

TRIODE PENTODE

UCL82

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	100	mA
V_h	50	V

MOUNTING POSITION

Any

CAPACITANCES (measured without external shield)

C_{at-g1p}	<0.02	pF
C_{gt-ap}	<0.02	pF
C_{gt-g1p}	<0.025	pF
C_{at-ap}	<0.25	pF

Pentode section

C_{in}	9.3	pF
C_{out}	8.0	pF
C_{a-g1}	<0.3	pF
C_{g1-h}	<0.3	pF

Triode section

C_{a-k+h}	4.3	pF
C_{g-k+h}	2.7	pF
C_{a-g}	4.2	pF
C_{g-h}	<0.02	pF

CHARACTERISTICS

Pentode section

V_a	100	200	V
V_{g2}	100	200	V
I_a	26	35	mA
I_{g2}	5.0	7.0	mA
V_{g1}	-6.0	-16	V
g_m	6.8	6.4	mA/V
r_a	15	20	k Ω
μ_{Lg1-g2}	10	9.5	

Triode section

V_a	100	V
I_a	3.5	mA
V_g	0	V
g_m	2.5	mA/V
r_a	28	k Ω
μ	70	

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PENTODE SECTION AS AUDIO OUTPUT VALVE

Single valve class 'A'

V_a	100	200	V
V_{g2}	100	200	V
V_{g1}	-6.0	-16	V
$I_{a(0)}$	26	35	mA
$I_{g2(0)}$	5.0	7.0	mA
$V_{in(r.m.s.)}$ $P_{out}=50mW$	650	600	mV
R_a	3.9	5.6	k Ω
$V_{in(r.m.s.)}$	3.8	6.6	V
* P_{out}	1.0	3.5	W
D_{tot}	9.0	10	%

Two valves in class 'AB' push-pull

V_a	100	200	V
V_{g2}	100	200	V
$\dagger R_k$	150	190	Ω
$I_{a(0)}$	2×20	2×35	mA
I_a (max. sig.)	2×22.5	2×39.5	mA
$I_{g2(0)}$	2×4.0	2×7.0	mA
I_{g2} (max. sig.)	2×7.0	2×16.5	mA
R_{a-a}	5.0	6.0	k Ω
$V_{in(g1-g1)r.m.s.}$	12.4	25	V
P_{out}	2.3	9.8	W
D_{tot}	4.0	4.0	%

$\dagger$ Common cathode bias resistor.

* P_{out} and D_{tot} are measured at fixed bias and therefore represent the power output available during the reproduction of speech and music.

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TRIODE SECTION AS A.F. AMPLIFIER

V_b (V)	R_a (k Ω)	I_a (mA)	R_k (k Ω)	R_g (M Ω)	Z_{source} (k Ω)	$\frac{V_{out}}{V_{in}}$	D_{tot} (%)	R_{g1}^* (k Ω)
200	100	0.85	1.5	3.3	0	47	1.0	330
150	100	0.6	1.8	3.3	0	45	1.9	330
100	100	0.38	1.8	3.3	0	41	6.0	330
200	100	0.85	1.5	3.3	220	43	0.85	330
150	100	0.6	1.8	3.3	220	41	1.05	330
100	100	0.38	1.8	3.3	220	34	3.6	330
200	220	0.52	2.2	3.3	0	54.5	1.0	680
150	220	0.36	2.7	3.3	0	52	1.85	680
100	220	0.23	2.7	3.3	0	47	4.25	680
200	220	0.52	2.2	3.3	220	50	0.5	680
150	220	0.36	2.7	3.3	220	47	1.0	680
100	220	0.23	2.7	3.3	220	38	3.75	680
200	100	1.05	0	22	0	48.5	0.7	330
150	100	0.7	0	22	0	46	1.55	330
100	100	0.37	0	22	0	44	8.0	330
200	100	1.05	0	22	220	44	2.1	330
150	100	0.7	0	22	220	42.5	1.6	330
100	100	0.37	0	22	220	37	5.9	330
200	220	0.59	0	22	0	56	0.8	680
150	220	0.4	0	22	0	53	1.7	680
100	220	0.21	0	22	0	46	5.6	680
200	220	0.59	0	22	220	51	2.0	680
150	220	0.4	0	22	220	48.5	1.4	680
100	200	0.21	0	22	220	42	3.1	680

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

D_{tot} measured for $V_{out}=10V$

*Grid resistor of following valve.

MICROPHONY

The triode section can be used without special precautions against microphony in circuits in which the input voltage is $\geq 10mV$ (r.m.s.) for an output of 50mV from the output stage.

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LIMITING VALUES

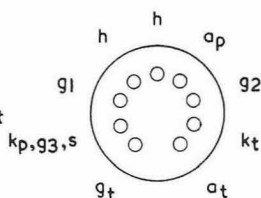
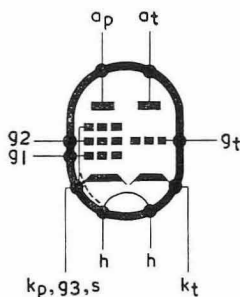
Pentode Section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	7.0	W
$V_{g2(b)}$ max.	550	V
V_{g2} max.	250	V
p_{g2} max.	1.8	W
p_{g2} max. (max. sig. speech and music)	3.2	W
I_k max.	50	mA
R_{g1-k} max. (self bias)	2.0	M Ω
R_{g1-k} max. (fixed bias)	1.0	M Ω
V_{h-k} max.	200	V
R_{h-k} max.	20	k Ω

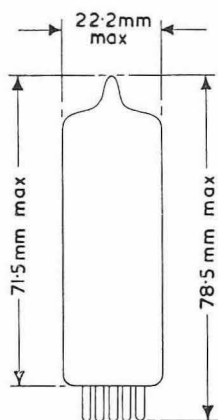
Triode Section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	1.0	W
I_k max.	15	mA
R_{g-k} max. (self bias)	3.0	M Ω
R_{g-k} max. (fixed bias)	1.0	M Ω
R_{g-k} max. (grid current biasing)	22	M Ω
Z_{g-k} max. ($f=50c/s$)	500	k Ω
V_{h-k} max.	200	V
R_{h-k} max.	20	k Ω

2324



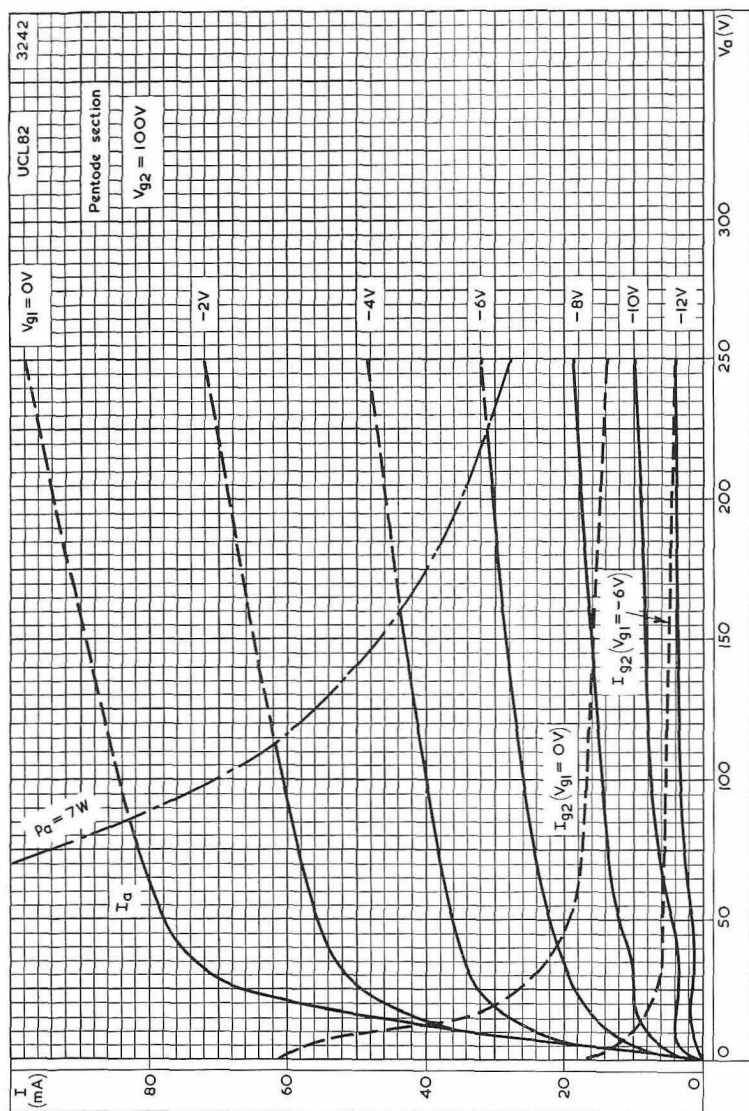
B9A Base



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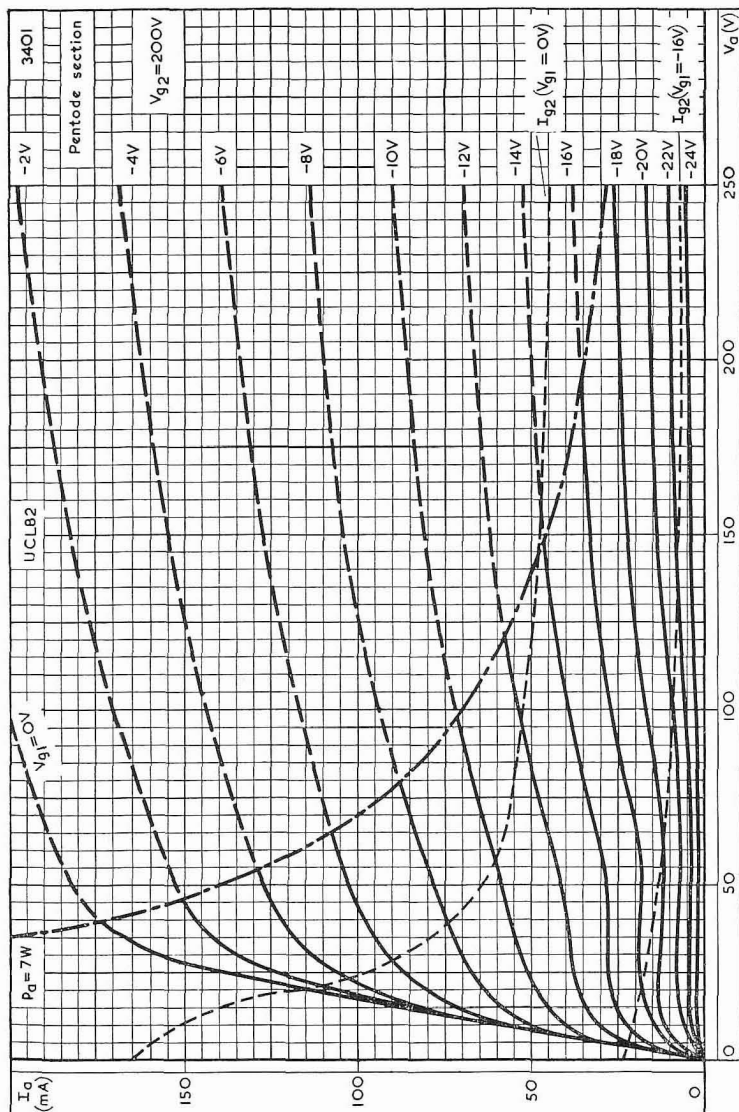


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 100V$

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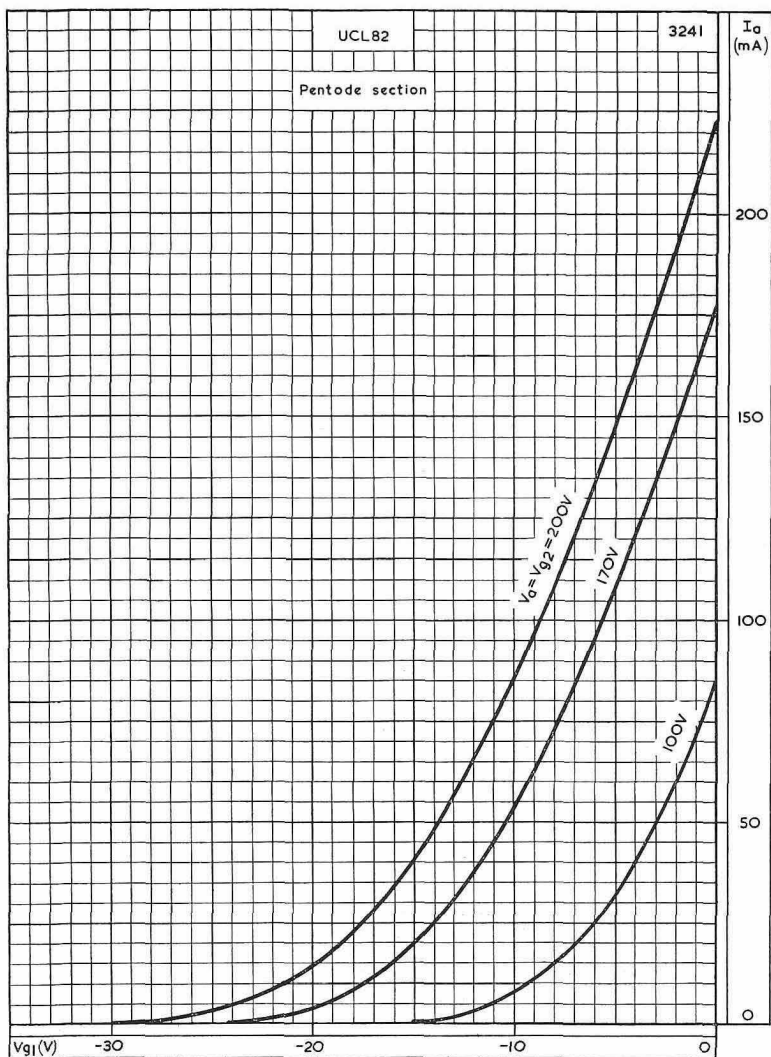
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 200V$



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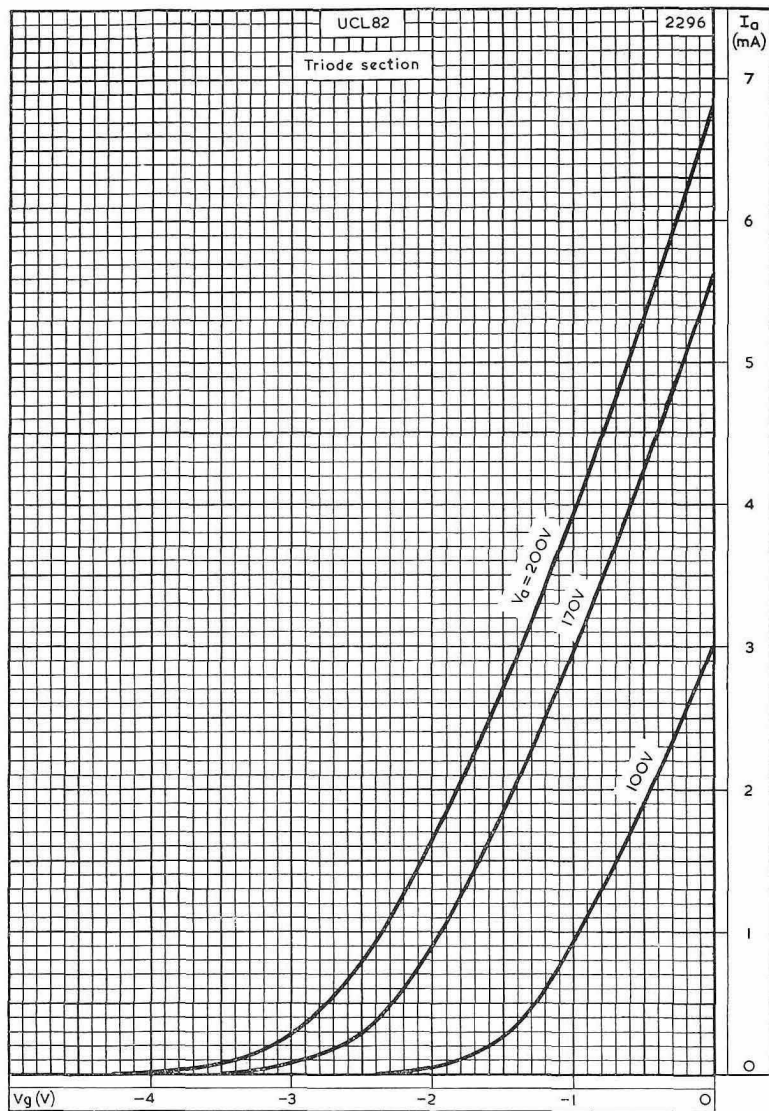


ANODE CURRENT PLOTTED AGAINST CONTROL-GRID VOLTAGE FOR VARIOUS VALUES OF ANODE AND SCREEN-GRID VOLTAGE

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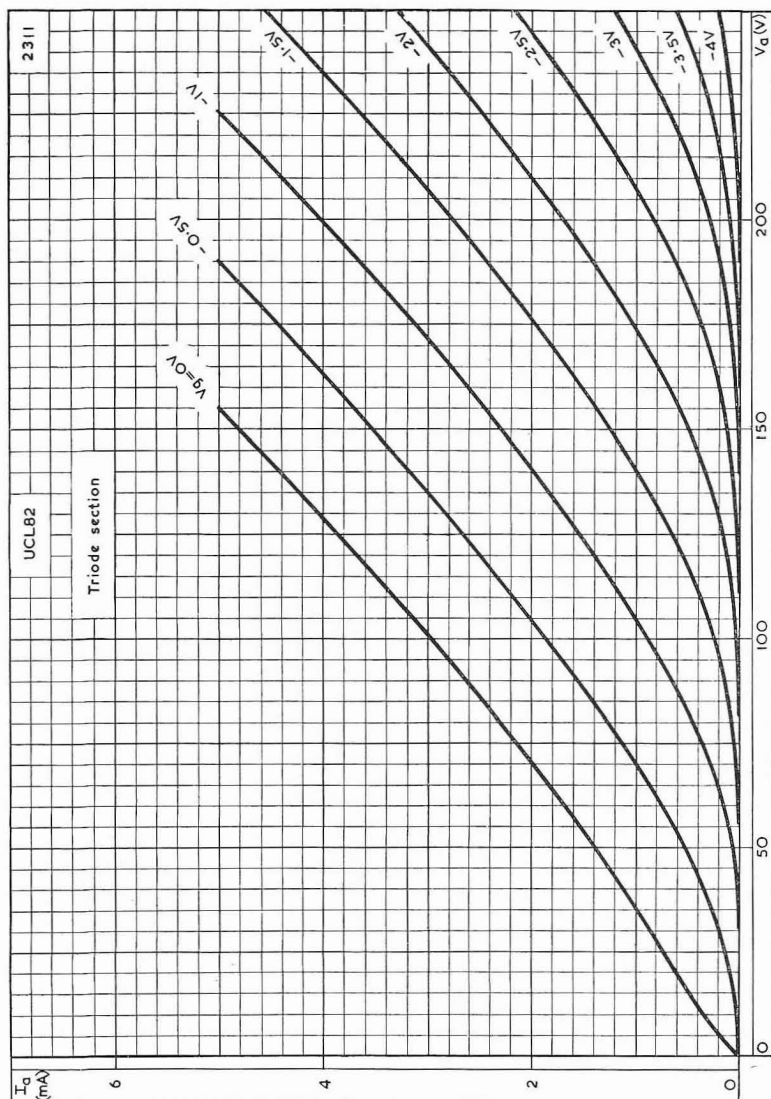


ANODE CURRENT OF THE TRIODE SECTION PLOTTED AGAINST CONTROL-GRID VOLTAGE FOR VARIOUS VALUES OF ANODE VOLTAGE

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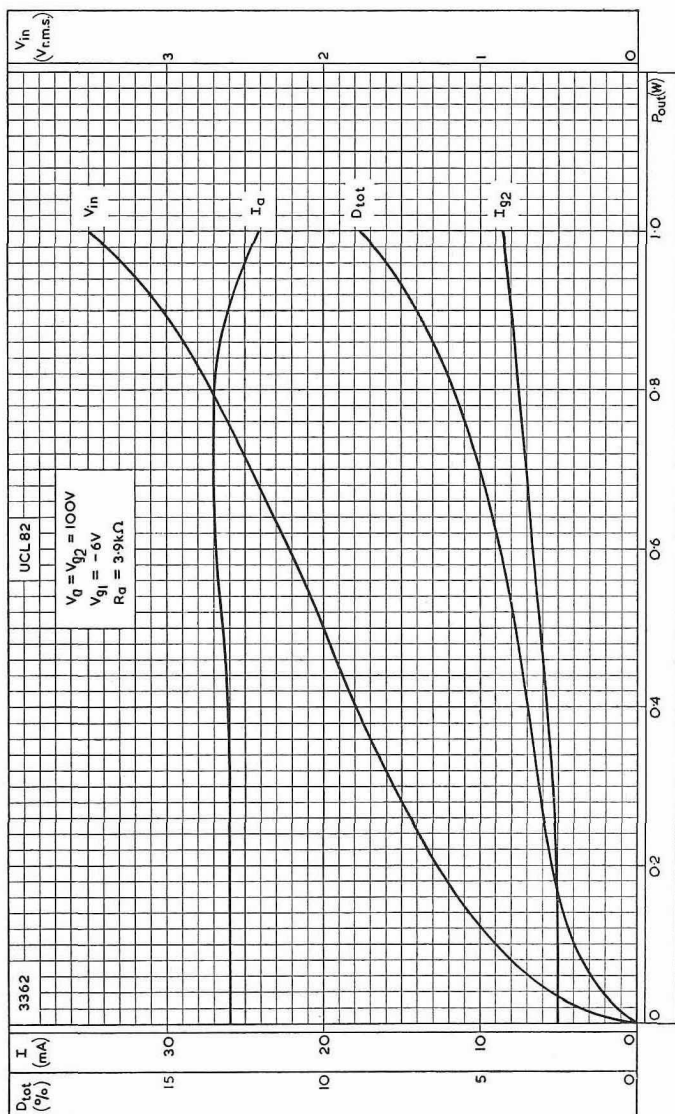


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR VARIOUS VALUES OF GRID VOLTAGE

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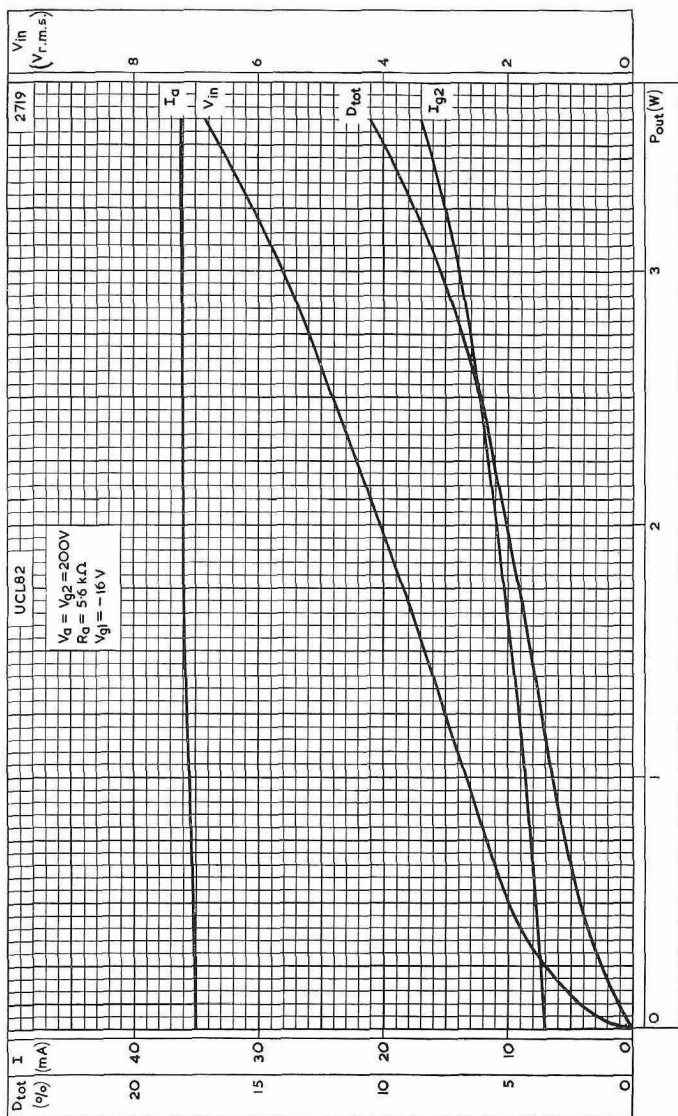


PERFORMANCE OF SINGLE UCL82 CLASS 'A' AMPLIFIER. $V_a = V_{g2} = 100V$

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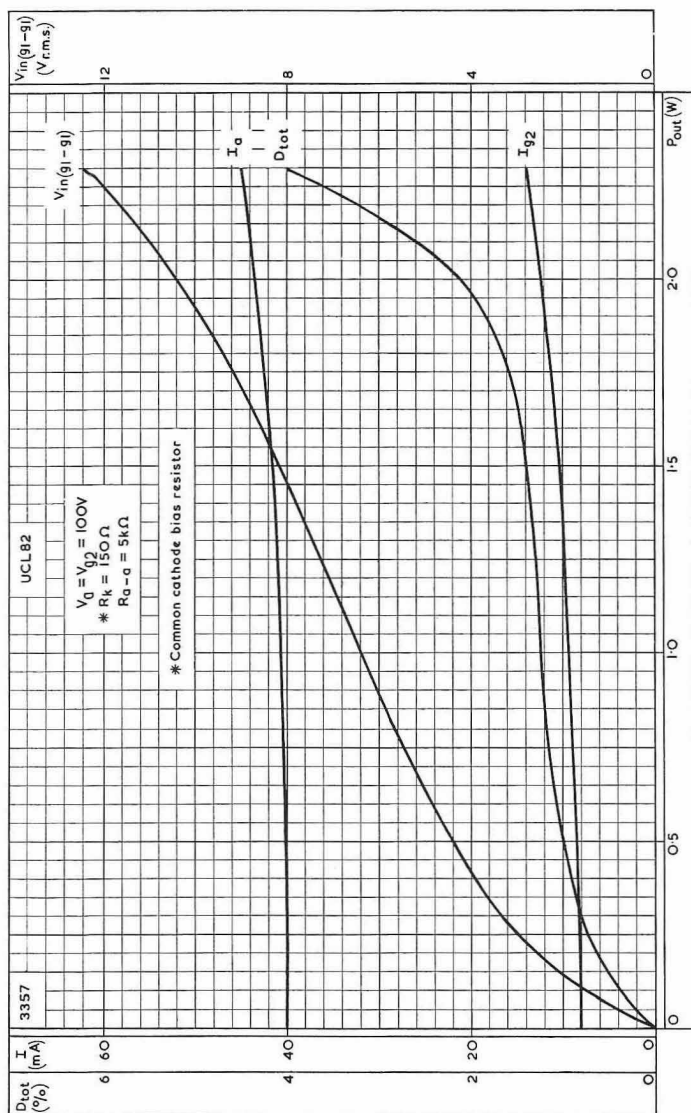


PERFORMANCE OF SINGLE UCL82 CLASS 'A' AMPLIFIER. $V_a = V_{g2} = 200V$

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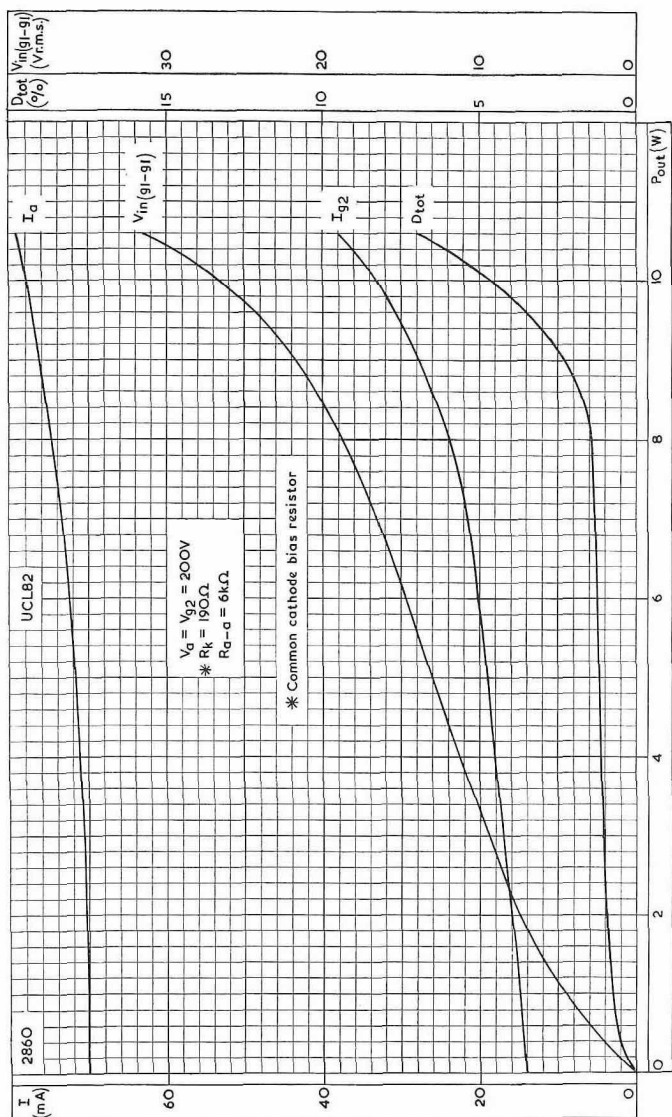


PERFORMANCE OF UCL82 IN PUSH-PULL. $V_a = V_{g2} = 100V$

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PERFORMANCE OF UCL82 IN PUSH-PULL. $V_a = V_{g2} = 200V$

