

TRIODE PENTODE

PCF80

Combined triode and high slope r.f. pentode with separate cathodes. Primarily designed for use as a frequency changer at frequencies up to 220Mc/s in television equipment with series connected heaters.

HEATER

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

I_h	300	mA
V_h	9.0	V

MOUNTING POSITION

Any

CAPACITANCES (measured without external shield)

C_{ap-at}	<0.06	pF
C_{ap-gt}	<0.02	pF
C_{gp-at}	<0.16	pF
C_{gp-gt}	<0.02	pF

Pentode section

* C_{a-g1}	<0.025	pF
C_{in}	5.5	pF
C_{out}	3.8	pF

*May be reduced to <0.01pF by the use of a skirted base.

Triode section

C_{g-k+h}	2.5	pF
C_{a-k+h}	1.8	pF
C_{a-g}	1.5	pF

CHARACTERISTICS

Pentode section

V_a	170	V
V_{g2}	170	V
I_a	10	mA
V_{g1}	-2.0	V
I_{g2}	2.8	mA
g_m	6.2	mA/V
μ_{g1-g2}	47	
r_a	400	k Ω
R_{in} ($f = 50Mc/s$)	10	k Ω
R_{eq}	1.5	k Ω

Triode section

V_a	100	V
I_a	14	mA
V_g	-2.0	V
g_m	5.0	mA/V
μ	20	
r_a	4.0	k Ω

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TYPICAL OPERATING CONDITIONS

As a frequency changer

V_a	170	170	V
V_{g2}	170	170	V
R_{g1}	100	100	k Ω
R_k	820	0	Ω
I_a	5.2	6.3	mA
I_{g2}	1.5	2.5	mA
$V_{osc(r.m.s.)}$	3.5	4.0	V
I_{g1}	0	53	μ A
g_c	2.1	2.05	mA/V
r_a	870	720	k Ω

LIMITING VALUES

Pentode section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	1.7	W
$V_{g2(b)}$ max.	550	V
V_{g2} max. ($I_k \leq 10$ mA)	200	V
V_{g2} max. ($I_k > 10$ mA)	175	V
p_{g2} max. ($p_a \leq 1.2$ W)	750	mW $\leftarrow$
p_{g2} max. ($p_a > 1.2$ W)	500	mW $\leftarrow$
I_k max.	17	mA $\leftarrow$
V_{g1} max. ($I_{g1} = +0.3$ μ A)	-1.3	V
R_{g1-k} max. (cathode bias)	1.0	M Ω
R_{g1-k} max. (fixed bias)	500	k Ω
* V_{h-k} max. (cathode positive)	225	V $\leftarrow$
V_{h-k} max. (cathode negative)	100	V $\leftarrow$

*Max. d.c. component 150V

Triode section

$V_{a(b)}$ max.	550	V
V_a max.	250	V
p_a max.	1.5	W
I_k max.	17	mA $\leftarrow$
$\dagger I_{k(pk)}$ max.	200	mA
R_{g-k} max.	500	k Ω
V_g max. ($I_{g1} = +0.3$ μ A)	-1.3	V
$-V_{g(pk)}$ max.	350	V $\leftarrow$
* V_{h-k} max. (cathode positive)	225	V $\leftarrow$
V_{h-k} max. (cathode negative)	100	V $\leftarrow$

*Max. d.c. component 150V

$\dagger$ Max. pulse duration 200 μ s

$\leftarrow$

OPERATING NOTE

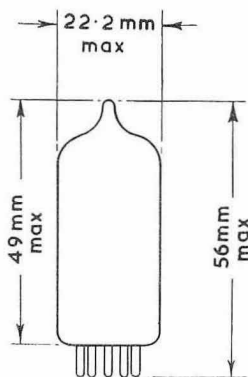
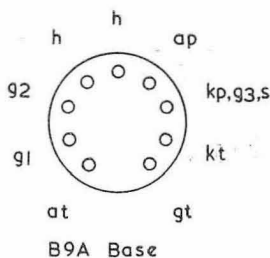
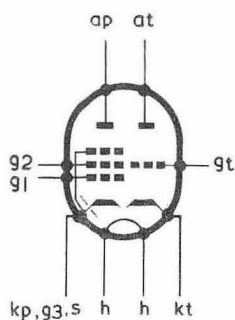
It is anticipated that variations in heater-to-cathode capacitance may render this valve unsuitable for use in Hartley oscillator circuits, particularly in f.m. receivers. For this reason it is recommended that a Colpitts type of circuit be employed.

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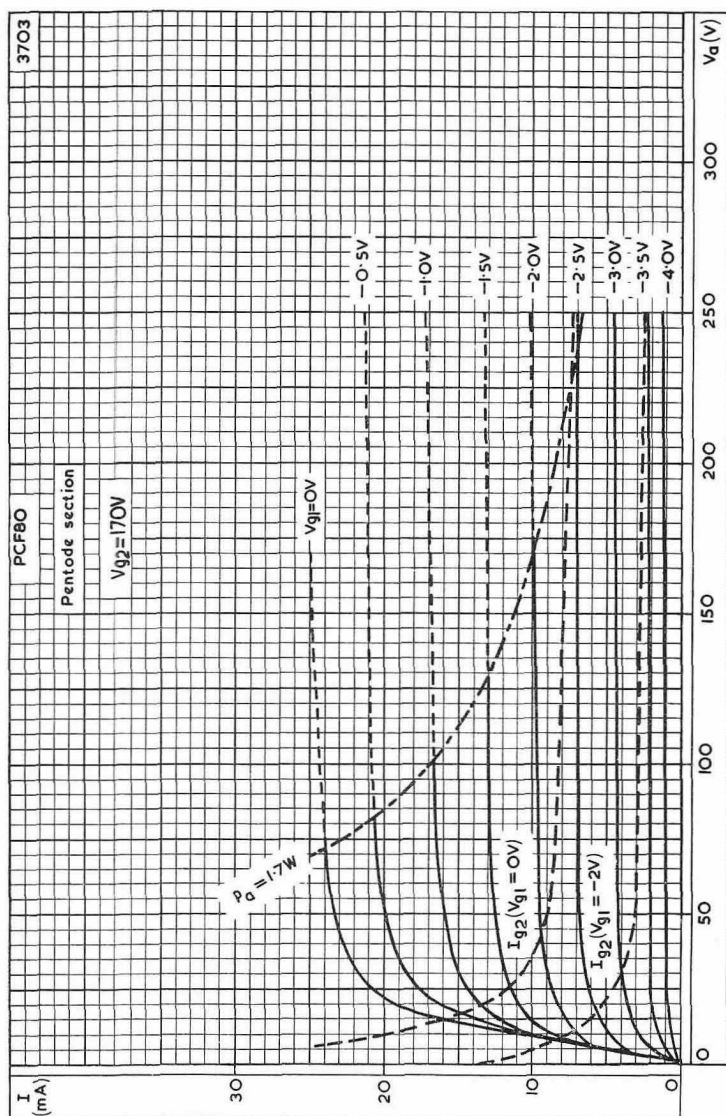
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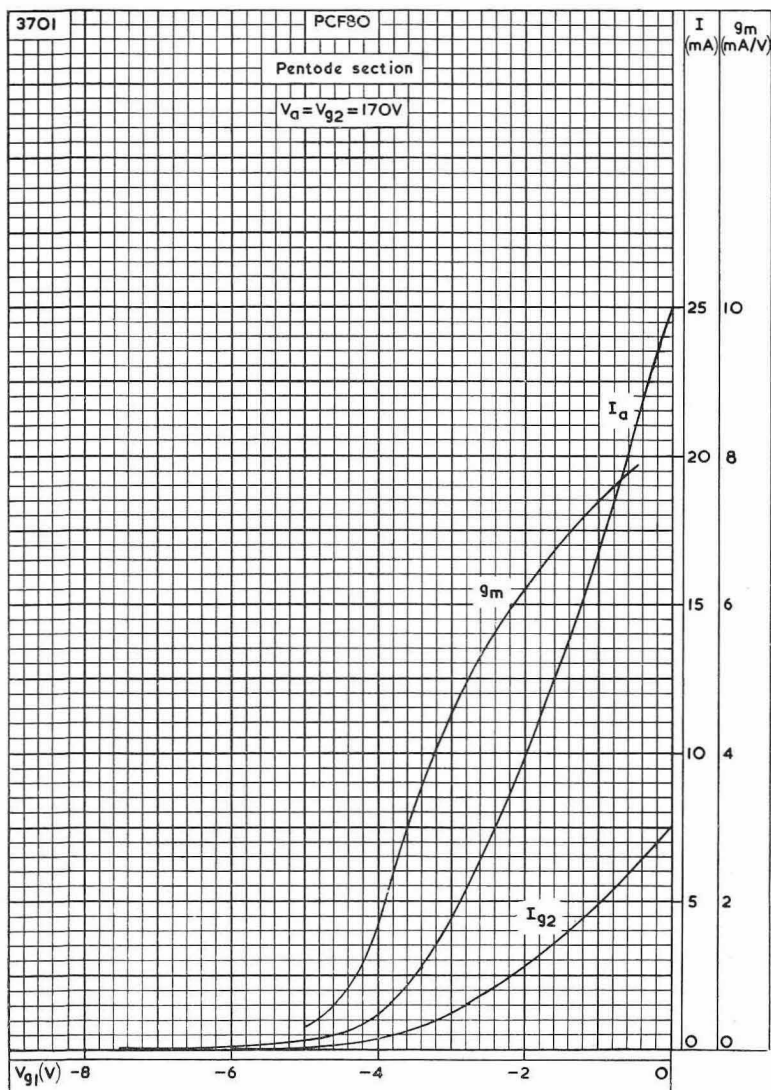


ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE FOR PENTODE SECTION WITH CONTROL-GRID VOLTAGE AS PARAMETER

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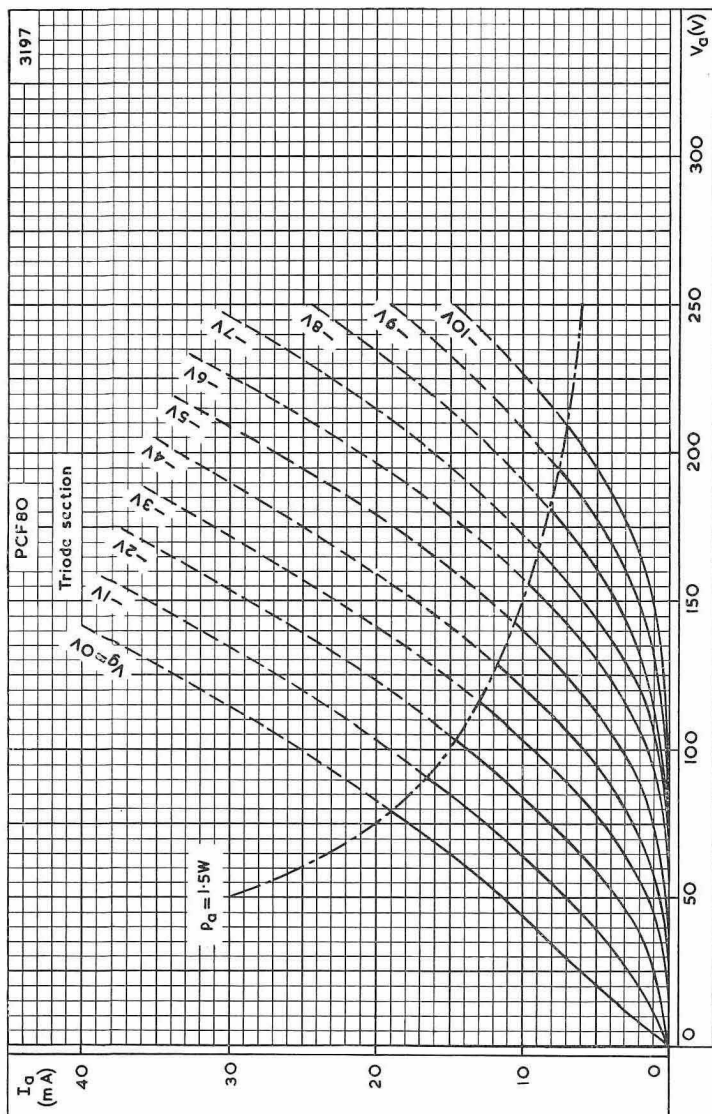


ANODE AND SCREEN-GRID CURRENTS AND MUTUAL CONDUCTANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE OF PENTODE SECTION.
 $V_a = V_{g2} = 170V$

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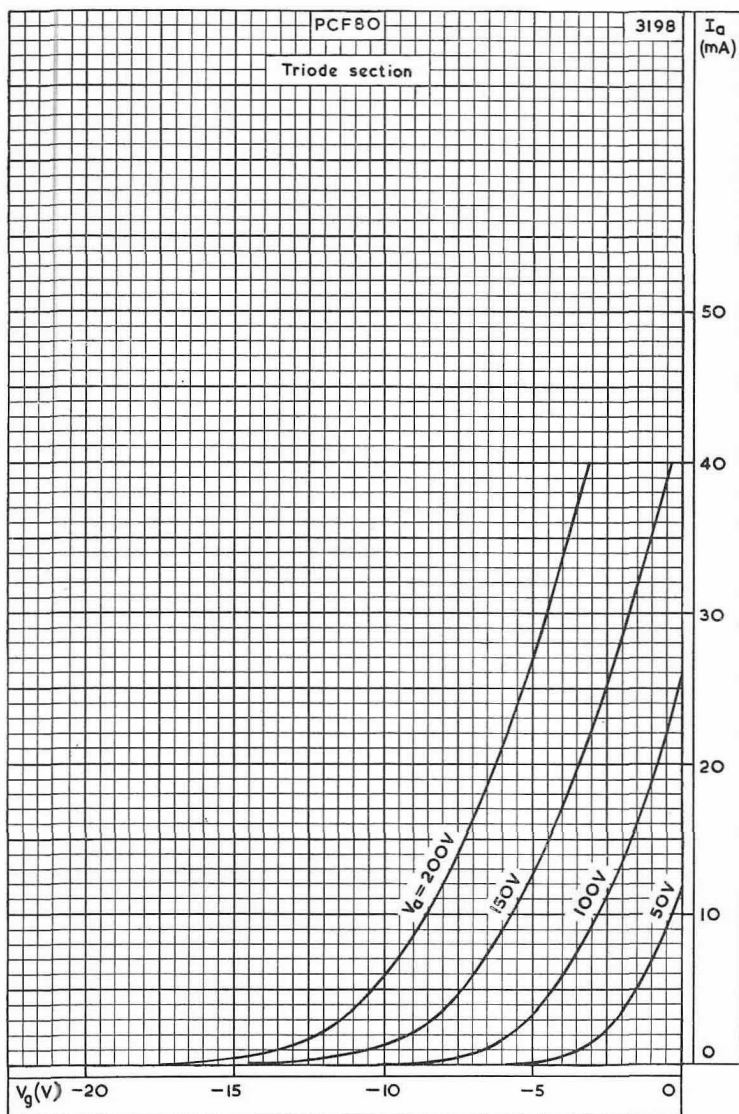


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR TRIODE SECTION WITH GRID VOLTAGE AS PARAMETER

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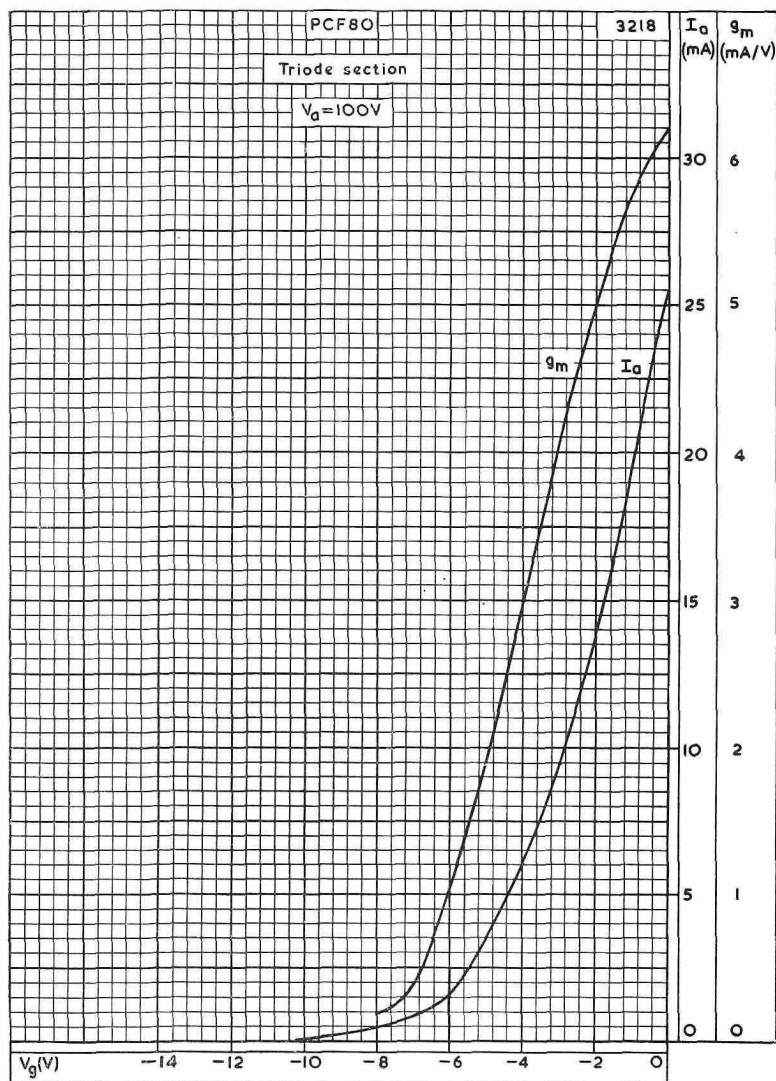


ANODE CURRENT PLOTTED AGAINST CONTROL-GRID VOLTAGE FOR TRIODE SECTION FOR VARIOUS VALUES OF ANODE VOLTAGE

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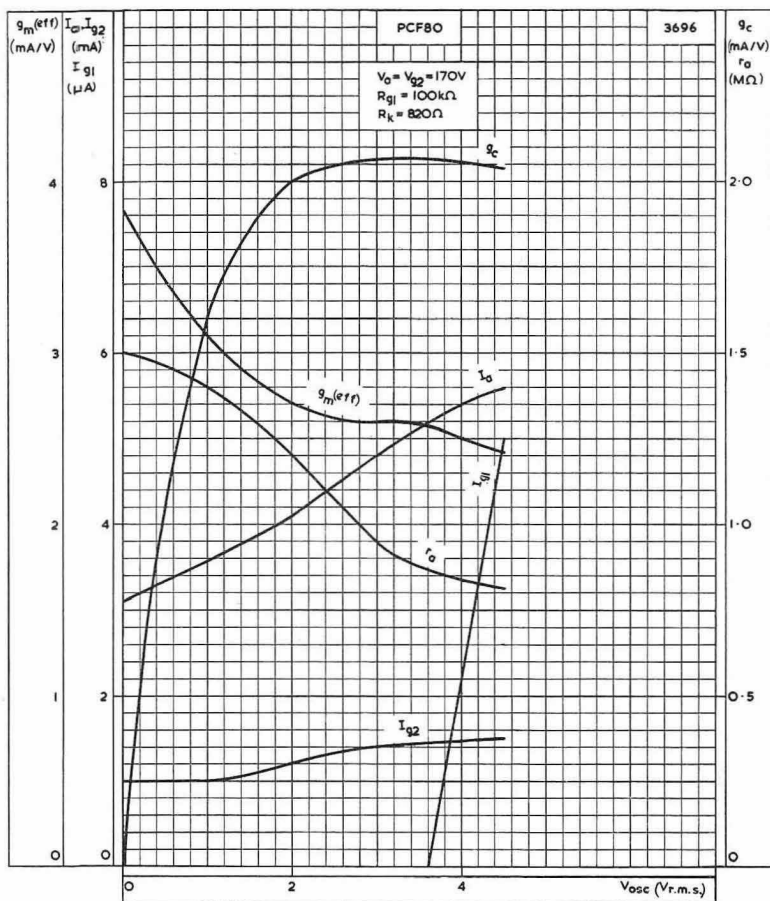


ANODE CURRENT AND MUTUAL CONDUCTANCE PLOTTED AGAINST GRID VOLTAGE FOR TRIODE SECTION. $V_a = 100V$

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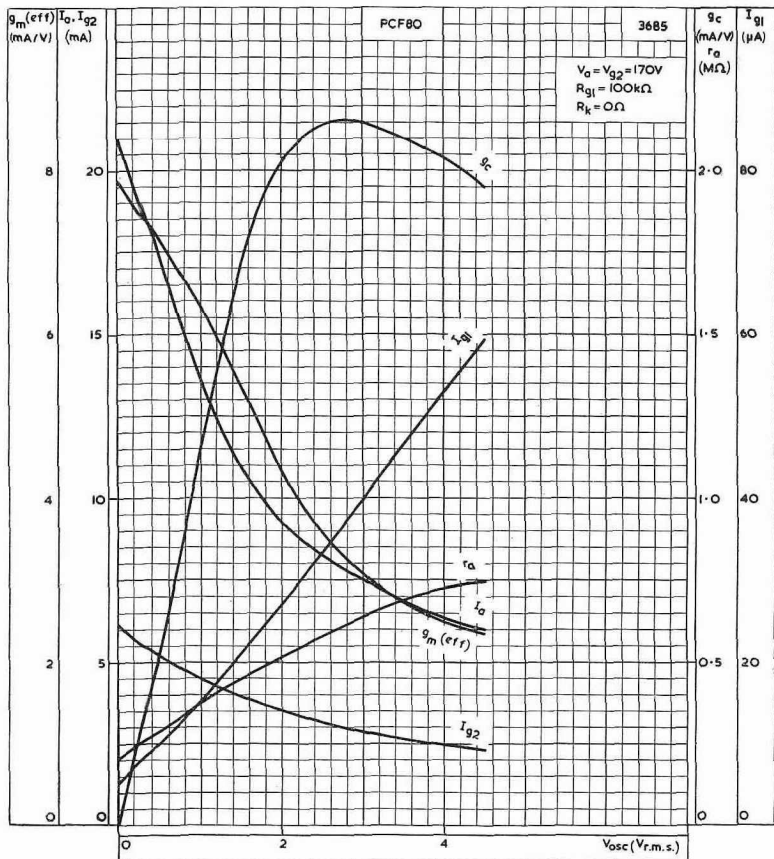


PERFORMANCE CURVES FOR USE AS A FREQUENCY CHANGER WITH
 $R_k = 820\Omega$

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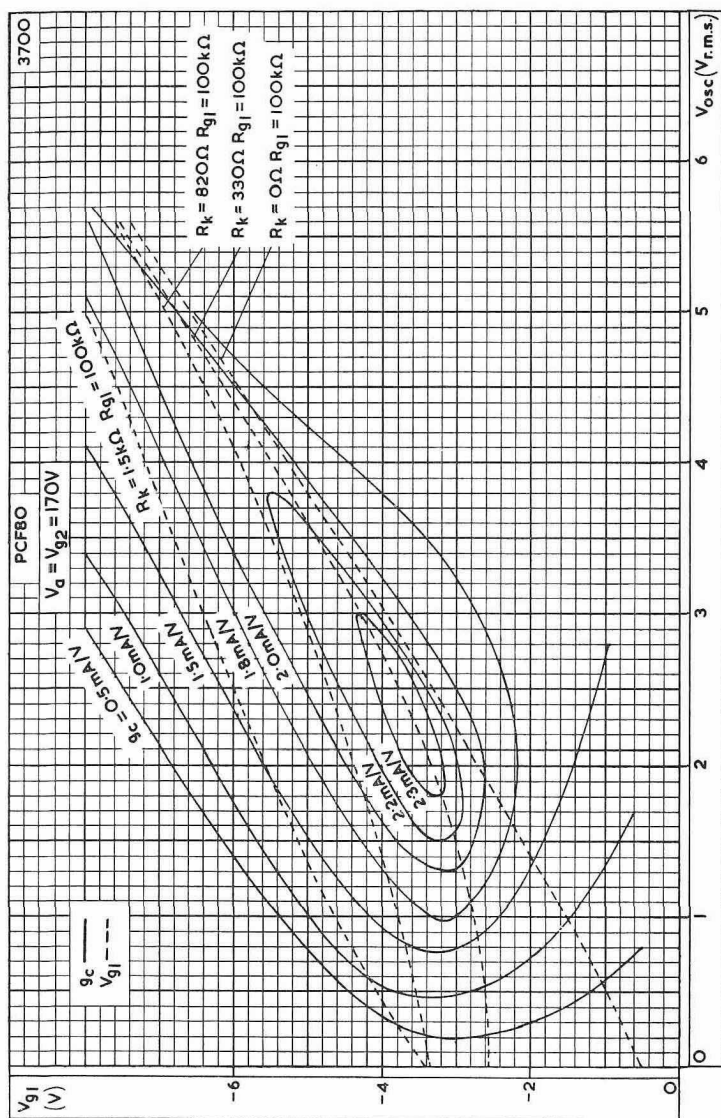


PERFORMANCE CURVES FOR USE AS A FREQUENCY CHANGER WITH
 $R_k = 0\Omega$

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CONTROL-GRID BIAS PLOTTED AGAINST OSCILLATOR VOLTAGE FOR VARIOUS VALUES OF CATHODE RESISTOR AND GRID RESISTOR, TOGETHER WITH 'CONTOUR LINES' OF CONSTANT CONVERSION CONDUCTANCE

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