{load}$          | 14             | 7.0            | 8.5            | 10             | W    |

\*When  $V_{g2}$  and/or  $V_{g1}$  are obtained by means of resistors ( $R_{g2}$  and  $R_{g1}$ ) the anode input power and therefore the output power is likely to vary considerably from valve to valve. For optimum operating conditions it will be necessary therefore to make  $R_{g2}$  adjustable.

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225 Mc/s.

# OPERATION AS SINGLE VALVE R.F. AMPLIFIER (CLASS "C" ANODE AND SCREEN-GRID MODULATION)

**Limiting Values** (carrier condition for use with modulation factor of 1) ←

|                  |                |    |
|------------------|----------------|----|
| $V_a$ max.       | 250            | V  |
| $p_a$ max.       | $2 \times 3.3$ | W  |
| $V_{g2}$ max.    | 200            | V  |
| $p_{g2}$ max.    | $2 \times 650$ | mW |
| $p_{g1}$ max.    | $2 \times 200$ | mW |
| $I_k$ max.       | $2 \times 35$  | mA |
| $i_{k(pk)}$ max. | $2 \times 180$ | mA |
| $-V_{g1}$ max.   | 150            | V  |
| $I_{g1}$ max.    | $2 \times 3.0$ | mA |
| $V_{h-k}$ max.   | 100            | V  |

## Typical Operating Conditions

 ←

|                            |                |      |
|----------------------------|----------------|------|
| $f$                        | 175            | Mc/s |
| $V_a$                      | 200            | V    |
| $V_{g2}$                   | 175            | V    |
| $V_{g1}$                   | -60            | V    |
| $I_a$                      | $2 \times 34$  | mA   |
| $I_{g2}$                   | $2 \times 1.5$ | mA   |
| $I_{g1}$                   | $2 \times 1.2$ | mA   |
| $V_{ln(g1-g1)pk}$          | 150            | V    |
| $P_{load}$ (driver)        | 1.0            | W    |
| $p_a$                      | $2 \times 2.4$ | W    |
| $p_{out}$                  | 9.0            | W    |
| $P_{load}$                 | 7.0            | W    |
| <i>For 100% modulation</i> |                |      |
| $*V_{g2(pk)mod}$           | 125            | V    |
| $P_{mod}$                  | 6.8            | W    |

\*Conveniently obtained from potential divider consisting of a 12k $\Omega$  and 39k $\Omega$  resistors across the secondary of the modulation transformer.

# QQV03-10 R.F. POWER DOUBLE TETRODE

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225 Mc/s.

## OPERATION AS A FREQUENCY TREBLER

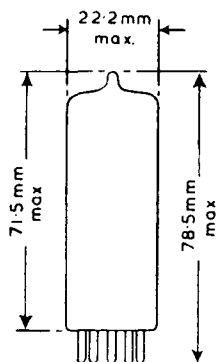
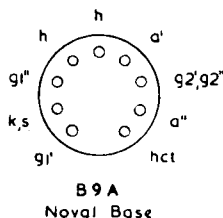
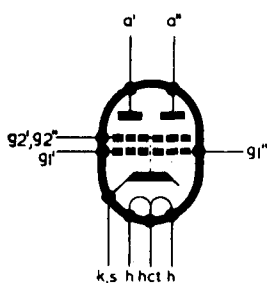
### Limiting Values

|                  |                |    |
|------------------|----------------|----|
| $V_a$ max.       | 300            | V  |
| $p_a$ max.       | $2 \times 5.0$ | W  |
| $V_{g2}$ max.    | 200            | V  |
| $p_{g2}$ max.    | $2 \times 1.0$ | W  |
| $-V_{g1}$ max.   | 150            | V  |
| $p_{g1}$ max.    | $2 \times 200$ | mW |
| $I_{g1}$ max.    | $2 \times 2.0$ | mA |
| $I_k$ max.       | $2 \times 35$  | mA |
| $i_{k(pk)}$ max. | $2 \times 225$ | mA |
| $V_{h-k}$ max.   | 100            | V  |

### Typical Operating Conditions

|                     |                |                |      |
|---------------------|----------------|----------------|------|
| $f_{out}$           | 175            | 175            | Mc/s |
| $V_a$               | 200            | 300            | V    |
| $V_{g2}$            | 150            | 150            | V    |
| $V_{g1}$            | -100           | -125           | V    |
| $I_a$               | $2 \times 15$  | $2 \times 24$  | mA   |
| $I_{g2}$            | $2 \times 0.5$ | $2 \times 1.3$ | mA   |
| $I_{g1}$            | $2 \times 0.5$ | $2 \times 1.3$ | mA   |
| $V_{in(g1-g1)pk}$   | 210            | 250            | V    |
| $P_{load (driver)}$ | 300            | 500            | mW   |
| $p_a$               | $2 \times 2.0$ | $2 \times 4.5$ | W    |
| $P_{out}$           | 2.0            | 5.5            | W    |
| $P_{load}$          | 1.5            | 3.5            | W    |

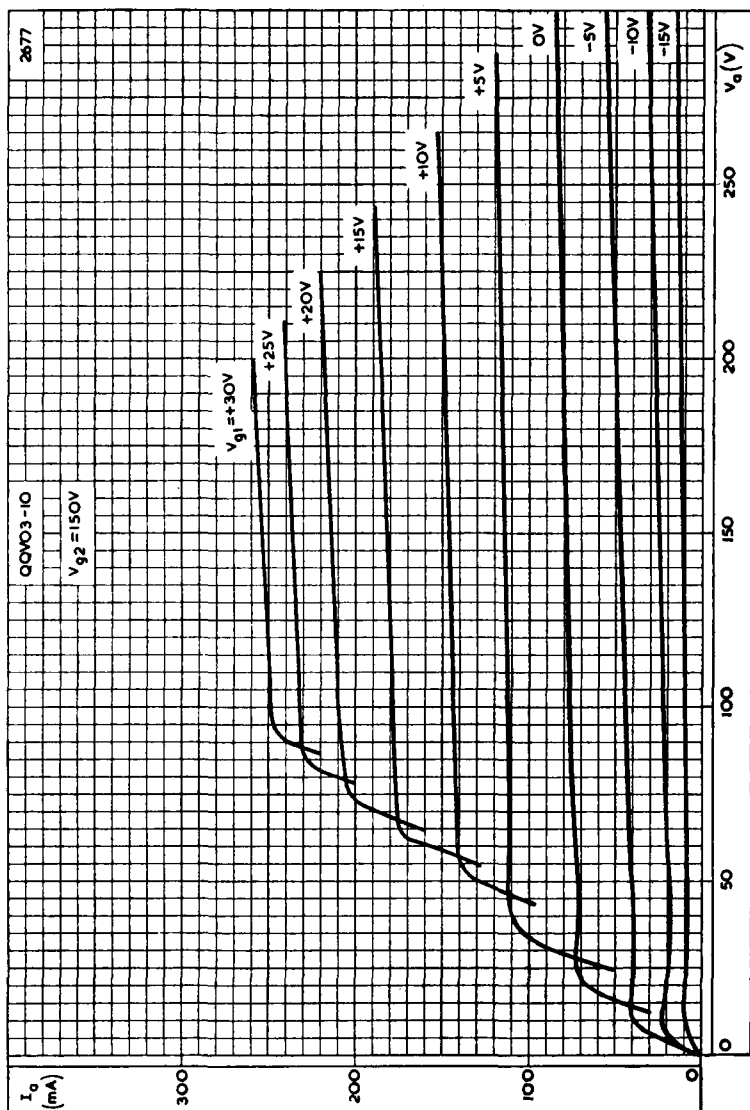
1738



# R.F. POWER DOUBLE TETRODE

# QQV03-10

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

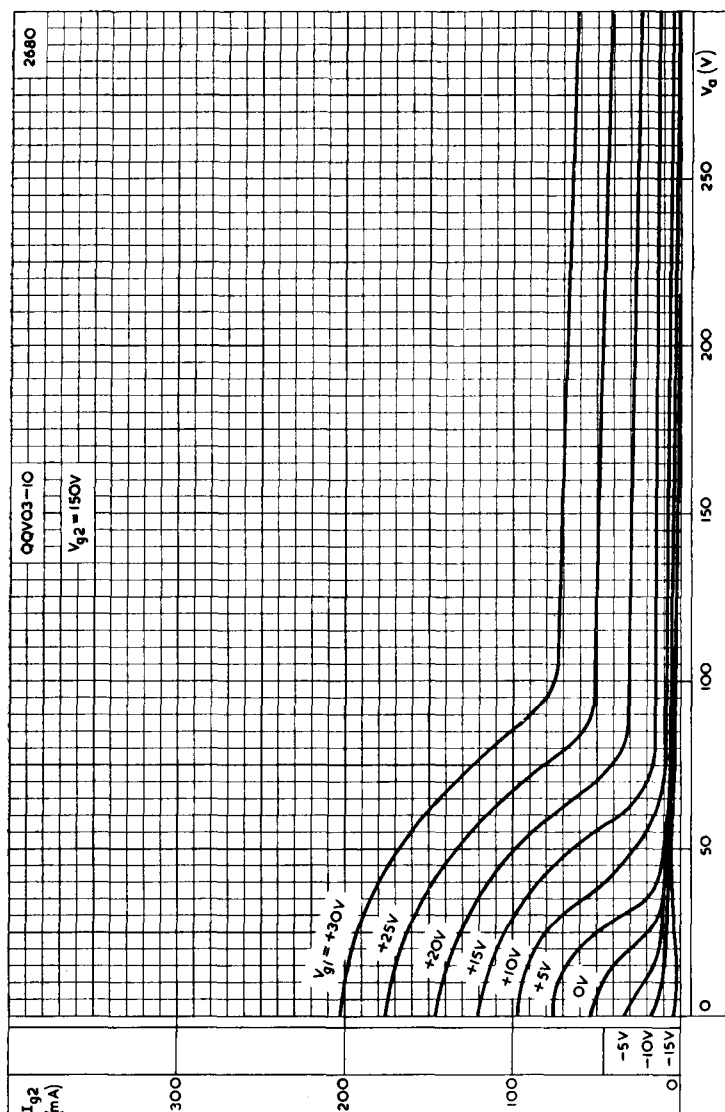


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE  $V_{g2}=150V$

# QQV03-10

## R.F. POWER DOUBLE TETRODE

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

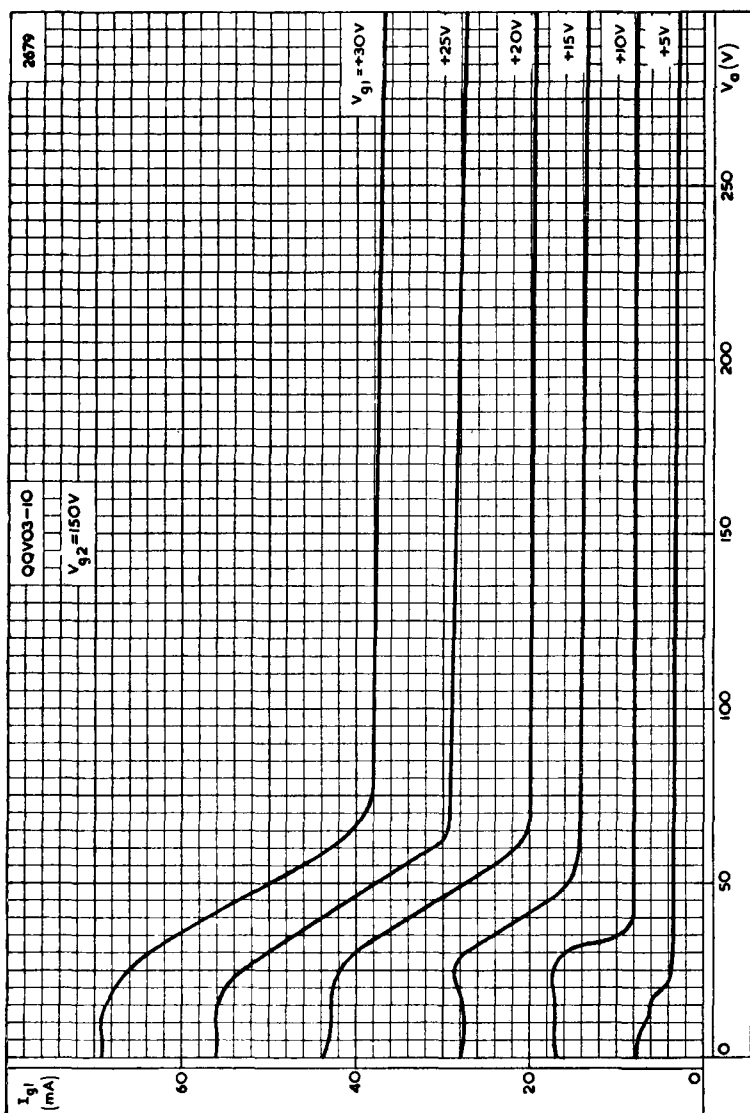


SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE  $V_{g2} = 150V$

# R.F. POWER DOUBLE TETRODE

# QQV03-10

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

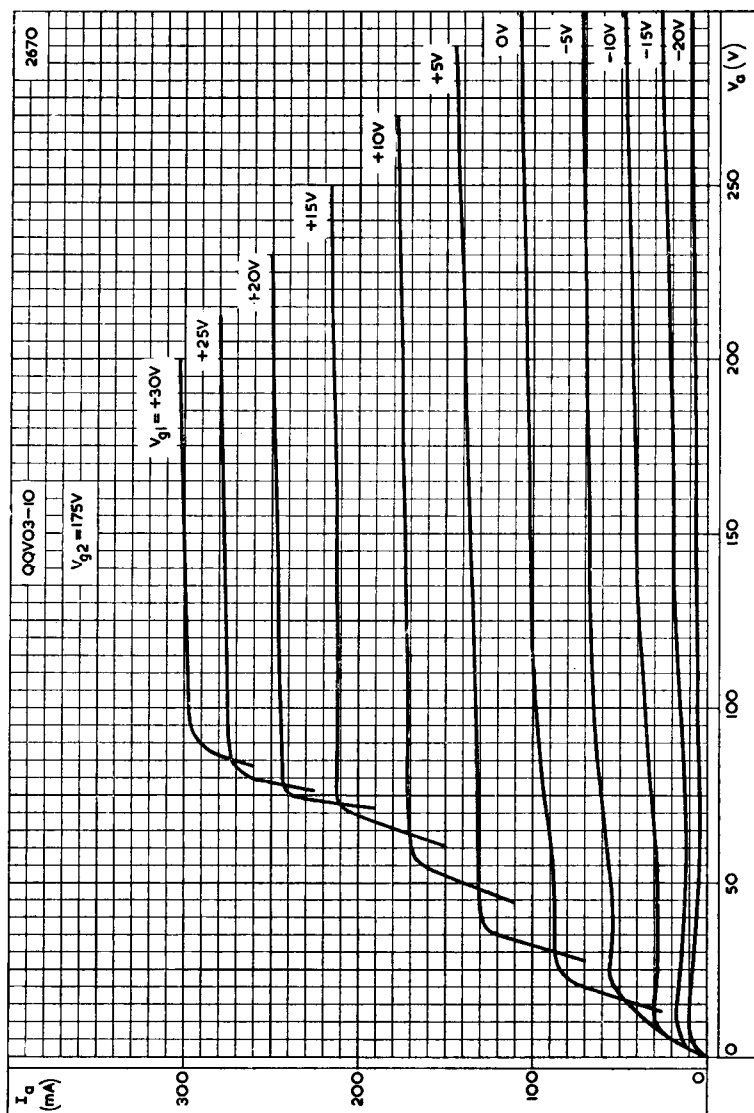


CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE  
 $V_{g2} = 150V$

# QQV03-10

## R.F. POWER DOUBLE TETRODE

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

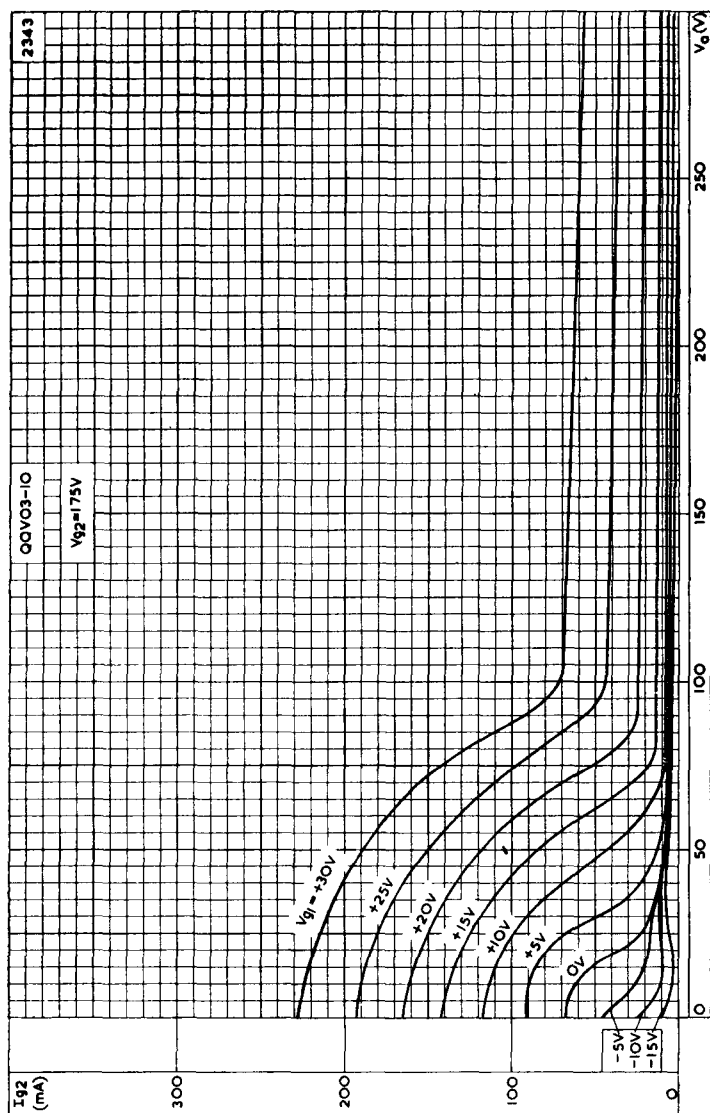


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE  $V_{g2} = 175V$

# R.F. POWER DOUBLE TETRODE

# QQV03-10

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

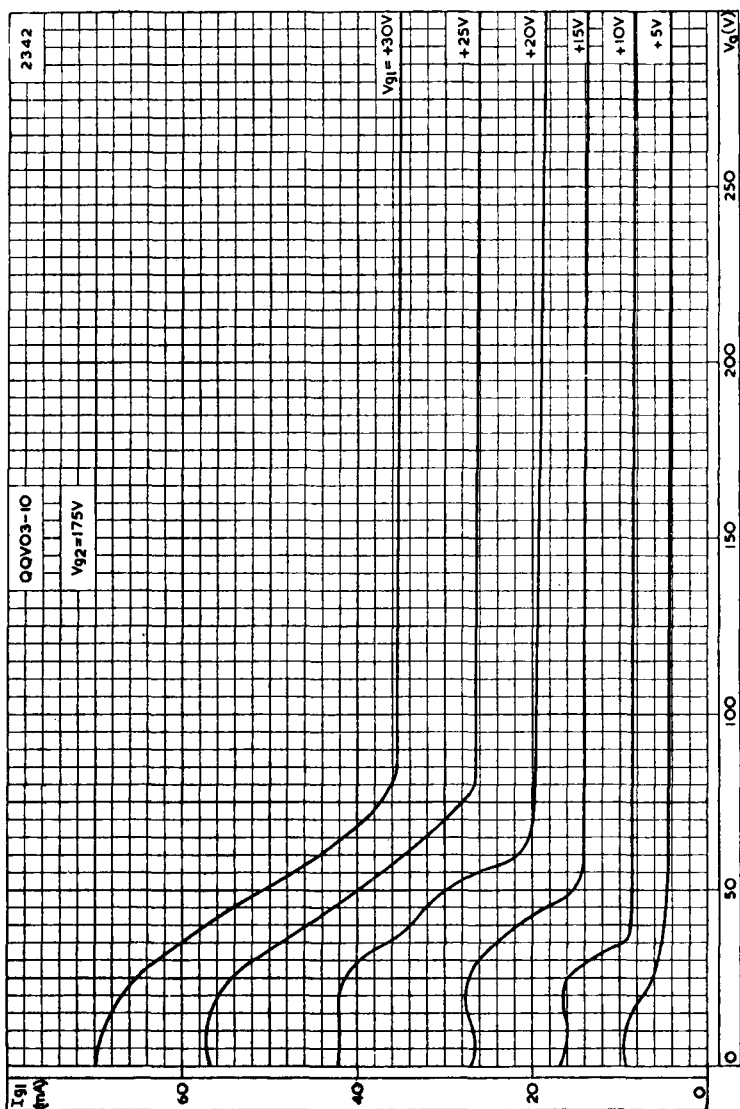


SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE  $V_{g2} = 175V$

# QQV03-10

## R.F. POWER DOUBLE TETRODE

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

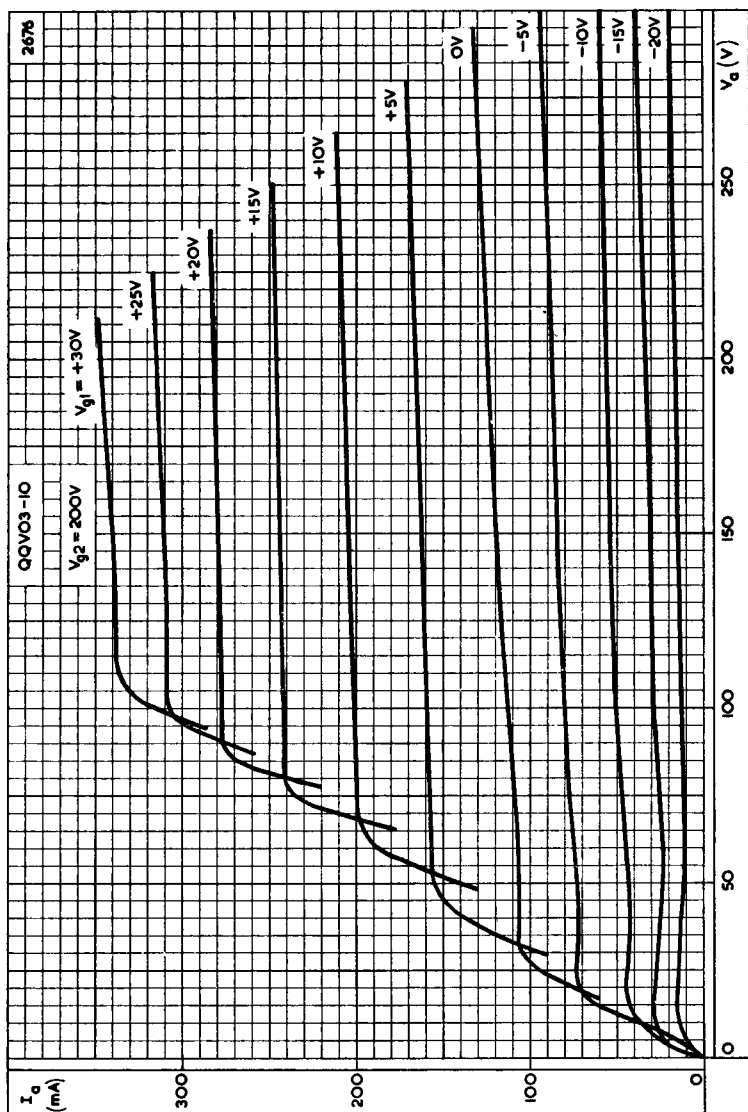


CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE  
 $V_{g2} = 175V$

# R.F. POWER DOUBLE TETRODE

# QQV03-10

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

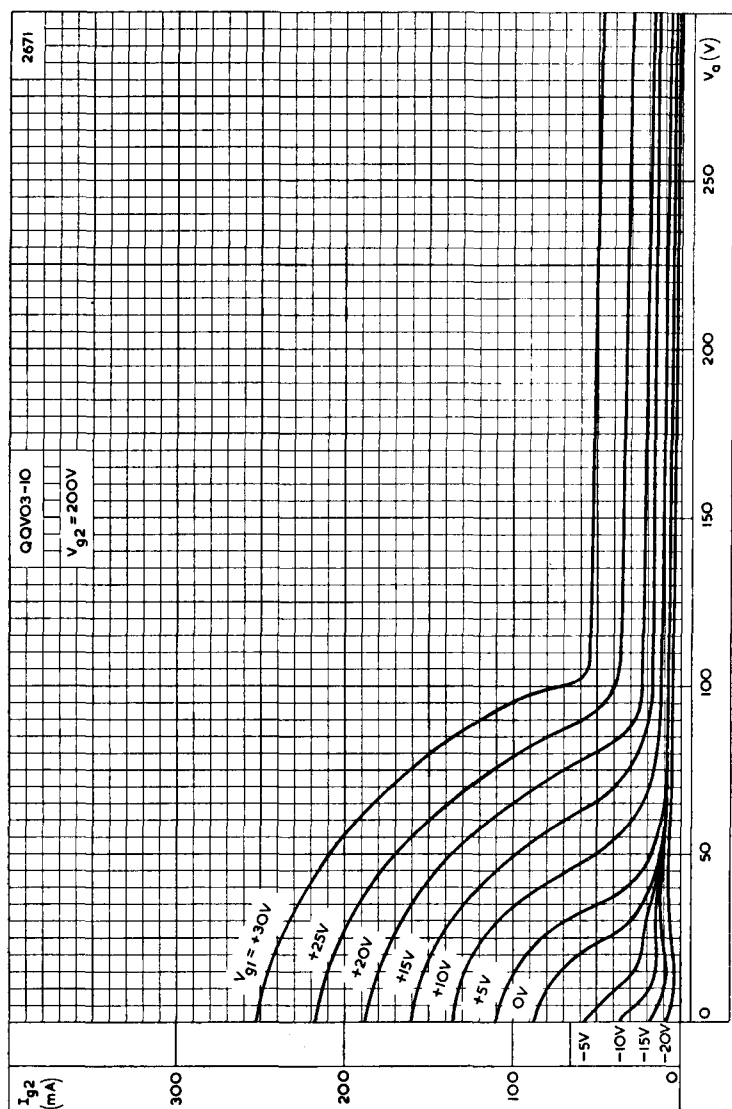


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE  $V_{g2}=200V$

# QQV03-10

## R.F. POWER DOUBLE TETRODE

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.

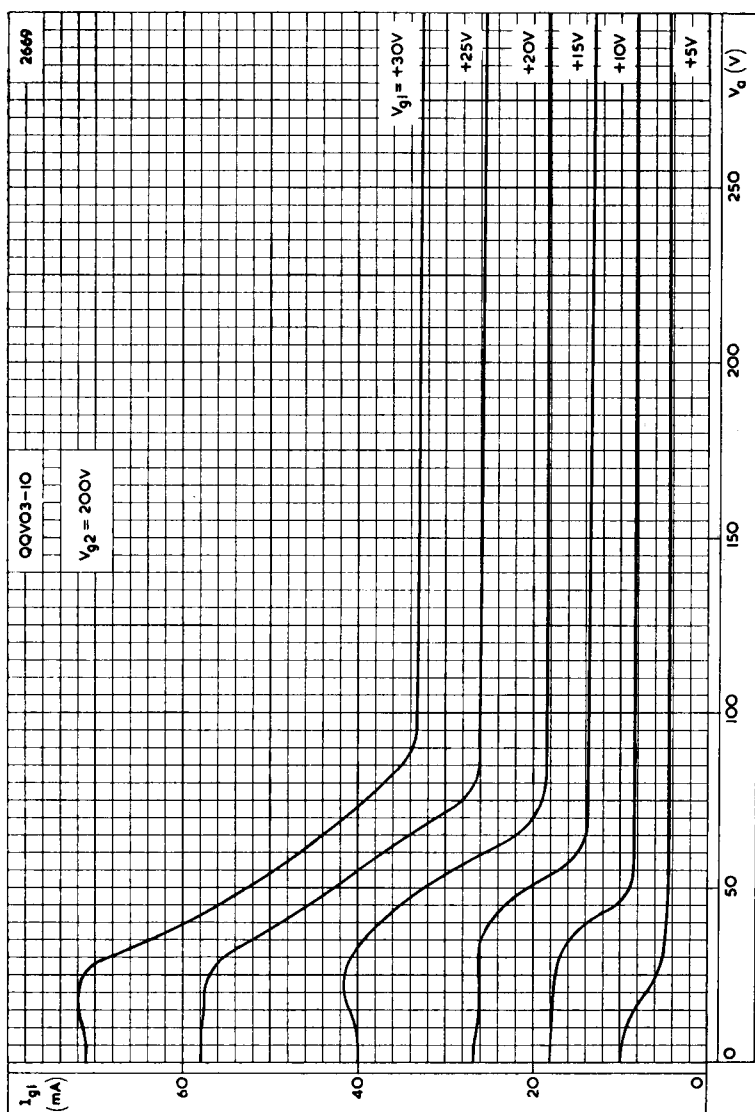


SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE  $V_{R2}$ —200V

# R.F. POWER DOUBLE TETRODE

# QQV03-10

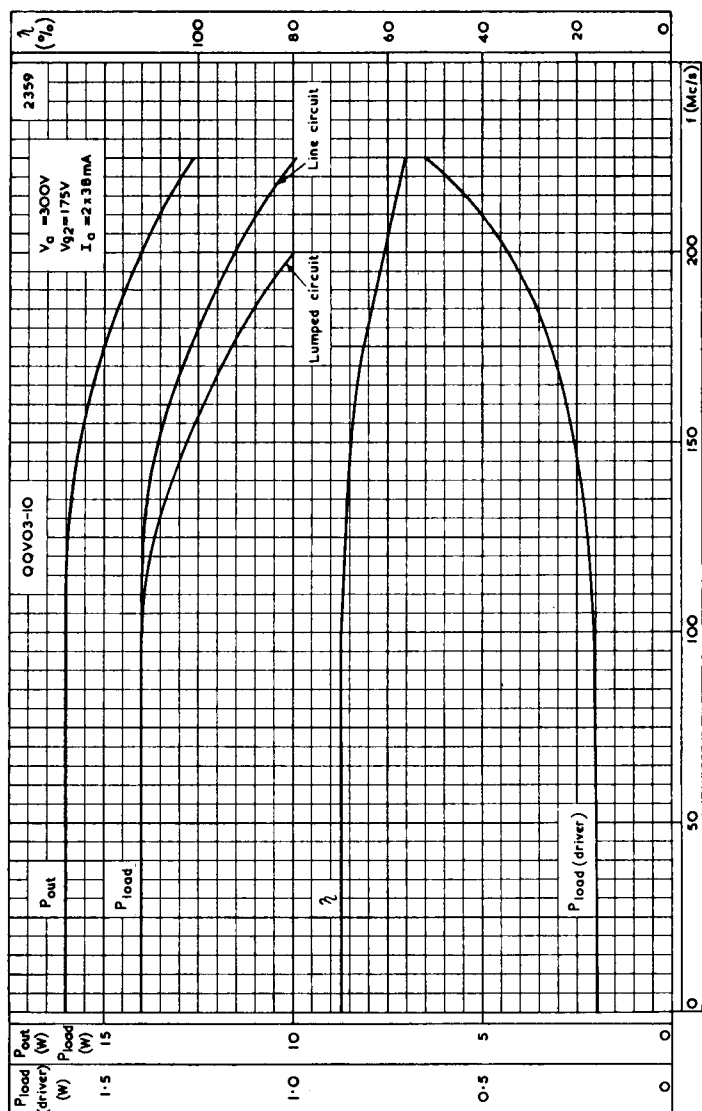
Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.



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

# QQV03-10 R.F. POWER DOUBLE TETRODE

Miniature r.f. double tetrode rated to dissipate 5W at each anode and intended for use at frequencies up to 225Mc/s.



FREQUENCY CHARACTERISTICS. SINGLE VALVE CLASS "C" TELEGRAPHY

