

U.H.F. POWER TETRODE

QVI-150A

Forced air-cooled power tetrode rated for a maximum anode dissipation of 150W and suitable for use at frequencies up to 500 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.

HEATER Indirectly heated.

V_h	6.0	V
I_h	2.6	A
Minimum heating time	30	secs

MOUNTING POSITION

Any

CAPACITANCES (Measured without external shield)

C_{a-g1}	<0.06	$\mu\mu F$
C_{in}	15.5	$\mu\mu F$
C_{out}	4.5	$\mu\mu F$

CHARACTERISTICS (Measured at $V_a=500$ V, $V_{g2}=250$ V, $I_a=200$ mA)

I_{g1-g2}	5.0
g_m	12 mA/V

COOLING

Max. temperature of base and envelope seals	150	°C
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Air cooling must start simultaneously with the application of heater voltage. A base must be used which directs air on to the base seals, past the screen-grid seal and glass envelope, and through the radiator. A typical value of air flow for maximum anode dissipation is given in the following table.

Anode dissipation	Height above sea-level	Input temperature	Rate of flow of air	Pressure difference between inlet and outlet
P_a (W)	h (m)	T_{in} °C	(m ³ /min)	(mm of H ₂ O)
150	0	20	0.22	15

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OPERATING CONDITIONS AS SINGLE VALVE R.F. POWER AMPLIFIER (CLASS "C" TELEPHONY, ANODE AND SCREEN-GRID MODULATION)

Limiting Values

f max.	500	Mc/s
V _a max.	1.0	kV
p _a max.	100	W
V _{g2} max.	300	V
p _{g2} max.	12	W
I _k max.	250	mA
i _{k(pk)} max.	2.1	A
-V _{g1} max.	250	V
p _{g1} max.	2.0	W
R _{g1-k} max.	25	k Ω

Typical Operating Conditions at f ≤ 165 Mc/s.

V _a	400	600	800	1000	V
V _{g2}	250	250	250	250	V
V _{g1}	-90	-95	-100	-105	V
I _a	200	200	200	200	mA
I _{g2}	40	35	25	20	mA
I _{g1} (approx.)	7.0	8.0	10	15	mA
v _{in(pk)}	110	120	120	125	V
p _a	25	40	60	60	W
P _{drive}	1.0	1.0	1.5	2.0	W
P _{out}	55	80	100	140	W
*P _{load}	44	64	80	112	W
η	69	66	63	70	%
For 100% modulation					
V _{g2(pk) mod.}	140	150	160	170	V
P _{mod.}	40	60	80	100	W

*With a circuit transfer efficiency of 80%.

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

Limiting Values

f max.	500	Mc/s
V _a max.	1.25	kV
p _a max.	150	W
V _{g2} max.	300	V
p _{g2} max.	12	W
I _k max.	250	mA
i _{k(pk)} max.	1.25	A
-V _{g1} max.	250	V
p _{g1} max.	2.0	W
R _{g1-k} max.	25	k Ω

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Typical Operating Conditions at $f \leq 165$ Mc/s.

V_a	600	750	1000	1250	V
V_{g2}	250	250	250	250	V
V_{g1}	-75	-80	-80	-90	V
I_a	200	200	200	200	mA
I_{g2}	37	37	30	20	mA
I_{g1} (approx.)	10	10	10	10	mA
$V_{in(pk)}$	90	95	95	105	V
* P_{drive}	1.0	1.0	1.0	1.2	W
p_a	35	40	50	55	W
P_{out}	85	110	150	195	W
† P_{load}	68	88	120	156	W
η	71	73	75	78	%

*Circuit losses not included.

†With a circuit transfer efficiency of 80%.

Typical Operating Conditions with Coaxial Cavity at $f \leq 500$ Mc/s.

V_a	600	800	1000	1250	V
V_{g2}	250	250	250	280	V
V_{g1}	-110	-110	-110	-115	V
I_a	170	200	200	200	mA
I_{g2}	6.0	7.0	7.0	5.0	mA
I_{g1} (approx.)	6.0	10	10	10	mA
p_a	52	65	80	110	W
* P_{drive}	15	20	25	30	W
P_{out}	50	95	120	140	W
† P_{load}	40	76	96	112	W
η	49	60	60	56	%

*Output of driver stage.

†With a circuit transfer efficiency of 80%.

OPERATING CONDITIONS AS R.F. POWER AMPLIFIER CLASS "B" FOR TELEVISION SERVICE (Negative modulation and positive synchronisation).

Limiting Values

f max.	220	Mc/s
V_a max.	1.25	kV
p_a max.	150	W
$I_{a(sync)}$ max.	335	mA
I_a max.	250	mA
V_{g2} max.	400	V
p_{g2} max.	12	W
$-V_{g1}$ max.	250	V
p_{g1} max.	2.0	W

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Typical Operating Conditions

f	170-220	170-220	170-220	Mc/s
Bandwidth	5.0	5.0	5.0	Mc/s
V _a	750	1000	1250	V
V _{g2}	300	300	300	V
V _{g1}	-60	-65	-70	V
I _a (sync)	335	330	305	mA
I _a (black)	245	240	230	mA
I _{g2} (sync)	50	45	45	mA
I _{g2} (black)	20	15	10	mA
I _{g1} (sync)	15	20	25	mA
I _{g1} (black)	4.0	4.0	4.0	mA
V _{in(pk)} (sync)	85	95	100	V
V _{in(pk)} (black)	65	70	75	V
P _{drive} (sync)	7.0	8.0	9.0	W
P _{drive} (black)	4.25	4.7	5.5	W
P _{out} (sync)	135	200	250	W
P _{out} (black)	75	110	140	W

CIRCUIT NOTES

1. All four cathode connections must be used.
2. For low frequency operation the screen-grid connection is made to Pin 1. At higher frequencies the contact ring must be used for connecting the screen-grid.

WEIGHT

Valve only

{ 5.5 ozs
150 g

ACCESSORIES

Information on these items can be obtained from the Industrial Technical Service Department, Mullard Ltd.

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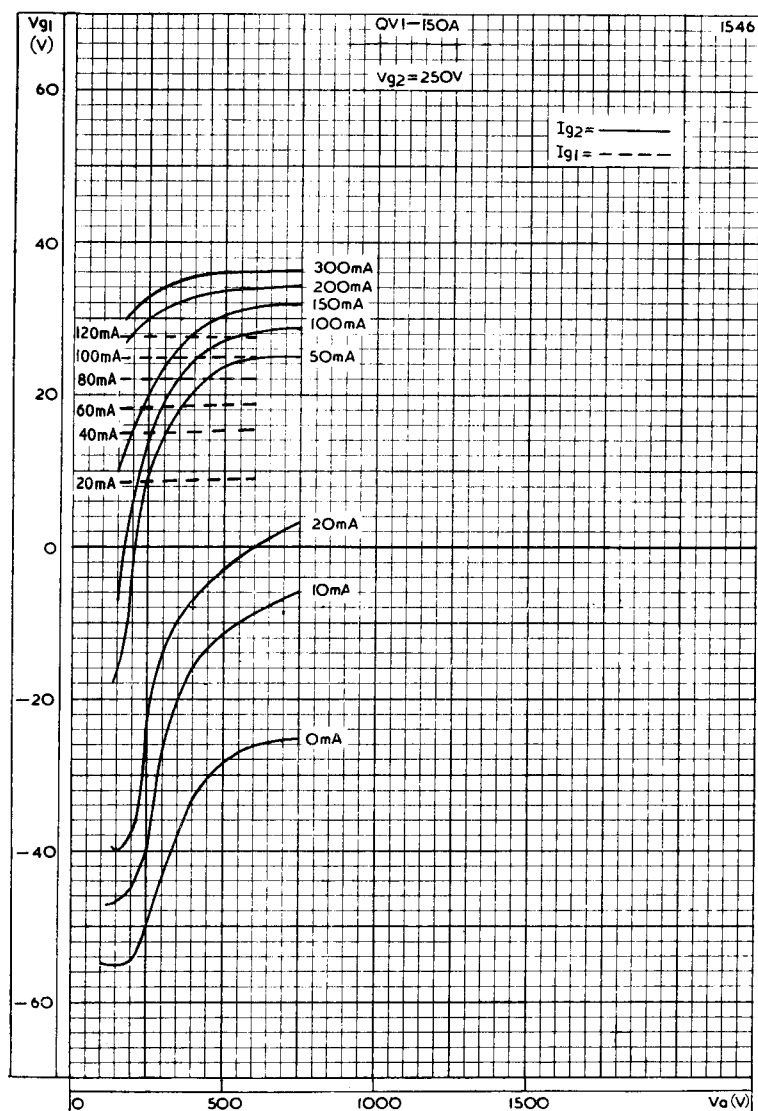
All dimensions in mm.



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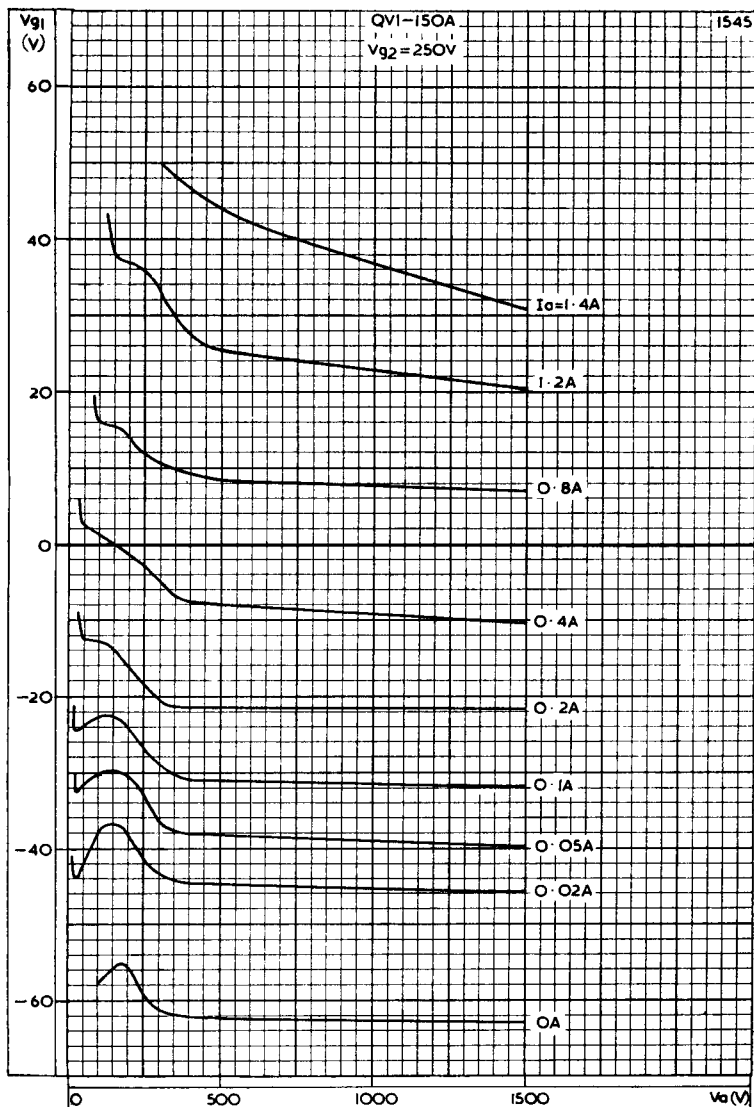


SCREEN-GRID AND CONTROL-GRID CONSTANT CURRENT CURVES

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CONSTANT ANODE CURRENT CURVES