# I.F. PENTODE

Pentode with variable transconductance intended for use as I.F. amplifier in television receivers.

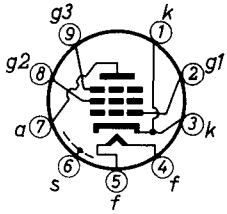
| QUICK REFERENCE DATA | | | |
|---|---|---|---|
| Anode current | $I_a$ | 12 | mA |
| Transconductance | S | 12.5 | mA/V |
| Internal resistance | $R_i$ | 500 | kΩ |

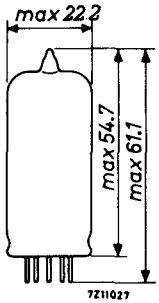
**HEATING:** Indirect by A.C. or D.C.; parallel or series supply

| | | | |
|---|---|---|---|
| Heater voltage | $V_f$ | 6.3 | V |
| Heater current | $I_f$ | 300 | mA |

**DIMENSIONS AND CONNECTIONS** Dimensions in mm

Base: Noval




**CAPACITANCES**

| | | | |
|---|---|---|---|
| Anode to all except grid No.1 | $C_{a(g_1)}$ | 3 | pF |
| Grid No.1 to all except anode | $C_{g_1(a)}$ | 9.5 | pF |
| Anode to grid No.1 | $C_{ag_1}$ | max. 0.005 | pF |
| Grid No.1 to grid No.2 | $C_{g_1g_2}$ | 2.8 | pF |

## TYPICAL CHARACTERISTICS

| | | | |
|---|---|---|---|
| Anode voltage | $V_a$ | 200 | V |
| Grid No.3 voltage | $V_{g_3}$ | 0 | V |
| Grid No.2 voltage | $V_{g_2}$ | 90 | V |
| Grid No.1 voltage | $V_{g_1}$ | -2 | V |
| Anode current | $I_a$ | 12 | mA |
| Grid No.2 current | $I_{g_2}$ | 4.5 | mA |
| Transconductance | S | 12.5 | mA/V |
| Internal resistance | $R_i$ | 500 | kΩ |
| Input resistance grid No.1 (f = 40 MHz) | $r_{g_1}$ | 13 | kΩ |
| Equivalent noise resistance (f = 40 MHz) | $R_{eq}$ | 490 | Ω |

## OPERATING CHARACTERISTICS

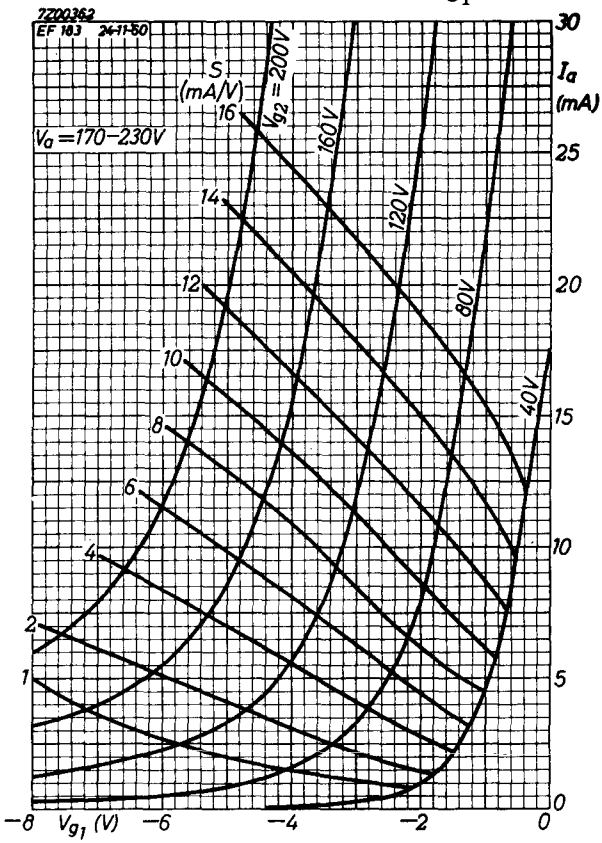
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Anode voltage | $V_a$ | 170 | | 200 | | 230 | | V |
| Grid No.3 voltage | $V_{g_3}$ | 0 | | 0 | | 0 | | V |
| Grid No.2 supply voltage | $V_{bg_2}$ | 170 | | 200 | | 230 | | V |
| Grid No.2 resistor | $R_{g_2}$ | 15 | | 24 | | 39 | | kΩ |
| Grid No.1 voltage | $V_{g_1}$ | -1.8 | -7.5 | -2.0 | -9.5 | -2.1 | -12 | V |
| Anode current | $I_a$ | 14 | 2.7 | 12 | 2.7 | 10.5 | 2.4 | mA |
| Transconductance | S | 14 | 0.7 | 12.5 | 0.62 | 10.6 | 0.5 | mA/V |

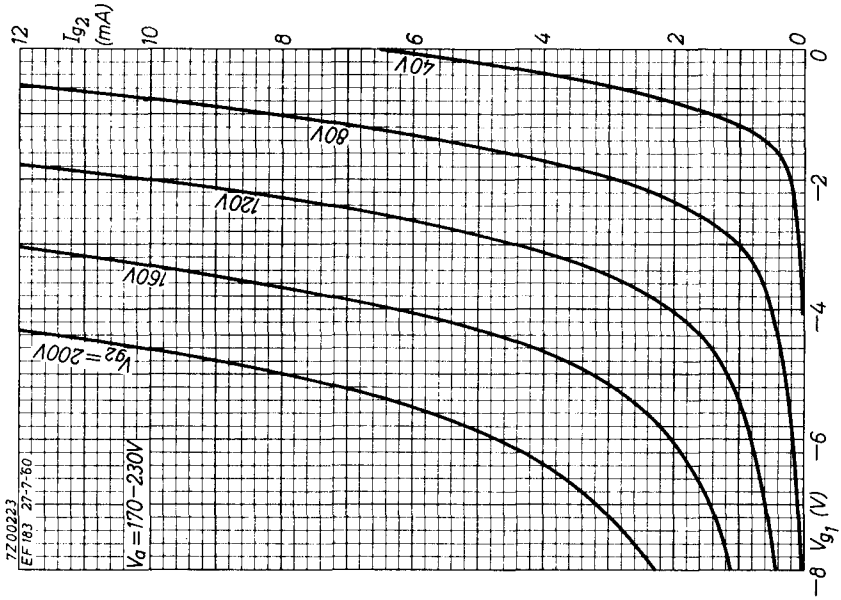
REMARK

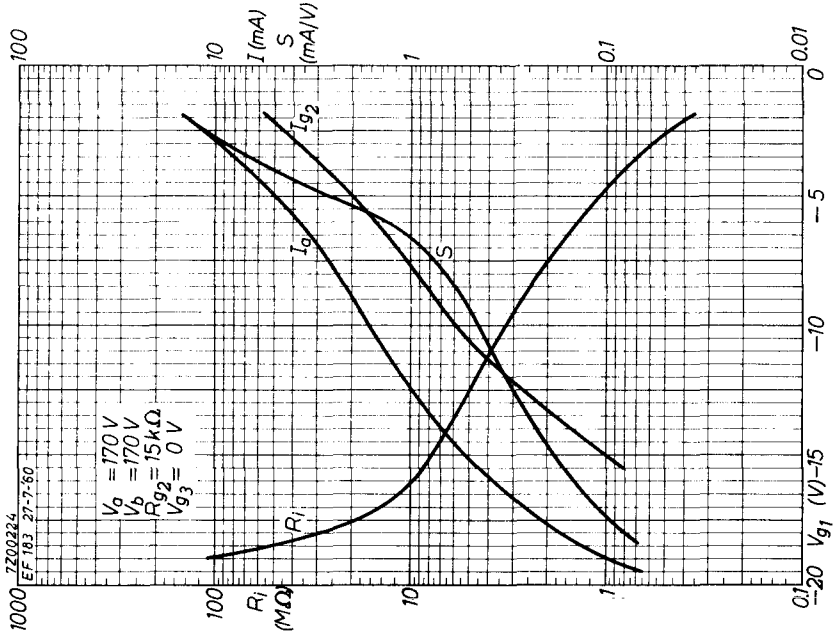
Operation with cathode bias resistor and/or screen grid resistor is recommended.

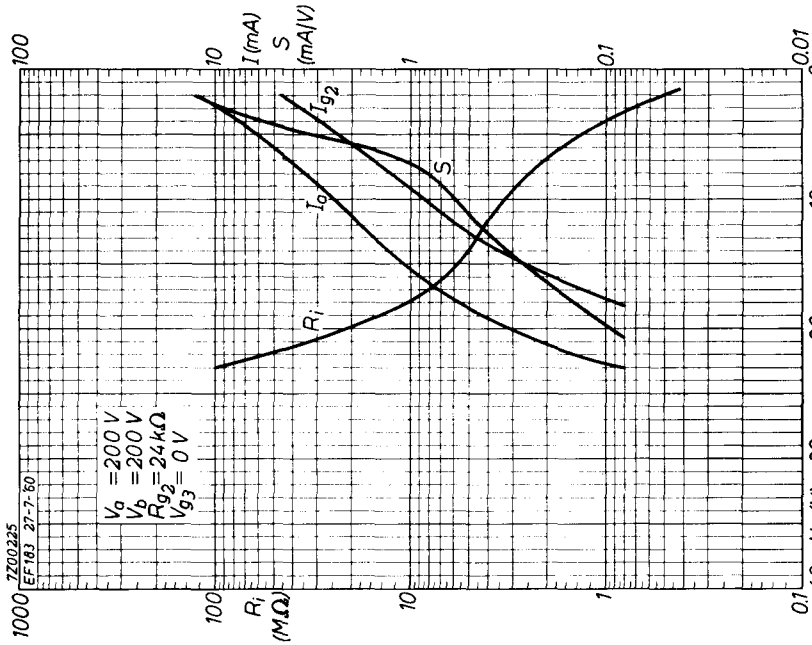
**LIMITING VALUES** (Design centre rating system)

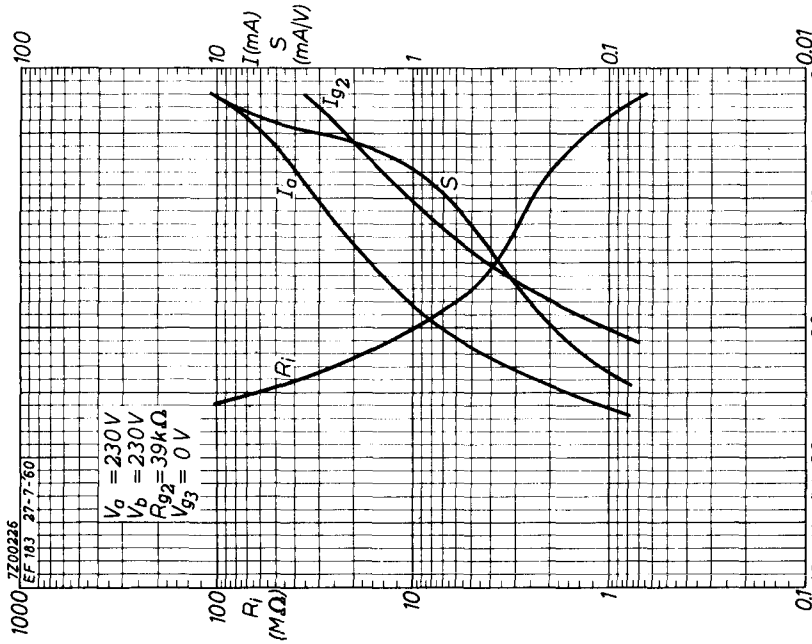
| | | | | |
|---|---|---|---|---|
| Anode voltage | $V_{a_o}$ | max. | 550 | V |
| | $V_a$ | max. | 250 | V |
| Anode dissipation | $W_a$ | max. | 2.5 | W |
| Grid No.2 voltage | $V_{g2_o}$ | max. | 550 | V |
| | $V_{g2}$ | max. | 250 | V |
| Grid No.2 dissipation | $W_{g_2}$ | max. | 0.65 | W |
| Grid No.1 voltage, negative peak | $-V_{g_{1p}}$ | max. | 50 | V |
| Cathode current | $I_k$ | max. | 20 | mA |
| Cathode to heater voltage | $V_{kf}$ | max. | 150 | V |
| Grid No.3 resistor | $R_{g_3}$ | max. | 50 | kΩ |
| Grid No.1 resistor | $R_{g_1}$ | max. | 1 | MΩ |

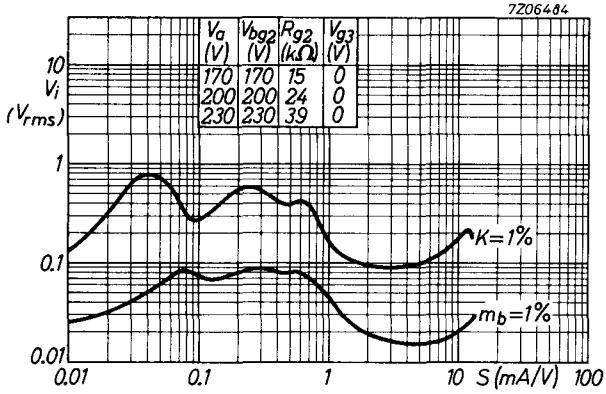


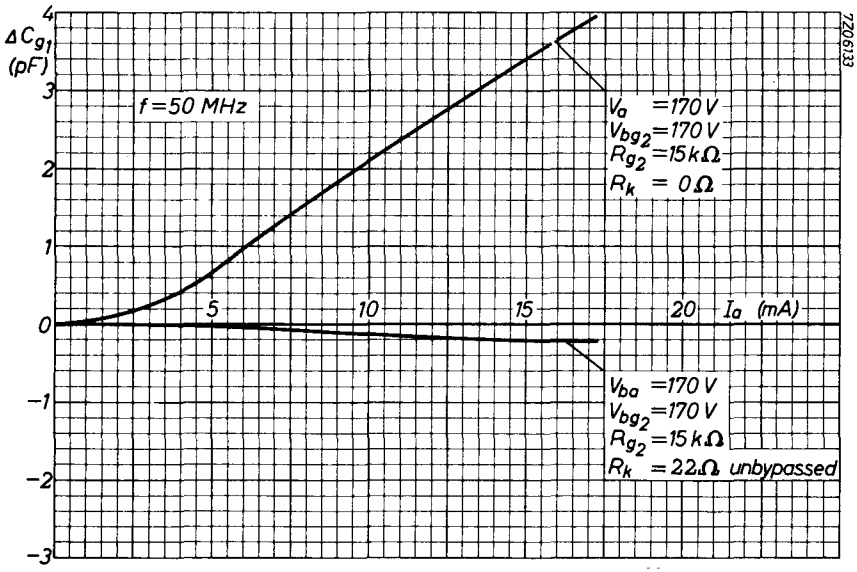

7Z00223
EF183 27-7-60
$V_a$ = 170–230V
$V_{g2}$ = 200V
160V
120V
80V
40V
$I_{g2}$ (mA)
$V_{g1}$ (V)

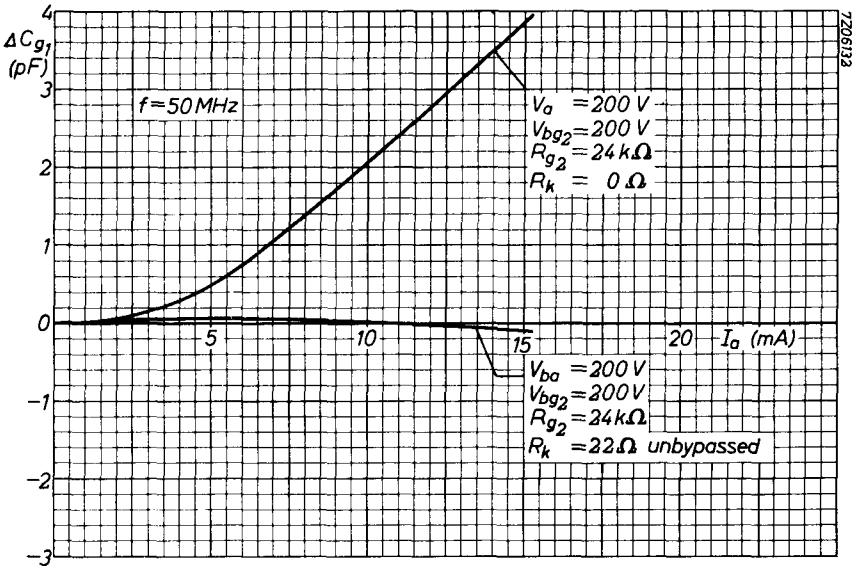

7Z00224
EF183 27-7-60
$V_a$ = 170 V
$V_b$ = 170 V
$R_{g2}$ = 15 kΩ
$V_{g3}$ = 0 V
$I_a$
$I_{g2}$
S
$R_i$
$R_i$ (MΩ)
I (mA)
S (mA/V)
$V_{g1}$ (V)


7Z00225
EF183 27-7-60
$V_a$ = 200 V
$V_b$ = 200 V
$R_{g2}$ = 24 kΩ
$V_{g3}$ = 0 V
$R_i$
$I_a$
$I_{g2}$
S
$R_i$ (MΩ)
I (mA)
S (mA/V)
$V_{g1}$ (V)
1000
100
10
1
0.1
100
10
1
0.1
0.01
−40
−30
−20
−10
0


7Z00226
EF183 27-7-60
$V_a$ = 230 V
$V_b$ = 230 V
$R_{g2}$ = 39 kΩ
$V_{g3}$ = 0 V
$R_i$
$I_a$
$I_{g2}$
S
$R_i$ (MΩ)
I (mA)
S (mA/V)
$V_{g1}$ (V)
1000
100
10
1
0.1
100
10
1
0.1
0.01
−40
−30
−20
−10
0


7Z06484
Va (V)
Vbg2 (V)
Rg2 (kΩ)
Vg3 (V)
170 170 15 0
200 200 24 0
230 230 39 0
10
Vi
(Vrms)
1
0.1
0.01
K=1%
mb=1%
0.01
0.1
1
10
S (mA/V)
100


7Z06133
ΔCg1
(pF)
4
3
2
1
0
−1
−2
−3
f=50 MHz
5
10
15
20
Ia (mA)
Va =170 V
Vbg2=170 V
Rg2=15 kΩ
Rk = 0 Ω
Vba =170 V
Vbg2=170 V
Rg2=15 kΩ
Rk = 22 Ω unbypassed


7Z06132
$\Delta C_{g_1}$ (pF)
4
3
2
1
0
−1
−2
−3
f=50 MHz
$V_a$ =200 V
$V_{bg_2}$=200 V
$R_{g_2}$=24 kΩ
$R_k$ = 0 Ω
5
10
15
20
$I_a$ (mA)
$V_{ba}$ =200 V
$V_{bg_2}$=200 V
$R_{g_2}$=24 kΩ
$R_k$ =22 Ω unbypassed

PHILIPS

Data handbook

Electronic components and materials

# EF183

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