R.F. POWER TETRODE

QY5-500

Application: *R.F. power amplifier, frequency multiplier or modulator.*
Power output: *1.76kW continuous rating.*
Frequency: *75Mc/s at full ratings, 110Mc/s at reduced ratings.*
Construction: *Glass, radiation or low velocity air cooled.*

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

FILAMENT Thoriated tungsten

V_f	10	V
I_f	9.9	A

MOUNTING POSITION

Vertical, base up or down

CAPACITANCES

c_{in}	24	pF
c_{out}	8.3	pF
c_{a-g1}	250	mpF

CHARACTERISTICS (measured at I_a = 120mA)

g_m	7.0	mA/V
μ_{g1-g2}	9.5	

COOLING

In order to keep the temperature below the maximum permitted values it may be necessary to direct an air flow onto the seals.

$T_{anode\ seal}$ max.	220	°C
$T_{base\ seals}$ max.	180	°C
T_{bulb} max.	250	°C

CLASS 'C' TELEGRAPHY OR F.M. TELEPHONY

Limiting values (absolute ratings)

V_a max. ($f \leqslant 75$Mc/s)	5.0	kV
V_a max. ($f = 110$Mc/s)	4.5	kV
p_a max.	500	W
V_{g2} max.	700	V
p_{g2} max.	65	W
$-V_{g1}$ max.	500	V
p_{g1} max.	25	W
I_k max.	600	mA
$i_{k(pk)}$ max.	3.0	A
$R_{g1\ f}$ max.	5.0	kΩ

Typical operation

f	⩽60	⩽60	100	Mc/s
V_a	4.0	5.0	4.5	kV
V_{g2}	600	600	600	V
V_{g1}	−200	−200	−200	V
I_a	450	440	400	mA
I_{g2}	90	80	70	mA
I_{g1}	39	35	30	mA
$v_{in(pk)}$	350	350	340	V
$P_{load(driver)}$	22	20	30	W
p_a	390	440	500	W
η_a	78	80	72	%
P_{out}	1.41	1.76	1.3	kW
P_{load} ($\eta_{transfer}$ = 85%)	1.2	1.5	1.1	kW

QY5-500

R.F. POWER TETRODE

CLASS 'C' AMPLIFIER (ANODE AND SCREEN-GRID MODULATION)

Limiting values (absolute ratings)

Carrier conditions for a modulation factor of 1

f max.	75	Mc/s
V_a max.	4.0	kV
p_a max.	330	W
V_{g2} max.	700	V
p_{g2} max.	50	W
$-V_{g1}$ max.	500	V
p_{g1} max.	25	W
I_k max.	520	mA
$i_{k(pk)}$ max.	4.7	A
R_{g1-f} max.	50	kΩ

Typical operation

Screen grid modulated via a choke of 2H

f	60	Mc/s
V_a	4.0	kV
V_{g2}	600	V
V_{g1}	−240	V
I_a	380	mA
I_{g2}	80	mA
I_{g1}	20	mA
$v_{in(pk)}$	415	V
$P_{load(driver)}$	22	W
p_a	320	W
p_{g2}	48	W
η_a	79	%
P_{out}	1.2	kW
P_{load} ($\eta_{transfer} = 85\%$)	1.02	kW

For 100% modulation

$P_{mod.}$	760	W

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

Limiting values (absolute ratings)

f max.	75	Mc/s
V_a max.	5.0	kV
p_a max.	500	W
V_{g2} max.	700	V
p_{g2} max.	65	W
I_k max.	550	mA
$i_{k(pk)}$ max.	1.8	A
R_{g1-f} max.	50	kΩ

Typical operation

f	60	Mc/s
V_a	5.0	kV
V_{g2}	700	V
V_{g1}	−90	V
$I_{a(o)}$	56	mA
I_a (single tone)	280	mA
I_a (two tone)	200	mA
$I_{g2(o)}$	0	mA
I_{g2} (max. sig.)	25	mA
I_{g1} (max. sig.)	1.0	mA
$V_{in(pk)}$	130	V
P_a (max. sig.)	500	W
P_{g2} (max. sig.)	18	W
P_{out} (two tone)	450	W
η_a	64.5	%
P.E.P.	900	W
P_{load} ($\eta_{transfer}$ = 85%)	760	W

CLASS 'B' AUDIO AMPLIFIER AND MODULATOR (TWO VALVES IN PUSH-PULL)

Limiting values (absolute ratings)

V_a max.	5.0	kV
p_a max.	500	W
V_{g2} max.	700	V
p_{g2} max.	65	W
$-V_{g1}$ max.	500	V
I_{g1} max.	45	mA
I_k max.	550	mA
$i_{k(pk)}$ max.	1.8	A
$R_{g1\ t}$ max.	50	kΩ

Typical operation

V_a	4.0	4.0	5.0	kV
V_{g2}	600	600	600	V
V_{g1}	−62.5	−60	−62.5	V
$I_{a(o)}$	2×45	2×55	2×50	mA
I_a (max. sig.)	2×285	2×366	2×290	mA
I_{g2} (max. sig.)	2×40	2×60	2×43	mA
I_{g1}	2×13.5	2×18	2×13	mA
$V_{in(g1-g1)}$ r.m.s.	178	214	182	V
P_{drive}	2×1.5	2×2.5	2×1.5	W
P_a	2×300	2×340	2×340	W
P_{out}	1.68	2.25	2.22	kW
R_{a-a}	20	16	26	kΩ
η_a	74	76.5	76.5	%
D_{tot}	4.7	5.0	5.0	%

QY5-500

R.F. POWER TETRODE

WEIGHT

Valve only	{ 13.22 oz 375 g

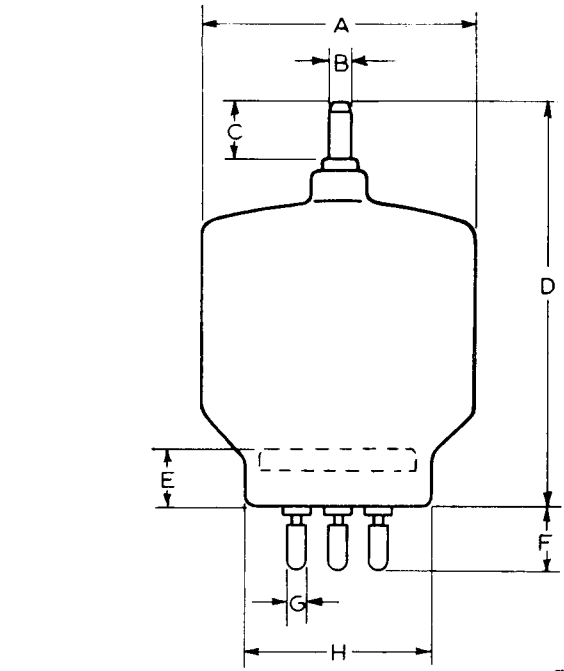
ACCESSORIES

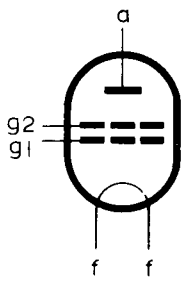
Socket	40216
Clip for anode connection	40626

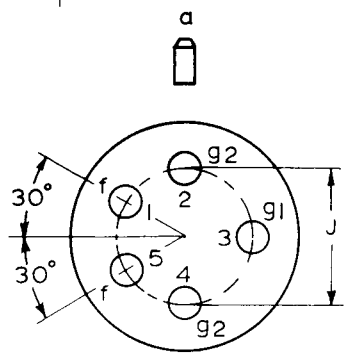
DIMENSIONS

	Inches	*Millimetres*	
A	4.65	118	max.
B	0.374	9.5	
C	0.984	25	
D	6.93 ± 0.24	176 ± 6	
E	0.984	25	
F	1.06	27	
G	0.374	9.5	
H	3.19	81	max.
J	1.50	38.1	

QY5-500



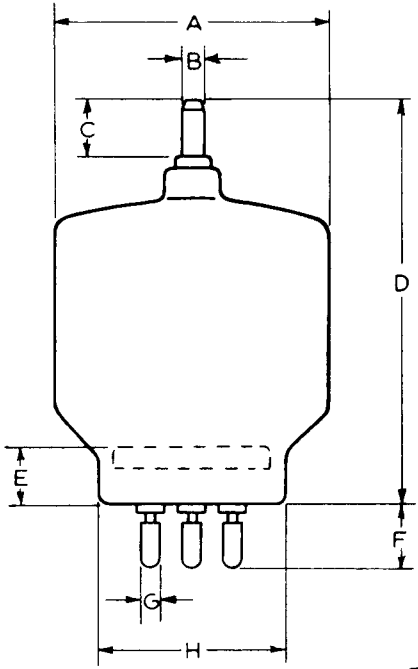


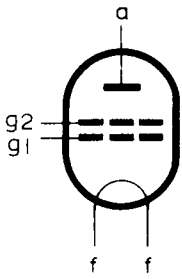


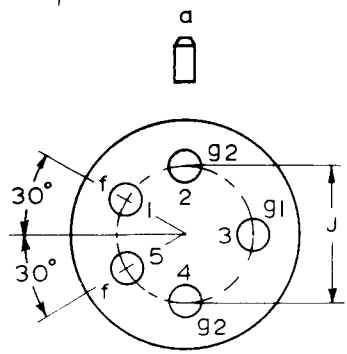
8104

B5F Base

QY5-500



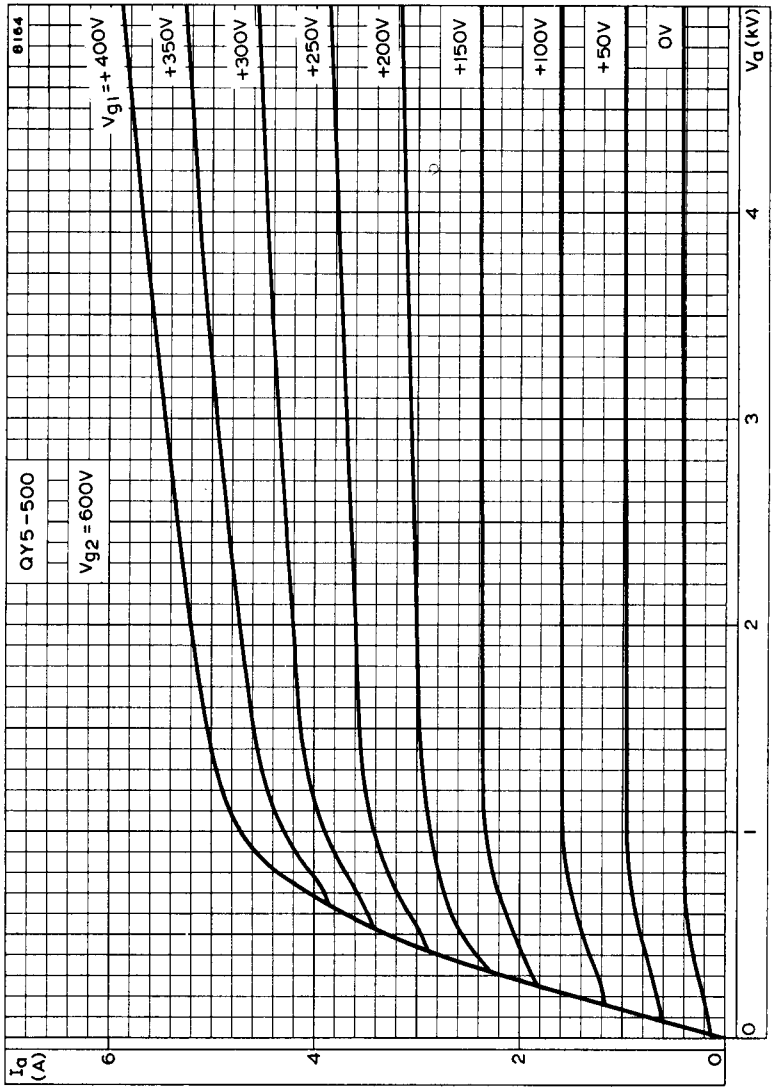




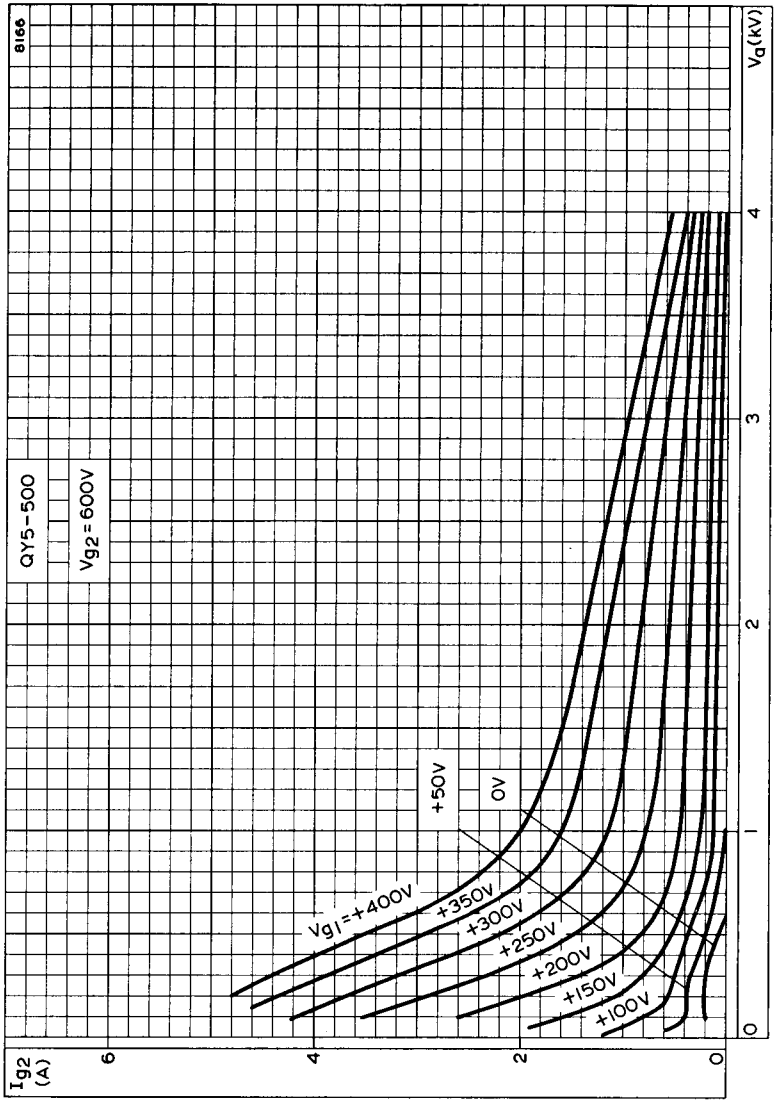
8104

B5K Base

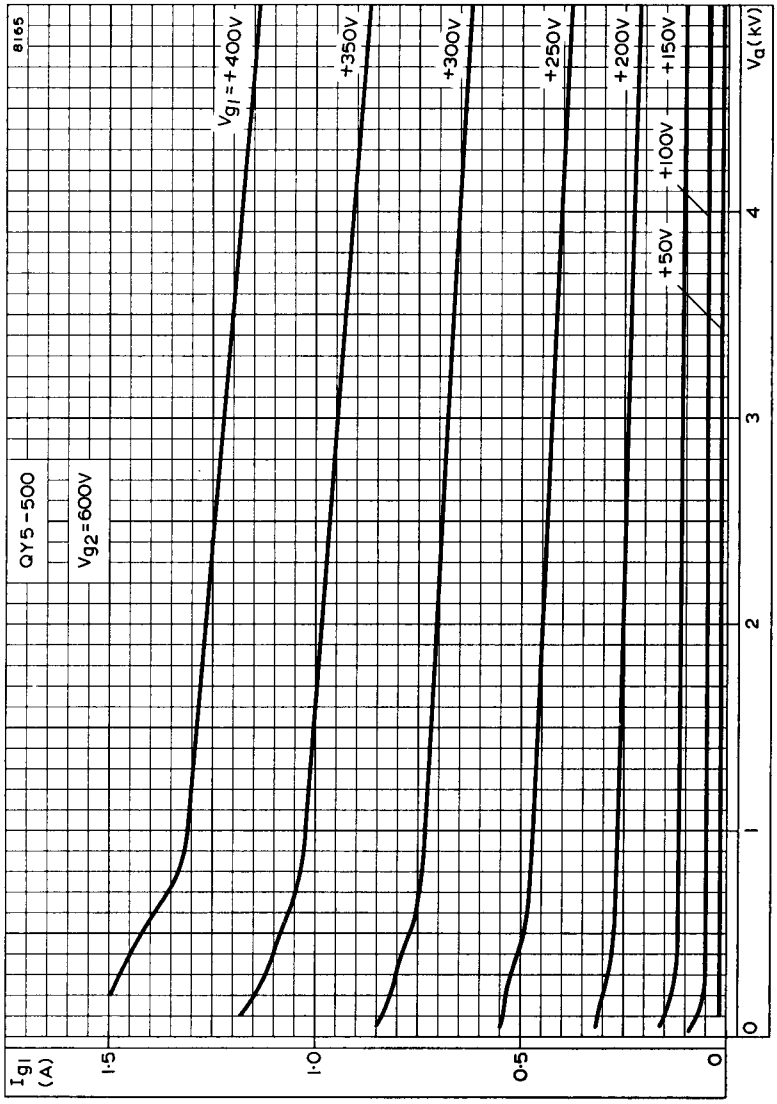
QY5-500



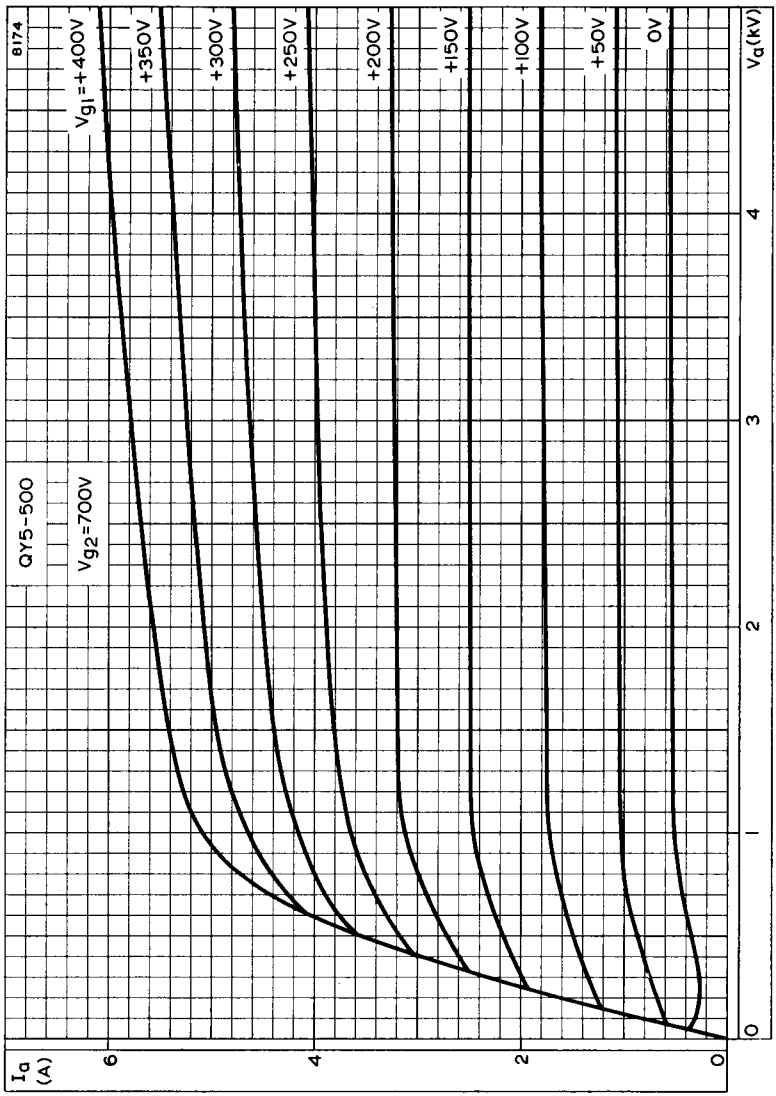
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. V_{g2} = 600V.



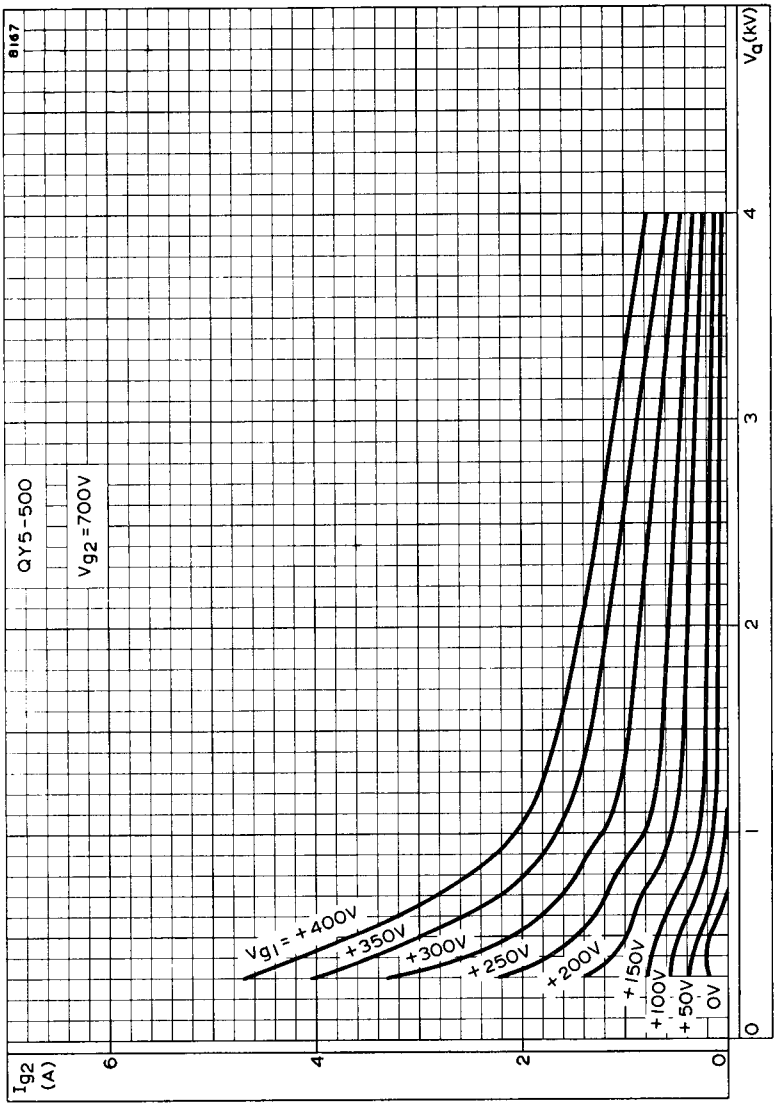
SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. V_{g2} = 600V.



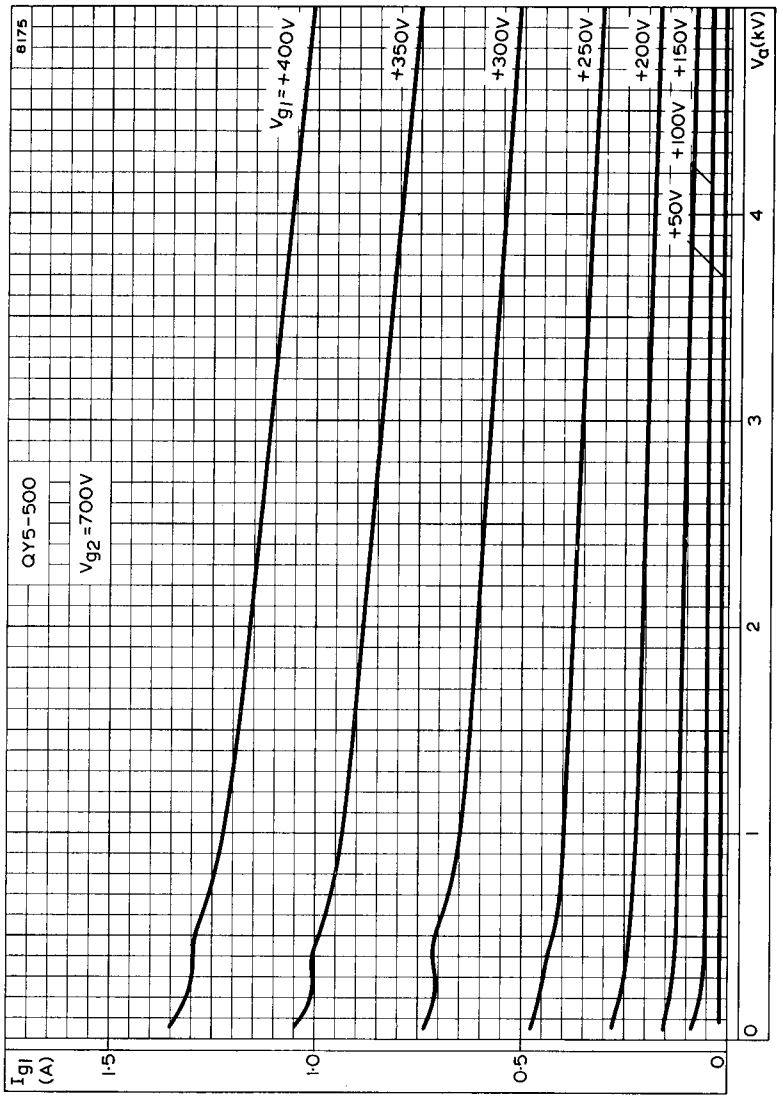
CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. V_{g2} = 600V.



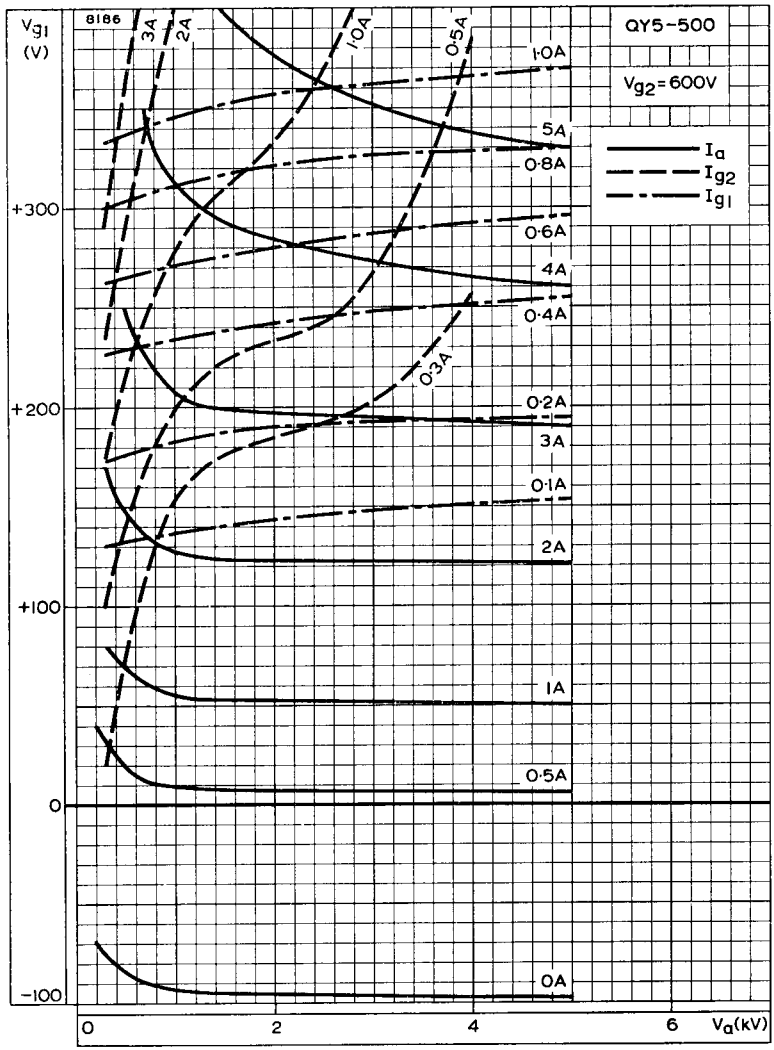
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. V_{g2} = 700V.



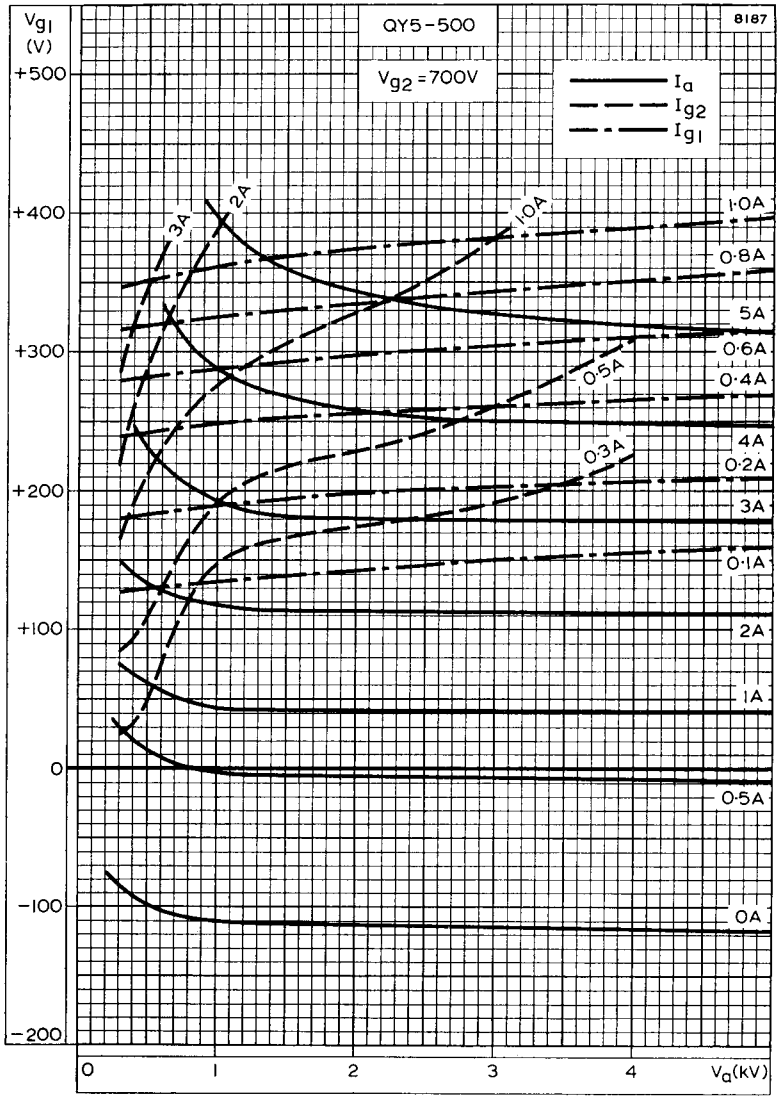
SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 700V$.



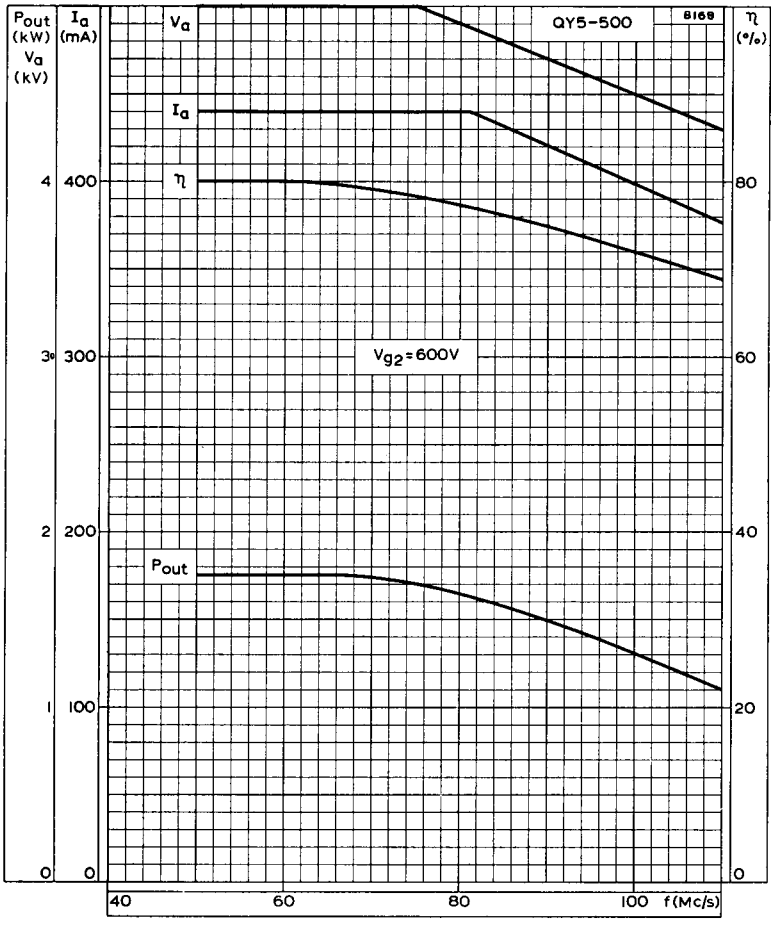
CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. V_{g2} = 700V.



CONSTANT CURRENT CURVES V_{g2} = 600V.



CONSTANT CURRENT CURVES. V_{g2} = 700V.



FREQUENCY CHARACTERISTICS