

# 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.

$I_h$	100	mA
$V_h$	38	V ←

## MOUNTING POSITION

Any

## CAPACITANCES (measured without an external shield)

$C_{cat-gp}$	<0.1	pF
$C_{cat-ap}$	<1.6	pF
$C_{gt-gp}$	<0.03	pF
$C_{gt-ap}$	<0.05	pF

### Pentode section

$C_{a-g1}$	<0.2	pF
$C_{in}$	5.7	pF
$C_{out}$	4.7	pF
$C_{g1-h}$	0.4	pF

### Triode section

$C_{a-g}$	1.6	pF
$C_{in}$	2.3	pF
$C_{out}$	0.32	pF

## CHARACTERISTICS

### Pentode section

$V_a$	170	V
$V_{g2}$	170	V
$I_a$	30	mA
$I_{g2}$	5.0	mA
$V_{g1}$	-9.5	V
$g_m$	5.5	mA/V
$r_a$	53	kΩ
$\mu_{g1-g2}$	10	

### Triode section

$V_a$	170	200	V
$I_a$	1.6	2.4	mA
$V_g$	-1.5	-1.5	V
$g_m$	2.1	2.5	mA/V
$r_a$	40	34	kΩ
$\mu$	82	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 $\Omega$
$V_{in(r.m.s.)}$	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	$\Omega$
$I_{a(0)}$	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
$R_{a-b}$	6.5	7.5	k $\Omega$
$V_{in(g1-g1)r.m.s.}$	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 $\Omega$ )	$I_a$ ( $\mu$ A)	$R_k$ (k $\Omega$ )	$\frac{V_{out}}{V_{in}}$	$V_{out}$ (V <sub>r.m.s.</sub> )	$R_{g1}^*$ (k $\Omega$ )
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

$V_{in}$

$V_{out}$  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 $\Omega$
$R_{g1-k}$ max. (fixed bias)	250	k $\Omega$
$V_{h-k}$ 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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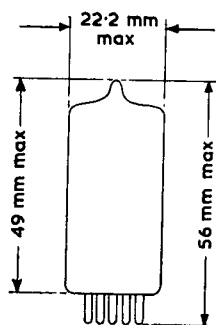
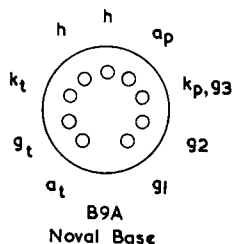
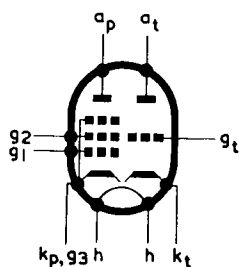
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## LIMITING VALUES

### Triode Section

$V_{a(t)}$ 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	M $\Omega$
$R_{g1-k}$ max (grid current biasing)	22	M $\Omega$
$V_{h-k}$ max. (d.c. cathode positive or a.c.r.m.s.)	250	V
$V_{h-k}$ max. (d.c. cathode negative)	100	V

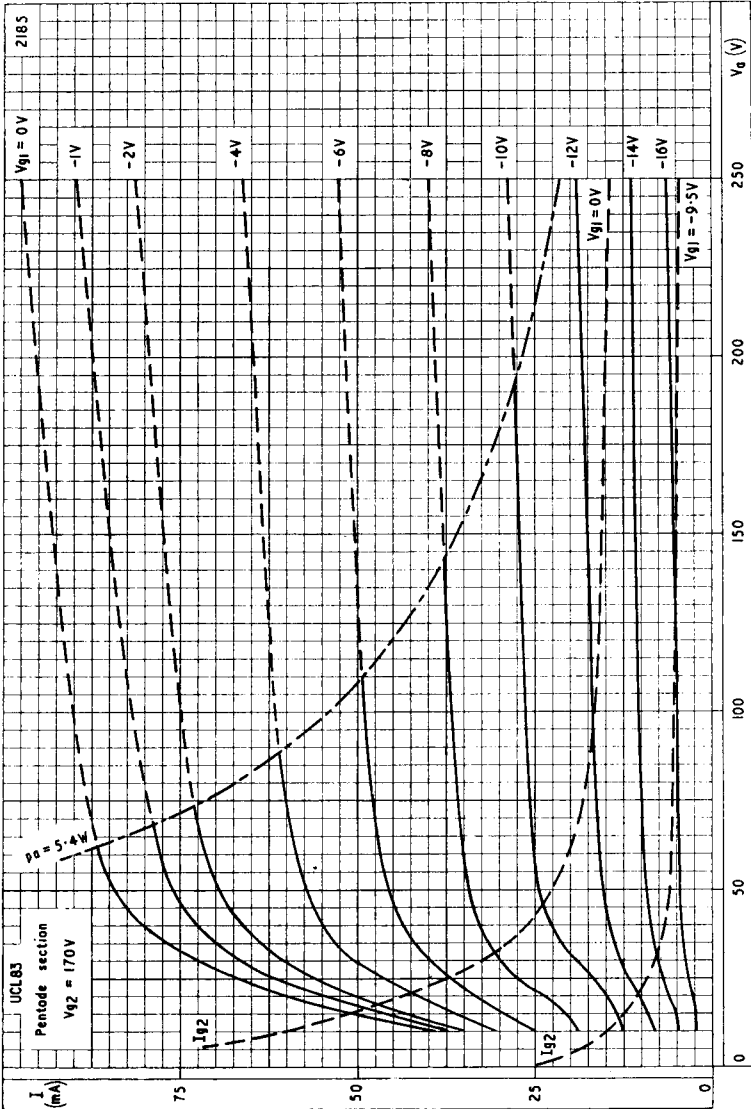
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ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID CURRENTS AS PARAMETER.  $V_{g2} = 170V$