

## TRIODE-PENTODE

High transconductance triode and R.F. pentode intended for use as frequency changer in V.H.F. T.V. tuners.

### QUICK REFERENCE DATA

#### Pentode section

Anode current	$I_a$	10 mA
Transconductance	S	11 mA/V
Amplification factor	$\mu_{g_2g_1}$	55 -
Internal resistance	$R_i$	min. 350 k $\Omega$

#### Triode section

Anode current	$I_a$	15 mA
Transconductance	S	9 mA/V
Amplification factor	$\mu$	20 -

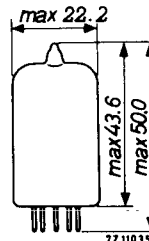
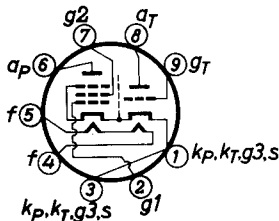
**HEATING:** Indirect by A. C. or D. C.; series supply

Heater current	$I_f$	0.3 A
Heater voltage	$V_f$	8.5 V

### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



**CAPACITANCES** (with external shield)

Pentode section

Grid No.1 to all except anode	$C_{g1(a)}$	5.9 pF
Anode to all except grid No.1	$C_{a(g1)}$	3.7 pF
Anode to grid No.1	$C_{ag1}$	0.009 pF
	$C_{ag1}$	max. 0.012 pF
Grid No.1 to grid No.2	$C_{g1g2}$	1.6 pF

Triode section

Grid to all except anode	$C_{g(a)}$	3.3 pF
Anode to all except grid	$C_{a(g)}$	1.7 pF
Anode to grid	$C_{ag}$	1.8 pF

Between pentode and triode sections

Pentode anode to triode anode	$C_{aPaT}$	max. 0.025 pF
Pentode anode to triode grid	$C_{aPgT}$	max. 0.010 pF
Pentode grid No.1 to triode anode	$C_{g1PaT}$	max. 0.010 pF
Pentode grid No.1 to triode grid	$C_{g1PgT}$	max. 0.010 pF

**TYPICAL CHARACTERISTICS**

Pentode section

Anode voltage	$V_a$	170 V
Grid No.2 voltage	$V_{g2}$	120 V
Grid No.1 voltage	$V_{g1}$	-1.4 V
Anode current	$I_a$	10 mA
Grid No.2 current	$I_{g2}$	3 mA
Transconductance	$S$	11 mA/V
Internal resistance	$R_i$	min. 350 k $\Omega$
Amplification factor	$\mu_{g2g1}$	55
Equivalent noise resistance	$R_{eq}$	1.5 k $\Omega$

**TYPICAL CHARACTERISTICS (continued)**

Triode section

Anode voltage	$V_a$	100	V
Grid voltage	$V_g$	-3	V
Anode current	$I_a$	15	mA
Transconductance	S	9	mA/V
Amplification factor	$\mu$	20	-

**OPERATING CHARACTERISTICS**

Pentode section as I. F. amplifier

Anode supply voltage	$V_{ba}$	200	V
Grid No. 2 supply voltage	$V_{bg_2}$	200	V
Grid No. 2 resistor	$R_{g_2}$	27	k $\Omega$
Anode resistor	$R_a$	2.7	4.7 k $\Omega$
Grid No. 1 supply voltage	$V_{bg_1}$	-1.4	0 V
Grid No. 1 resistor	$R_{g_1}$	0.1	1 M $\Omega$
Anode current	$I_a$	10	13 mA
Grid No. 2 current	$I_{g_2}$	3.0	3.9 mA
Transconductance	S	11	14.5 mA/V
Input resistance at 50 MHz	$r_{g_1}$	10	10 k $\Omega$
Grid No. 1 voltage	$V_{g_1}$	-12	- V
Transconductance	S	0.11	- mA/V

## OPERATING CHARACTERISTICS (continued)

Pentode section as mixer

Anode supply voltage	$V_{ba}$	200	V
Grid No.2 supply voltage	$V_{bg2}$	200	V
Grid No.2 resistor	$R_{g2}$	27	k $\Omega$
Anode resistor	$R_a$	2.7	4.7 k $\Omega$
Grid No.1 supply voltage	$V_{bg1}$	-1.4	0 V
Grid No.1 resistor	$R_{g1}$	0.1	1 M $\Omega$
Oscillator voltage	$V_{osc}$	1.6	1.6 V <sub>(RMS)</sub>
Anode current	$I_a$	10	9.3 mA
Grid No.2 current	$I_{g2}$	3.0	2.9 mA
Grid No.1 current	$I_{g1}$	8	2.3 $\mu$ A
Conversion conductance	$S_c$	5	4.7 mA/V

## OPERATING CHARACTERISTICS

Triode section as oscillator

Anode supply voltage	$V_{ba}$	200	V
Grid resistor	$R_g$	10	k $\Omega$
Anode resistor	$R_a$	8.2	12 k $\Omega$
Oscillator voltage	$V_{osc}$	4.5	3.3 V <sub>(RMS)</sub>
Anode current	$I_a$	16	12 mA
Effective transconductance (without higher harmonics)	$S_{eff}$	3.7	3.7 mA/V

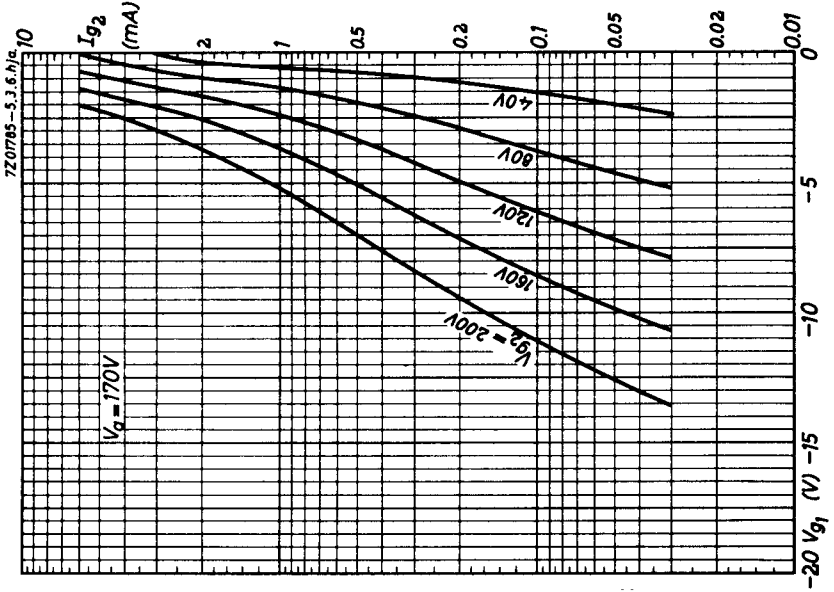
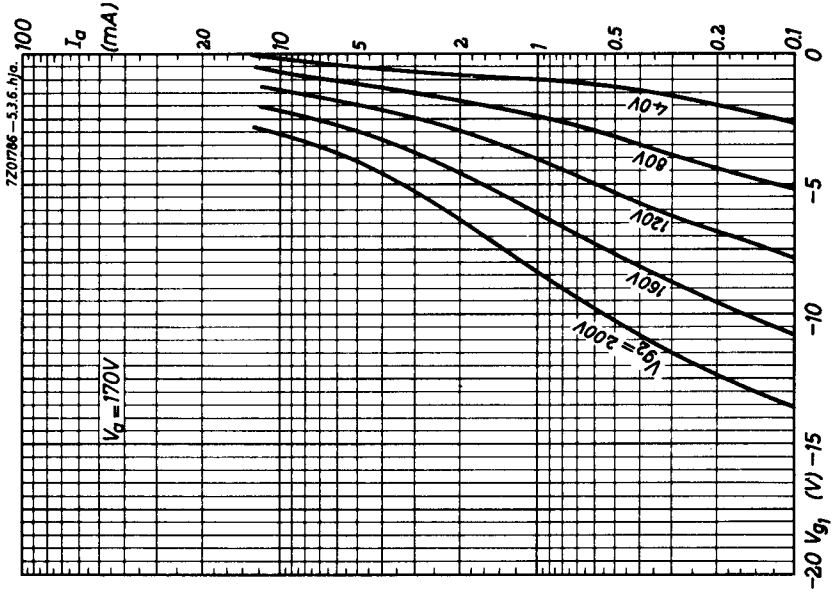
**LIMITING VALUES** (Design centre rating system)Pentode section

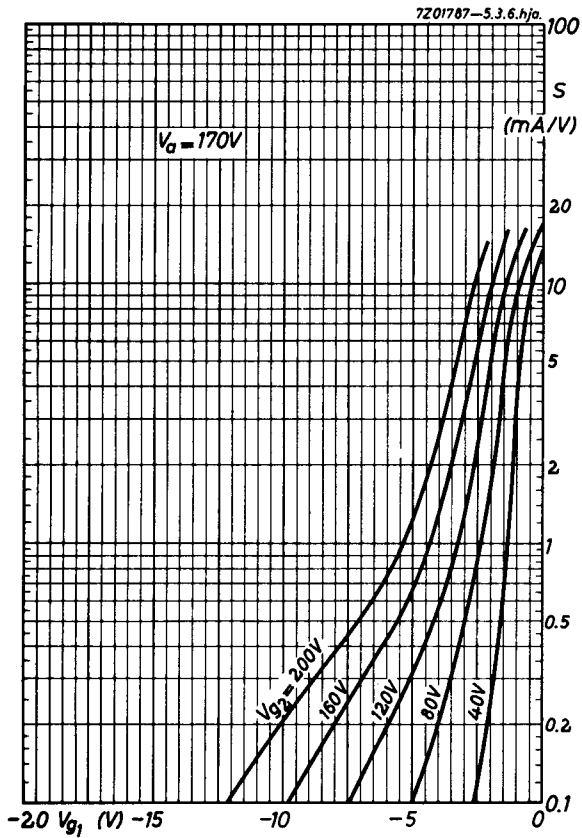
Anode voltage	$V_{a_0}$	max. 550 V
	$V_a$	max. 250 V
Anode dissipation	$W_a$	max. 2.0 W
Grid No.2 voltage	$V_{g_{20}}$	max. 550 V
Grid No.2 supply voltage	$V_{bg_2}$	max. 250 V
Grid No.2 voltage	$V_{g_2}$	max. 250 V
Grid No.2 dissipation	See page 10	
Grid No.1 voltage	$-V_{g_1}$	max. 50 V
Grid No.1 resistor, fixed bias	$R_{g_1}$	max. 1 M $\Omega$
automatic bias	$R_{g_1}$	max. 2.2 M $\Omega$
Cathode current	$I_k$	max. 18 mA
Cathode to heater voltage	$V_{kf}$	max. 100 V <sup>1)</sup>

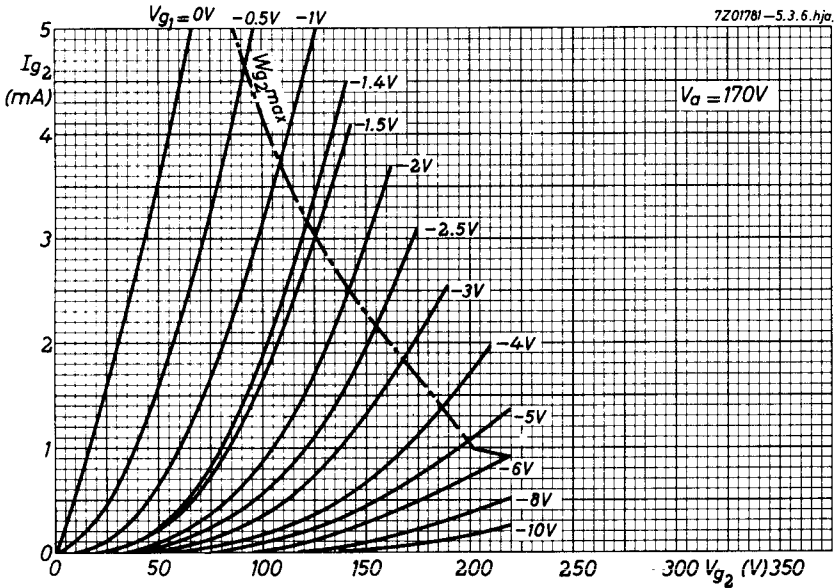
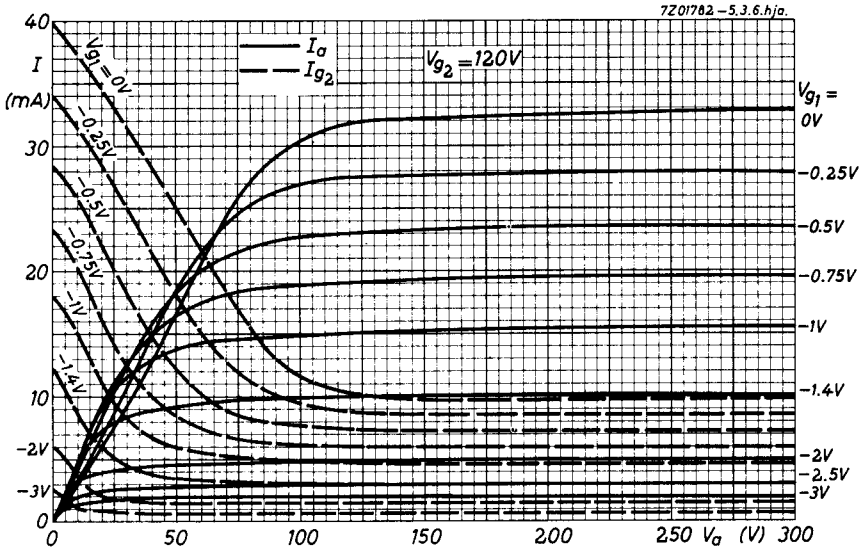
Triode section

Anode voltage	$V_{a_0}$	max. 550 V
Anode supply voltage	$V_{b_a}$	max. 250 V
Anode voltage	$V_a$	max. 125 V
Anode dissipation	$W_a$	max. 1.5 W
Grid voltage	$-V_g$	max. 50 V
Grid resistor	$R_g$	max. 0.5 M $\Omega$
Cathode current	$I_k$	max. 20 mA
Cathode to heater voltage	$V_{kf}$	max. 100 V <sup>1)</sup>

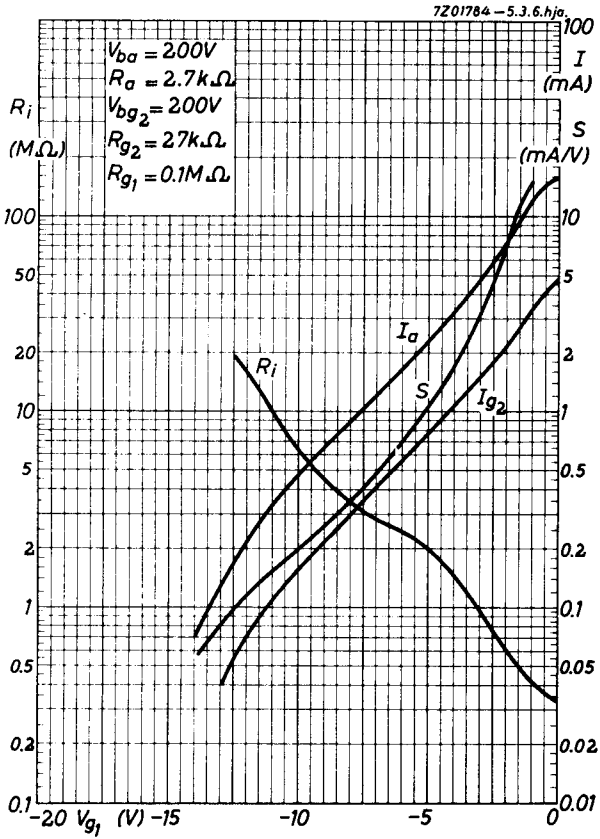
<sup>1)</sup> To fulfil the modulation hum requirements in intercarrier receivers, the voltage between heater and cathode should not exceed 100 V<sub>(RMS)</sub>.  
With respect to modulation hum in A.M. sound receivers the voltage between heater and cathode should not exceed 50 V<sub>(RMS)</sub>.

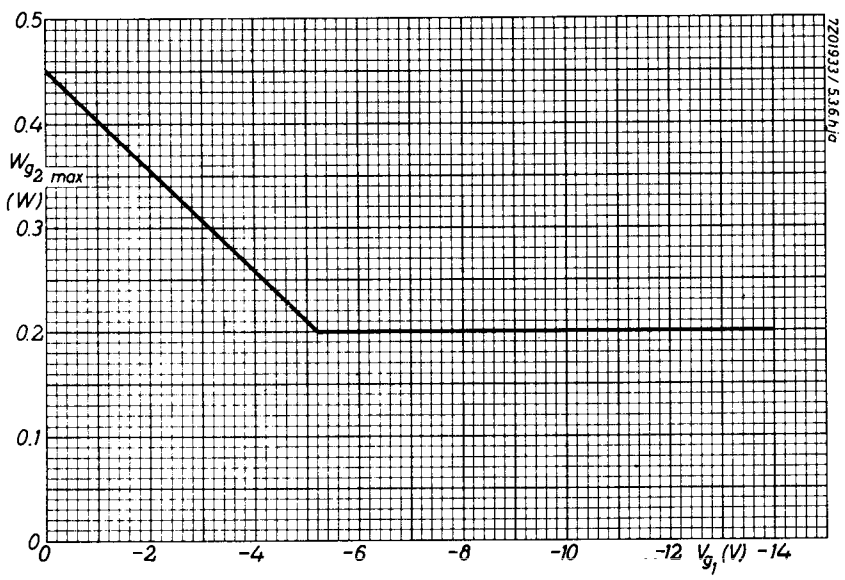
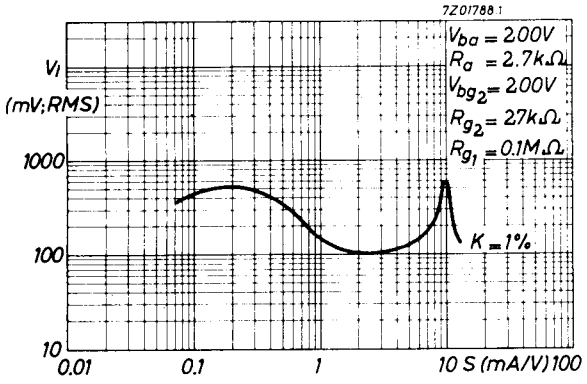


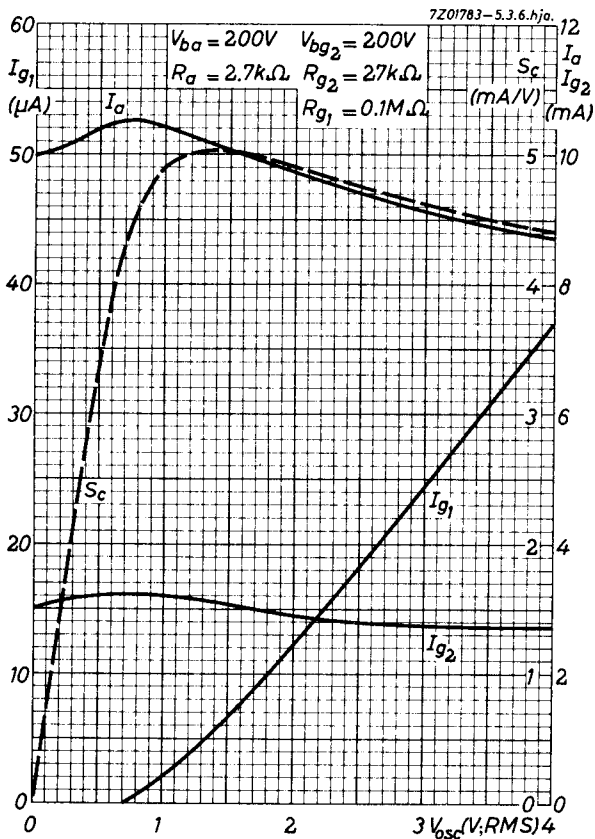


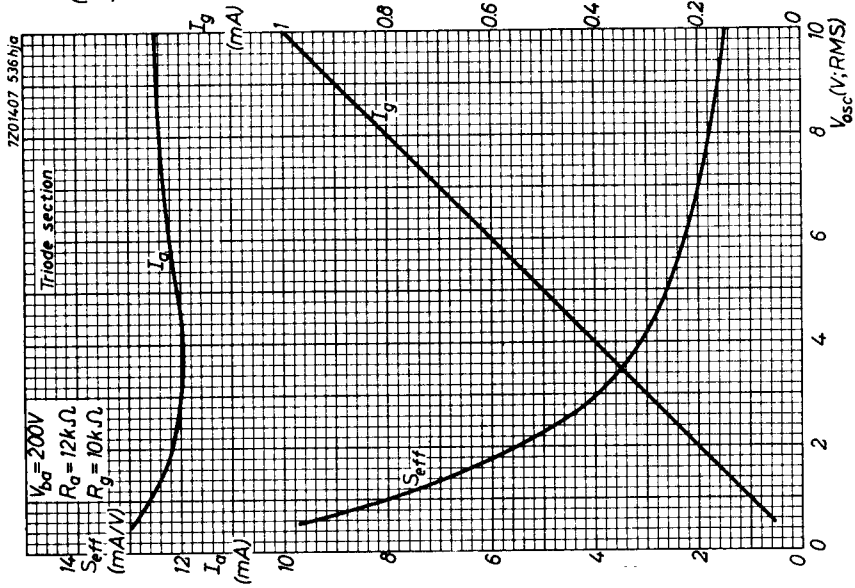
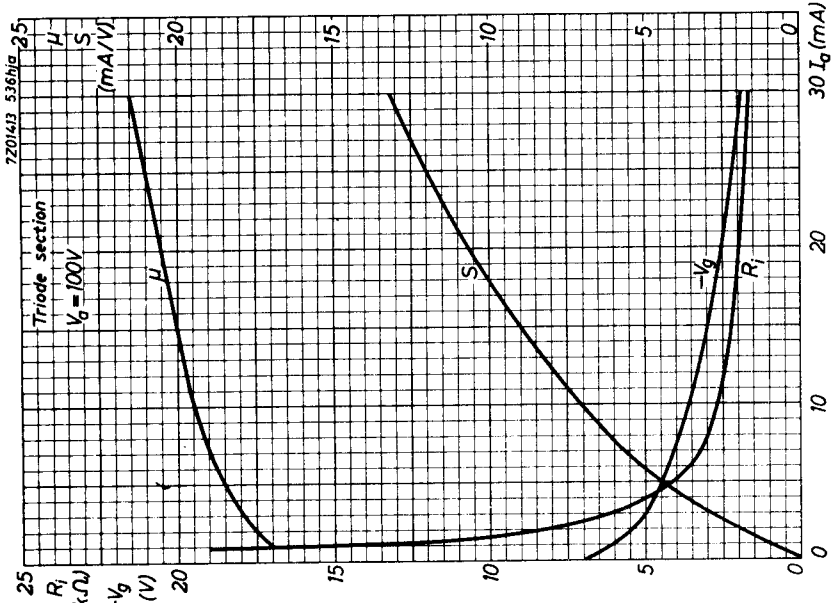












# PHILIPS

Data handbook



Electronic  
components  
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