V.H.F. POWER TETRODE

QV03-12

R.F. beam power tetrode rated for a maximum anode dissipation of 12W and intended for use at frequencies up to 175 Mc/s.

PRELIMINARY DATA

This data should be read in conjunction with "Operating Notes. Part 1—Power Valves" included in this volume of the Handbook.

CATHODE Indirectly heated.

V_h	6.0	V
I_h	0.75	A

MOUNTING POSITION Any

CAPACITANCES (Measured without external shield)

c_{a-g1}	<0.3	μμF
c_{in}	9.5	μμF
c_{out}	4.5	μμF

CHARACTERISTICS (Measured at I_a=45 mA)

g_m	7.0	mA/V
μ_{g1-g2}	16	

COOLING Natural cooling

Maximum bulb temperature	250	°C

OPERATING CONDITIONS AS ANODE AND SCREEN MODULATED R.F. POWER AMPLIFIER (CLASS "C" TELEPHONY)

Limiting Values

V_a max.	250	V
p_a max.	8.0	W
V_{g2} max.	250	V
p_{g2} max.	1.5	W
I_k max.	60	mA
$i_{k(pk)}$ max.	550	mA
$-V_{g1}$ max.	125	V
I_{g1} max.	5.0	mA
R_{g1-k} max.	100	kΩ
$v_{h-k\ (pk)}$ max.	±100	V

QV03-12

V.H.F. POWER TETRODE

R.F. beam power tetrode rated for a maximum anode dissipation of 12W and intended for use at frequencies up to 175 Mc/s.

Typical Operating Conditions

f	<30	Mc/s
V_a	250	V
*V_{g2}	250	V
†V_{g1}	−39	V
I_a	40	mA
I_{g2}	5.5	mA
I_{g1} (approx.)	1.0	mA
$v_{in(pk)}$	47	V
P_{drive}	0.2	W
P_{out}	6.4	W
‡P_{load}	5.1	W

*Obtained preferably from a separate source modulated with the anode supply or from the modulated anode supply through a series resistor.

†May be obtained by grid resistor or from a combination of grid resistor with either fixed supply or cathode resistor.

‡With a circuit transfer efficiency of 80%.

OPERATING CONDITIONS AS R.F. POWER AMPLIFIER OR OSCILLATOR (CLASS "C" TELEGRAPHY OR F.M. TELEPHONY)

Limiting Values

V_a max.	300	V
p_a max.	12	W
V_{g2} max.	250	V
p_{g2} max.	2.0	W
I_k max.	70	mA
$i_{k(pk)}$ max.	350	mA
$-V_{g1}$ max.	125	V
I_{g1} max.	5.0	mA
R_{g1-k} max.	100	kΩ
$v_{h-k(pk)}$ max.	±100	V

Typical Operating Conditions

f	<30	<50	Mc/s
V_a	300	300	V
V_{g2}	250	250	V
*V_{g1}	−29	−60	V
R_{g1-k}	18	22	kΩ
$v_{in(pk)}$	38	80	V
I_a	50	50	mA
I_{g2}	6.5	5.0	mA
I_{g1}	1.5	3.0	mA
P_{drive}	0.15	0.4	W
P_{out}	10	8.0	W
†P_{load}	8.0	6.4	W

*May be obtained from a fixed supply or by the grid resistor shown.

†With a circuit transfer efficiency of 80%.

V.H.F. POWER TETRODE

QV03-12

R.F. beam power tetrode rated for a maximum anode dissipation of 12W and intended for use at frequencies up to 175 Mc/s.

OPERATING CONDITIONS AS FREQUENCY MULTIPLIER

Limiting Values

V_a max.	300	V
p_a max.	12	W
V_{g_2} max.	250	V
p_{g_2} max.	2.0	W
I_k max.	70	mA
$i_{k(pk)}$ max.	450	mA
$-V_{g_1}$ max.	125	V
I_{g_1} max.	5.0	mA
R_{g_1-k} max.	100	k Ω
$v_{h-k(pk)}$ max.	±100	V

TYPICAL OPERATING CONDITIONS AS A FREQUENCY MULTIPLIER

	Trebler	*Doubler*	
f_{out}	175	175	Mc/s
V_a	300	300	V
*V_{g_2}	238	250	V
R_{g_2}	12.5	12.5	k Ω
†V_{g_1}	−100	−75	V
R_{g_1-k}	100	75	k Ω
I_a	35	40	mA
I_{g_2}	5.0	4.0	mA
I_{g_1} (approx.)	1.0	1.0	mA
$v_{in(pk)}$	120	95	V
P_{drive}	0.6	0.6	W
P_{out}	2.8	3.6	W
‡P_{load}	1.5	2.0	W

*Obtained from anode supply voltage of 300 V through a series resistor of 12.5 kΩ.

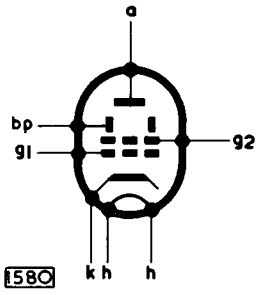
†May be obtained from a fixed supply or by the grid resistor shown.

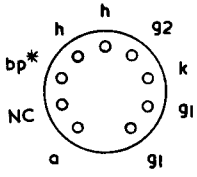
‡With a typical circuit arrangement.

QV03-12

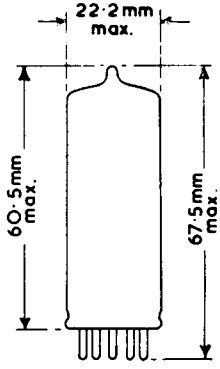
V.H.F. POWER TETRODE

R.F. beam power tetrode rated for a maximum anode dissipation of 12W and intended for use at frequencies up to 175 Mc/s.





B9A
Noval Base

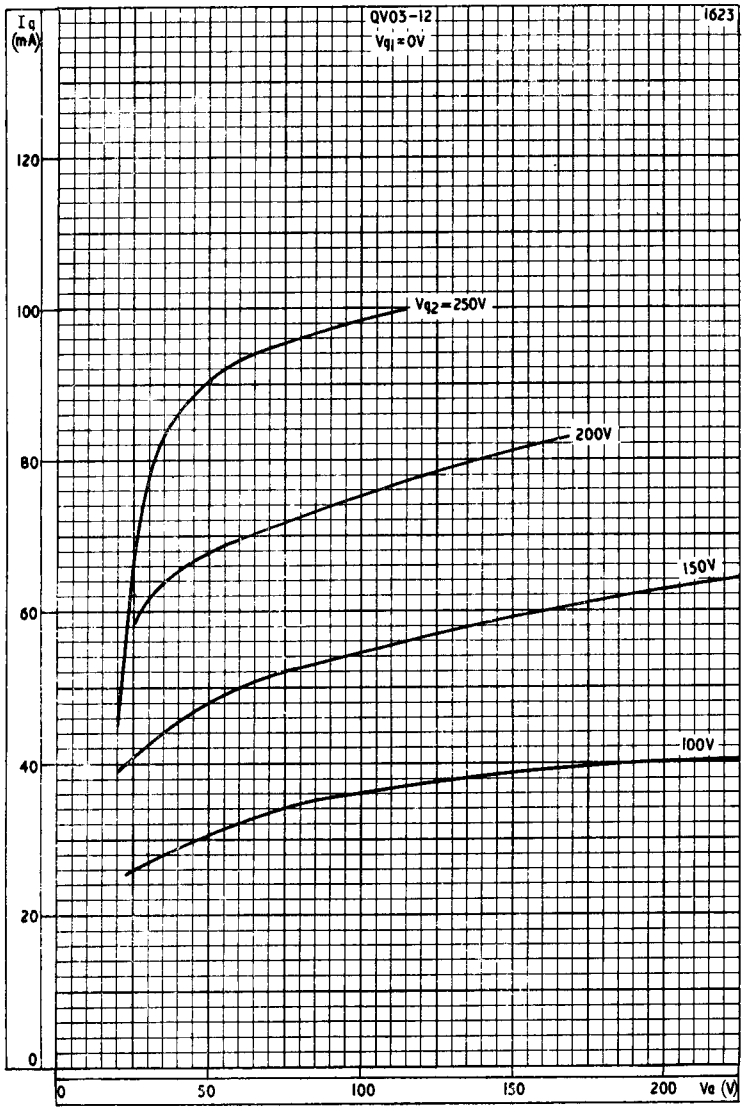


* Connect contact 3 to contact 7 at socket. Contacts 8 and 9 should be connected to external circuit with leads of equal length.

V.H.F. POWER TETRODE

QV03-12

R.F. beam power tetrode rated for a maximum anode dissipation of 12W and intended for use at frequencies up to 175 Mc/s.

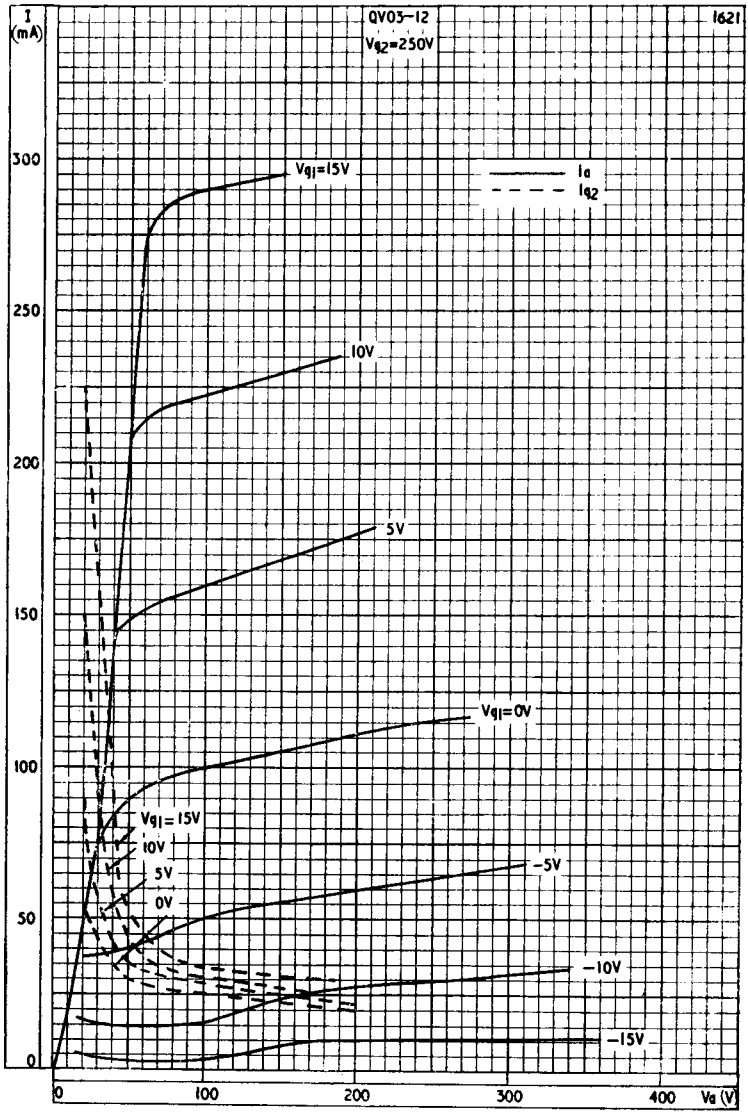


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR VARIOUS SCREEN-GRID VOLTAGES

QV03-12

V.H.F. POWER TETRODE

R.F. beam power tetrode rated for a maximum anode dissipation of 12W and intended for use at frequencies up to 175 Mc/s.

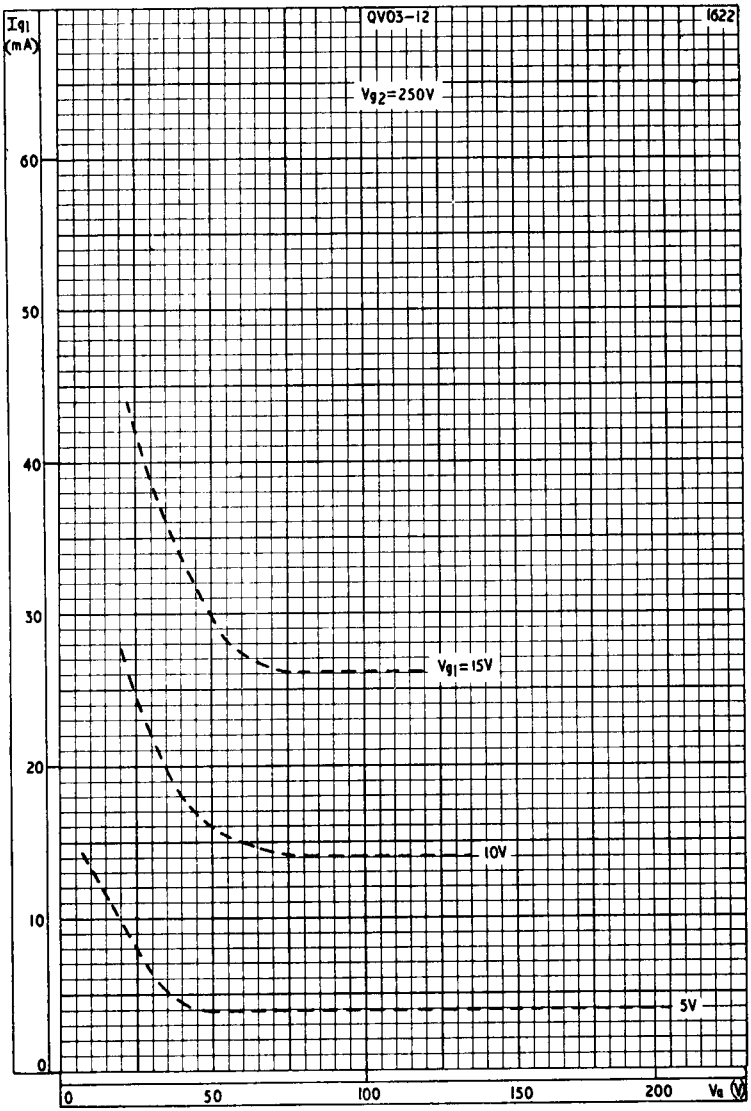


ANODE AND SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE

V.H.F. POWER TETRODE

QV03-12

R.F. beam power tetrode rated for a maximum anode dissipation of 12W and intended for use at frequencies up to 175 Mc/s.



CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE

V.H.F. POWER TETRODE

QV03-12

Application: *V.H.F. power amplifier*
Power output: *10W*
Frequency: *175Mc/s at full ratings*
Construction: *Glass, natural cooling*

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	6.0	V
I_h	750	mA

MOUNTING POSITION

Any

CAPACITANCES (measured without external shield)

c_{a-g1}	<300	mpF
c_{in}	9.5	pF
c_{out}	4.5	pF

CHARACTERISTICS (measured at I_a = 45mA)

g_m	7.0	mA/V
μ_{g1-g2}	16	

COOLING

Natural cooling

T_{bulb} max.	250	°C

CLASS 'C' TELEGRAPHY OR F.M. TELEPHONY

Limiting values (absolute ratings)

V_a max.	300	V
p_a max.	12	W
V_{g2} max.	250	V
p_{g2} max.	2.0	W
$-V_{g1}$ max.	125	V
I_{g1} max.	5.0	mA
I_k max.	70	mA
$i_{k(pk)}$ max.	350	mA
R_{g1-k} max.	100	kΩ
$v_{h-k(pk)}$ max.	100	V

Operating conditions

f	<30	<50	Mc/s
V_a	300	300	V
V_{g2}	250	250	V
†V_{g1}	-29	-60	V
R_{g1-k}	18	22	kΩ
I_a	50	50	mA
I_{g2}	6.5	5.0	mA
I_{g1}	1.5	3.0	mA
$v_{in(pk)}$	38	80	V
P_{drive}	150	400	mW
P_{out}	10	8.0	W
P_{load}	8.0	6.4	W
$\eta_{transfer}$	80	80	%

†May be obtained by a fixed bias or by the grid resistor shown.

CLASS 'C' ANODE AND SCREEN-GRID MODULATION

Limiting values (absolute ratings)

V_a max.	250	V
p_a max.	8.0	W
V_{g2} max.	250	V
p_{g2} max.	1.5	W
$-V_{g1}$ max.	125	V
I_{g1} max.	5.0	mA
I_k max.	60	mA
$i_{k(pk)}$ max.	550	mA
R_{g1-k} max.	100	kΩ
$v_{h-k(pk)}$ max.	100	V

Operating conditions

f	<30	Mc/s
V_a	250	V
*V_{g2}	250	V
V_{g1}	−39	V
I_a	40	mA
I_{g2}	5.5	mA
I_{g1}	1.0	mA
$v_{in(pk)}$	47	V
P_{drive}	200	mW
P_{out}	6.4	W
P_{load}	5.1	W
$\eta_{transfer}$	80	%

*Obtained preferably from a separate modulated supply, or from the modulated anode supply.

CLASS 'C' FREQUENCY MULTIPLIER

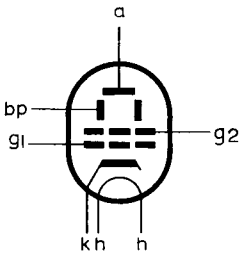
Limiting values (absolute ratings)

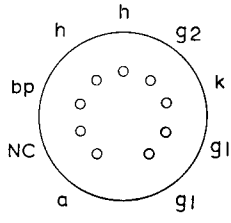
V_a max.	300	V
p_a max.	12	W
V_{g2} max.	250	V
p_{g2} max.	2.0	W
$-V_{g1}$ max.	125	V
I_{g1} max.	5.0	mA
I_k max.	70	mA
$i_{k(pk)}$ max.	450	mA
R_{g1-k} max.	100	kΩ
$v_{h-k(pk)}$ max.	100	V

QV03-12

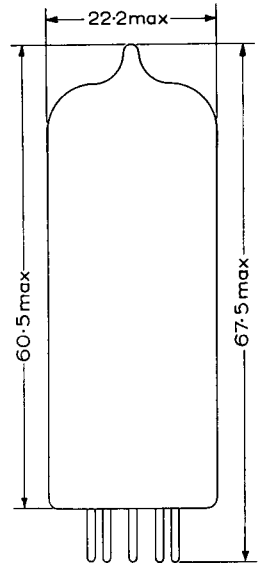
Operating conditions

	Doubler	*Trebler*	
f_{out}	175	175	Mc/s
V_a	300	300	V
V_{g2}	250	238	V
R_{g2}	12.5	12.5	kΩ
V_{g1}	−75	−100	V
R_{g1-k}	75	100	kΩ
I_a	40	35	mA
I_{g2}	4.0	5.0	mA
I_{g1}	1.0	1.0	mA
$V_{in(pk)}$	95	120	V
P_{drive}	600	600	mW
P_{out}	3.6	2.8	W
P_{load}	2.0	1.5	W
$\eta_{transfer}$	56	54	%





B9A Base

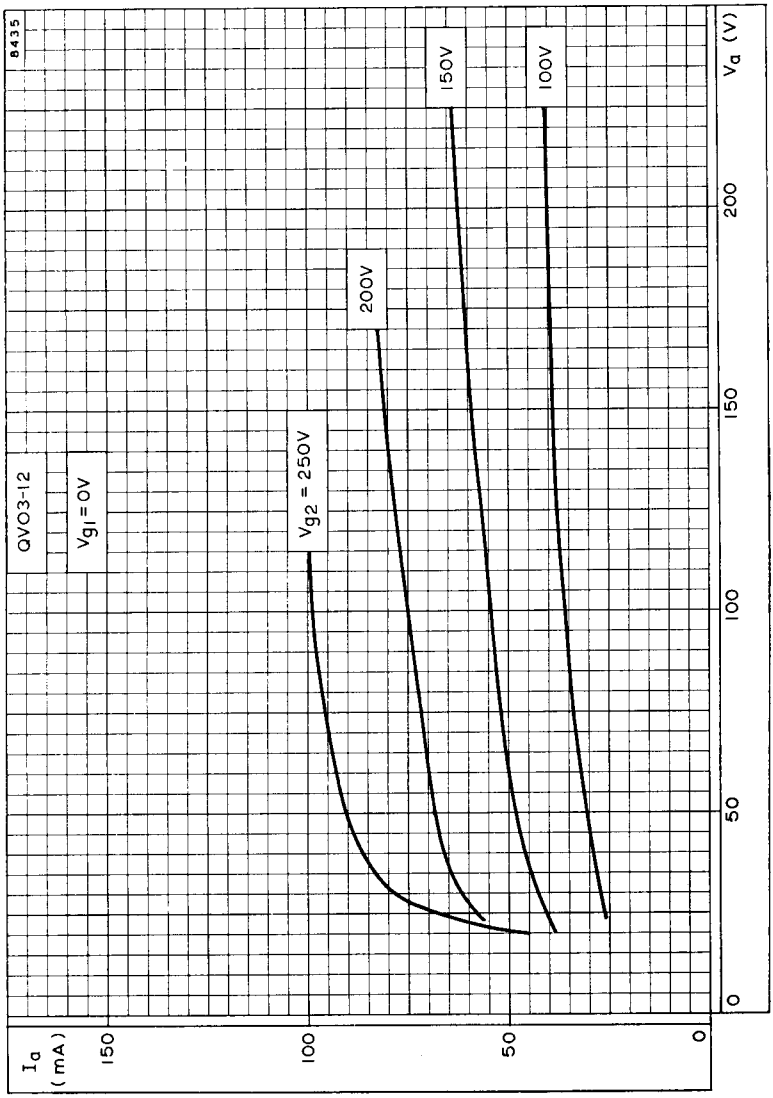


Contacts 3 and 7 should be connected together at the socket.
Contacts 8 and 9 should be connected to the external circuit with leads of equal length.

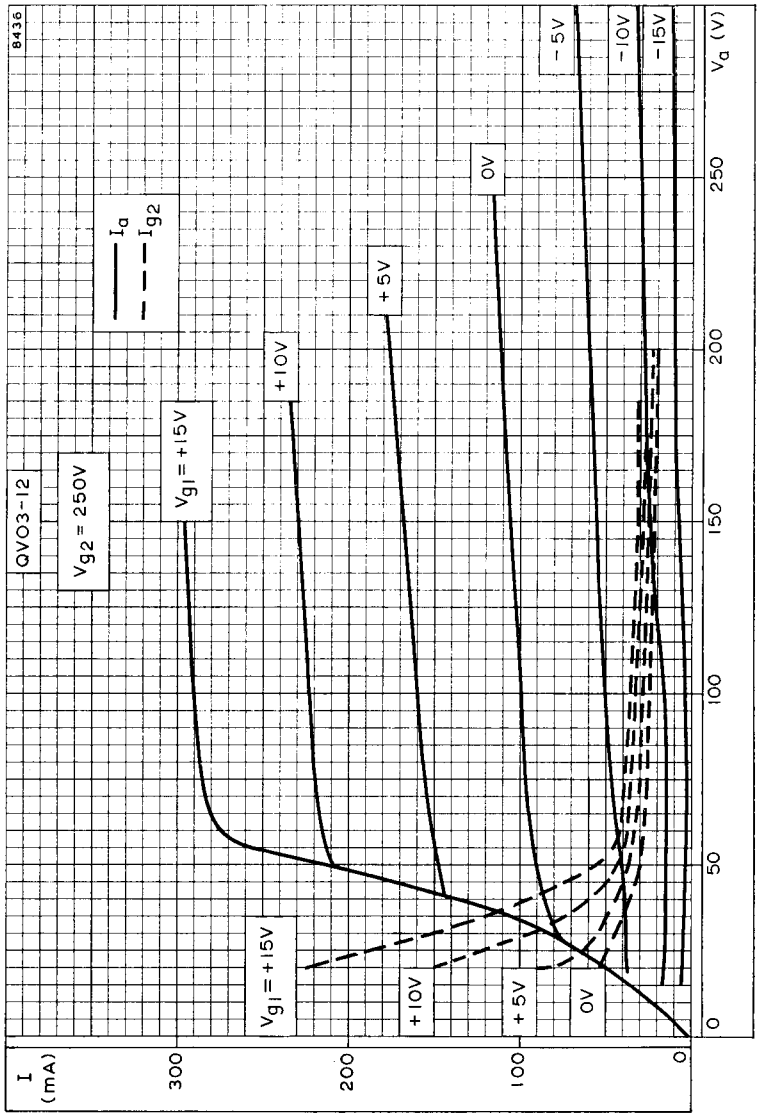
All dimensions in mm

8438

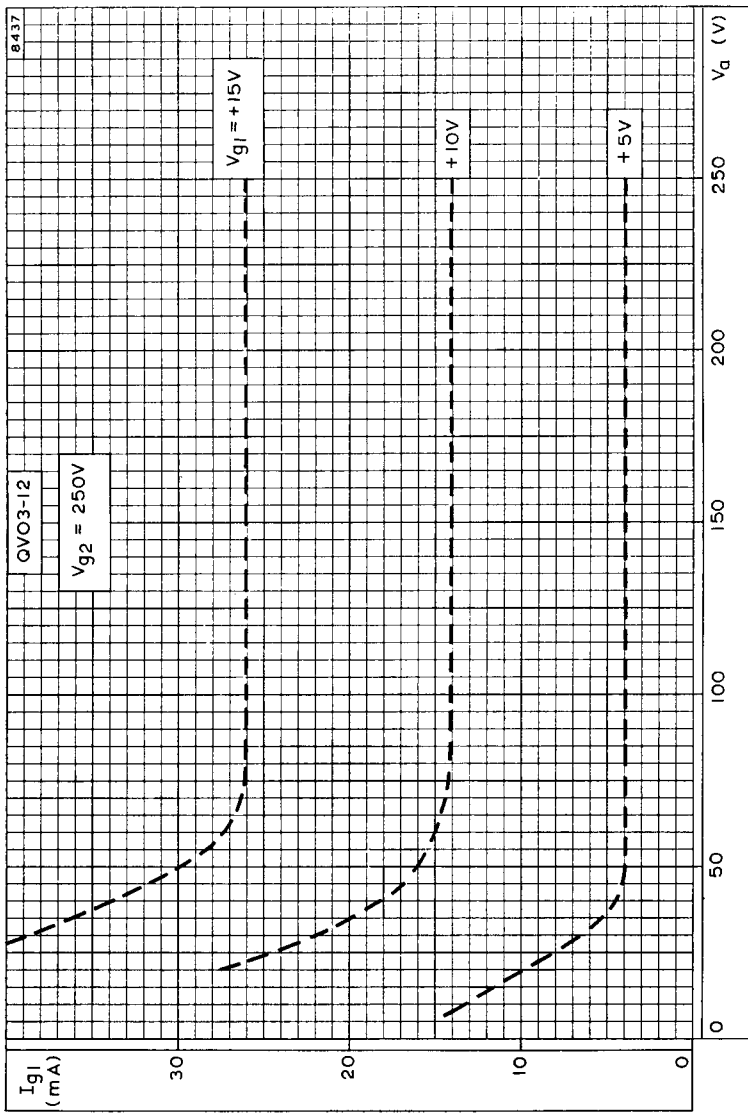
QV03-12



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR VARIOUS SCREEN-GRID VOLTAGES



ANODE AND SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE



CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE