



## Zuverlässigkeit

Der P-Faktor gibt den voraussichtlichen Röhrenausfall in Promille je 1000 Std. an. Er liegt bei ca. 1,5‰ je 1000 Std.



## Lange Lebensdauer

Für diese Röhre wird eine Lebensdauer von 10 000 Std., gemittelt über 100 Röhren, garantiert.



## Enge Toleranzen

Bei dieser Röhre sind Streuungen der elektrischen Werte gegenüber Rundfunkröhren eingengt.



## Zwischenschichtfreie Spezialkathode

Die Spezialkathode dieser Röhre schließt das Entstehen einer störenden Zwischenschicht selbst dann aus, wenn sie längere Zeit bei eingeschalteter Heizung ohne Stromentnahme betrieben wird.

## Reliability

The factor P indicates how many of 1,000 tubes fail over an operating period of 1,000 hours. The figure is approx. 1.5‰ for each 1,000 hours.

## Long life

For long-life tubes we guarantee 10,000 hours operation, averaged over 100 tubes.

## Tight tolerances

In these tubes the tolerances of electrical ratings are reduced in comparison with receiving tubes.

## Cathode free from interface

The cathode establishes no interface even in cases where the heated tube is operated without plate current over lengthy periods.

|          |                        |    |
|----------|------------------------|----|
| $U_{f1}$ | <b>25<sup>1)</sup></b> | V  |
| $I_f$    | <b>300</b>             | mA |

## Meßwerte · Measuring values

|             |                   |            |
|-------------|-------------------|------------|
| $U_{ba}$    | <b>125</b>        | V          |
| $U_{g2}$    | <b>125</b>        | V          |
| $R_k$       | <b>140</b>        | $\Omega$   |
| $I_a$       | $55^{+7}_{-5}$    | mA         |
| $I_{g2}$    | $2,4^{+2}_{-0,7}$ | mA         |
| S           | $10,5 \pm 2,5$    | mA/V       |
| $U_{g2/g1}$ | <b>7,7</b>        |            |
| $R_i$       | <b>12,4</b>       | k $\Omega$ |
| $-I_{g1}$   | $\leq 1$          | $\mu A$    |

$$(U_a = U_{g2} = 125 \text{ V}, I_a = 80 \text{ mA})$$

## Ende der Lebensdauer, siehe „Meßwerte“

|                       |        |                                 |           |
|-----------------------|--------|---------------------------------|-----------|
| Anodenstrom           | $I_a$  | vom Anfangswert auf 42 mA       | gesunken  |
| Steilheit             | S      | vom Anfangswert auf 6,5 mA/V    | gesunken  |
| Negativer Gitterstrom | $-I_g$ | vom Anfangswert auf $> 2 \mu A$ | gestiegen |

## End of the life, see "Measuring values"

|                       |        |                                             |
|-----------------------|--------|---------------------------------------------|
| Plate current         | $I_a$  | reduced from initial value to 42 mA         |
| Mutual conductance    | S      | reduced from initial value to 6.5 mA/V      |
| Negative grid current | $-I_g$ | increased from initial value to $> 2 \mu A$ |

<sup>1)</sup> Die garantierte Lebensdauer gilt nur, wenn die Heizspannung in den Grenzen von  $\pm 5\%$  gehalten wird (absolute Grenzen).

The guaranteed life applies only if the filament voltage is kept in the limits  $\pm 5\%$  (absolute limits).



**Betriebswerte** • Typical operation**Zählschaltungen** • Computer circuits**a) System gesperrt**  
System is blocked

|          |            |          |
|----------|------------|----------|
| $U_b$    | <b>115</b> | V        |
| $R_a$    | 500        | $\Omega$ |
| $R_{g2}$ | 1000       | $\Omega$ |
| $R_{g1}$ | 4700       | $\Omega$ |
| $U_{g1}$ | -25        | V        |
| $I_a$    | $\leq 2$   | mA       |
| $I_{g2}$ | —          | mA       |

**b) System stromführend**  
System current-carrying

|          |            |          |
|----------|------------|----------|
| $U_b$    | <b>115</b> | V        |
| $R_a$    | 500        | $\Omega$ |
| $R_{g2}$ | 1000       | $\Omega$ |
| $R_{g1}$ | 4700       | $\Omega$ |
| $U_{g1}$ | 0          | V        |
| $I_a$    | 120        | mA       |
| $I_{g2}$ | 16         | mA       |

**Eintakt-A-Betrieb** • Class A-amplifier

|                     |            |            |            |            |
|---------------------|------------|------------|------------|------------|
| $U_{ba}$            | <b>110</b> | <b>200</b> | <b>250</b> | V          |
| $U_{bg2}$           | <b>110</b> | <b>125</b> | <b>150</b> | V          |
| $R_k$               | <b>110</b> | <b>170</b> | <b>310</b> | $\Omega$   |
| $I_{ao}$            | 55         | 50         | 41         | mA         |
| $I_a$ ausgest.      | 55         | 50         | 42,3       | mA         |
| $I_{g2o}$           | 2,4        | 1,5        | 1          | mA         |
| $I_{g2}$ ausgest.   | 7,8        | 8          | 8,5        | mA         |
| $R_a$               | 1,9        | 3,8        | 5          | k $\Omega$ |
| $U_{g1\text{ eff}}$ | 3,9        | 5,8        | 6,5        | V          |
| N (10 %)            | 2,1        | 5,1        | 6,5        | W          |

**2 Röhren in Gegentakt-AB-Betrieb** • 2 tubes push-pull, class AB

|                        |                |                 |                |            |
|------------------------|----------------|-----------------|----------------|------------|
| $U_a$                  | <b>250</b>     | <b>300</b>      | <b>350</b>     | V          |
| $U_{g2}$               | <b>150</b>     | <b>150</b>      | <b>150</b>     | V          |
| $U_{g1}$               | <b>-16,8</b>   | <b>-17</b>      | <b>-17,2</b>   | V          |
| $I_{ao}$               | $2 \times 27$  | $2 \times 27$   | $2 \times 27$  | mA         |
| $I_a$ ausgest.         | $2 \times 66$  | $2 \times 63$   | $2 \times 61$  | mA         |
| $I_{g2o}$              | $2 \times 0,7$ | $2 \times 0,55$ | $2 \times 0,5$ | mA         |
| $I_{g2}$ ausgest.      | $2 \times 5,3$ | $2 \times 5$    | $2 \times 5,5$ | mA         |
| $R_{aa}$               | 3              | 4               | 5              | k $\Omega$ |
| $U_{g1\text{ eff}}^1)$ | 11,3           | 11,6            | 10,5           | V          |
| N                      | 15             | 18              | 22             | W          |
| k                      | 1,6            | 2,2             | 2              | %          |

<sup>1)</sup> pro Röhre • per tube

## Absolute Grenzdaten

Absolute maximum ratings

Absolute Maxima

|               |            |    |
|---------------|------------|----|
| $U_{ao}$      | <b>550</b> | V  |
| $U_a$         | <b>350</b> | V  |
| $N_a$         | <b>13</b>  | W  |
| $U_{g2o}$     | <b>550</b> | V  |
| $U_{g2}$      | <b>200</b> | V  |
| $N_{g2}$      | <b>2</b>   | W  |
| $I_k$         | <b>150</b> | mA |
| $R_{g1}^{1)}$ | <b>0,1</b> | MΩ |
| $R_{g1}^{2)}$ | <b>0,5</b> | MΩ |
| $U_{f/k+}$    | <b>200</b> | V  |
| $U_{f/k-}$    | <b>100</b> | V  |
| $R_{f/k}$     | <b>20</b>  | kΩ |
| $t_{Kolben}$  | <b>220</b> | °C |

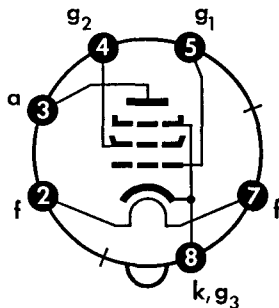
<sup>1)</sup>  $U_{g1}$  fest · fixed grid bias

<sup>2)</sup>  $U_{g1}$  autom. · cathode grid bias

## Kapazitäten · Capacitances

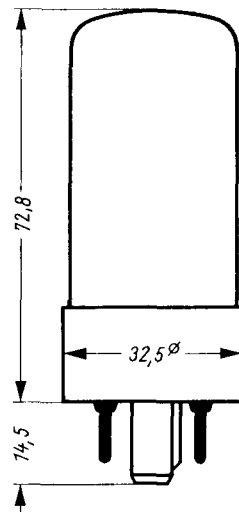
|            |          |    |
|------------|----------|----|
| $c_e$      | ca. 17,5 | pF |
| $c_a$      | ca. 11   | pF |
| $c_{g1/a}$ | ca. 0,8  | pF |
| $c_{k/f}$  | ca. 0,35 | pF |

Sockelschaltbild  
Base connection

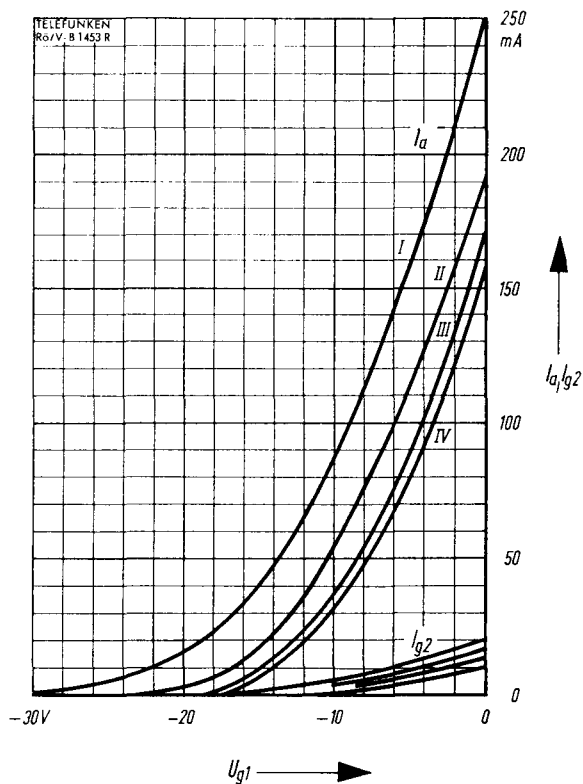


Oktal

max. Abmessungen  
max. dimensions

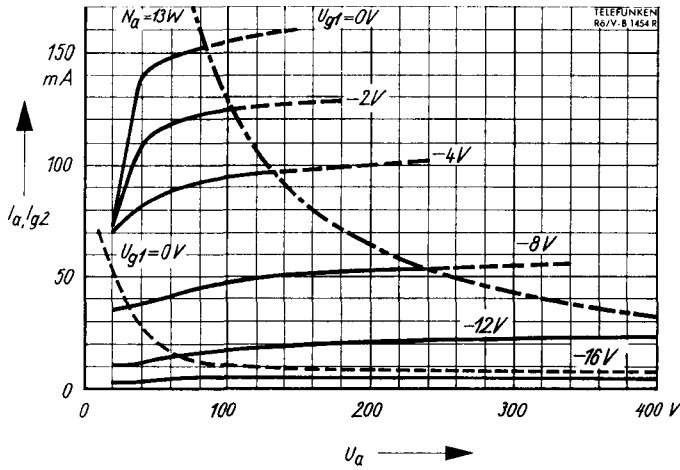


Gewicht · Weight  
max. 35 g

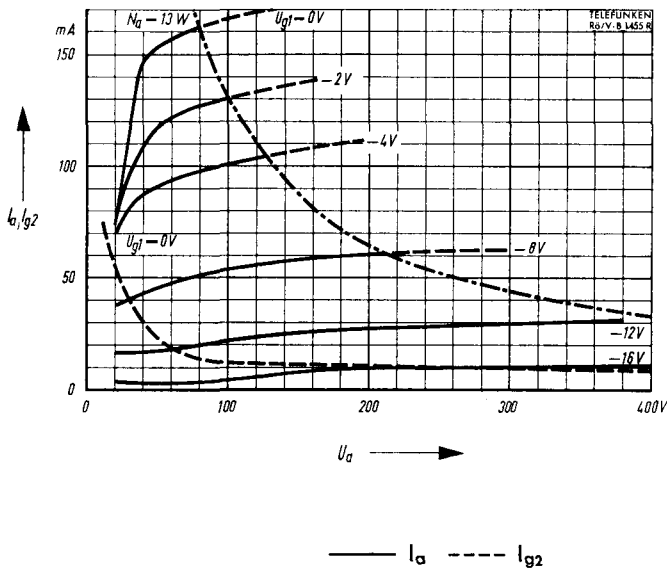


- $I_a, I_{g2} = f(U_{g1})$
- I  $U_a = U_{g2} = 150 \text{ V}$
- II  $U_a = U_{g2} = 125 \text{ V}$
- III  $U_a = U_{g2} = 115 \text{ V}$
- VI  $U_a = U_{g2} = 110 \text{ V}$



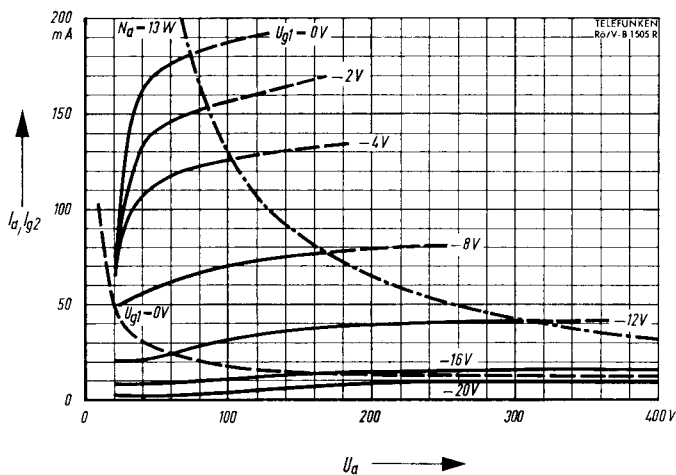


$I_a, I_{g2} = f(U_a)$   
 $U_{g2} = 110 \text{ V}$   
 $U_{g1} = \text{Parameter}$



$I_a, I_{g2} = f(U_a)$   
 $U_{g2} = 115 \text{ V}$   
 $U_{g1} = \text{Parameter}$

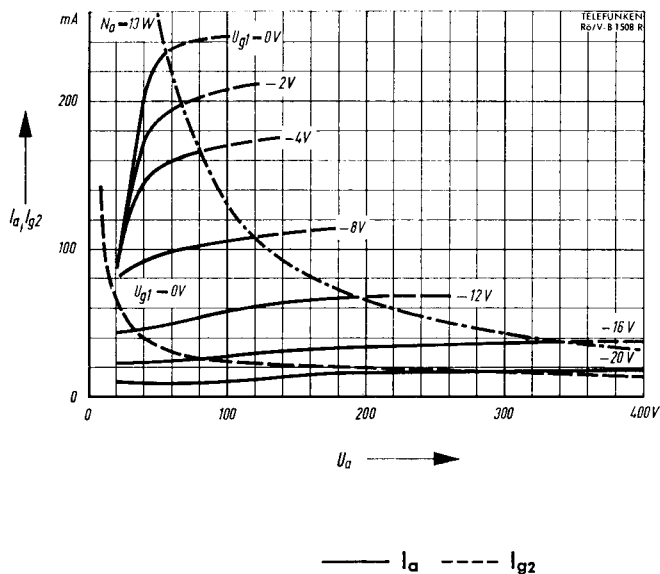
—  $I_a$     - - -  $I_{g2}$



$$I_a, I_{g2} = f(U_a)$$

$$U_{g2} = 125 V$$

$$U_{g1} = \text{Parameter}$$



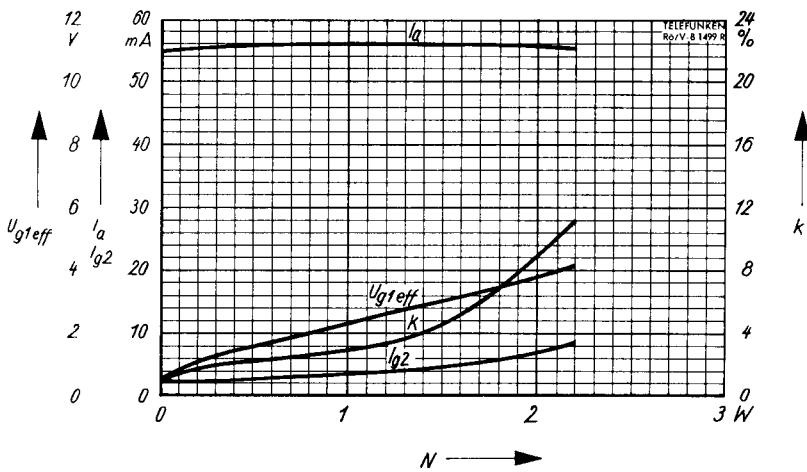
$$I_a, I_{g2} = f(U_a)$$

$$U_{g2} = 150 V$$

$$U_{g1} = \text{Parameter}$$

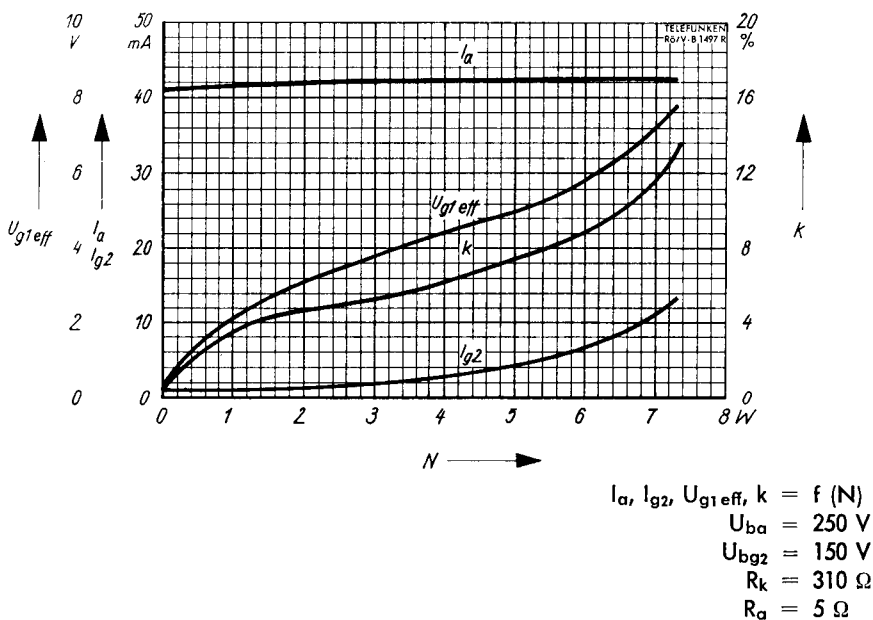
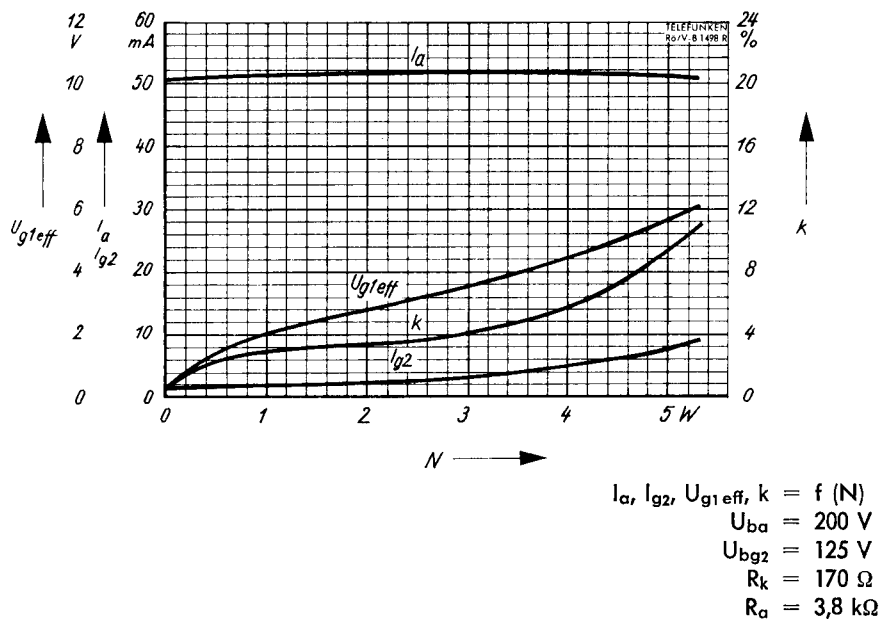
—  $I_a$     - - -  $I_{g2}$





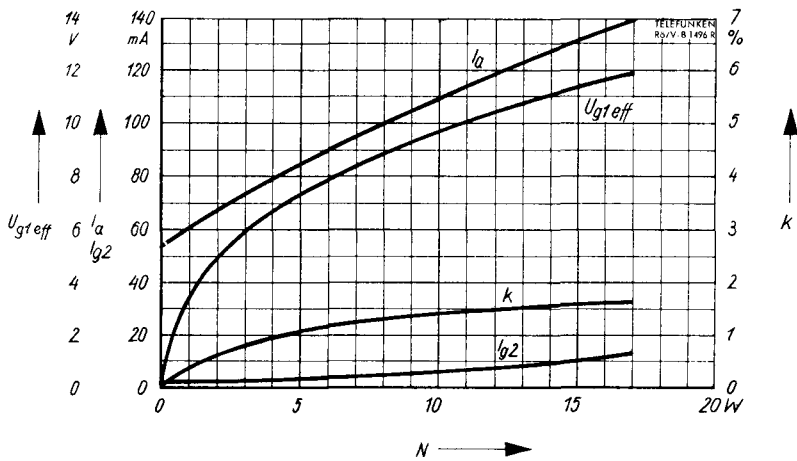
$$\begin{aligned}
 I_a, I_{g2}, U_{g1eff}, k &= f(N) \\
 U_{ba} &= U_{bg2} = 110 \text{ V} \\
 R_k &= 110 \text{ } \Omega \\
 R_a &= 1,9 \text{ k}\Omega
 \end{aligned}$$

Eintakt-A-Betrieb · Class A-amplifier



Eintakt-A-Betrieb · Class A-amplifier





$$I_a, I_{g2}, U_{g1eff}, k = f(N)$$

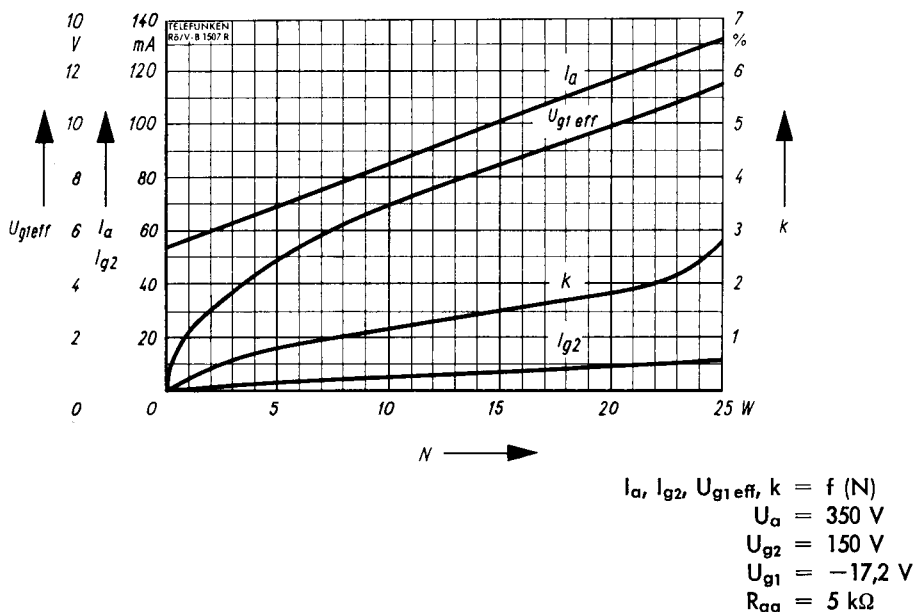
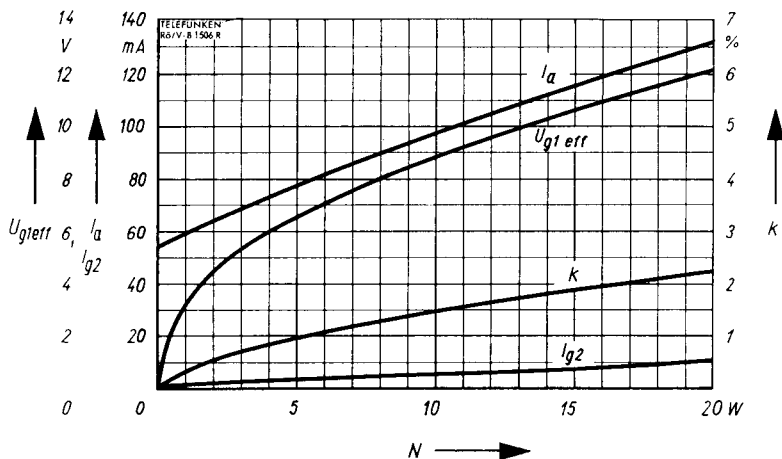
$$U_a = 250 \text{ V}$$

$$U_{g2} = 150 \text{ V}$$

$$U_{g1} = -16,8 \text{ V}$$

$$R_{aa} = 3 \text{ k}\Omega$$

**Gegentakt-AB-Betrieb** · Push-pull, class AB



Gegentakt-AB-Betrieb · Push-pull, class AB

