

SPECIAL QUALITY V.H.F. POWER TETRODE

M8096

Special quality r.f. beam power tetrode for use at frequencies up to 175Mc/s in equipment where mechanical vibration and shocks are unavoidable and where statistically controlled major electrical characteristics are required.

This data should be read in conjunction with GENERAL NOTES – SPECIAL QUALITY VALVES which precede this section of the handbook, and the index numbers are used to indicate where reference should be made to a specific note.

HEATER

V_h^1	6.0	V
I_h	750	mA

CAPACITANCES² (measured without an external shield)

C_{a-g1}	< 300	mpF
C_{1n}	9.5	pF
C_{out}	4.5	pF

CHARACTERISTICS³

V_a	250	V
V_{bp}	0	V
V_{g2}	250	V
V_{g1}	-7.5	V
I_a	45	mA
I_{g2}	4.5	mA
g_m	7.0	mA/V
μ_{g1-g2}	16	
R_k	0	Ω

LIMITING VALUES⁴ (absolute ratings)

f max.	175	Mc/s
$V_{a(b)}$ max.	500	V
V_a max.	300	V
$V_{g2(b)}$ max.	500	V
V_{g2} max.	250	V
$-V_{g1}$ max.	125	V
p_a max.	12	W
p_{g2} max.	2.0	W
I_k max.	60	mA
$i_{k(pk)}$ max.	550	mA
V_{h-k} max.	100	V
Maximum acceleration (continuous operation)	2.5	g
Maximum shock (short duration)	500	g
T_{bulb} max.	250	°C

TEST CONDITIONS (unless otherwise specified)

V_h (V)	V_a (V)	V_{bp} (V)	V_{g2} (V)	V_{g1} (V)
6.0	250	0	250	-7.5

TESTS

GROUP A

Insulation

a-rest, g_2 -rest measured at -300V

g_1 -rest measured at -100V

Reverse grid-current

R_{g1} max. = 100k Ω

GROUP B

Heater current

Heater to cathode leakage current

V_{h-k} = 100V (cathode negative)

V_{h-k} = 100V (cathode positive)

†Anode current

Screen-grid current

Mutual conductance

Group quality level¹⁰

When V_{g1} is applied in turn to pins 8 and 9,

†no change in anode current should result.

V _{g1} (V) -7.5	R _k (Ω) 0	V _{h-k} (V) 0	Individuals ⁶		Lot average ⁷		Lot standard deviation ⁸ Max.
			Bogey ⁹	Min.	Max.	Min.	
A.Q.L. ⁵	(%)						
0.25			—	100	—	—	MΩ
0.25			—	100	—	—	MΩ
0.25			—	—	2.5	—	μA
0.65			—	690	810	—	mA
0.65			—	—	—	—	—
—			—	—	20	—	μA
—			—	—	20	—	μA
0.65	45	33	57	39	—	—	mA
—	—	—	—	—	51	—	mA
0.65	—	—	7.0	—	—	—	mA
0.65	7.0	5.6	9.0	—	—	—	mA/V
—	—	—	—	6.3	7.7	—	0.54 mA/V
1.0	—	—	—	—	—	—	—

GROUP C

Anode current. $V_{g1} = -15V$

Change in mutual conductance. $V_h = 5.7V$

Microphonic noise at the anode at 50c/s and

2.5g min. peak acceleration, $V_b = 250V$,
 $R_a = 2.0k\Omega$, $V_g = -15V$.

Amplification factor (μ_{g1-g2})

*Beam plate continuity test. $V_{bp} = 250V$

Group quality level¹⁰

*The anode and screen-grid currents should

change from the values obtained in group B

GROUP D

Glass strain test^{11A}. No applied voltages

Base strain test¹². No applied voltages

Capacitances (unshielded). No applied voltages

C_{a-g}

C_{in}

C_{out}

Reverse grid current. $V_h = 6.6V$, $V_a = 300V$,
 $V_{g2} = 250V$, $I_a = 40mA$

Power oscillation. $V_{a(b)} = 300V$, $I_a = 50mA$,
 $R_{g1} = 16k\Omega$, $f = 135Mc/s$

Reverse screen-grid current. $V_a = 0V$,
 $I_{g2} = 10mA$, $V_{g2} = 170V_{r.m.s.}$

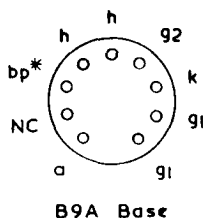
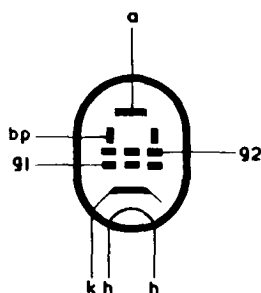
*Peak cathode current. $V_{a(pk)} = V_{g1(pk)}$
 $= V_{bp(pk)} = 200V$

*The voltage waveform should be a half-sine wave.

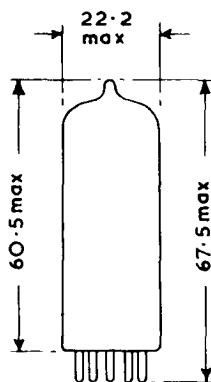
P.R.F. = 50p/s., t_p max. = 12.5 μs .

GROUP G

	A.Q.L. ⁵ (%)	Min.	Max.
Valves are held for 28 days and retested for Inoperatives ¹⁶	0.5	—	—
Reverse grid current. R_{g1} max. = 100k Ω	0.5	—	2.5 μ A



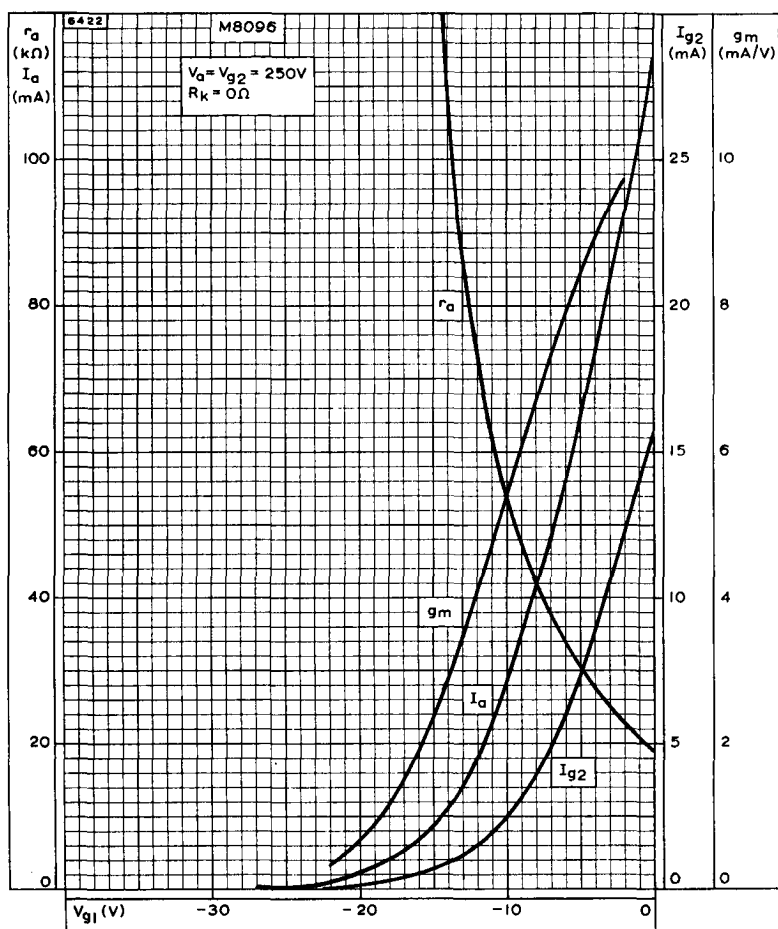
All dimensions in mm



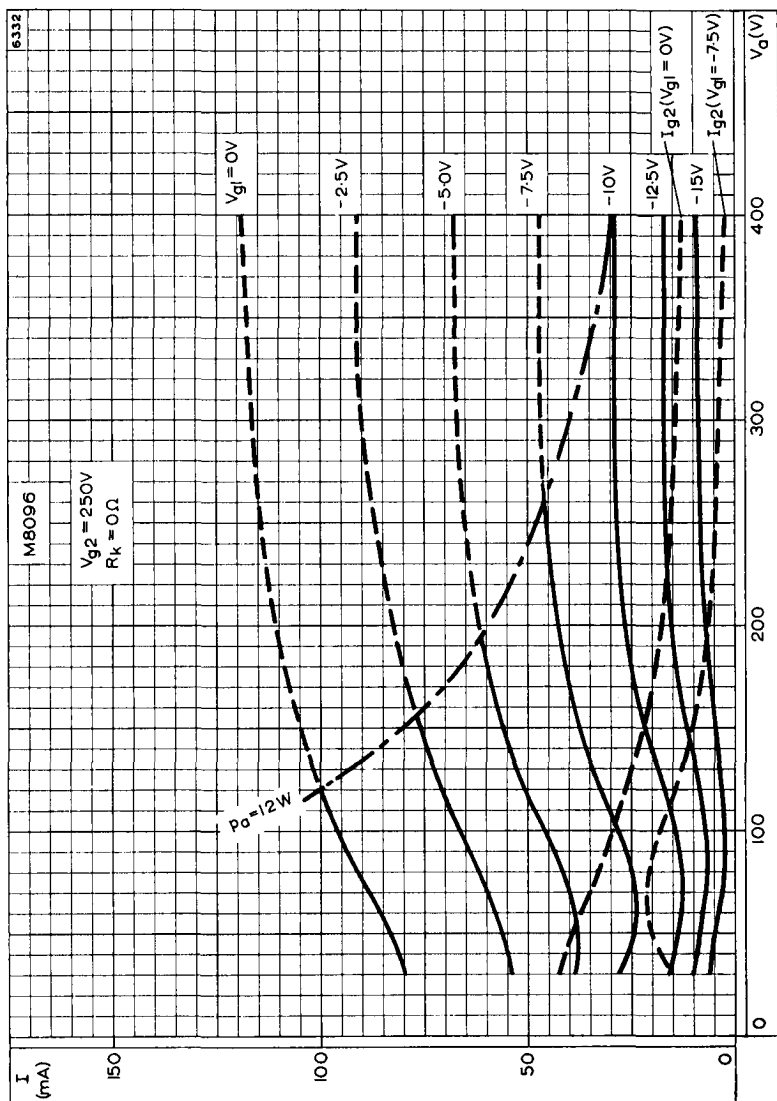
* Connect contact 3 to contact 7 at socket.
Contacts 8 and 9 should be connected to
external circuit with leads of equal length.

6309

The bulb and base dimensions of this valve are in accordance with BS448,
Section B9A



ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE AND ANODE IMPEDANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE



ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER