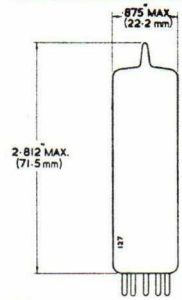
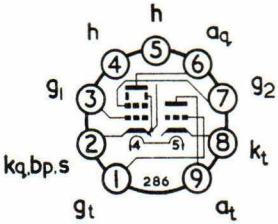


TRIODE OUTPUT BEAM TETRODE



B9A Base

GENERAL

This triode output beam tetrode valve is intended principally for use in field deflection circuits of AC/DC television receivers using 110° cathode ray tubes.
Each section has its own cathode.
The triode section is a general purpose one with identical characteristics to the 6/30L2.

Heater Current	I_h	0·3	A
Heater Voltage	V_h	16	V

RATINGS

		Triode	Tetrode	
Maximum Anode Dissipation	$P_{a(max)}$	1	8	W
Maximum Screen Dissipation	$P_{g2(max)}$	—	2	W
Maximum Anode Voltage	$V_{a(max)}$	250	250	V
Maximum Peak Anode Voltage (Pulse positive)		—	2*	kV
Maximum Peak Anode Voltage (Pulse negative)		—	500*	V
Maximum Screen Grid Voltage	$V_{g2(max)}$	—	250	V
Maximum Heater to Cathode Voltage (R.M.S.)	$V_{h-k(r.m.s.)max}$	150†	150†	V
Maximum Mean Cathode Current	$I_{k(av)max}$	—	75	mA
Maximum Resistance Grid 1 to Cathode (Self bias)		—	2	MΩ
Maximum Resistance Grid 1 to Cathode (Fixed bias)		—	1	MΩ

* Maximum pulse duration 5% of one cycle with a maximum of 1 ms.

† Measured with respect to the higher potential heater pin.

INTER-ELECTRODE CAPACITANCES ←

		‡	§	‖	
Grid 1 to Earth	C_{g1-E}	10·5	10·9	12·0	pF
Anode Tetrode to Earth	C_{aq-E}	9·5	10·3	11·4	pF
Grid 1 to Anode Tetrode	C_{g1-aq}	0·32	0·32	0·33	pF
Grid Triode to Earth	C_{gt-E}	2·1	2·5	3·4	pF
Anode Triode to Earth	C_{at-E}	1·8	2·3	3·2	pF
Grid Triode to Anode Triode	C_{gt-at}	2·3	2·3	2·4	pF
Grid 1 to Anode Triode	C_{g1-at}	0·009	0·015	0·02	pF
Grid Triode to Anode Tetrode	C_{gt-aq}	0·019	0·024	0·026	pF
Anode Tetrode to Anode Triode	C_{aq-at}	0·078	0·09	0·098	pF

‡ In fully shielded socket without can.

§ With holder capacity balanced out (Holder as below).

‖ Total capacity including B9A nylon phenolic holder without skirt or radial shield (AEI "Clix" holder type VH19/902).

"Earth" denotes the electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shields joined to cathode.

Indicates a change ←

THORN—AEI RADIO VALVES & TUBES LTD.

CHARACTERISTICS

		Triode	Tetrode	
Anode Voltage	V_a	100	170	V
Screen Grid Voltage	V_{g_2}	—	170	V
Anode Current	I_a	10	50	mA
Mutual Conductance	g_m	4·3	7·3	mA/V ←
Amplification Factor (Tetrode g_1 to g_2)	μ	18	7·5	←

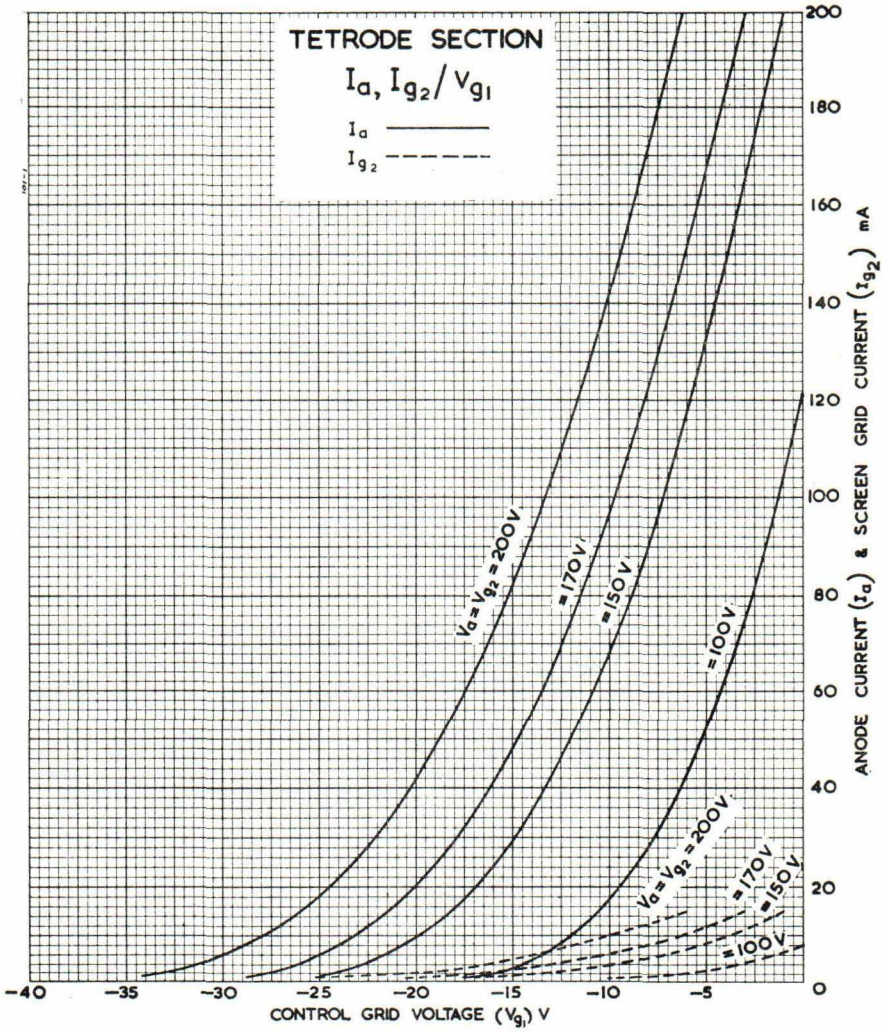
FIELD TIME BASE TYPICAL OPERATION

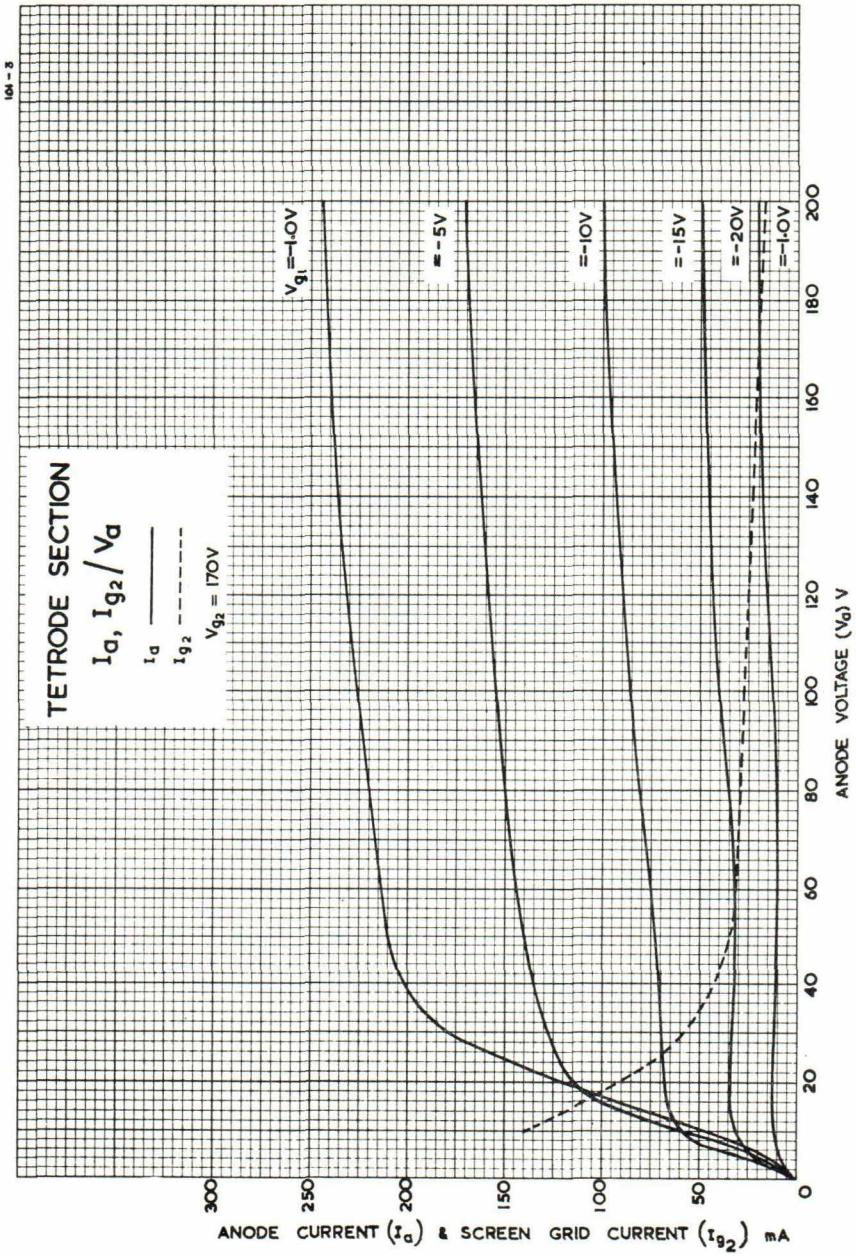
The output stage should be designed to allow for valve spread and deterioration during life in addition to component variation. Values of total peak anode current available for a new average valve and at assumed end of life point for any valve are as follows:

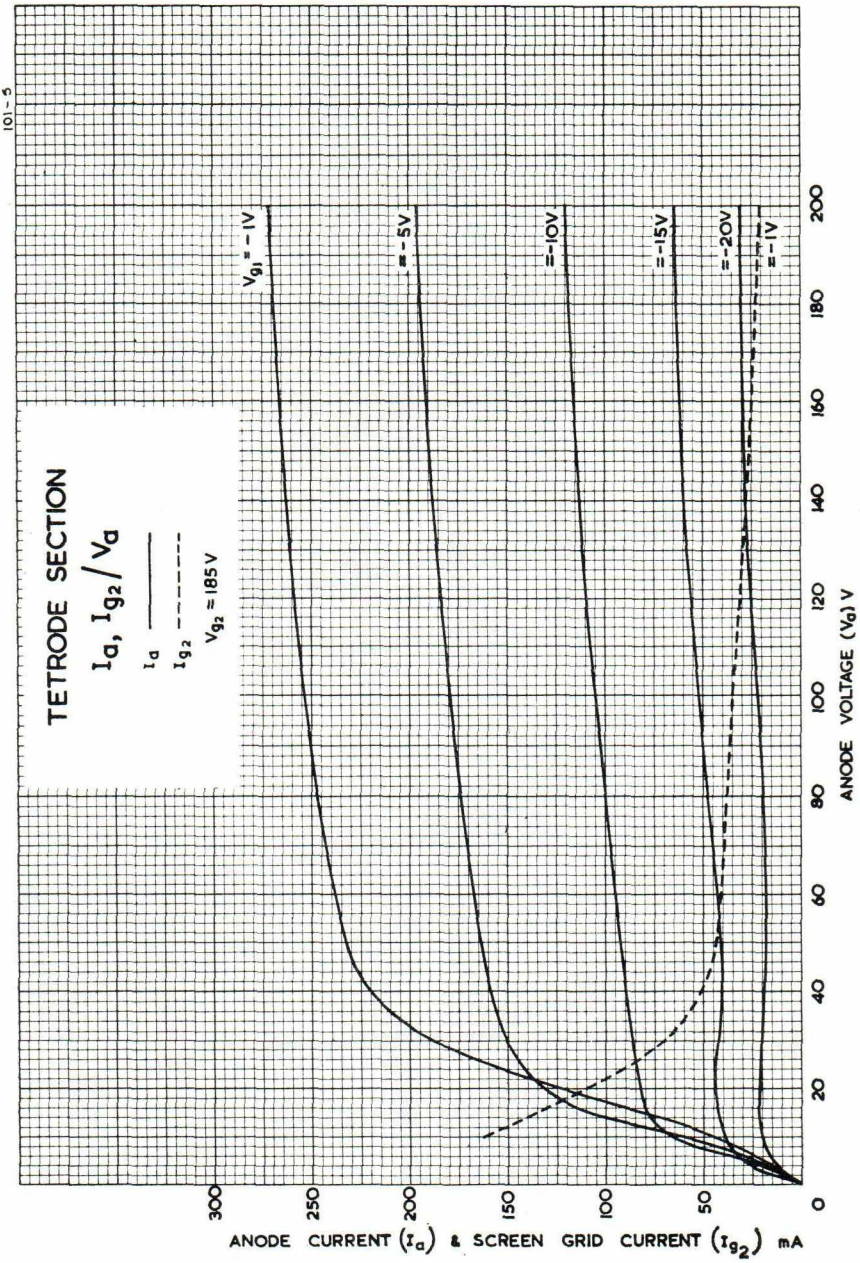
	V_a (V)	V_{g_2} (V)	V_{g_1} (V)	I_a (mA)
Average New Valve	55	170	−1	210
Assumed End of Life Condition	50	170	−1	135
Average New Valve	55	185	−1	235
Assumed End of Life Condition	50	185	−1	151

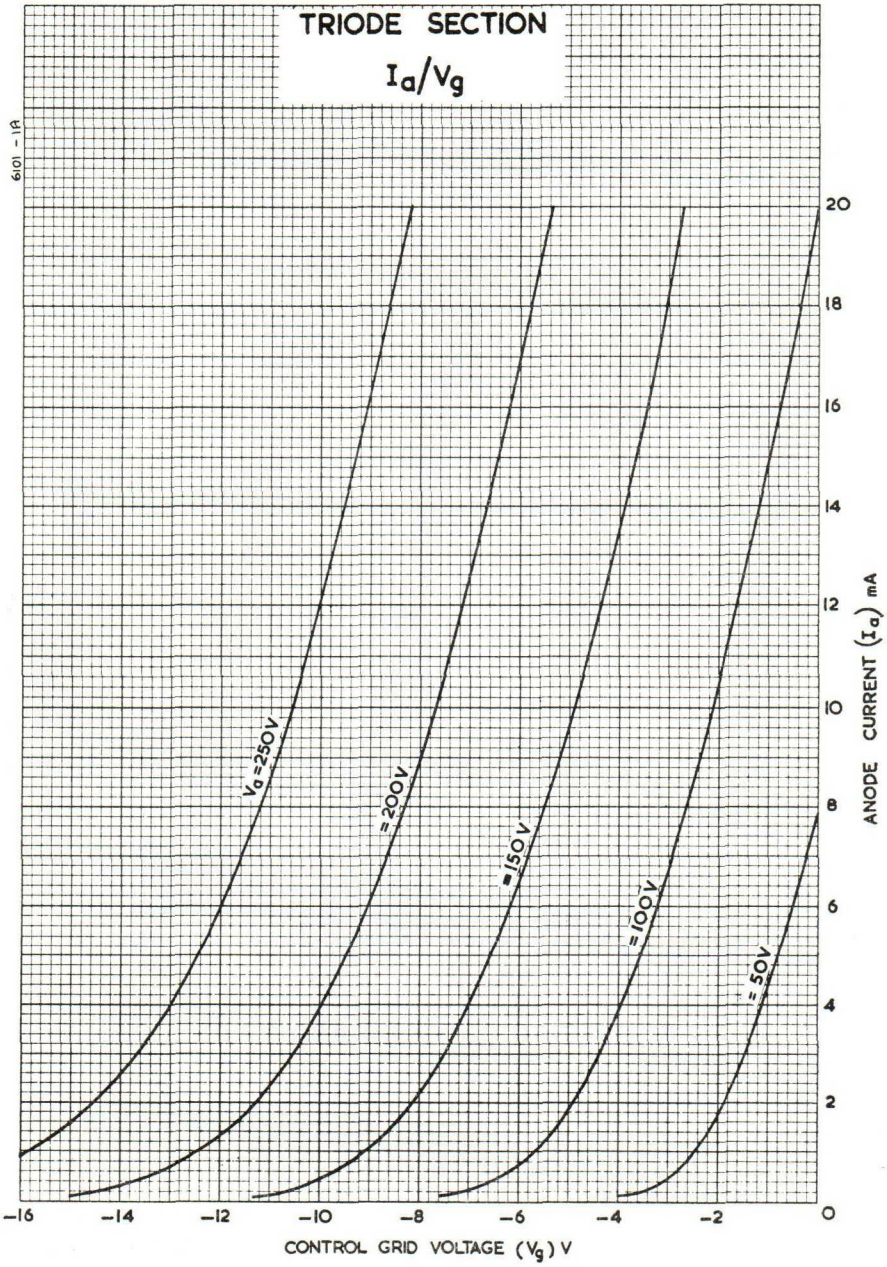
MOUNTING POSITION—Unrestricted

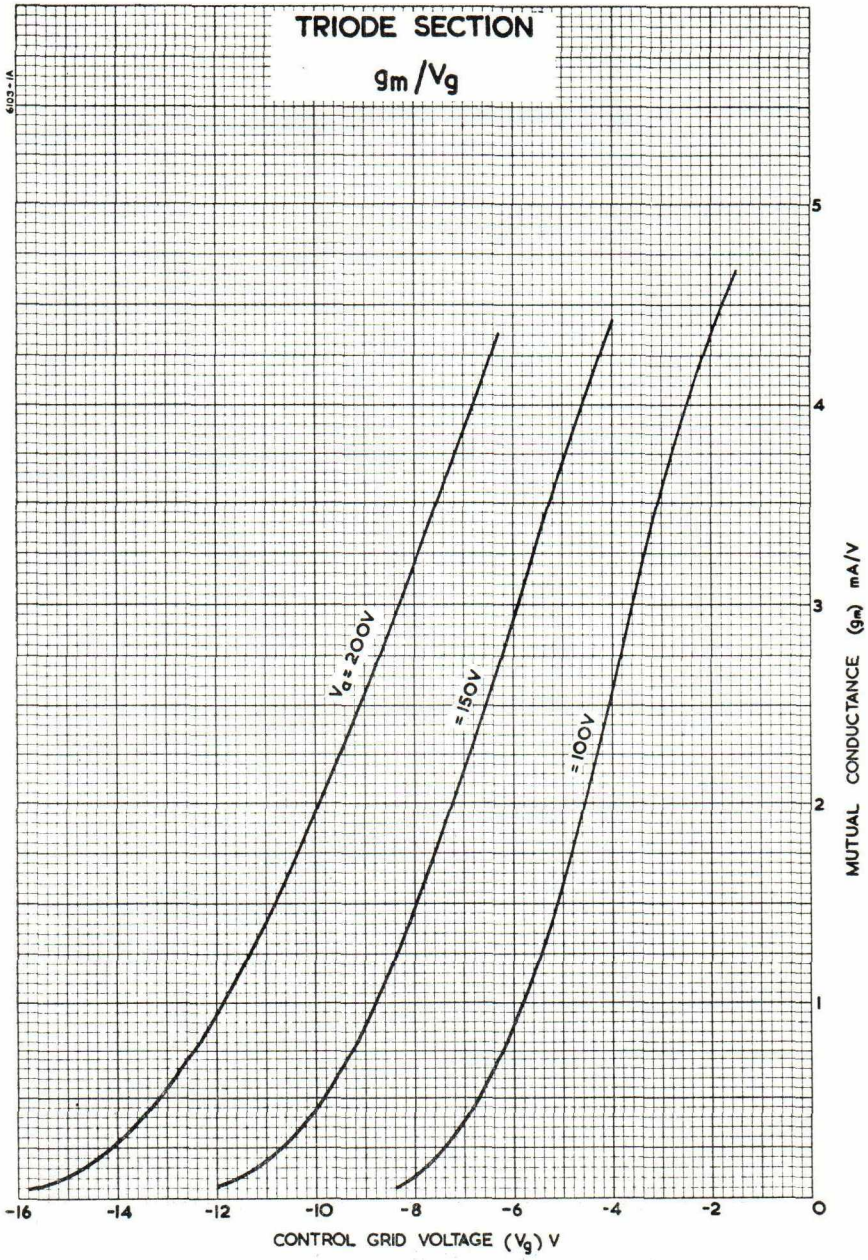
Indicates a change ←

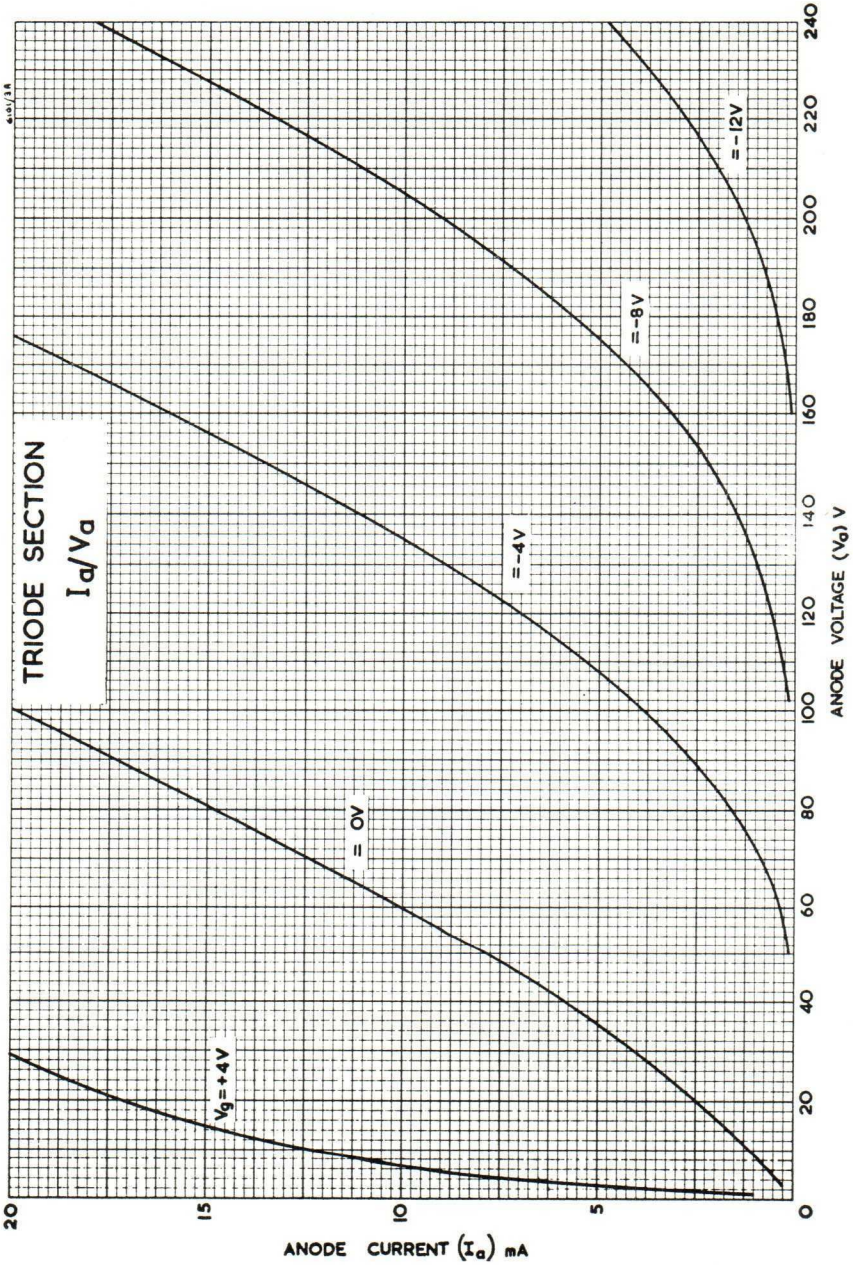

TETRODE SECTION
$I_a, I_{g2} / V_{g1}$
I_a
I_{g2}
$V_a = V_{g2} = 200V$
=170V
=150V
=100V
$V_a = V_{g2} = 200V$
=170V
=150V
=100V
-40
-35
-30
-25
-20
-15
-10
-5
0
20
40
60
80
100
120
140
160
180
200
CONTROL GRID VOLTAGE (V_{g1}) V
ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g2}) mA


TETRODE SECTION
$I_a, I_{g_2}/V_a$
I_a
I_{g_2}
V_{g_2} = 170V
V_{g_1}=-1·0V
=-5V
=-10V
=-15V
=-20V
=-1·0V
ANODE VOLTAGE (V_a) V
0
20
40
60
80
100
120
140
160
180
200
ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g_2}) mA
0
50
100
150
200
250
300


101-5
TETRODE SECTION
$I_a, I_{g2}/V_a$
I_a
I_{g2}
$V_{g2} \approx 185$ V
$V_{g1} = -1V$
$= -5V$
$= -10V$
$= -15V$
$= -20V$
$= -1V$
ANODE VOLTAGE (V_a) V
0
20
40
60
80
100
120
140
160
180
200
ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g2}) mA
300
250
200
150
100
50


TRIODE SECTION
Ia/Vg
6101 - 1A
Va = 250 V
= 200 V
= 150 V
= 100 V
= 50 V
20
18
16
14
12
10
8
6
4
2
0
ANODE CURRENT (Ia) mA
-16
-14
-12
-10
-8
-6
-4
-2
CONTROL GRID VOLTAGE (Vg) V


TRIODE SECTION
gm/Vg
6103-VI
Va = 200V
= 150V
= 100V
5
4
3
2
1
0
-16
-14
-12
-10
-8
-6
-4
-2
CONTROL GRID VOLTAGE (Vg) V
MUTUAL CONDUCTANCE (gm) mA/V


TRIODE SECTION
Ia/Va
Vg = +4V
= 0V
= -4V
= -8V
= -12V
ANODE CURRENT (Ia) mA
20
15
10
5
0
ANODE VOLTAGE (Va) V
20
40
60
80
100
120
140
160
180
200
220
240