

A.F. OUTPUT PENTODE

Pentode intended for use as A.F. power amplifier.

QUICK REFERENCE DATA

Anode current	I_a	48 mA
Transconductance	S	11.3 mA/V
Amplification factor	μg_{2g_1}	19
Output power	W_o	6.0 W

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

Heater voltage

V_f 6.3 V

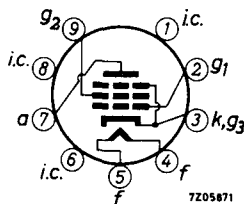
Heater current

I_f 760 mA

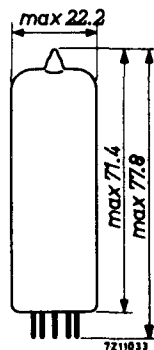
DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



7Z05871



CAPACITANCES

Anode to all except grid No.1

$C_{a(g_1)}$ 6.5 pF

Grid No.1 to all except anode

$C_{g_1(a)}$ 10.8 pF

Anode to grid No.1

C_{ag_1} max. 0.5 pF

Grid No.1 to heater

C_{g_1f} max. 0.25 pF

OPERATING CHARACTERISTICS

Class A

Anode voltage	V_a	250	V
Grid No.2 voltage	V_{g2}	250	V
Grid No.1 voltage	V_{g1}	-7.3	V
Cathode resistor	R_k	135	Ω
Load resistance	$R_{a\sim}$	5.2	k Ω
Grid No.1 driving voltage	V_i	0 0.3 3.4 4.3 4.7 ²⁾	V _{RMS}
Anode current	I_a	48 - - 49.5 49.2	mA
Grid No.2 current	I_{g2}	5.5 - - 10.8 11.6	mA
Transconductance	S	11.3 - - - -	mA/V
Amplification factor	μ_{g2g1}	19 - - - -	
Internal resistance	R_i	38 - - - -	k Ω
Output power	W_o ¹⁾	0 0.05 4.5 5.7 6.0	W
Distortion, total	d_{tot} ¹⁾	- - 6.8 10 -	%
second harmonic	d_2 ¹⁾	- - 3.0 2.0 -	%
third harmonic	d_3 ¹⁾	- - 5.8 9.5 -	%
Anode voltage	V_a	250	V
Grid No.2 voltage	V_{g2}	250	V
Grid No.1 voltage	V_{g1}	-7.3	V
Cathode resistor	R_k	135	Ω
Load resistance	$R_{a\sim}$	4.5	k Ω
Grid No.1 driving voltage	V_i	0 0.3 3.5 4.4 4.8 ²⁾	V _{RMS}
Anode current	I_a	48 - - 50.6 50.5	mA
Grid No.2 current	I_{g2}	5.5 - - 10 11	mA
Transconductance	S	11.3 - - - -	mA/V
Amplification factor	μ_{g2g1}	19 - - - -	
Internal resistance	R_i	38 - - - -	k Ω
Output power	W_o ¹⁾	0 0.05 4.5 5.7 6.0	W
Distortion, total	d_{tot} ¹⁾	- - 7.5 10 -	%
second harmonic	d_2 ¹⁾	- - 5.7 5.0 -	%
third harmonic	d_3 ¹⁾	- - 4.5 8 -	%

¹⁾ Measured with fixed bias²⁾ At $I_{g1} = +0.3 \mu A$

OPERATING CHARACTERISTICS (continued)

Class A (continued)

Anode voltage	V_a	250	V
Grid No.2 voltage	V_{g2}	250	V
Grid No.1 voltage	V_{g1}	-8.4	V
Cathode resistor	R_k	210	Ω
Load resistance	$R_{a\sim}$	7	k Ω
Grid No.1 driving voltage	V_i	0 0.3 3.5 5.5 ²⁾	V_{RMS}
Anode current	I_a	36 - 36.8 36	mA
Grid No.2 current	I_{g2}	4.1 - 8.5 14.6	mA
Transconductance	S	10 - - -	mA/V
Amplification factor	μ_{g2g1}	19 - - -	
Internal resistance	R_i	40 - - -	k Ω
Output power	W_o ¹⁾	0 0.05 4.2 5.6	W
Distortion, total	d_{tot} ¹⁾	- - 10 -	%
second harmonic	d_2 ¹⁾	- - 1.7 -	%
third harmonic	d_3 ¹⁾	- - 8.7 -	%

Anode voltage	V_a	250	V
Grid No.2 voltage	V_{g2}	210	V
Grid No.1 voltage	V_{g1}	-6.4	V
Cathode resistor	R_k	160	Ω
Load resistance	$R_{a\sim}$	7	k Ω
Grid No.1 driving voltage	V_i	0 0.3 3.4 3.8 ²⁾	V_{RMS}
Anode current	I_a	36 - 36.6 36.5	mA
Grid No.2 current	I_{g2}	3.9 - 7.3 8.0	mA
Transconductance	S	10.4 - - -	mA/V
Amplification factor	μ_{g2g1}	19 - - -	
Internal resistance	R_i	40 - - -	k Ω
Output power	W_o ¹⁾	0 0.05 4.3 4.7	W
Distortion, total	d_{tot} ¹⁾	- - 10 -	%
second harmonic	d_2 ¹⁾	- - 1.8 -	%
third harmonic	d_3 ¹⁾	- - 9.3 -	%

¹⁾ Measured with fixed bias²⁾ At $I_{g1} = +0.3 \mu A$

OPERATING CHARACTERISTICS (continued)

Class B, two tubes in push-pull

Anode voltage	V_a	250		300	V
Grid No.2 voltage	V_{g_2}	250		300	V
Grid No.1 voltage	V_{g_1}	-11.6		-14.7	V
Load resistance	$R_{aa\sim}$	8		8	k Ω
Grid No.1 driving voltage	V_i	0	8	0	10 V_{RMS}
Anode current	I_a	2x10	2x37.5	2x7.5	2x46 mA
Grid No.2 current	I_{g_2}	2x1.1	2x7.5	2x0.8	2x11 mA
Output power	W_o	0	11	0	17 W
Distortion	d_{tot}	-	3	-	4 %

Class AB, two tubes in push-pull

Anode voltage	V_a	250		300	V
Grid No.2 voltage	V_{g_2}	250		300	V
Common cathode resistor	R_k	130		130	Ω
Load resistance	$R_{aa\sim}$	8		8	k Ω
Grid No.1 driving voltage	V_i	0	8	0	10 V_{RMS}
Anode current	I_a	2x31	2x37.5	2x36	2x46 mA
Grid No.2 current	I_{g_2}	2x3.5	2x7.5	2x4	2x11 mA
Output power	W_o	0	11	0	17 W
Distortion	d_{tot}	-	3	-	4 %

OPERATING CHARACTERISTICS IN TRIODE CONNECTION

(g₂ connected to a)Class A

Anode voltage	V_a	250	V
Cathode resistor	R_k	270	Ω
Load resistance	$R_{a\sim}$	3.5	k Ω
Grid No.1 driving voltage	V_i	0 1.0 6.7	V _{RMS}
Anode current	I_a	34 - 36	mA
Output power	W_o	- 0.05 1.95	W
Distortion	d_{tot}	- - 9	%

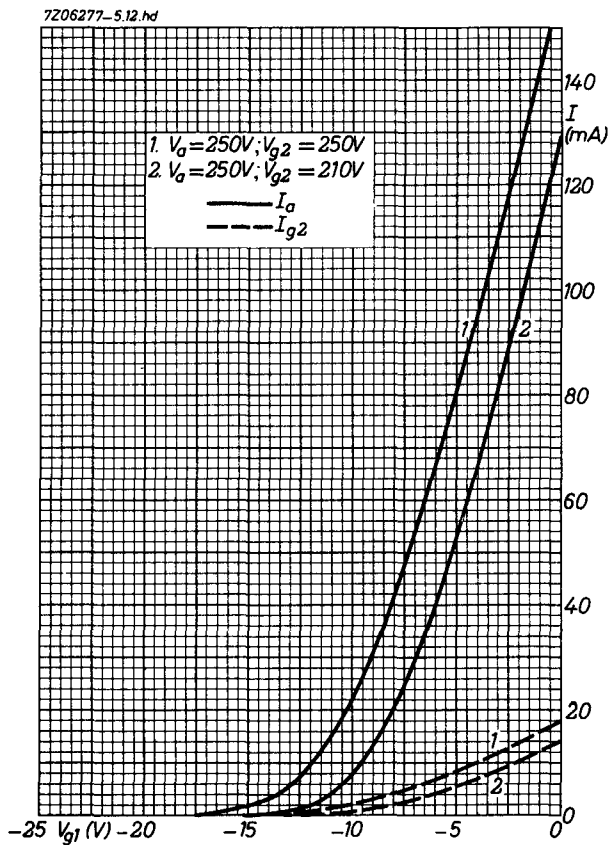
Class AB, two tubes in push-pull

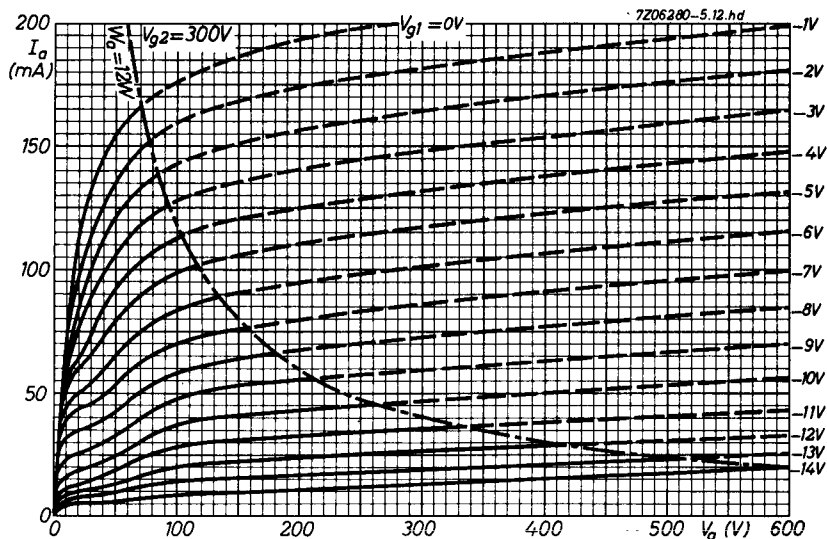
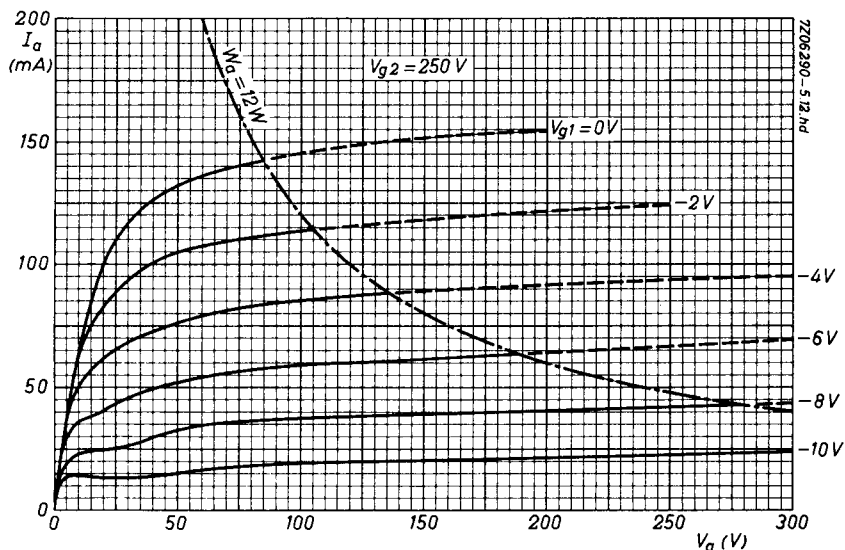
Anode voltage	V_a	250	300	V
Common cathode resistor	R_k	270	270	Ω
Load resistance	$R_{aa\sim}$	10	10	k Ω
Grid No.1 driving voltage	V_i	0 8.3	0 10	V _{RMS}
Anode current	I_a	2x20 2x21.7	2x24 2x26	mA
Output power	W_o	0 3.4	0 5.2	W
Distortion	d_{tot}	- 2.5	- 2.5	%
Grid No.1 driving voltage for $W_o = 50$ mW	V_i	0.95	0.9	V _{RMS}

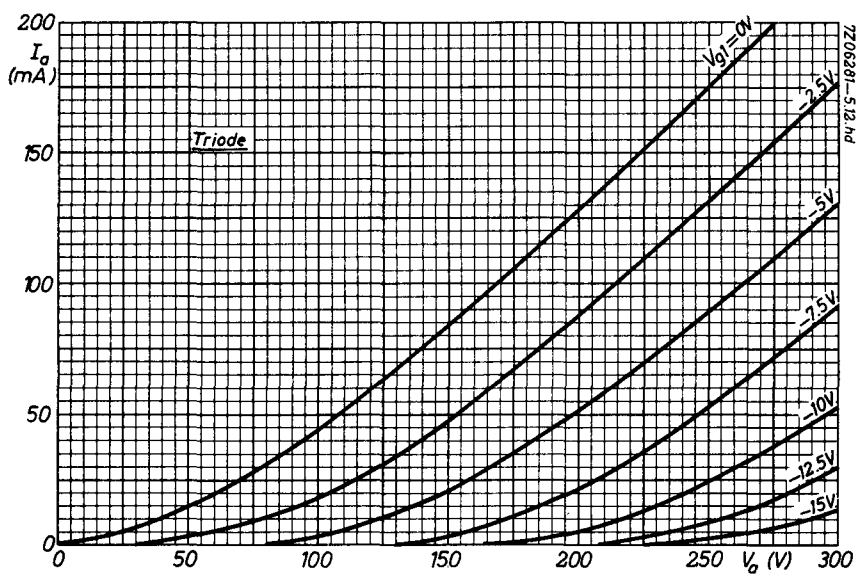
LIMITING VALUES (Design centre rating system)

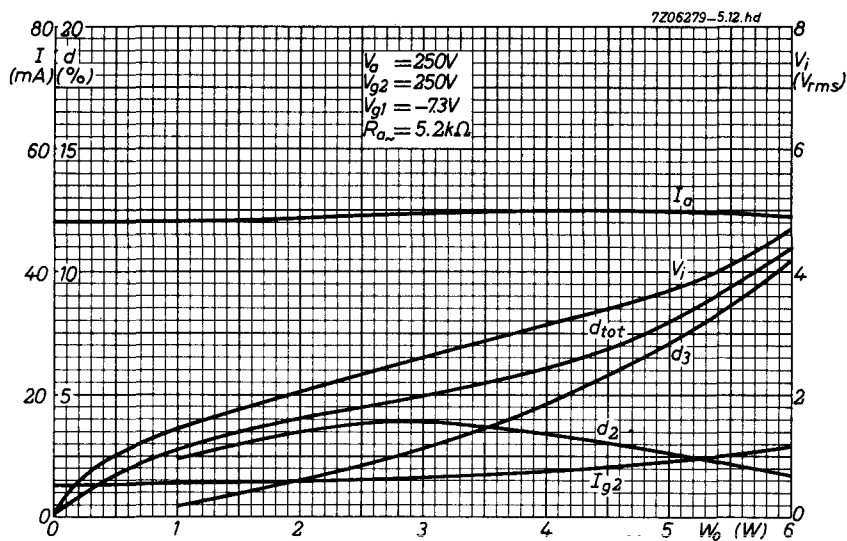
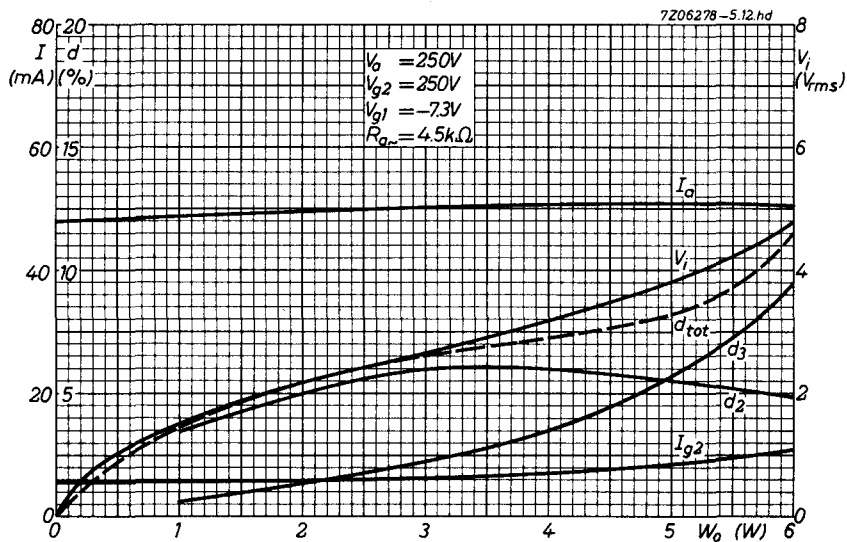
Anode voltage	V_{a_0}	max.	550 V
	V_a	max.	300 V ¹⁾
Anode dissipation	W_a	max.	12 W ¹⁾
Grid No.2 voltage	V_{g2_0}	max.	550 V
	V_{g2}	max.	300 V ¹⁾
Grid No.2 dissipation	W_{g2}	max.	2 W
	W_{g2p}	max.	4 W
Grid No.1 voltage	$-V_{g1}$	max.	100 V
Cathode current	I_k	max.	65 mA
Grid No.1 resistor			
for automatic bias	R_{g1}	max.	1 M Ω
for fixed bias	R_{g1}	max.	0.3 M Ω
Cathode to heater voltage	V_{kf}	max.	100 V

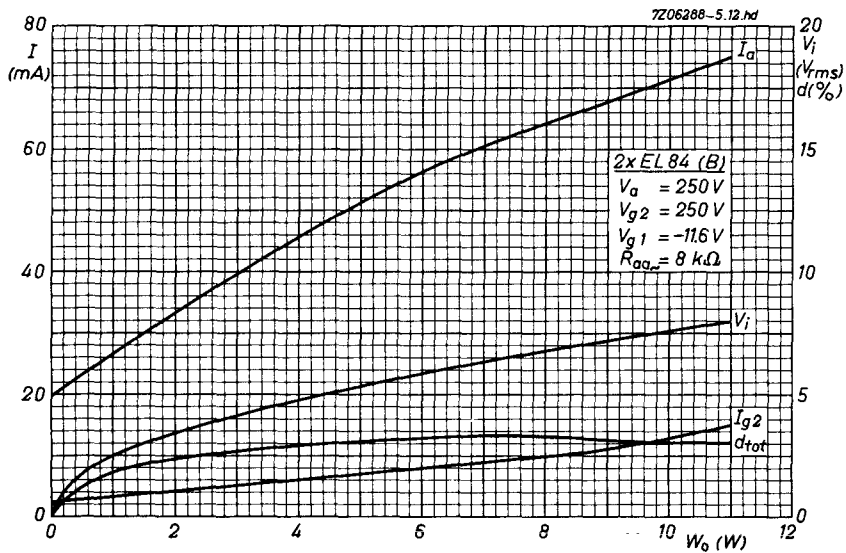
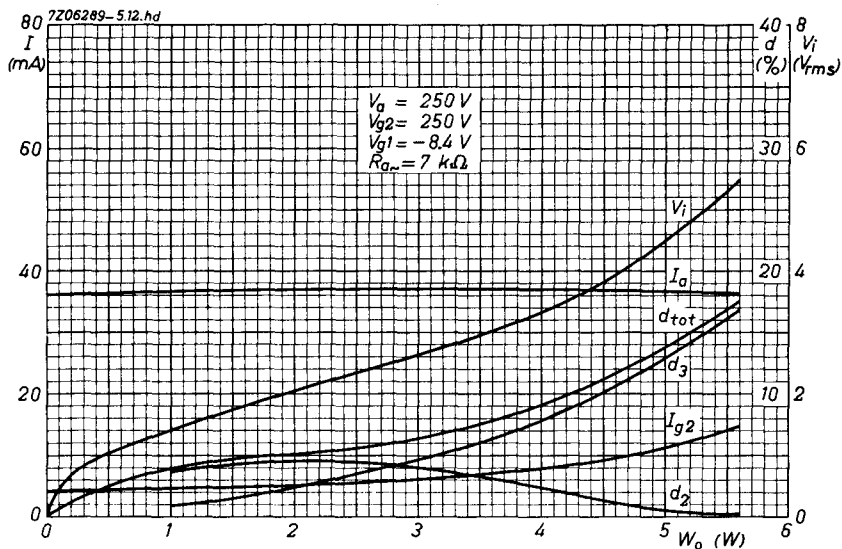
¹⁾ When the heater and positive voltages are obtained from a storage battery by means of a vibrator, the max. values of V_a and V_{g2} are 250 V and that of W_a is 9 W.

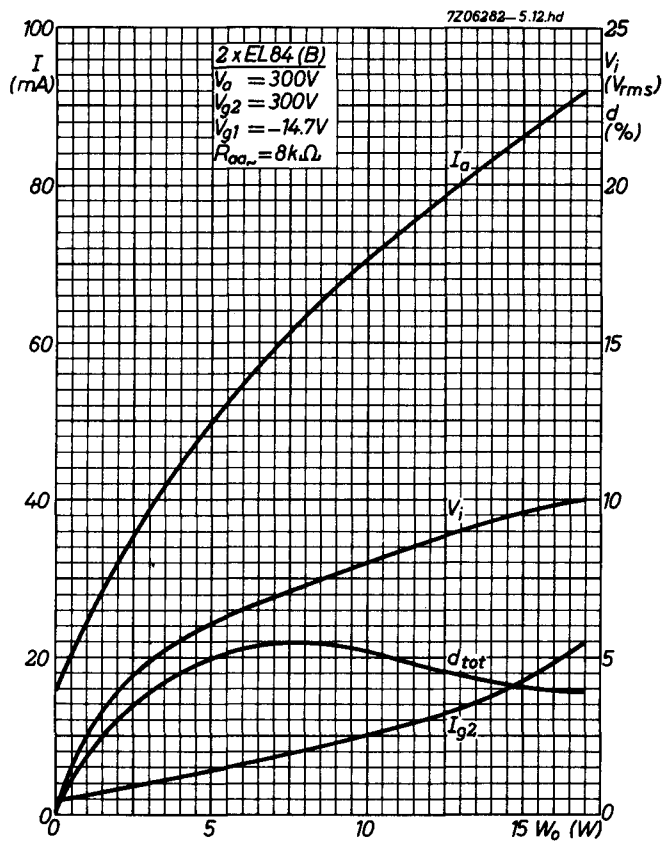


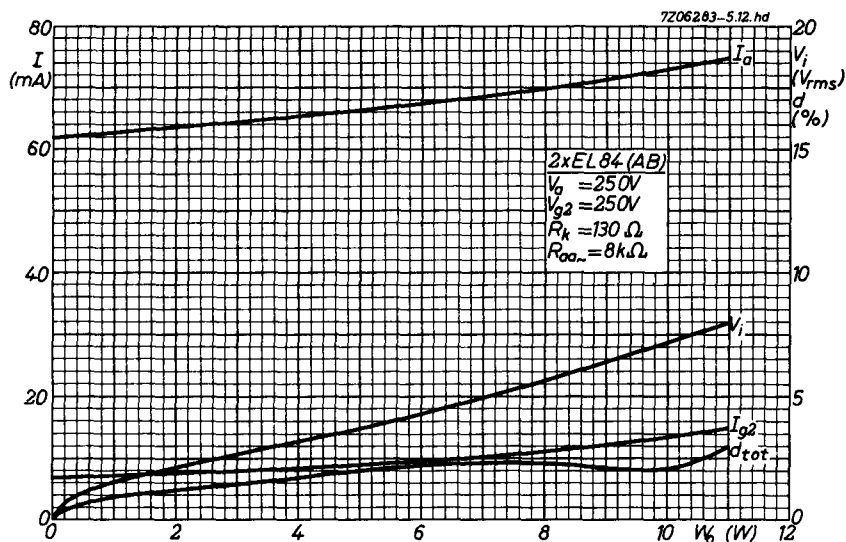


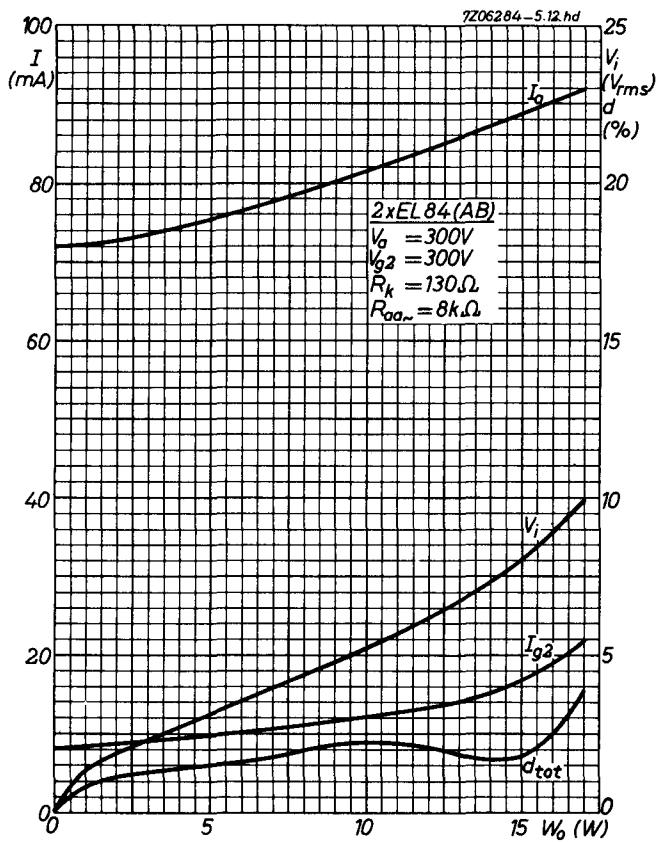












PHILIPS

Data handbook



**Electronic
components
and materials**

EL84

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