



ELECTRONIC TUBE REFERENCE

UCH81

Voltage - Triode (with diode, heptode or hexode) electronic tube

CONSOLIDATED TECHNICAL
DATA

2 SECTIONS
CONSTRUCTION
HEPTODE-TRIODE

Triode-heptode frequency changer for AC/DC superheterodyne receivers. The triode serves as local oscillator while the heptode mixer provides useful conversion gain and high output resistance.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9C13	BASE PINS	9
NOMINAL HEATER	19 V / 100 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Common cathode	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Heptode	
PLATE RESISTANCE	900000 Ω
TRANSCONDUCTANCE	0.000775 S
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	100 V
MAXIMUM PLATE DISSIPATION	1.7 W
MAXIMUM SCREEN DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	12.55 mA
<i>Published ratings and characteristics promoted from the approved source.</i>	

SECTION2 Triode	
TRANSCONDUCTANCE	0.0037 S
AMPLIFICATION FACTOR	22
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	0.8 W
MAXIMUM CATHODE CURRENT	6.5 mA
<i>Published ratings and characteristics promoted from the approved source.</i>	

Triode-heptode frequency changer for radio receiver oscillator and mixer service. The supplied French datasheet was translated to English for descriptive output.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1953 La Radiotechnique

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1953 LA RADIOTECHNIQUE

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	170 V	Heptode
Plate Current	3.2 mA	Heptode
Screen Current	6.8 mA	Heptode grids 2+4

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Conversion Transconductance	750 uS	Heptode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input Capacitance	4.8 pF	Heptode cold
Output Capacitance	7.9 pF	Heptode cold
OscillatorGridCapacitance	6 pF	Heptode grid 3
Plate To Grid Capacitance	0.006 pF	Heptode maximum

1953 LA RADIOTECHNIQUE

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	100 V	Triode
Grid Voltage	-2 V	Triode
Plate Current	7.3 mA	Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input Capacitance	2.6 pF	Triode

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Output Capacitance	2.1 pF	Triode
Plate To Grid Capacitance	1 pF	Triode



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

1953 RFT Rundfunk Technik

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1953 RFT RUNDFUNK TECHNIK

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	300 V	—
Maximum Screen Voltage	250 V	—
Maximum Plate Dissipation	1.5 W	—
Maximum Screen Dissipation	1 W	—
Maximum Cathode Current	25 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	775 μ S	Typical
Plate Resistance	1000000 ohm	Typical

1953 RFT RUNDFUNK TECHNIK

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Plate Dissipation	1.5 W	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Cathode Current	15 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	3800 μ S	Typical
Amplification Factor	22	Typical
Plate Resistance	19000 ohm	Typical



SOURCE OPERATING CONDITIONS

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1957 Philips Receiving and Amplifying Tubes

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1957 PHILIPS RECEIVING AND AMPLIFYING TUBES

Section 1 · Heptode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current	7.6 mA	ConverterSection
Transconductance	2400 μ S	ConverterSection
Plate Resistance	0.6 Mohm	ConverterSection

1957 PHILIPS RECEIVING AND AMPLIFYING TUBES

Section 2 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Triode Plate Voltage	100 V	—
Triode Plate Current	13.5 mA	—
Triode Transconductance	3700 μ S	—
Triode Amplification Factor	22	—



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195X Tesla

Published test conditions and operating points. Values on this page are preserved as reported by this source.

195X TESLA

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	19 V	Nominal
HeaterCurrentNominal	100 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Screen Voltage	100 V	—

195X TESLA

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	19 V	Nominal
HeaterCurrentNominal	100 mA	Nominal
Maximum Plate Voltage	250 V	—



SOURCE OPERATING CONDITIONS

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1961 Ferranti Technical Handbook

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1961 FERRANTI TECHNICAL HANDBOOK

Section 1 · Heptode

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Frequency changer / RF-IF amplifier	—

Section 2 · Triode

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Oscillator	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

1963 Philips Electron Tubes Handbook V1

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	170 V	FrequencyChanger
Screen voltage	102 V	FrequencyChanger
Plate current	6.2 mA	FrequencyChanger
Screen current	3.8 mA	FrequencyChanger

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	0.9 Mohm	FrequencyChanger

1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	100 V	OscillatorSection
Plate current	13.5 mA	OscillatorSection

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	22	OscillatorSection

SOURCE OPERATING CONDITIONS

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1967 Mullard Receiving and Amplifying Valves

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
$V_a = V_b$	200 V	OR I.F. AMPLIFIER
V_g	0 V	OR I.F. AMPLIFIER
V_g	123 V	OR I.F. AMPLIFIER
g_m	2.4 mA	OR I.F. AMPLIFIER
r_a	600 kΩ	OR I.F. AMPLIFIER
V_g	1	OR I.F. AMPLIFIER
reduction in g_m)	-33 V	OR I.F. AMPLIFIER
V_g	-1.3 V	OR I.F. AMPLIFIER
$V_{g3 \text{ max. (lg}})$	3 V	OR I.F. AMPLIFIER
$V_a = V_b$	200 V	FREQUENCY CHANGER
V_{g1}	-2.6 V	FREQUENCY CHANGER
V_{g2+g4}	119 V	FREQUENCY CHANGER
r_a	1	FREQUENCY CHANGER
V_{g1} (for	1	FREQUENCY CHANGER
$V_{g2+g4}(\text{ b) max}$	550 V	LIMITING VALUES
$V_{g2+g4 \text{ max. (Ia =$	125 V	LIMITING VALUES
$V_{g2+g4 \text{ max. (Ia <}$	250 V	LIMITING VALUES
$R_{eq \text{ I } V_a =$	200	LIMITING VALUES
$V_a =$	200	LIMITING VALUES
$V_a \text{ t}$	0 V	LIMITING VALUES

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

Section 2 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Va	100 V	CHARACTERISTICS
Vg	0 V	CHARACTERISTICS
gm	3.7 V	CHARACTERISTICS
Vg max. (Ig = +	3 V	CHARACTERISTICS

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
gm (eff)	580 A	OSCILLATOR
Va max	250 V	LIMITING VALUES
50mV for an output of	50	LIMITING VALUES
Vg	3	LIMITING VALUES
Vg	0 V	LIMITING VALUES
Va =	11 V	LIMITING VALUES
7 16 1 UCH 81 Ia	81	LIMITING VALUES
i Va "	170 V	LIMITING VALUES
Vg l (V)	0 V	LIMITING VALUES
Va =	200	LIMITING VALUES
Va =	170 V	LIMITING VALUES
Vg l (V)	0 V	LIMITING VALUES
<" A) Va	170 A	LIMITING VALUES
Va =	0 V	LIMITING VALUES
Va =	170	OSCILLATOR-GRID CURRENT.
va	0	OSCILLATOR-GRID CURRENT.
Va =	200	OSCILLATOR-GRID CURRENT .



SOURCE DATA APPENDIX

1968 Mazda Belvu

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1968 MAZDA BELVU
Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tension filAment ecrereseenceceserencesesenensessenseursers VL	19 V	—
Courant filament Jlf	100 mA	—
Capacité anode/ grille ne ! Ca/g	6 mpF	—
Capacité grille no 1/ filament CgJË	0.17 pF	—
Caäpacité grille n° 1/ grille n° 3 ... Ca/& ,	3 pF	—
Capacité grille n° 3/ filament escereresciensene CB3/f	0.06 pF	—
Capacité grille/ filAment eseserenenennn C8/ Ë	0.02 pF	—
Capacité anode Heptode/ grille Triode CaH/ gT	0.09 pF	—
Capacité grille n° 1 Heptode/ anode Triode CgH/aT ==	0.06 pF	—
Capacité grille n° ! Heptode/ grille Triode CgH/geT -	0.17 pF	—
Tension d'anode à courant nul c Va bl	550 V	—
Tension d'anode Va	250 V	—
T'ension de grilles n°2 et 4àcourant nul Vg+tg bl =	550 V	—
Tension de grilles n° 2 et 4 veate	125 V	—
la = 1 mA V&+e	250 V	—
Dissipation de grilles n° 2 et 4 Pg+tg	1 W	—
Courant de cathode IK	18 mA	—
Tension entre filament et cathode s VÊK	100 V	—
Tension d'anode à courant nul ccrerecess :Va bl	550 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tension d'anode	250 V	—
Dissipation d'anode	0.8 W	—
Courant de cathode	6.5 mA	—
Tension entre filament et cathode	100 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Capacité d'Entrée @ vevriecrersentsneemsesneneü Ce	4.8 pF	—
Capacité de sortie Cs	7.9 pF	—
Capacité d'entrée Ce	2.6 pF	—
Capacité de sortie Cs	2.1 pF	—
Capacité anode/ grille Ca/g	1 pF	—
Capacité anode Heptode/anode Triode CaH/ aT	0.2 pF	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Dissipation d'anode ... vasssesesreemnmacesercee PA	1.8 W	—
Tension d'anode Va	160 V	—
Tension de grilles n° 2 et 4. Ve+tg	90 V	—
Tension de grille n° 1 Veg	-0.5 V	—
Courant d'anode Ia	9.8 mA	—
Ig+g	6.1 mA	—
Pente S	4.3 mA	—
ensessen cn sess so00 sosoceansi en	100 V	—
Pente R	3.7 mA	—
mA) Va: =	100 V	—



SOURCE DATA APPENDIX

1972 Philips Receiving Tubes

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1972 PHILIPS RECEIVING TUBES

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	19 V	Nominal
HeaterCurrentNominal	100 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Screen Voltage	250 V	—
Maximum Plate Dissipation	1.8 W	—
Maximum Screen Dissipation	1 W	—
Maximum Cathode Current	18 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	4300 µS	Typical
Amplification Factor	25	Typical
Plate Resistance	400000 ohm	Typical

1972 PHILIPS RECEIVING TUBES

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	19 V	Nominal
HeaterCurrentNominal	100 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Plate Dissipation	0.8 W	—
Maximum Cathode Current	6.5 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification Factor	22	Typical

SOURCE OPERATING CONDITIONS

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1973 Mazda Valves Binder 2

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1973 MAZDA VALVES BINDER 2

Section 1 · Heptode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater or filament voltage	19 V	Published nominal value
Heater or filament current	100 mA	Published nominal value

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	1.7 W	Published maximum rating

1973 MAZDA VALVES BINDER 2

Section 2 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater or filament voltage	19 V	Published nominal value
Heater or filament current	100 mA	Published nominal value
Transconductance	3200 μ S	Published operating characteristic

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	0.8 W	Published maximum rating

1999 Philips E-Z

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1999 PHILIPS E-Z
Section 2 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	19 V	SeriesHeater

TUBE TINKER

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