

## DOUBLE DIODE - PENTODE

Double diode-pentode. Pentode intended for use as R.F. or I.F. amplifier.

QUICK REFERENCE DATA			
<u>Pentode section</u>			
Variable transconductance			
Anode current	$I_a$	9	mA
Transconductance	$S$	4.5	mA/V
Amplification factor	$\mu_{g_2g_1}$	20	--

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

Heater voltage

$V_f$  6.3 V

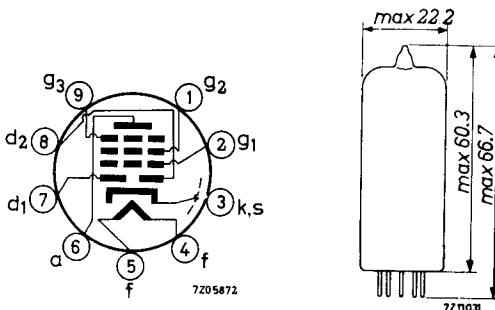
Heater current

$I_f$  300 mA

### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



**CAPACITANCES**

Pentode section

Anode to all except grid No.1	$C_{a(g_1)}$	5.2 pF
Grid No.1 to all except anode	$C_{g_1(a)}$	5.0 pF
Anode to grid No.1	$C_{ag_1}$	max. 0.0025 pF
Grid No.1 to heater	$C_{g_1f}$	max. 0.05 pF

Diode sections

Diode No.1 to all	$C_{d_1}$	2.5 pF
Diode No.2 to all	$C_{d_2}$	2.5 pF
Diode No.1 to diode No.2	$C_{d_1d_2}$	max. 0.25 pF
Diode No.1 to heater	$C_{d_1f}$	max. 0.015 pF
Diode No.2 to heater	$C_{d_2f}$	max. 0.003 pF

Between diode and pentode sections

Diode No.1 to grid No.1	$C_{d_1g_1}$	max. 0.0008 pF
Diode No.2 to grid No.1	$C_{d_2g_1}$	max. 0.001 pF
Diode No.1 to anode	$C_{d_1a}$	max. 0.15 pF
Diode No.2 to anode	$C_{d_2a}$	max. 0.025 pF

**TYPICAL CHARACTERISTICS**

Pentode section

Anode voltage	$V_a$	250	250	200	170	V
Grid No. 2 voltage	$V_{g_2}$	100	80	100	100	V
Grid No. 3 voltage	$V_{g_3}$	0	0	0	0	V
Grid No. 1 voltage	$V_{g_1}$	-2	-1 <sup>1)</sup>	-1.5	-1 <sup>1)</sup>	V
Anode current	$I_a$	9	9	11	12	mA
Grid No. 2 current	$I_{g_2}$	2.7	2.7	3.3	4	mA
Transconductance	S	3.8	4.5	4.5	5	mA/V
Amplification factor	$\mu_{g_2g_1}$	20	20	20	20	-
Internal resistance	$R_i$	1.0	0.9	0.6	0.4	M $\Omega$

**OPERATING CHARACTERISTICS**

Pentode section as R.F. or I.F. amplifier

Supply voltage	$V_b$	250		200		250	V	
Anode resistor	$R_a$	0		0		0	$\Omega$	
Grid No. 3 voltage	$V_{g_3}$	0		0		0	V	
Grid No. 2 resistor	$R_{g_2}$	56		30		62	k $\Omega$	
Grid No. 1 voltage	$V_{g_1}$	-2.0	-20	-1.5	-20	-1 <sup>1)</sup>	-20	V
Anode current	$I_a$	9	-	11	-	9	-	mA
Grid No. 2 current	$I_{g_2}$	2.7	-	3.3	-	2.7	-	mA
Transconductance	S	3.8	0.2	4.5	0.12	4.5	0.2	mA/V
Internal resistance	$R_i$	1.0	-	0.6	-	0.9	-	M $\Omega$

<sup>1)</sup> To avoid grid No. 1 current the negative grid No. 1 voltage should be min. 1.5 V.

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

Pentode section

Anode voltage	$V_{a0}$	max. 550 V
	$V_a$	max. 300 V <sup>1)</sup>
Anode dissipation	$W_a$	max. 2.25 W
Grid No.2 voltage	$V_{g20}$	max. 550 V
Grid No.2 voltage		
at anode current $I_a$ max. 4 mA	$V_{g2}$	max. 300 V <sup>1)</sup>
at anode current $I_a$ min. 8 mA	$V_{g2}$	max. 125 V
Grid No.2 dissipation	$W_{g2}$	max. 0.45 W
Cathode current	$I_k$	max. 16.5 mA
Grid No.1 resistor	$R_{g1}$	max. 3 M $\Omega$
Grid No.3 resistor	$R_{g3}$	max. 10 k $\Omega$
Cathode to heater voltage	$V_{kf}$	max. 100 V

Diode sections (each diode)

Diode voltage, negative peak	$-V_{dp}$	max. 200 V
Diode current, average	$I_d$	max. 0.8 mA
peak	$I_{dp}$	max. 5 mA
Cathode to heater voltage	$V_{kf}$	max. 100 V

<sup>1)</sup> With supply from a storage battery and vibrator the max. voltage is 250V.

# PHILIPS

Data handbook



Electronic  
components  
and materials

**EBF89**

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