

4 VALVE DATA PREFERRED TYPES

H TRANSMITTING VALVES AND MERCURY VAPOUR RECTIFIERS

QY3-125

All-glass tetrode rated for a maximum anode dissipation of 125W and suitable for use at frequencies up to 120 Mc/s at full ratings, and up to 200 Mc/s at reduced ratings.

FILAMENT

Thoriated tungsten, suitable for D.C. or A.C. operation

V_f 5.0 V

I_f 6.5 A

MOUNTING POSITION

Vertical, base up or down

CAPACITANCES

C_{in}	11.2	μF
C_{out}	4.2	μF
C_{a-g1}	0.05	μF

CHARACTERISTICS

At $V_a = 2,500V$, $V_{g2} = 350V$, $I_a = 40mA$.

g_m	2.2	mA/V
μ_{g1-g2}	6	

LIMITING VALUES

V_a max.	3,000	V
V_{g2} max.	600	V
p_a max. (corresponding to an anode temperature of 850°C, i.e. red heat)	125	W
p_{g2} max.	25	W
I_k max.	270	mA
i_k (pk) max.	1.1	A
Max. temperature of anode seal	220	°C
Max. temperature of base pins	180	°C

COOLING

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 from the envelope is sufficient but an anode terminal connection of large surface area, is necessary in order to keep the anode seal cool.

OPERATING CONDITIONS AS SINGLE VALVE R.F. POWER AMPLIFIER (Class "C" Unmodulated) at 120 Mc/s.

V_a	2,000	2,500	3,000	V
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	9	6.5	mA
V_{in} (pk)	260	330	300	V
p_{g1}	2.4	3	2	W
p_a	125	125	125	W
p_{g2}	17.5	14	10.5	W
P_{out}	275	375	375	W
η	69	75	75	%



**TRANSMITTING VALVES AND
MERCURY VAPOUR RECTIFIERS** **H****OPERATING CONDITIONS FOR SINGLE VALVE
AS R.F. AMPLIFIER CLASS "C" TELEPHONY
(Anode and Screen Modulated) at 120 Mc/s.****QY3-125**
(contd.)

V_a	2,000	2,500	V
V_{g2}	350	350	V
V_{g1}	-220	-210	V
I_a	150	152	mA
I_{g2}	33	30	mA
I_{g1}	5	4.5	mA
P_{g1}	2	1.7	W
$V_{in} (pk)$	390	380	V
P_a	75	80	W
P_{g2}	11.5	10.5	W
P_{out}	225	300	W
η	75	79	%
Modulation Depth	100	100	%
P mod.	150	190	W
$V_{g2} (pk)$ mod.	300	300	V

**OPERATING CONDITIONS FOR SINGLE VALVE
AS R.F. AMPLIFIER CLASS "B" TELEPHONY
At 120 Mc/s.**

V_a	2,000	2,500	3,000	V
V_{g2}	350	350	350	V
V_{g1}	-50	-50	-50	V
I_a	83	70	60	mA
I_{g2}	1.5	1	1	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
η	32.5	31.5	32	%
Modulation depth	100	100	100	%
I_{g1}	4	4	4.5	mA
P_{g1}	0.52	0.44	0.45	W

**OPERATING CONDITIONS FOR TWO VALVES IN
PUSH-PULL AS L.F. POWER AMPLIFIER OR
CLASS "B" MODULATOR**(Without I_{g1})

V_a	1,500	2,000	2,500	V
V_{g2}	600	600	600	V
V_{g1}	-90	-94	-96	V
$I_{a(0)}$	2×30	2×30	2×30	mA
I_a max. sig.	2×111	2×120	2×116	mA
I_{g2} max. sig.	2×10	2×6	2×8	mA
I_{g1}	0	0	0	mA
$V_{in} (pk)$	2×90	2×94	2×96	V
P_a	2×88	2×125	2×125	W
P_{g2}	2×6	2×3.6	2×4.8	W
P_{out}	158	230	330	W
R_{a-a}	10,000	13,500	20,000	Ω
η	48	48	57	%

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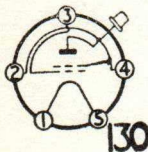
H TRANSMITTING VALVES AND MERCURY VAPOUR RECTIFIERS

QY3-125 OPERATING CONDITIONS FOR TWO VALVES IN (contd.) PUSH-PULL AS L.F. POWER AMPLIFIER OR CLASS "B" MODULATOR.

(With I_{g1})				
V_a	1,500	2,000	2,500	V
V_{g2}	350	350	350	V
V_{g1}	-41	-45	-43	V
I_a (o)	2×45	2×40	2×50	mA
I_a max. sig.	2×200	2×150	2×130	mA
I_{g2} max. sig.	2×19	2×10	2×8	mA
I_{g1}	2×18	2×15	2×12	mA
V_{in} (p.k.)	2×145	2×110	2×95	V
P_{g1}	2×2.6	2×1.6	2×1.2	W
P_{g2}	2×6.7	2×3.5	2×2.8	W
P_{out}	350	350	400	W
R_{a-a}	7,000	13,500	22,000	Ω
η	58	58	61	%

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 g_2 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.



BASE :
MVH18

DIMENSIONS :
L=130 mm
D=62 mm

QQV 04-20

Twin beam tetrode with a maximum rated dissipation of 10 watts at each anode. It is primarily intended for use as a push-pull R.F. power amplifier or oscillator at frequencies up to 200 Mc/s. Arrangements should be made to earth the metal base of the valve by means of spring clips or by some alternative method. The cathode is indirectly heated with centre tapped heater for series or parallel connection.

HEATER

	Series	Parallel	
V_h	12.6	6.3	V
I_h	0.8	1.6	A
Heating time 20 secs.			

MOUNTING POSITION

Vertical—base down Horizontal—plane of anodes vertical

