



ELECTRONIC TUBE REFERENCE

HCH81

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

CONSOLIDATED TECHNICAL
DATA

2 SECTIONS
CONSTRUCTION
HEPTODE-TRIODE

Radio receiver frequency changer combining oscillator and mixer functions for superheterodyne conversion. Its multi-grid construction translates incoming RF signals to the intermediate frequency within the receiver front end.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	12.6 V / 150 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Capable
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 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/characteristics are also preserved as parameter rows. Philips HCH81 oscillator triode of a triode-heptode AM/FM frequency changer. At V_a 100 V, V_g 0 V, I_a 13.5 mA the published typical g_m is 3.7 mA/V and μ 22. Maximum continuous anode 250 V, dissipation 0.8 W, cathode current 6.5 mA; 550 V is cold-anode withstand only. The 12.6 V, 150 mA heater can be supplied in series or parallel circuits.</i>	

SECTION2 Heptode	
PLATE RESISTANCE	1000000 Ω
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	125 V
MAXIMUM PLATE DISSIPATION	1.7 W
MAXIMUM SCREEN DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	12.5 mA
<i>Published ratings/characteristics are also preserved as parameter rows. Philips HCH81 heptode mixer/amplifier section, not a hexode. Maximum continuous anode voltage 250 V, dissipation 1.7 W, screen dissipation 1 W, cathode current 12.5 mA. Screen-grid voltage 125 V applies under the specified current condition; up to 250 V is allowed at plate current below 1 mA. The 550 V anode/screen figures are cold limits. Plate resistance about 1 MΩ is a specified mixer operating-point characteristic, not an absolute maximum.</i>	

Triode-heptode frequency-converter tube for radio receivers. Electrical ratings, heater data, operating limits, and published characteristics are captured from the supplied datasheet.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
parallel supply $V_e =$	12.6 V	. parallel supply $V_e = 12,6V$
série ou parallele $I =$	150 ma	série ou parallele $I = 150 \text{ ma}$
$C_g =$	2.6 pF	$C_g = 2,6 \text{ pF}$ $C_{gy} = 4,8 \text{ pF}$ $C_{gig} \leq 0,3 \text{ DF}$
$C_g =$	4.8 pF	$C_g = 2,6 \text{ pF}$ $C_{gy} = 4,8 \text{ pF}$ $C_{gig} \leq 0,3 \text{ DF}$
$C_a =$	2.1 pF	$C_a = 2,1 \text{ pF}$ $C_a = 7,9 \text{ pF}$ $C_{gyf} < 0,17 \text{ pF}$
$C_a =$	7.9 pF	$C_a = 2,1 \text{ pF}$ $C_a = 7,9 \text{ pF}$ $C_{gyf} < 0,17 \text{ pF}$
$C_a =$	0.17 pF	$C_a = 2,1 \text{ pF}$ $C_a = 7,9 \text{ pF}$ $C_{gyf} < 0,17 \text{ pF}$
$C_{ag} =$	0.006 pF	$C_{ag} = 1,0 \text{ pF}$ $C_{agy} < 0,006 \text{ pF}$ $C_{gaf} \leq 0,06 \text{ DF}$ le—
$C_{gf} <$	0.02 pF	$C_{gf} < 0,02 \text{ pF}$ $C_{gy} = 6,0 \text{ pF}$
$C_{gf} <$	6 pF	$C_{gf} < 0,02 \text{ pF}$ $C_{gy} = 6,0 \text{ pF}$
$C_{ag-aT} =$	0.2 pF	$C_{ag-aT} = 0.20 \text{ pF}$ $C_{giH-gT} < 0,170 \text{ pF}$
$C_{ag-aT} =$	0.17 pF	$C_{ag-aT} = 0.20 \text{ pF}$ $C_{giH-gT} < 0,170 \text{ pF}$
$C_{af-gT} \leq$	0.09 pF	$C_{af-gT} \leq 0,090 \text{ pF}$ $C_{giH-(gT+gy)} \leq 0.450 \text{ pF}$
$C_{af-gT} \leq$	0.45 pF	$C_{af-gT} \leq 0,090 \text{ pF}$ $C_{giH-(gT+gy)} \leq 0.450 \text{ pF}$
$C_{giH-aT} \leq$	0.06 PF	$C_{giH-aT} \leq 0,060 \text{ PF}$ $C_{aH-(gT+gs)} \leq 0,350 \text{ PF}$
$C_{giH-aT} \leq$	0.35 PF	$C_{giH-aT} \leq 0,060 \text{ PF}$ $C_{aH-(gT+gs)} \leq 0,350 \text{ PF}$
c parallel supply $V_e =$	12.6 V	c parallel supply $V_e = 12,6 V$
série ou parallèle $I_p =$	150 mA	série ou parallèle $I_p = 150 \text{ mA}$
$C_g =$	2.6 pF	$C_g = 2,6 \text{ pF}$ $C_{gy} = 4,8 \text{ pF}$ $C_{grga} \leq 0,3 \text{ pF}$
$C_g =$	4.8 pF	$C_g = 2,6 \text{ pF}$ $C_{gy} = 4,8 \text{ pF}$ $C_{grga} \leq 0,3 \text{ pF}$
$C_g =$	0.3 pF	$C_g = 2,6 \text{ pF}$ $C_{gy} = 4,8 \text{ pF}$ $C_{grga} \leq 0,3 \text{ pF}$
$C_a =$	2.1 pF	$C_a = 2,1 \text{ pF}$ $C_a = 7,9 \text{ pF}$ $C_{gy'} < 0,17 \text{ pF}$

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ca =	0.17 pF	Ca = 2,1 pF Ca = 7,9 pF Cgy' < 0,17 pF
Caz =	140 PF	Caz = 140 PF Cagy ϕ 0,006 pF Cgaf ϕ 0,06 PF
Caz =	0.006 pF	Caz = 140 PF Cagy ϕ 0,006 pF Cgaf ϕ 0,06 PF
Caz =	0.06 PF	Caz = 140 PF Cagy ϕ 0,006 pF Cgaf ϕ 0,06 PF
Cgf <	0.02 pF	Cgf < 0,02 pF Cay = 6,0 pF
Cgf <	6 pF	Cgf < 0,02 pF Cay = 6,0 pF
Caf-aT =	0.2 pF	Caf-aT = 0.20 pF') Cg, H-gT < 0,170 pF
Caf-aT =	0.17 pF	Caf-aT = 0.20 pF') Cg, H-gT < 0,170 pF
CaH-gT <	0.45 pF	CaH-gT < 0,090 pF Cg1H-(gT+g3) ϕ 0.450 pF
Cg:1 H-aT ϕ	0.06 pF	Cg:1 H-aT ϕ 0,060 pF CaH-(gT+ga) ϕ 0,350 pF
Cg:1 H-aT ϕ	0.35 pF	Cg:1 H-aT ϕ 0,060 pF CaH-(gT+ga) ϕ 0,350 pF
939	88 A	939 088A
Vg =Vp =	200 v	Vg =Vp = 200 v
Ves =	-28 v	Ves = -2,3 -28 v
Sc =	7.75 uA	Sc = 775 7,75 uA/v
Vg = Vp =	100 v	Vg = Vp = 170 100 v
Va=Vp =	200 v	Va=Vp = 200 v
Vg =	-28 v	Vg = 2,3 -28 v
Se =	7475 w	Se = 775 7475 whA/v
Vg = Vy =	100 v	Vg = Vy = 170 100 v
I(gT+gs) =	200 W	I(gT+gs) = 200 W KA
Vg, =220 ~24 ST	24 S	Vg, =220 ~24 ST -14,5°V
Se	6.2 w	Se - 750 7,5 620 6,2 wb/V
Va = Vp =	200 v	Va = Vp = 200 v
Ve =	0 v	Ve = 0 v
Vg = =243	-33 v	Vg = =243 -33 v
S =	0.024 mA	S = 2,4 0,024 mA/V
Vas = ϕ }	0 v	Vas = ϕ } 0 v
2,0 A-28 A	-2 A	-2,0 A-28 A
2,0 A-28 A	-28 A	-2,0 A-28 A
=141	-16.5 V	=141 -16,5 V
S =	0.02 mA	S = 2,3 0,023 2,0 0,020 mA/V

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Eingangswiderstand bei	100 MHZ	Eingangswiderstand bei 100 MHZ
$V_g = V_p =$	200 v	$V_g = V_p = 200 \text{ v}$
$V_{es} =$	0 v	$V_{es} = 0 \text{ v}$
$S =$	0.024 ma	$S = 2.4 \text{ 0,024 ma/vV}$
$V_{g,} =$	-16.5 V	$V_{g,} = -2,0 -28' - -16,5V$
$s =$	0.02 ma	$s = 2,3 \text{ 0,023 2,0 0,020 maA/vV}$
Eingangswiderstand bei	100 MHz	Eingangswiderstand bei 100 MHz
$V_a =$	100 v	$V_a = 100 \text{ v}$
$S =$	3.7 mA	$S = 3,7 \text{ mA/V}$
$V_y =$	100 V	$V_y = 200 \text{ 170 100 V}$
$I_a =$	2.5 mA	$I_a = 5,4 \text{ 4,5 2,5 mA}$
$S_{eff} =$	0.58 mA	$S_{eff} = 0,65 \text{ 0,65 0,58 mA/V}$
50 mW of the output tube. For the triode section the	50 mW	50 mW of the output tube. For the triode section the
une puissance de	50 mW	une puissance de 50 mW du tube de sortie, La valeur
$V_a =$	100 V	$V_a = 100 \text{ V}$
$I_a =$	13.5 mA	$I_a = 13,5 \text{ mA}$
$S_{err} =$	0.58 ma	$S_{err} = 0,65 \text{ 0,65 0,58 ma/v}$
von	50 mW	von 50 mW ergeben. Der entsprechende Wert für den Trioden-
$V_{ao} = \max$	550 V	$V_{ao} = \max. \text{ 550 V}$
$V_a = \max$	250 V	$V_a = \max. \text{ 250V}$
$W_o = \max$	0.8 W	$W_o = \max. \text{ 0,8 W}$
$T_x = \max$	6.5 mA	$T_x = \max. \text{ 6,5 mA}$
$Y_k = \max,$	100 V	$Y_k = \max, \text{ 100V}$
$V_{gllg} = +0.3 \text{ pd}) = \max$	1.3 V	$-V_{gllg} = +0.3 \text{ pd}) = \max. \text{ 1,3V}$
$V_a, = \max.,$	550 V	$V_a, = \max., \text{ 550 V}$
$V_a = \max. <250V$	250 V	$V_a = \max. <250V$
$W_y = \max,$	1.7 W	$W_y = \max, \text{ 1,7 W}$
$V_{i\{gergs\}o} = \max$	550 V	$V_{i\{gergs\}o} = \max. \text{ 550V}$
V_{g2}	1257 V	$V_{g2} \text{ 4ge)} = \max., \text{ 1257V}$
$V(\text{gasge })(f_a < 1 \text{ mA}) = \max,$	1 mA	$V(\text{gasge })(f_a < 1 \text{ mA}) = \max, \text{ 250 V}$

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
V(gasge)(fa <1 mA) = max,	250 V	V(gasge)(fa <1 mA) = max, 250 V
Vir = max,	100 v	Vir = max, 100 v
Vg (Igy=+40,3 ua) = max	40.3 ua	Vg (Igy=+40,3 ua) = max. 1,3V
Vg (Igy=+40,3 ua) = max	1.3 V	Vg (Igy=+40,3 ua) = max. 1,3V
Vg (Igy=+0,3 wa) =max	0.3 w	Vg (Igy=+0,3 wa) =max. 1,3V
Vg (Igy=+0,3 wa) =max	1.3 V	Vg (Igy=+0,3 wa) =max. 1,3V
Vag = max.,	550 V	Vag = max., 550 V
Va = max,	2507 V	Va = max, 2507V
Wa = max	0.8 W	Wa = max. 0,8 W
Ty = max,	6.5 mA	Ty = max, 6,5 mA
Vif = max	120 V	Vif = max. 120 V
~Vglig = +0,3 pA) = max,	1.3 V	~Vglig = +0,3 pA) = max, 1,3V
Va, = max	550 V	Va, = max. 550V
Ty =wmax	1.7 W	Ty =wmax. 1,7 W
Vige+ee Jo = max	530 V	Vige+ee Jo = max. 530V
Viea s) = max,	125 V	Viea s) = max, 125V

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