

TRIODE PENTODE

UCL83

Combined triode and output pentode with separate cathodes and 100mA heater intended for use in audio frequency applications.

HEATER

Suitable for series operation a.c. or d.c.

I_h
 V_h

100 mA
38 V ←

MOUNTING POSITION

Any

CAPACITANCES (measured without an external shield)

C_{at-gp}
 C_{at-ap}
 C_{gt-gp}
 C_{gt-ap}

<0.1 pF
<1.6 pF
<0.03 pF
<0.05 pF

Pentode section

C_{a-g1}
 C_{in}
 C_{out}
 C_{g1-h}

<0.2 pF
5.7 pF
4.7 pF
0.4 pF

Triode section

C_{a-g}
 C_{in}
 C_{out}

1.6 pF
2.3 pF
0.32 pF

CHARACTERISTICS

Pentode section

V_a
 V_{g2}
 I_a
 I_{g2}
 V_{g1}
 g_m
 r_a
 μ_{g1-g2}

170 V
170 V
30 mA
5.0 mA
-9.5 V
5.5 mA/V
53 k Ω
10

Triode section

V_a 170
 I_a 1.6
 V_g -1.5
 g_m 2.1
 r_a 40
 μ 82

200 V
2.4 mA
-1.5 V
2.5 mA/V
34 k Ω
85



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PENTODE SECTION AS AUDIO OUTPUT VALVE

Single valve class 'A'

V_a	170	200	V
V_{g2}	170	200	V
V_{g1}	-9.5	-13	V
$I_{a(0)}$	30	27	mA
$I_{g2(0)}$	5.0	4.4	mA
R_a	5.5	7.5	k Ω
$V_{in(r.m.s.)}$	5.0	5.2	V
P_{out}	2.2	2.5	W
D_{tot}	10	10.5	%

Two valves in class 'AB' push-pull

V_a	170	200	V
V_{g2}	170	200	V
R_k	180	220	Ω
$I_{a(0)}$	2×24	2×25	mA
I_a (max. sig.)	2×27.5	2×29	mA
$I_{g2(0)}$	2×3.8	2×3.9	mA
I_{g2} (max. sig.)	2×6.25	2×8.5	mA
R_{a-k}	6.5	7.5	k Ω
$V_{in(g1-g2)r.m.s.}$	17	23.5	V
P_{out}	5.0	7.2	W
D_{tot}	3.6	4.2	%

TRIODE SECTION AS A.F. VOLTAGE AMPLIFIER

V_b (V)	R_a (k Ω)	I_a (μ A)	R_k (k Ω)	$\frac{V_{out}}{V_{in}}$	V_{out} (V _{r.m.s.})	R_{g1}^* (k Ω)
170	100	650	1.8	49	15.3	330
200	100	720	2.2	47	17.7	330

$\frac{V_{out}}{V_{in}}$ measured with an input of 100mV

V_{out} measured for a total harmonic distortion of 5%

*Grid resistor of following valve.

LIMITING VALUES

Pentode section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	5.4	W
$V_{g2(b)}$ max.	550	V
V_{g2} max.	250	V
p_{g2} max.	1.2	W
p_{g2} max. (speech and music)	2.4	W
I_k max.	45	mA
R_{g1-k} max. (self-bias)	500	k Ω
R_{g1-k} max. (fixed bias)	250	k Ω
V_{h-k} max. (r.m.s. or d.c. cathode positive)	250	V
V_{h-k} max. (d.c. cathode negative)	100	V

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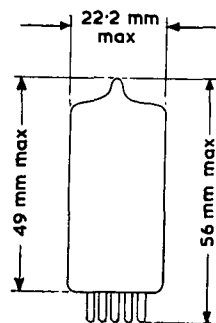
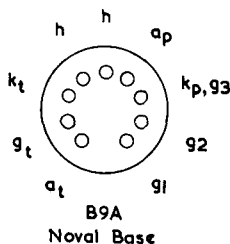
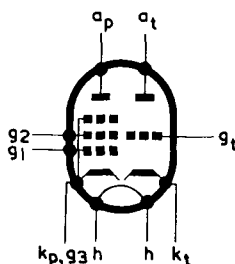
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LIMITING VALUES

Triode Section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	3.5	W
I_k max.	15	mA
R_{g1-k} max. (fixed bias)	1.0	MΩ
R_{g1-k} max (grid current biasing)	22	MΩ
V_{h-k} max. (d.c. cathode positive or a.c. r.m.s.)	250	V
V_{h-k} max. (d.c. cathode negative)	100	V

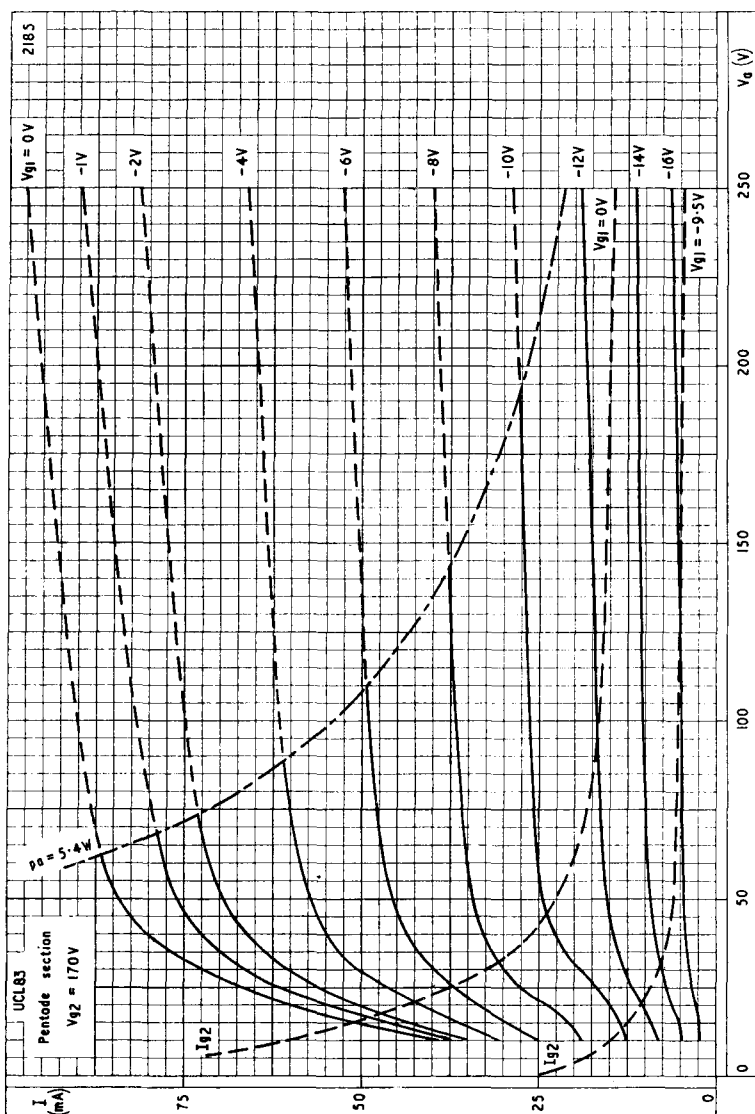
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ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 170V$