TRIODE-PENTODE

Triode pentode intended for use in T.V. receivers; triode section as line-blocking oscillator, part of a multivibrator, sync separator, pulse amplifier or A.G.C. delay diode; pentode section with remote cut-off as video I.F. amplifier.

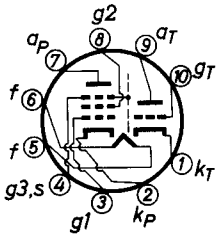
QUICK REFERENCE DATA			
Pentode section			
Anode current	I_a	13	mA
Transconductance	S	12.6	mA/V
Amplification factor	$\mu_{g_2g_1}$	45	-
Triode section			
Anode current	I_a	14	mA
Transconductance	S	4.8	mA/V
Amplification factor	μ	17.5	-
Cathode peak current	I_{k_p}	max. 50	mA

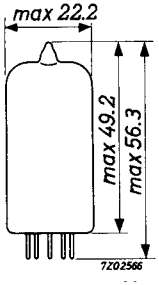
HEATING: Indirect by A.C. or D.C.; series supply

Heater current	I_f	300	mA
Heater voltage	V_f	8.5	V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Decal





CAPACITANCES

Pentode section			
Anode to all except grid No.1	$C_{a(g_1)}$	3.3	pF
Grid No.1 to all except anode	$C_{g1(a)}$	6.0	pF
Grid No.1 to cathode	C_{kg_1}	3.7	pF
Anode to grid No.1	C_{ag_1}	0.0056	pF
	C_{ag_1}	max. 0.008	pF
Grid No.1 to grid No.2	C_{g1g2}	1.7	pF
Triode section			
Anode to all except grid	$C_{a(g)}$	3.0	pF
Grid to all except anode	$C_{g(a)}$	2.1	pF
Anode to grid	C_{ag}	2.0	pF
Between pentode and triode sections			
Pentode anode to triode anode	C_{aPaT}	max. 0.015	pF
Pentode grid No.1 to triode anode	C_{g_1PaT}	max. 0.0012	pF
Pentode grid No.1 to triode grid	C_{g_1PgT}	max. 0.0015	pF

TYPICAL CHARACTERISTICS

Pentode section			
Anode voltage	V_a	160	V
Grid No.3 voltage	V_{g_3}	0	V
Grid No.2 voltage	V_{g_2}	110	V
Grid No.1 voltage	V_{g_1}	-1.4	V
Anode current	I_a	13	mA
Grid No.2 current	I_{g_2}	5.3	mA
Transconductance	S	12.6	mA/V
Amplification factor	$\mu_{g_2g_1}$	45	-
Triode section			
Anode voltage	V_a	100	V
Grid voltage	V_g	-2	V
Anode current	Ia	14	mA
Transconductance	S	4.8	mA/V
Amplification factor	μ	17.5	-

OPERATING CHARACTERISTICS

Pentode section as video I.F. amplifier (g_3 connected to earth)

Supply voltage	V_b	210	230	250	V
Anode resistor	R_a	3.9	5.6	6.8	kΩ
Grid No.2 resistor	R_{g_2}	18	22	27	kΩ
Cathode resistor	R_k	79	79	76	Ω
Anode current	I_a	13.2	13.2	12.8	mA
Grid No.2 current	I_{g_2}	5.4	5.4	5.2	mA
Transconductance	S	12.6	12.6	12.6	mA/V
Grid No.1 voltage at 0.1 S	V_{g_1}	-5.1	-5.4	-5.7	V
Grid No.1 voltage at 0.01 S	V_{g_1}	-19	-20.5	-22	V
Grid No.1 input resistance at 40 MHz	r_{g_1}	7.4	7.4	7.4	kΩ

Triode section as line-blocking oscillator

Anode voltage	V_a	30	V
Peak cathode current	I_{k_p}	40	mA
Peak anode current	I_{a_p}	25	mA
Peak grid current	I_{g_p}	15	mA

Triode section as sync. separator

Anode supply voltage	V_{b_a}	130 to 150	V
Anode resistor	R_a	33	kΩ
Grid current	I_g	1	μA
Anode current	I_a	min. 2	mA

LIMITING VALUES (Design centre rating system)

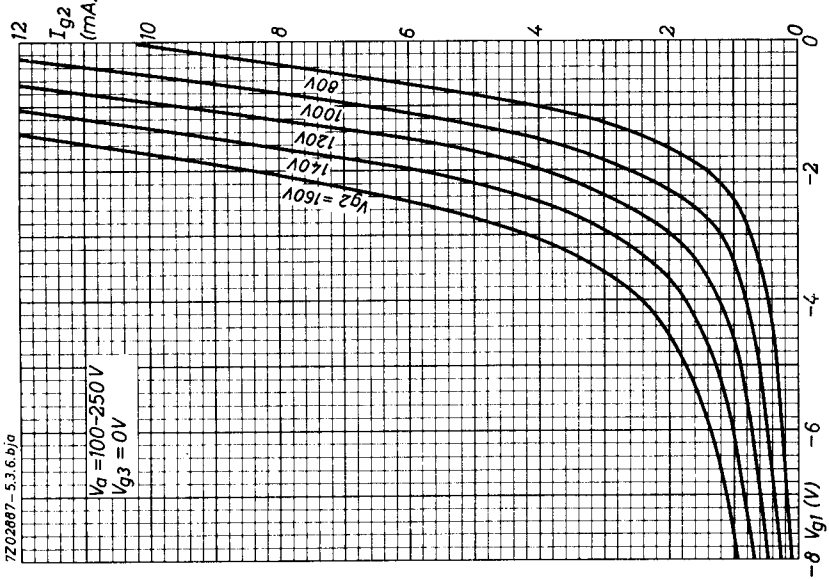
Pentode section

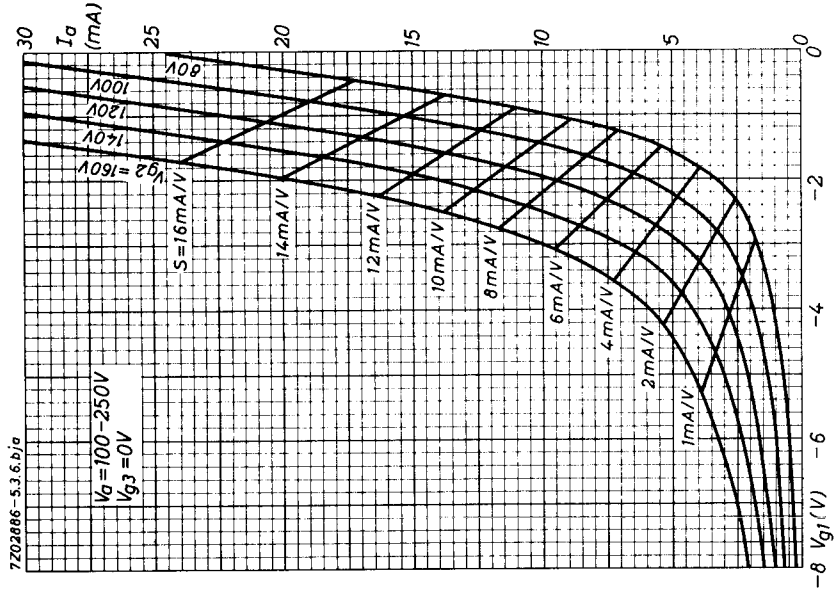
Anode voltage	V_{a_o}	max.	550	V
	V_a	max.	250	V
Anode dissipation	W_a	max.	2.1	W
Grid No.2 voltage	$V_{g_{2o}}$	max.	550	V
	V_{g_2}	max.	250	V
Grid No.2 dissipation	W_{g_2}	max.	0.7	W
Grid No.1 resistor	R_{g_1}	max.	1	MΩ
Cathode current	I_k	max.	20	mA
Cathode to heater voltage	V_{kf}	max.	150	V

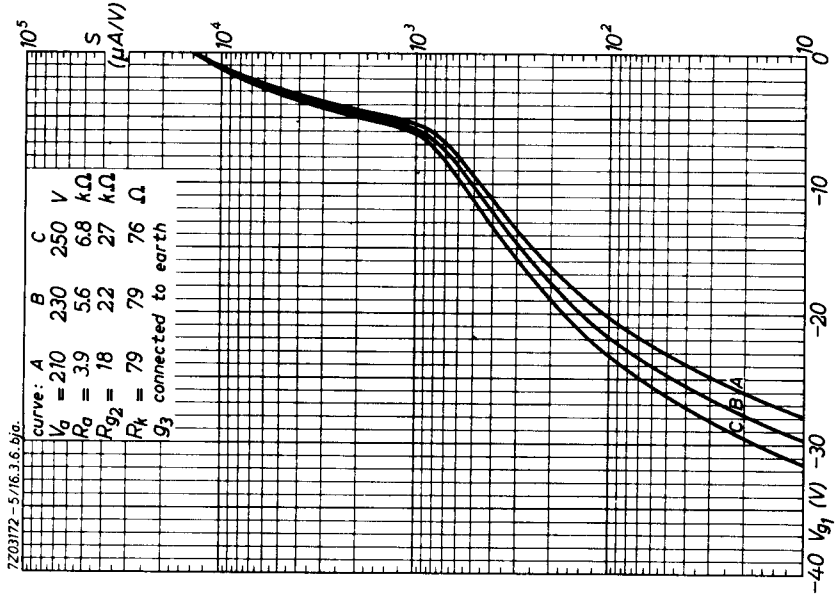
Triode section

Anode voltage	V_{a_o}	max.	550	V
	V_a	max.	250	V
Anode dissipation	W_a	max.	1.5	W
Grid resistor	R_g	max.	1	MΩ
Cathode current	I_k	max.	18	mA
Peak cathode current	I_{k_p}	max.	50	mA[1])
Cathode to heater voltage	V_{kf}	max.	150	V

[1]) Maximum pulse duration 10% of a cycle but max. 10 μs.


I_{g2} (mA)
12
10
8
6
4
2
0
V_{g2} = 160V
140V
120V
100V
80V
V_a = 100–250 V
V_{g3} = 0V
7Z02887–5.3.6.bja
0
–2
–4
–6
–8 V_{g1} (V)


I_a (mA)
30
25
20
15
10
5
0
V_{g2} = 160V
140V
120V
100V
80V
S = 16mA/V
14mA/V
12mA/V
10mA/V
8mA/V
6mA/V
4mA/V
2mA/V
1mA/V
V_a = 100–250V
V_{g3} = 0V
7Z02886–5.3.6.bja
0
–2
–4
–6
–8 V_{g1} (V)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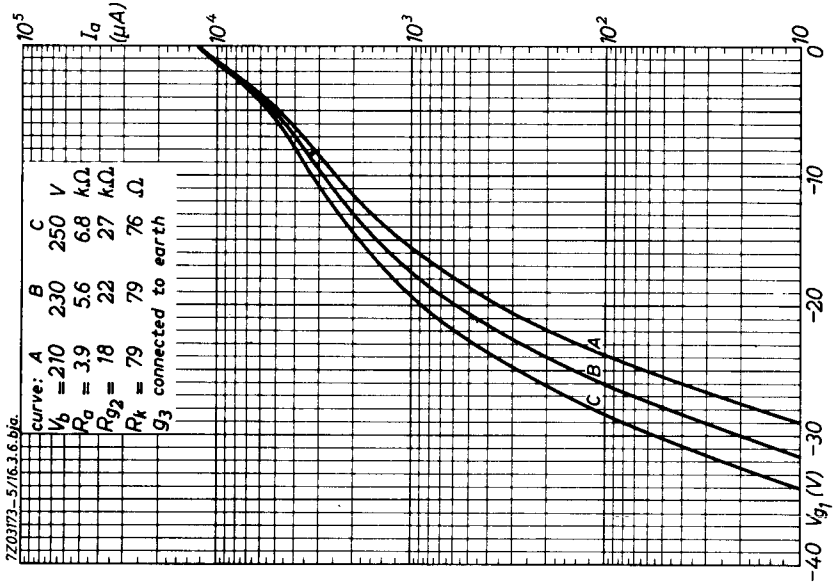
curve: A B C
V_b = 210 230 250 V
R_a = 3.9 5.6 6.8 kΩ
R_{g_2} = 18 22 27 kΩ
R_k = 79 79 76 Ω
g_3 connected to earth
S (μA/V)
10^5
10^4
10^3
10^2
0 -10 -20 -30 -40 V_{g_1} (V)
A B C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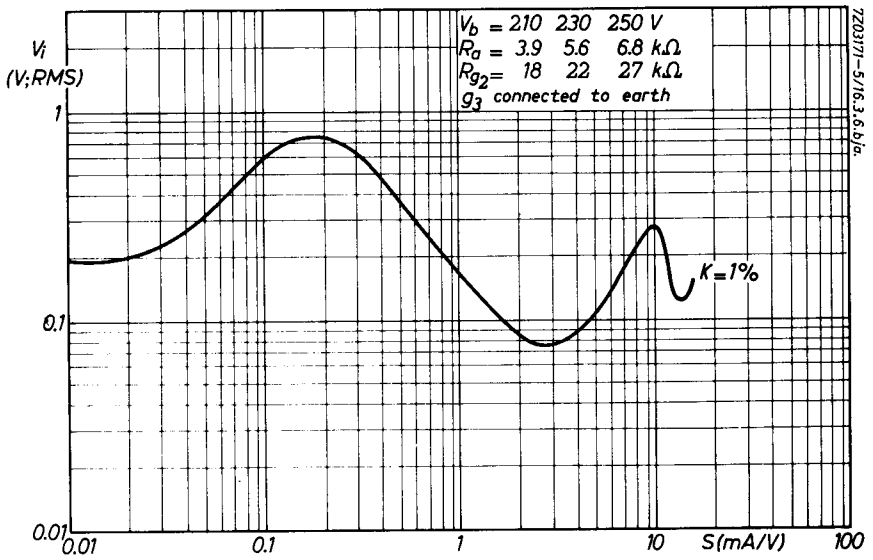
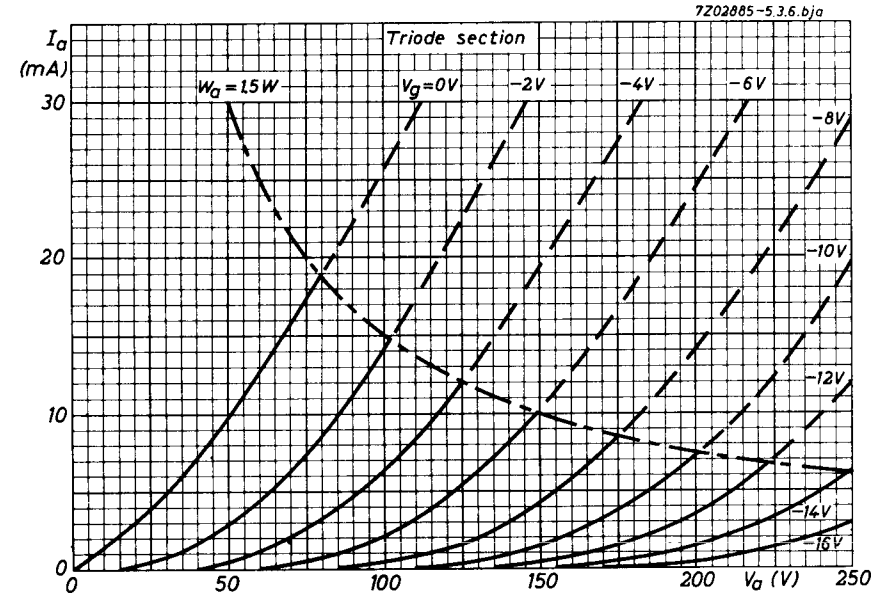
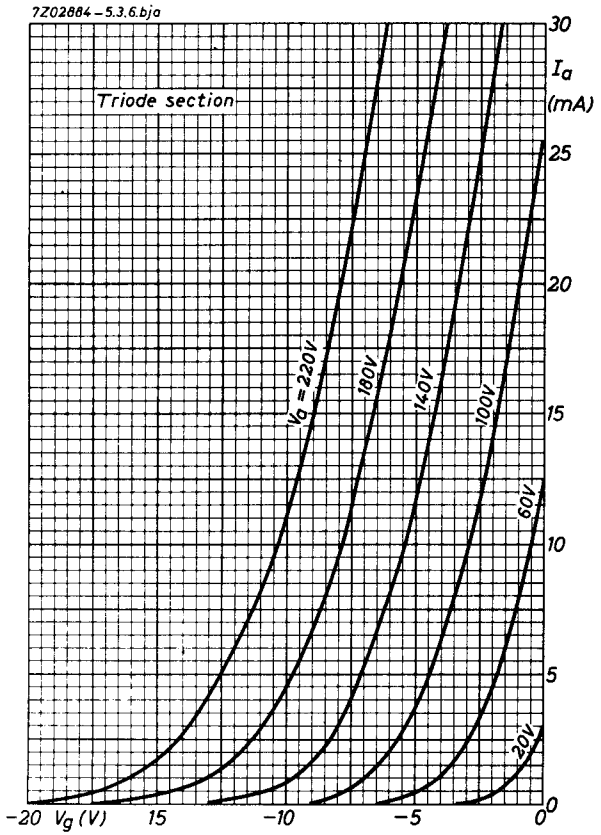
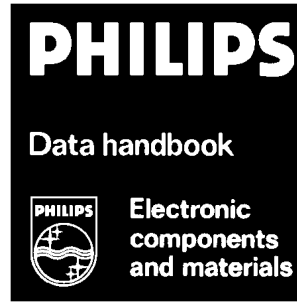
curve: A B C
V_b = 210 230 250 V
R_a = 3.9 5.6 6.8 kΩ
R_{g_2} = 18 22 27 kΩ
R_k = 79 79 76 Ω
g_3 connected to earth
I_a (μA)
10^5
10^4
10^3
10^2
0 -10 -20 -30 -40 V_{g_1} (V)
A B C


V_b = 210 230 250 V
R_a = 3.9 5.6 6.8 kΩ
R_{g_2} = 18 22 27 kΩ
g_3 connected to earth
K=1%
V_i (V;RMS)
1
0.1
0.01
0.01
0.1
1
10
S(mA/V)
100
7Z03171-5/19.3.6.bja


7Z02885-5.3.6.bja
Triode section
I_a (mA)
W_a = 15 W
V_g = 0V
-2V
-4V
-6V
-8V
-10V
-12V
-14V
-16V
30
20
10
0
0
50
100
150
200
V_a (V)
250


7Z02884 – 5.3.6.bjo
Triode section
I_a (mA)
30
25
20
15
10
5
0
V_a = 220V
180V
140V
100V
60V
20V
−20 V_g (V)
15
−10
−5
0



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