

TRIODE HEPTODE

ECH83

Triode heptode intended for use as a frequency changer or combined r.f. and a.f. amplifier in equipment operating directly from a 6V, 12V or 24V battery, on or off charge.

HEATER

V_h	6.3	V
I_h	300	mA

CAPACITANCES

C_{ah-at}	200	mpF
C_{ah-gt}	< 90	mpF
$C_{ah-g3+gt}$	< 350	mpF
C_{g1-at}	< 60	mpF
C_{g1-gt}	< 170	mpF
$C_{g1-g3+gt}$	< 450	mpF

Heptode section

$C_{in(g1)}$	4.8	pF
$C_{in(g3)}$	6.0	pF
C_{out}	7.9	pF
C_{a-g1}	< 12	mpF
C_{g1-g3}	< 300	mpF

Triode section

C_{in}	2.6	pF
C_{out}	2.1	pF
C_{a-g}	1.0	pF

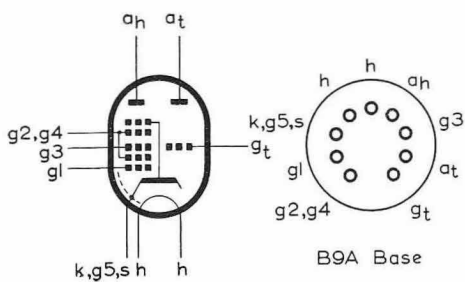
OPERATING CONDITIONS OF HEPTODE SECTION AS R.F. AMPLIFIER

$V_a = V_b$	6.3	12.6	25	V
$V_{g2+g3+g4}$	6.3	12.6	25	V
$*V_{g1(b)}$	0	0	0	V
V_{g1}	†	†	†	
R_{g1}	1.0	1.0	1.0	MΩ
I_a	0.11	0.4	1.25	mA
$I_{g2+g3+g4}$	80	250	850	μA
g_m	0.35	0.75	1.5	mA/V
r_a	600	850	200	kΩ
R_{eq}	8.5	6.5	5.0	kΩ
V_{g1} (for 100 : 1 reduction in g_m)	-2.0	-2.8	-4.4	V

* $V_{g1(b)}$ = Voltage at earthy end of grid leak.

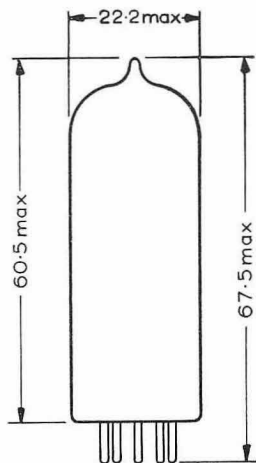
† Obtained by grid current biasing.

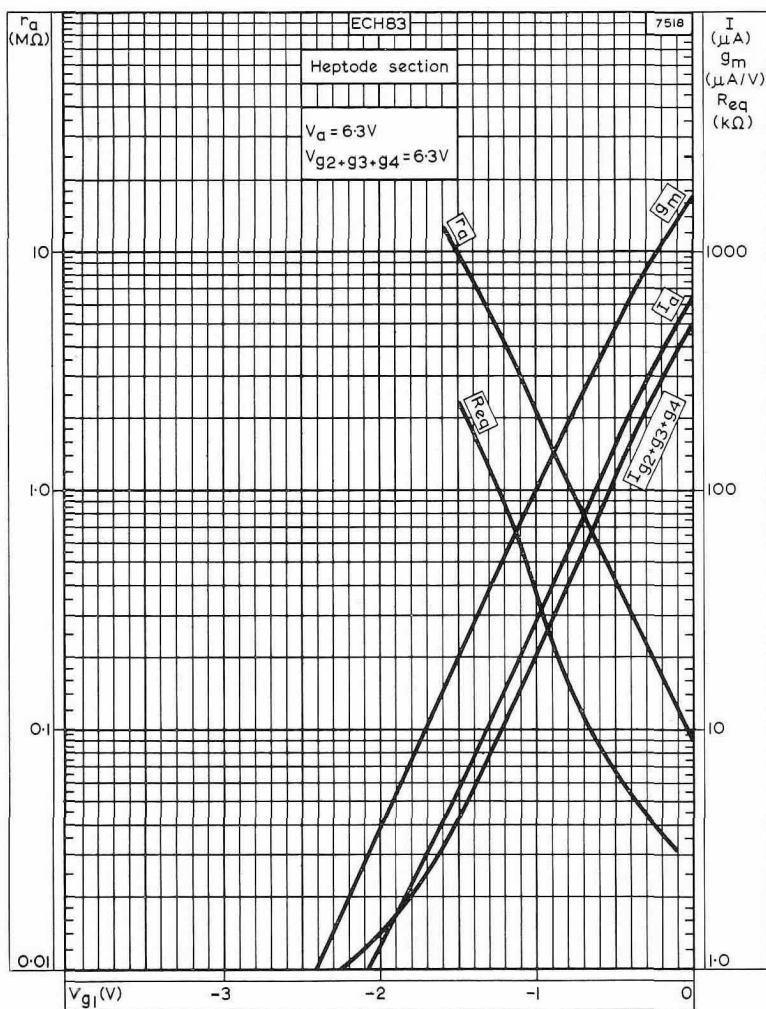




All dimensions in mm

6397





ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE, ANODE IMPEDANCE AND EQUIVALENT NOISE RESISTANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE FOR HEPTODE SECTION

$$V_a = V_{g2+g3+g4} = 6.3V$$

OPERATING CONDITIONS AS A.M. FREQUENCY CHANGER (multiplicative mixer)

Heptode section

$V_a = V_b$	6.3	12.6	25	V
V_{g2+g4}	6.3	12.6	25	V
* $V_{g1(b)}$	0	0	0	V
V_{g1}	†	†	†	
R_{g1}	1.0	1.0	1.0	MΩ
I_a	18	100	460	μA
I_{g2+g4}	0.1	0.35	1.25	mA
I_{g3+gt}	28	32	54	μA
$V_{osc(r.m.s.)}$	0.9	1.2	2.0	V
R_{g3+gt}	47	47	47	kΩ
g_c	50	160	390	μA/V
r_a	3.75	3.8	1.1	MΩ

* $V_{g1(b)}$ = Voltage at earthy end of grid leak.

†Obtained by grid current biasing with $R_{g1} = 1.0MΩ$.

Triode section

$V_a = V_b$	12.6	V
V_g	0	V
I_a	750	μA
g_m	1.4	mA/V
I_{gt+g3}	42	μA
R_{gt+g3}	47	kΩ
$V_{gt+g3(r.m.s.)}$	1.7	V

OPERATING CONDITIONS OF TRIODE SECTION AS A.F. AMPLIFIER

V_b	12.6	V
R_a	150	kΩ
R_g	10	MΩ
R_{g1} (of following valve)	10	MΩ
V_{out}/V_{in}	8.0	
V_{out}	1.8	V
D_{tot}	5.0	%

LIMITING VALUES

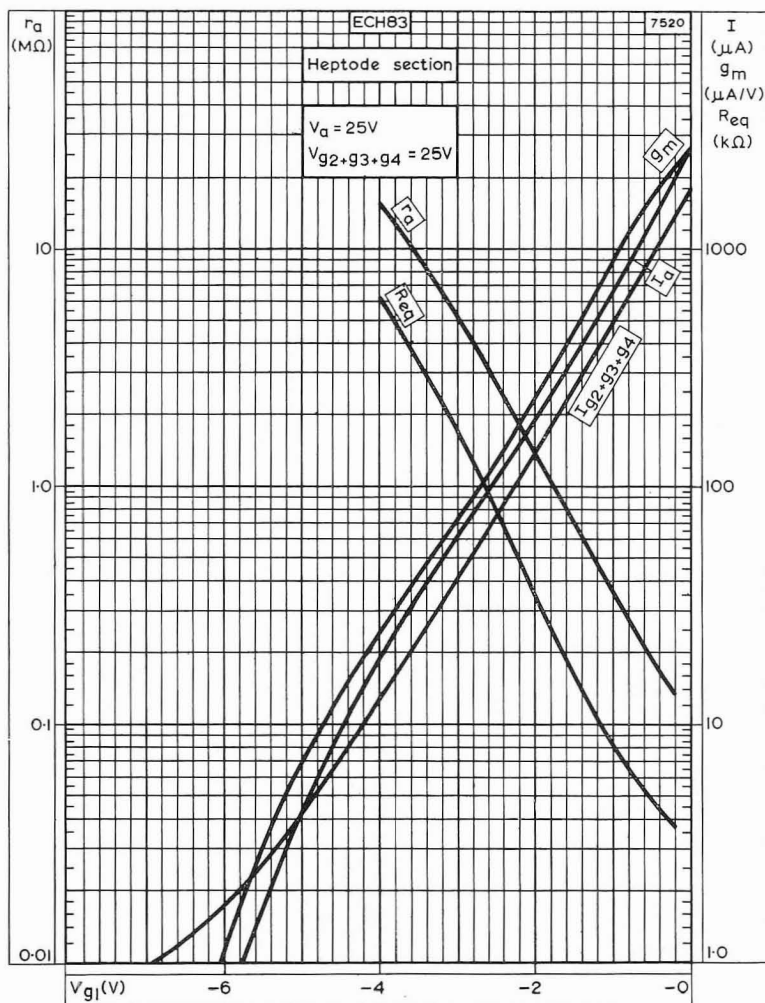
Heptode section

V_a max.	30	V
V_{g2+g4} max.	30	V
I_k max.	5.0	mA
R_{g1-k} max.	3.0	MΩ
R_{g3-k} max.	50	kΩ

Triode section

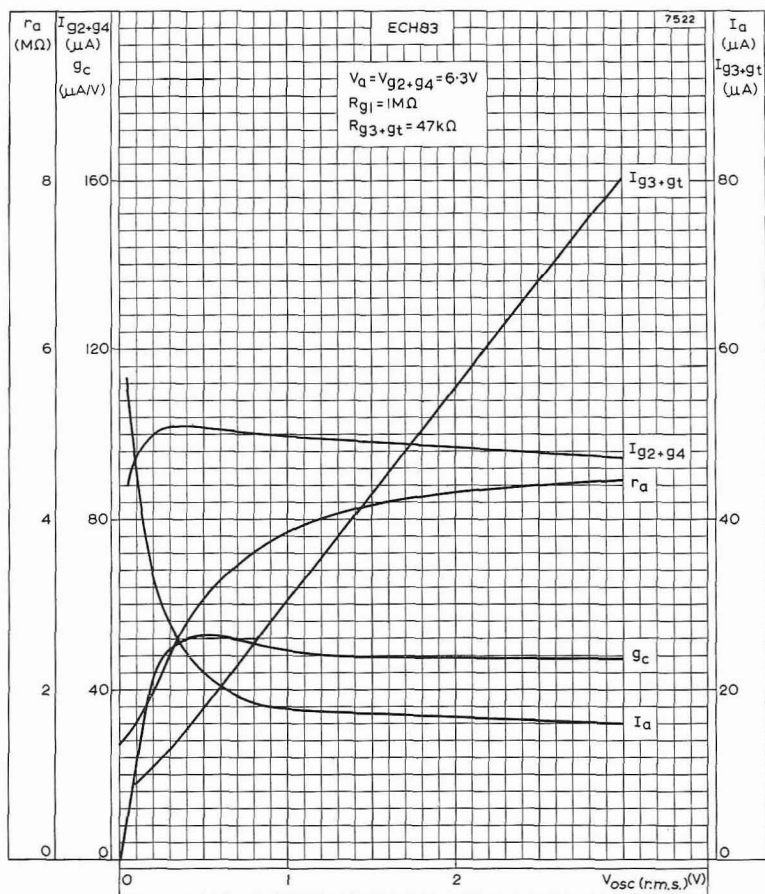
V_a max.	30	V
I_k max.	3.0	mA





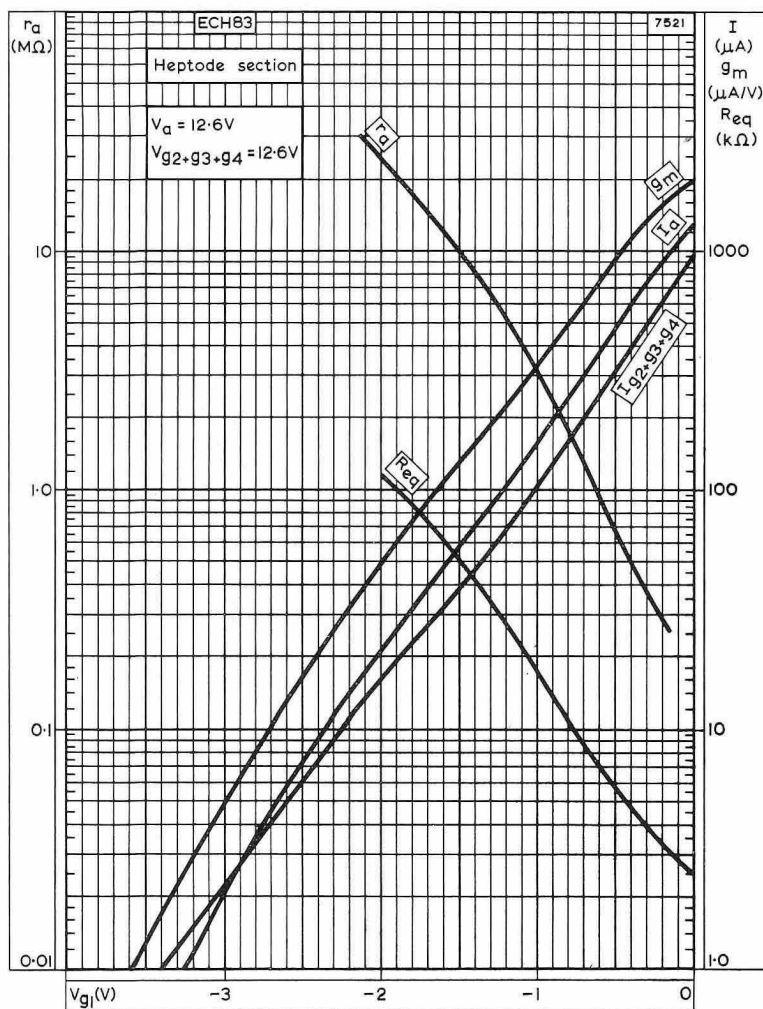
ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE,
ANODE IMPEDANCE AND EQUIVALENT NOISE RESISTANCE PLOTTED
AGAINST CONTROL-GRID VOLTAGE FOR HEPTODE SECTION

$$V_a = V_{g2+g3+g4} = 25V$$



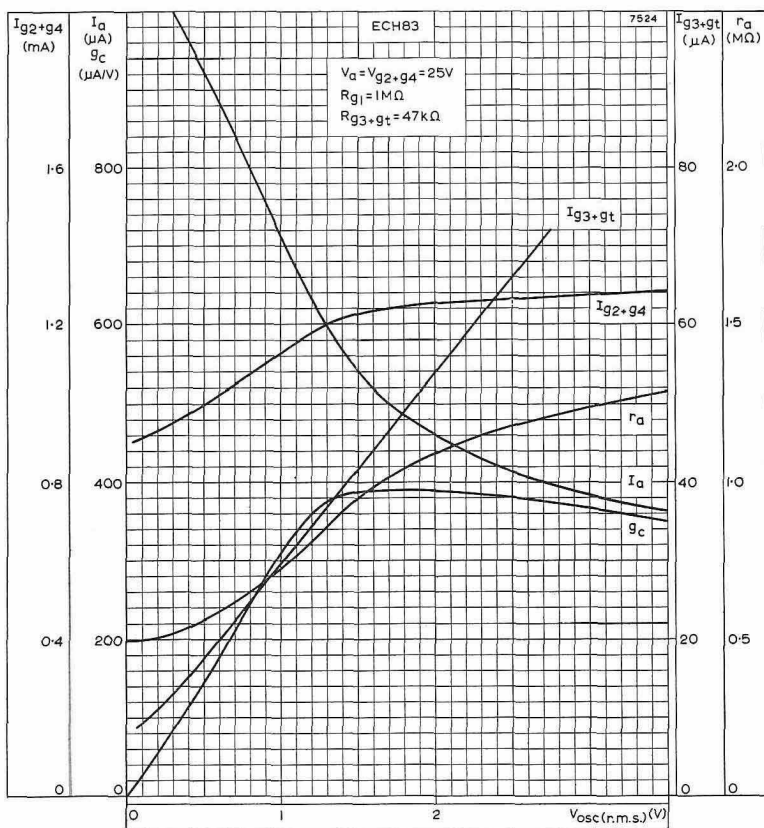
PERFORMANCE CURVES FOR USE AS A FREQUENCY CHANGER

$$V_a = V_{g2+g4} = 6.3V$$



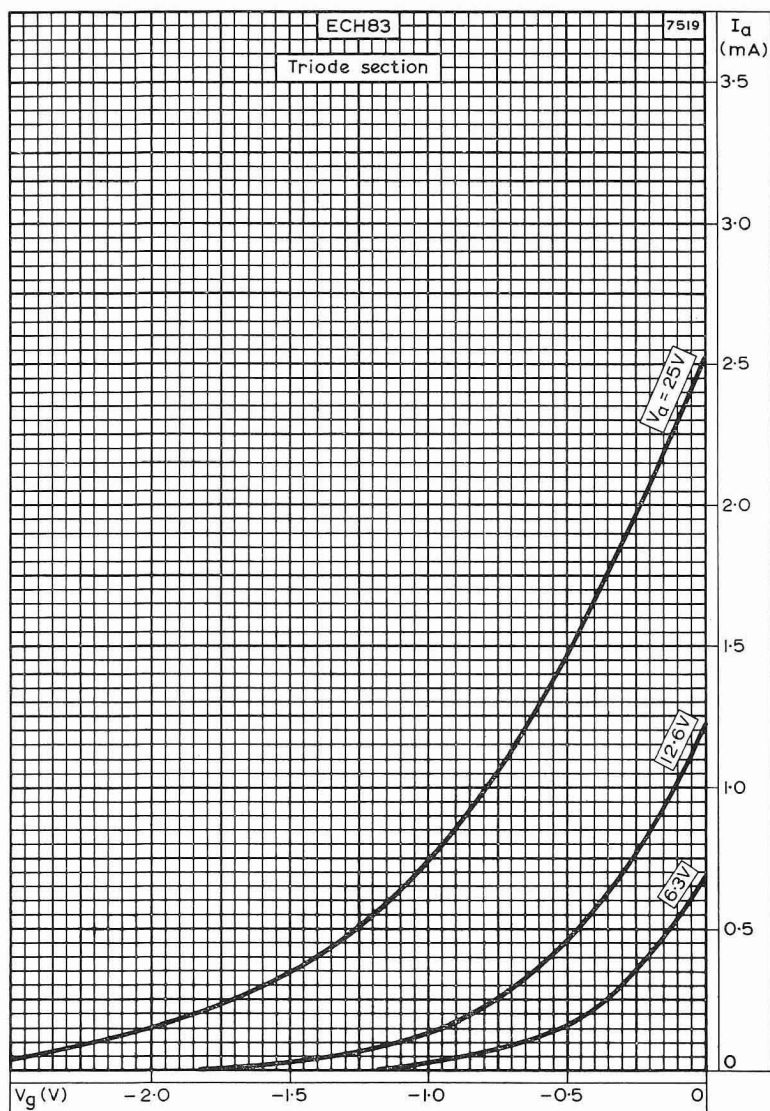
ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE, ANODE IMPEDANCE AND EQUIVALENT NOISE RESISTANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE FOR HEPTODE SECTION

$$V_a = V_{g2+g3+g4} = 12.6V$$

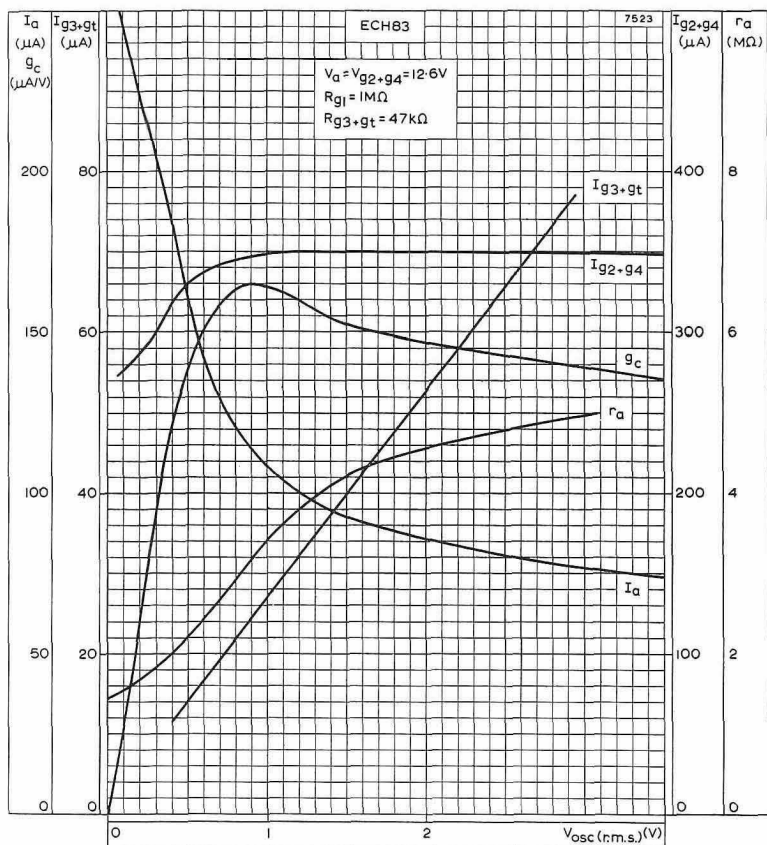


PERFORMANCE CURVES FOR USE AS A FREQUENCY CHANGER

$$V_a = V_{g2+g4} = 25V$$



ANODE CURRENT PLOTTED AGAINST GRID VOLTAGE WITH ANODE VOLTAGE AS PARAMETER. TRIODE SECTION



PERFORMANCE CURVES FOR USE AS A FREQUENCY CHANGER
 $V_a = V_{g2+g4} = 12.6V$