V.H.F. POWER TETRODE

QY3-125

All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 200 Mc/s.

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

FILAMENT Thoriated tungsten.

V_f	5.0	V
I_f	6.5	A

MOUNTING POSITION Vertical, base up or down.

CAPACITANCES

c_{in}	10.8	μμF
c_{out}	3.1	μμF
c_{a-g1}	0.05	μμF

CHARACTERISTICS (At V_a=2.5 kV, V_{g2}=350 V, I_a=40 mA)

g_m	2.2	mA/V
μ_{g1-g2}	6.2	

COOLING

Maximum temperature of anode seal	220	°C
Maximum temperature of base pins	180	°C

In order to keep within the temperature limits it may be necessary to direct a flow of air on to the anode seal and the base of the valve at frequencies above 50 Mc/s. The air stream on to the base should be directed so that it also passes over the envelope. Below 50 Mc/s, radiation cooling of the envelope is sufficient, but an anode terminal connector of large surface area is necessary in order to keep the anode seal cool.

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

Limiting Values

V_a max.	3.0	kV
p_a max. (corresponding to an anode temperature of 850°C, *i.e.*, red heat)	125	W
I_k max.	300	mA
$i_{k(pk)}$ max.	1.6	A
V_{g2} max.	400	V
p_{g2} max.	20	W
p_{g1} max.	5.0	W
$-V_{g1}$ max.	500	V
I_{g1} max.	15	mA

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V.H.F. POWER TETRODE

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Typical Operating Conditions at f ≤120 Mc/s.

V_a	2.0	2.5	3.0	kV
V_{g2}	350	350	350	V
V_{g1}	−100	−150	−150	V
I_a	200	200	167	mA
I_{g2}	50	40	30	mA
I_{g1}	9.0	9.0	6.5	mA
$v_{in(pk)}$	260	330	300	V
P_{drive}	2.4	3.0	2.0	W
p_a	125	125	125	W
p_{g2}	17.5	14	10.5	W
P_{out}	275	375	375	W
*P_{load}	220	300	300	W
η	69	75	75	%

* With a circuit transfer efficiency of 80%.

OPERATION AS SINGLE VALVE R.F. POWER AMPLIFIER (Class " B " Telephony)

Limiting Values

V_a max.	3.0	kV
p_a max. (corresponding to an anode temperature of 850°C, *i.e.*, red heat)	125	W
I_k max.	120	mA
$i_{k(pk)}$ max.	350	mA
V_{g2} max.	400	V
p_{g2} max.	14	W

Typical Operating Conditions at f ≤120 Mc/s.

V_a	2.0	2.5	3.0	kV
V_{g2}	350	350	350	V
V_{g1}	−50	−50	−50	V
I_a	83	70	60	mA
I_{g2}	1.5	1.0	1.0	mA
$v_{in(pk)}$	65	55	50	V
p_a	112	120	122	W
p_{g2}	0.52	0.35	0.35	W
P_{out}	54	55	58	W
*P_{load}	43	45	46	W
η	32.5	31.5	32	%
For 100% modulation				
I_{g1}	4.0	4.0	4.5	mA
P_{drive}	0.52	0.44	0.45	W

* With a circuit transfer efficiency of 80%.

V.H.F. POWER TETRODE

QY3-125

All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 200 Mc/s.

OPERATION AS SINGLE VALVE R.F. POWER AMPLIFIER CLASS "C" TELEPHONY (Anode and Screen Grid Modulated)

Limiting Values

V_a max.	2.5	kV
p_a max.	83	W
I_k max.	200	mA
$i_{k(pk)}$ max.	2.0	A
V_{g_2} max.	400	V
p_{g_2} max.	20	W
$-V_{g_1}$ max.	500	V
I_{g_1} max.	15	mA

Typical Operating Conditions at f ≤120 Mc/s.

V_a	2.0	2.5	kV
V_{g_2}	350	350	V
V_{g_1}	−220	−210	V
I_a	150	152	mA
I_{g_2}	33	30	mA
I_{g_1}	5.0	4.5	mA
P_{drive}	2.0	1.7	W
$v_{in(pk)}$	390	380	V
p_a	75	80	W
p_{g_2}	11.5	10.5	W
P_{out}	225	300	W
*P_{load}	180	240	W
η	75	79	%
For 100% modulation			
P_{mod}	150	190	W
$v_{g2(pk)\ mod.}$	300	300	V

* With a circuit transfer efficiency of 80%.

OPERATION OF TWO VALVES IN PUSH-PULL AS CLASS "B" A.F. POWER AMPLIFIER OR MODULATOR

Limiting Values

V_a max.	3.0	kV
p_a max. (corresponding to an anode temperature of 850°C, *i.e.*, red heat)	125	W
I_k max.	320	mA
$i_{k(pk)}$ max.	1.0	A
V_{g_2} max. ($I_{g_1}=0$)	600	V
V_{g_2} max. ($I_{g_1}>0$)	400	V
p_{g_2} max.	20	W
$-V_{g_1}$ max.	500	V
R_{g_1-k} max.	150	kΩ

QY3-125

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Typical Operating Conditions (Without I_{g1})

V_a	1.5	2.0	2.5	kV
V_{g2}	600	600	600	V
V_{g1}	−94	−96	−97	V
$I_{a(o)}$	2×30	2×30	2×30	mA
I_a (max. sig.)	2×109	2×111	2×108	mA
I_{g2} (max. sig.)	2×13.5	2×12	2×13	mA
$V_{in(g-g)\ (r.m.s.)}$	130	132	134	V
p_a	2×78	2×92	2×95	W
P_{out}	170	260	345	W
R_{a-a}	12	17.6	25	kΩ
η	52	58.5	64	%
D_{tot}	3.5	3.6	4.0	%

Typical Operating Conditions (With I_{g1})

V_a	1.5	2.0	2.5	kV
V_{g2}	350	350	350	V
V_{g1}	−48	−50	−51	V
$I_{a\ (o)}$	2×30	2×30	2×30	mA
I_a (max. sig.)	2×225	2×197	2×151	mA
I_{g2} (max. sig.)	2×42	2×32	2×18	mA
I_{g1}	2×16	2×12	2×8.5	mA
$V_{in\ (g-g)\ (r.m.s.)}$	234	210	170	V
P_{drive}	2×2.4	2×1.6	2×0.9	W
p_a	2×114	2×120	2×103	W
P_{out}	455	550	550	W
R_{a-a}	7.2	12	20	kΩ
η	66.5	69.5	72.5	%
D_{tot}	5.0	5.0	5.0	%

CIRCUIT NOTES

1. The R.F circuit returns must be brought to the filament connection on Pin No. 1.

2. To ensure equal distribution of the currents through the seals the screen-grid leads should be strapped together at the valve holder and the circuit connections joined to the midpoint of the strap. This should not be allowed to impair the free flotation of individual contacts.

WEIGHT

Valve only { 3.5 ozs / 100 g

V.H.F. POWER TETRODE

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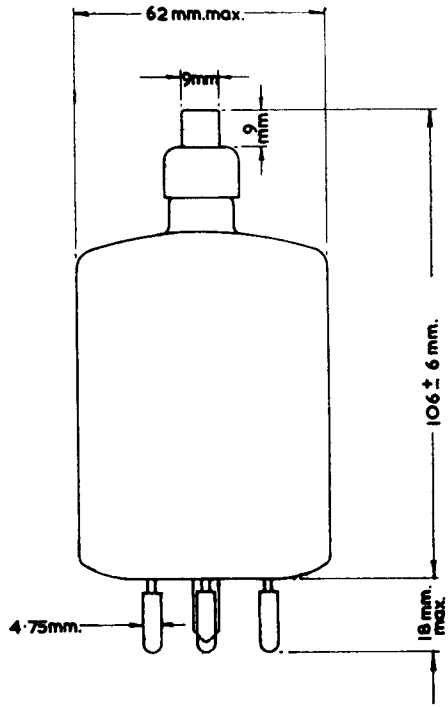
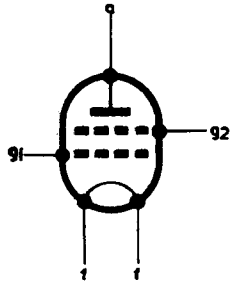
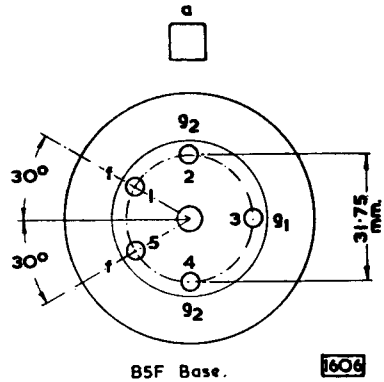
QY3-125







B5F Base. 1606

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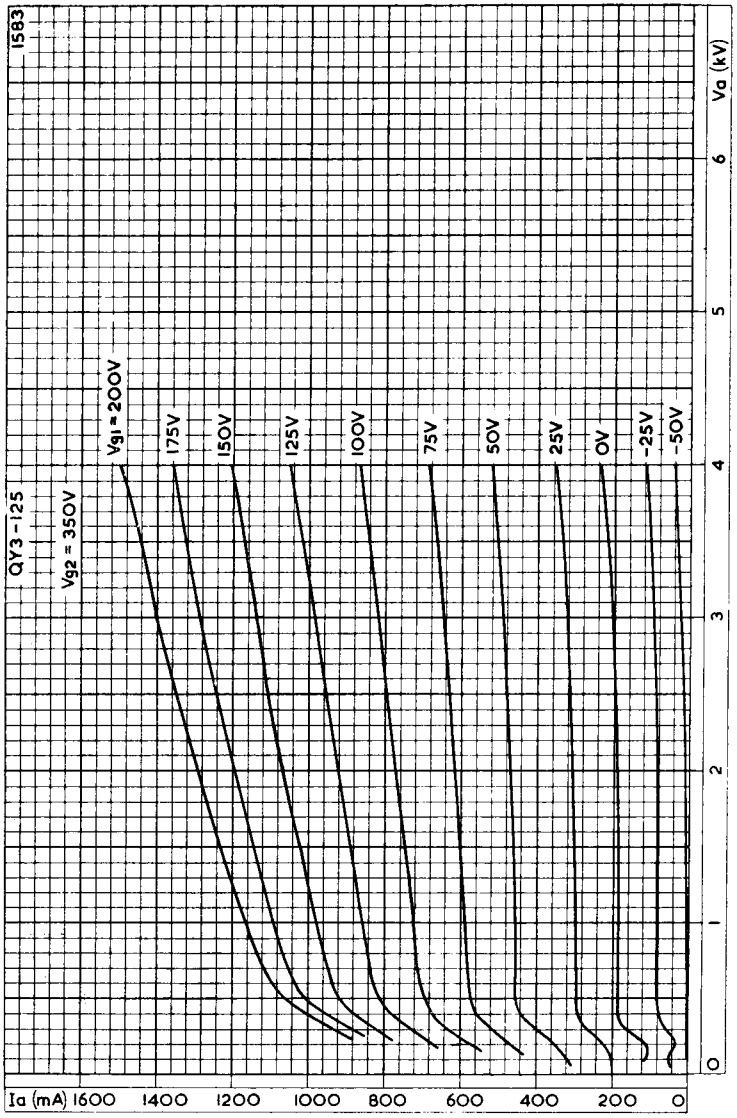

ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE = 350 V

V.H.F. POWER TETRODE

QY3-125

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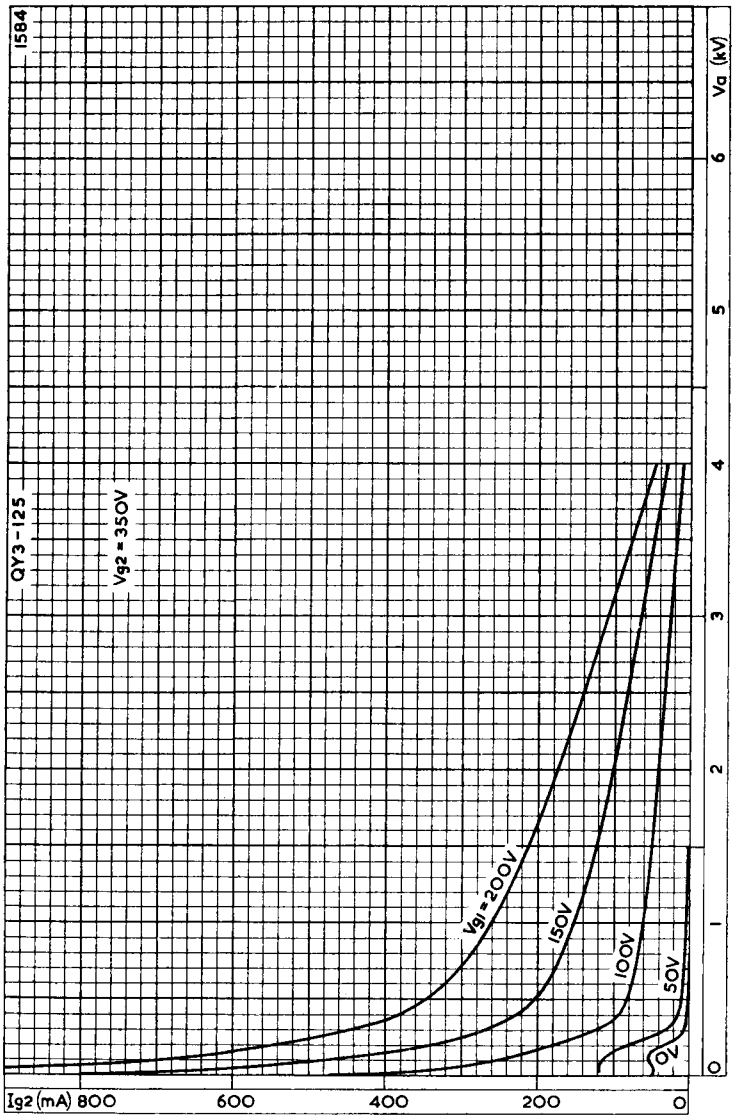


SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE = 350V

QY3-125

V.H.F. POWER TETRODE

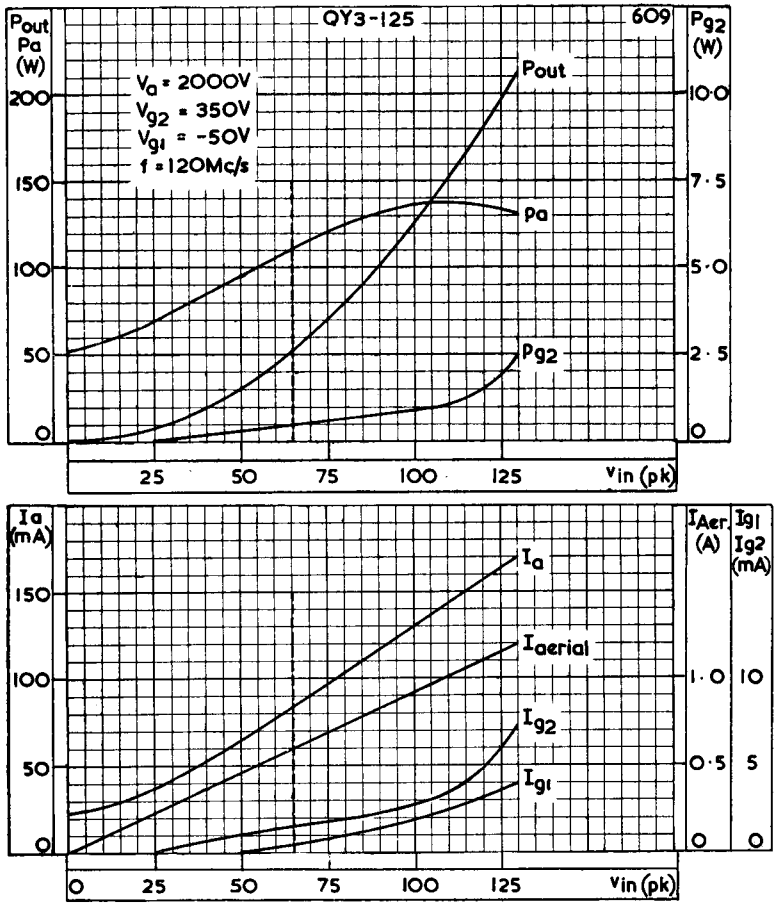
All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 200 Mc/s.

CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE OF 350 V

V.H.F. POWER TETRODE

QY3-125

All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 200 Mc/s.



OPERATING CHARACTERISTICS FOR CLASS "B" TELEPHONY
AT V_a=2 kV

QY3-125

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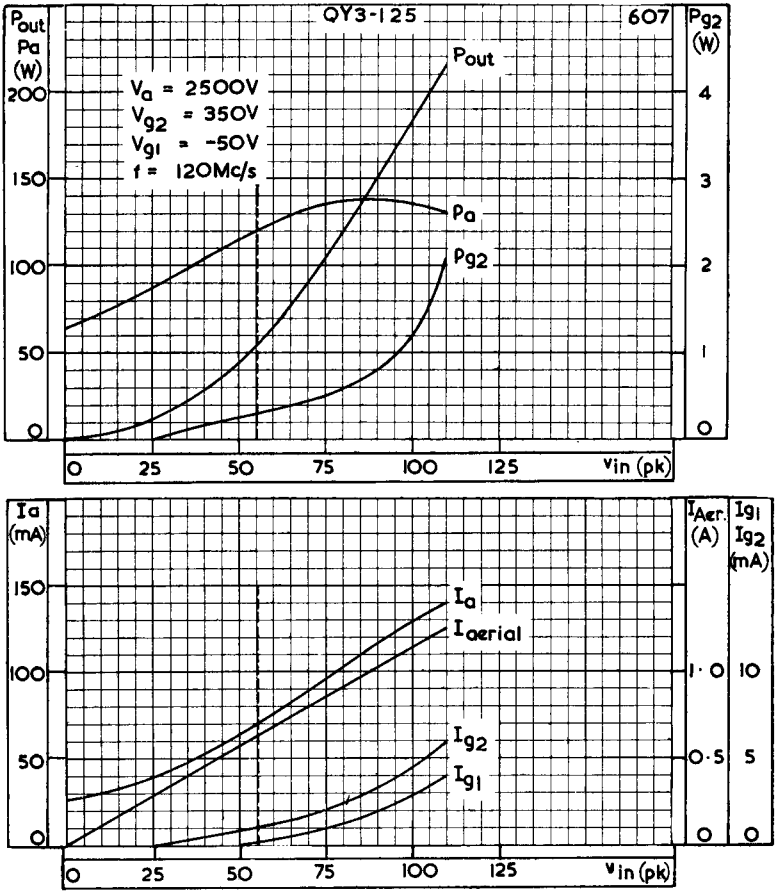
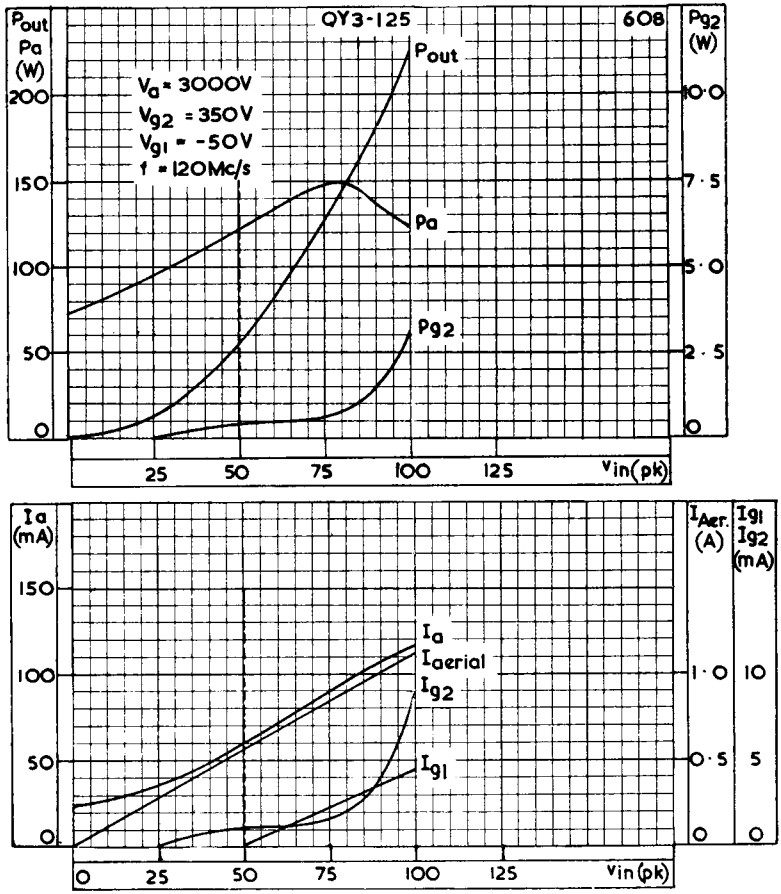


OPERATING CHARACTERISTICS FOR CLASS "B" TELEPHONY
AT V_a=2.5 kV

V.H.F. POWER TETRODE

QY3-125

All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 200 Mc/s.



OPERATING CHARACTERISTICS FOR CLASS "B" TELEPHONY

AT $V_a = 3.0$ kV

QY3-125

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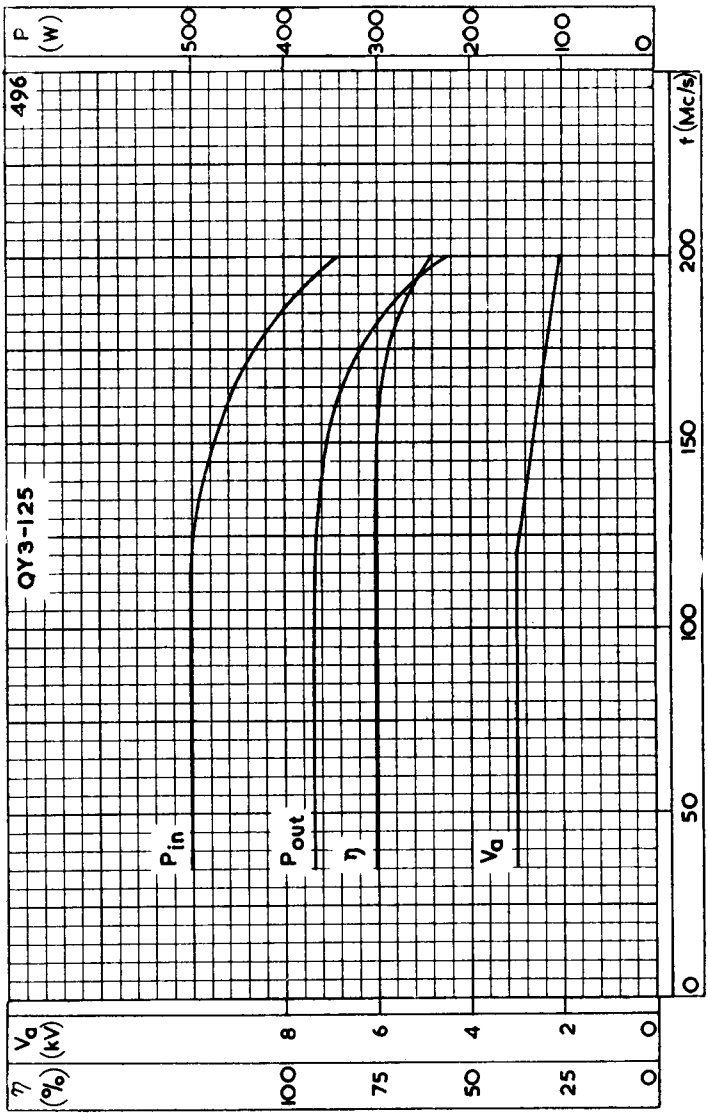
All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 200 Mc/s.



FREQUENCY CHARACTERISTICS AS CLASS "C" TELEGRAPHY AMPLIFIER

V.H.F. POWER TETRODE

QY3-125

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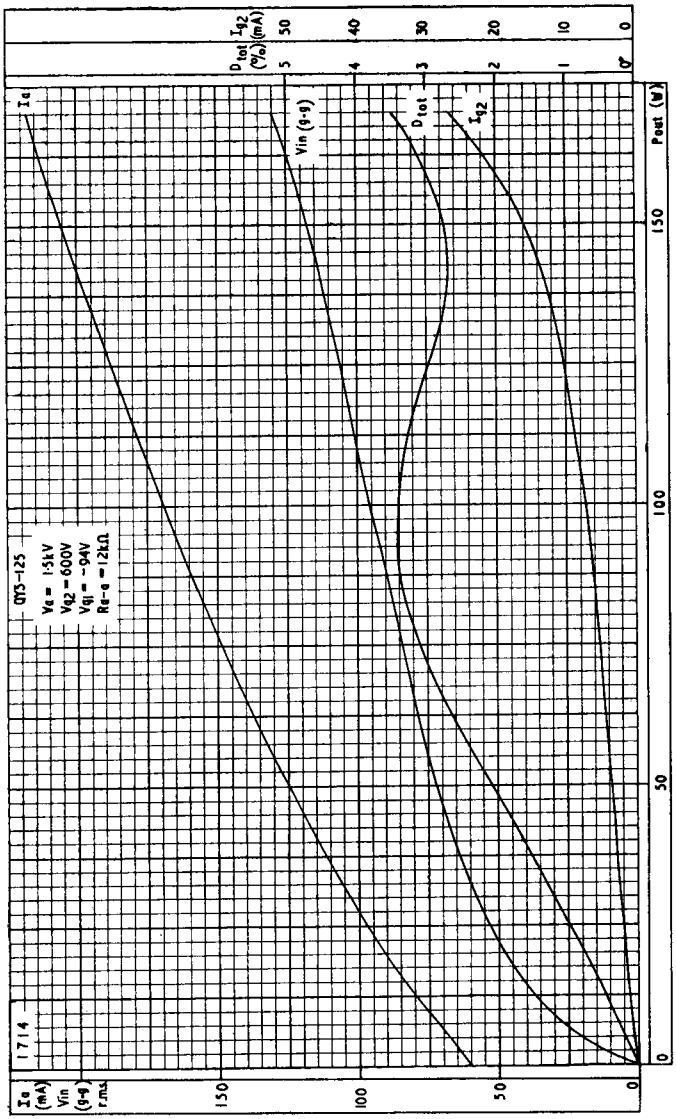
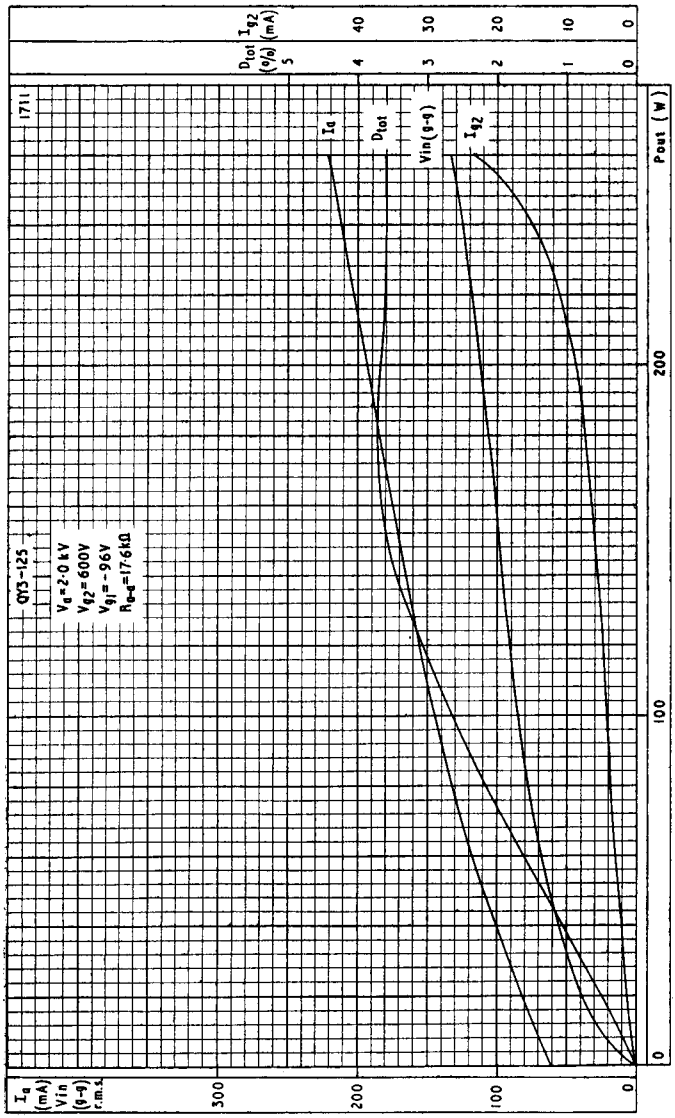


OPERATING CONDITIONS FOR TWO VALVES AS CLASS "B" AUDIO AMPLIFIER WITHOUT GRID CURRENT AND V_a=1.5 kV

QY3-125

V.H.F. POWER TETRODE

All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 200 Mc/s.



OPERATING CONDITIONS FOR TWO VALVES AS CLASS "B" AUDIO AMPLIFIER WITHOUT GRID CURRENT AND V_a=2.0kV

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QY3-125

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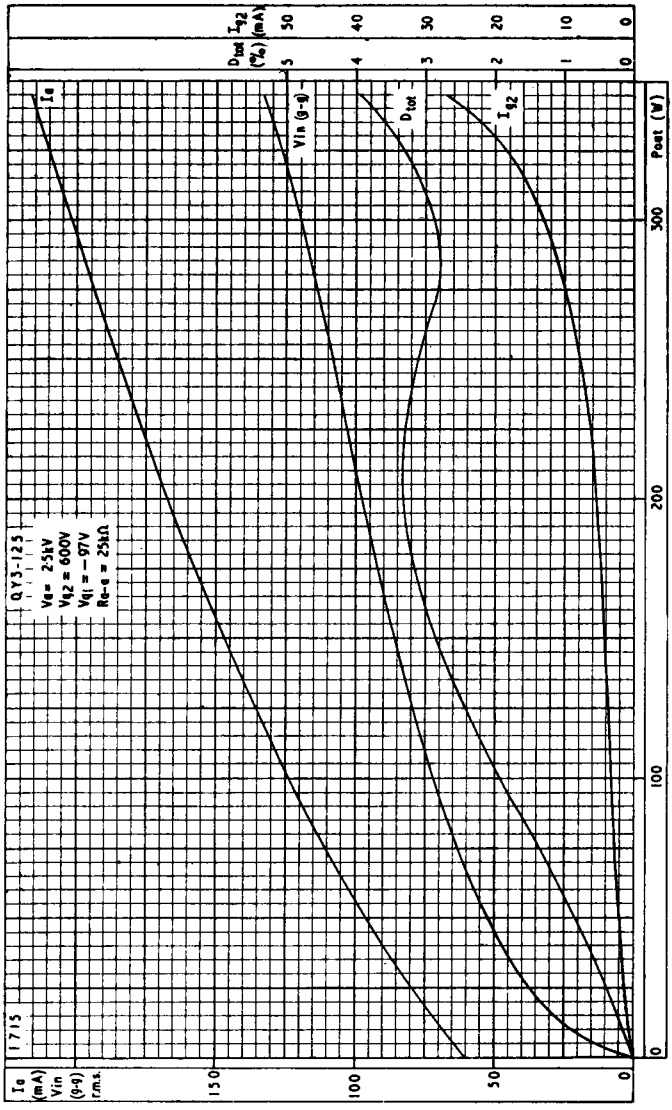

OPERATING CONDITIONS FOR TWO VALVES AS CLASS "B" AUDIO AMPLIFIER WITHOUT GRID CURRENT AND V_a=2.5 kV

QY3-125

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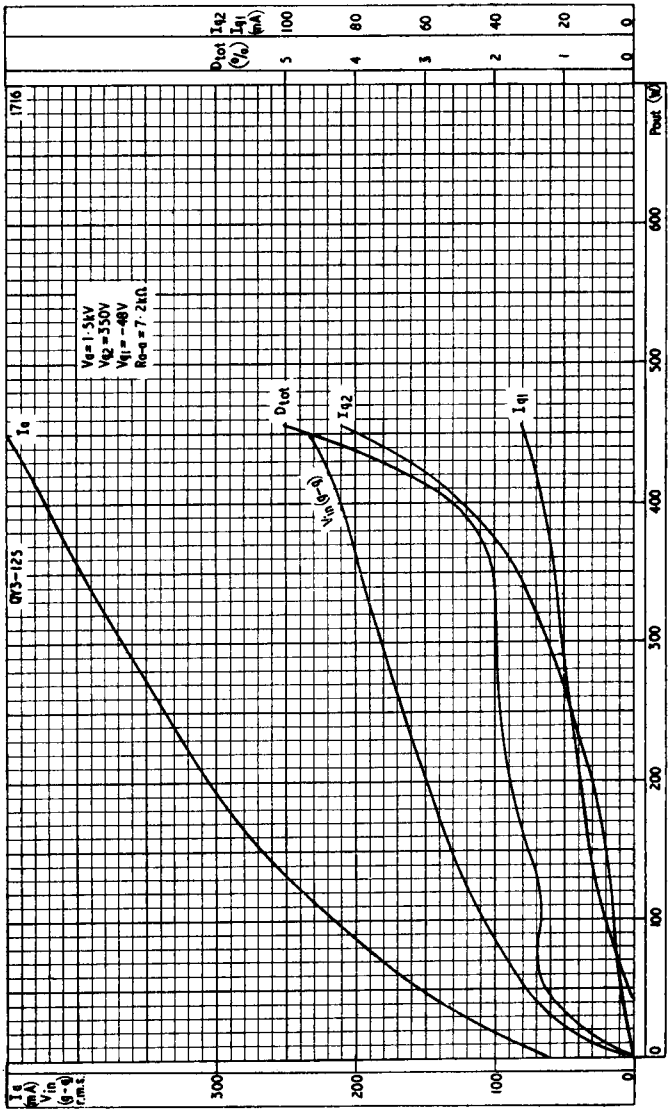

OPERATING CONDITIONS FOR TWO VALVES AS CLASS "B" AUDIO AMPLIFIER WITH GRID CURRENT AND V_a=1.5 kV

V.H.F. POWER TETRODE

QY3-125

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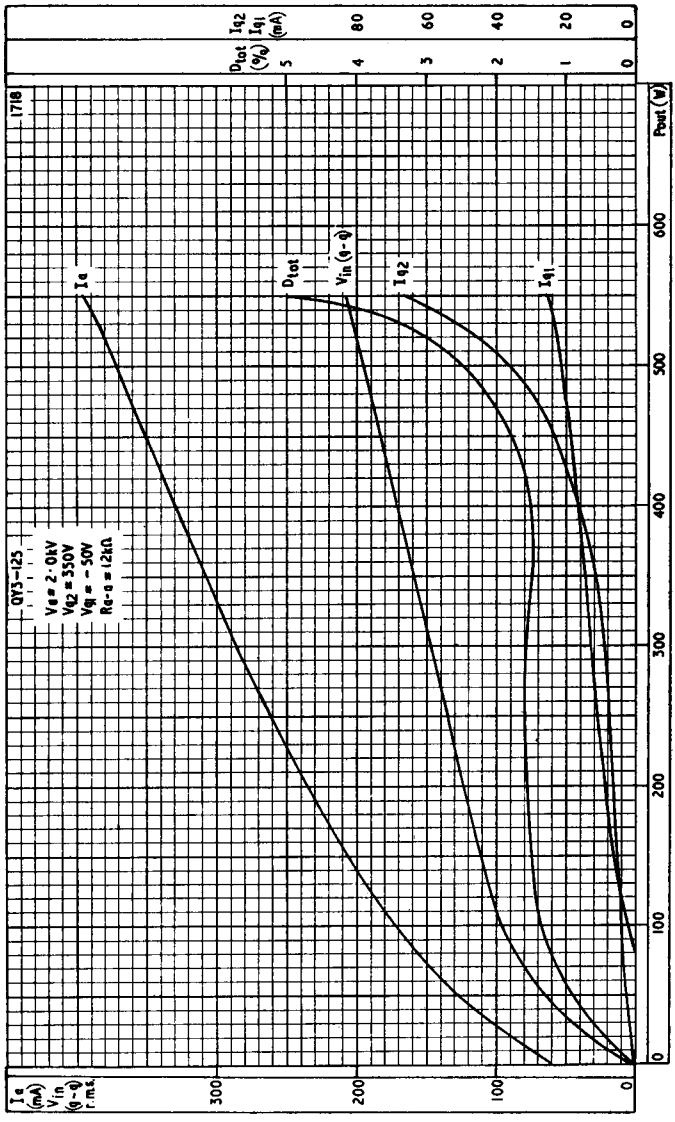

OPERATING CONDITIONS FOR TWO VALVES AS CLASS "B" AUDIO AMPLIFIER WITH GRID CURRENT AND V_a=2.0 kV

QY3-125

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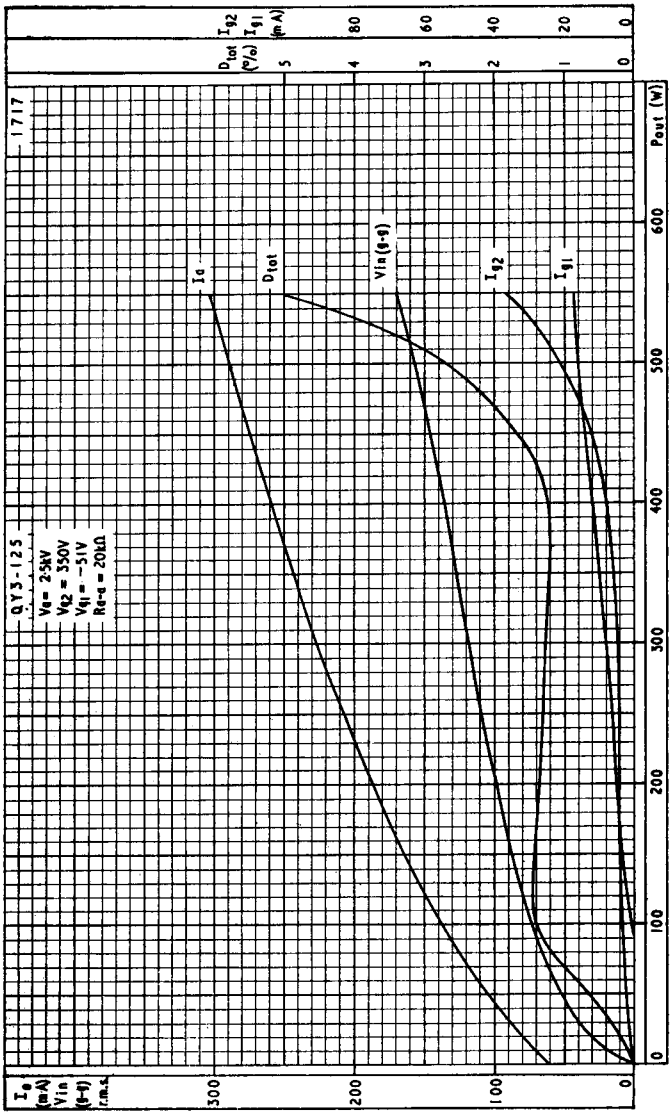

OPERATING CONDITIONS FOR TWO VALVES AS CLASS "B" AUDIO AMPLIFIER WITH GRID CURRENT AND $V_a = 2.5$ kV