

TETRODE for use as H.F.amplifier, frequency multiplier or modulator

TETRODE pour utilisation en amplificatrice H.F., multipliatrice de fréquence ou modulatrice

TETRODE zur Verwendung als HF-Verstärker, Frequenzvervielfacher oder Modulator

Cooling : radiation/low velocity air flow

Refroidissement: radiation/léger courant d'air

Kühlung : Strahlung/schwacher Luftstrom

Filament : thoriated tungsten

Filament : tungstène thorié

Heizfaden: thoriertes Wolfram

Heating : direct

Chauffage: direct

Heizung : direkt

$V_f = 10 \text{ V}$

$I_f = 9,9 \text{ A}$

Capacitances

$C_{g1} = 24 \text{ pF}$

Capacités

$C_a = 8,3 \text{ pF}$

Kapazitäten

$C_{ag1} = 0,25 \text{ pF}$

Typical characteristics

Caractéristiques types

Kenndaten

$\mu g2g1 (I_a = 120 \text{ mA}) = 9,5$

S  $(I_a = 120 \text{ mA}) = 7 \text{ mA/V}$

| $\lambda$ | Freq.   | C telegr.    |              | $C_{ag2} \text{ mod}$ |              | $C_{g1} \text{ mod}$ |              |
|-----------|---------|--------------|--------------|-----------------------|--------------|----------------------|--------------|
| (m)       | ( Mc/s) | $V_a$<br>(V) | $W_o$<br>(W) | $V_a$<br>(V)          | $W_o$<br>(W) | $V_a$<br>(V)         | $W_o$<br>(W) |
| 5         | 60      | 5000<br>4000 | 1760<br>1410 | 4000                  | 1200         | 4500<br>4000         | 400<br>330   |

| $\lambda$ | Freq.   | Single side band<br>B Une bande latérale<br>Ein Seitenband |              | $B \text{ mod}^{1)}$ |              |
|-----------|---------|------------------------------------------------------------|--------------|----------------------|--------------|
| (m)       | ( Mc/s) | $V_a$<br>(V)                                               | $W_o$<br>(W) | $V_a$<br>(V)         | $W_o$<br>(W) |
| 5         | 60      | 5000                                                       | 900          | 5000<br>4000         | 2220<br>2250 |

Industrial application, H.F. class C

Application industrielle, H.F. classe C

Industrielle Anwendung, HF-Klasse C

| $\lambda$ | Freq.   | $\sim 2)$                 |              | $\sim 3)$                               |              |
|-----------|---------|---------------------------|--------------|-----------------------------------------|--------------|
| (m)       | ( Mc/s) | $V_{tr}$<br>( $V_{eff}$ ) | $W_o$<br>(W) | $V_{tr}$<br>( $V_{eff}$ ) <sup>4)</sup> | $W_o$<br>(W) |
| 5         | 60      | 4800                      | 750          | 4250                                    | 1110         |

1)2)3)4) See page 3; voir page 3; siehe Seite 3

Cooling  
 Refroidissement  
 Kühlung

In order to keep the temperatures below the maximum permitted values it may be necessary to direct an air flow to the seals

Afin de maintenir les températures au-dessous des valeurs maximum admissible il peut être nécessaire de diriger un courant d'air vers les scellements

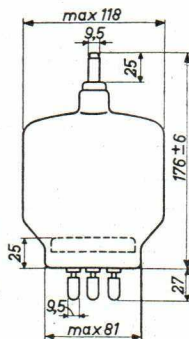
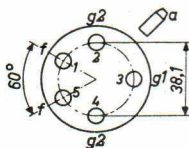
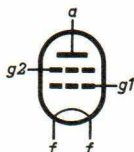
Damit die Temperaturen unterhalb der höchstzulässigen Werte bleiben, kann ein Luftstrom auf die Einschmelzungen notwendig sein

Bulb temperature  
 Température de l'ampoule = max. 250 °C  
 Kolbentemperatur

Temperature of anode seal  
 Température du scellement de l'anode = max. 220 °C  
 Temperatur der Anodeneinschmelzung

Temperature of pin seals  
 Température des scellements des broches = max. 180 °C  
 Temperatur der Stifteneinschmelzungen

Dimensions in mm  
 Dimensions en mm  
 Abmessungen in mm



Mounting position: vertical with base up or down  
 Montage : verticale avec le culot en haut ou en bas  
 Einbau : senkrecht mit dem Sockel oben oder unten

|              |         |       |
|--------------|---------|-------|
| Accessories  | Socket  |       |
| Accessoires  | Support | 40216 |
| Zubehörteile | Fassung |       |

|  |                               |       |
|--|-------------------------------|-------|
|  | Clip for anode connection     |       |
|  | Borne de connexion de l'anode | 40626 |
|  | Anodenanschlussklemme         |       |

|              |       |  |
|--------------|-------|--|
| Net weight   |       |  |
| Poids net    | 375 g |  |
| Nettogewicht |       |  |

|                 |         |  |
|-----------------|---------|--|
| Shipping weight |         |  |
| Poids brut      | 1,35 kg |  |
| Bruttogewicht   |         |  |

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1) Two tubes  
 Deux tubes  
 Zwei Röhren

→ 2) = selfrectification  
 = auto-redressement  
 = Selbstgleichrichtung

→ 3) = two phase half wave rectification without filter  
 = redressement biphasé à une alternance sans filtre  
 = Zweiphasen-Einweggleichrichtung ohne Filter

4) Each phase  
 Chaque phase  
 Jede Phase

H.F. class C telegraphy  
H.F. classe C télégraphie  
HF- Klasse C Telegraphie

Limiting values  
Caractéristiques limites  
Grenzdaten

$f$  ----- = max. ----- 75 Mc/s.

$V_a$  = max. 5 kV

$W_{1a}$  = max. 2250 W

$W_a$  = max. 500 W

$I_a$  = max. 450 mA

$V_{g2}$  = max. 700 V

$W_{g2}$  = max. 65 W

$-V_{g1}$  = max. 500 V

$W_{g1}$  = max. 25 W

$f$  ----- = max. ----- 110 Mc/s<sup>1)</sup>

$V_a$  = max. 4,5 kV

$W_{1a}$  = max. 1800 W

Operating conditions  
Caractéristiques d'utilisation  
Betriebsdaten

|           |        |      |      |      |         |
|-----------|--------|------|------|------|---------|
| $f$       | $\leq$ | 60   | 60   | 60   | 60 Mc/s |
| $V_a$     | =      | 5    | 5    | 4    | 4 kV    |
| $V_{g2}$  | =      | 600  | 700  | 600  | 700 V   |
| $V_{g1}$  | =      | -200 | -200 | -200 | -200 V  |
| $I_a$     | =      | 440  | 440  | 450  | 450 mA  |
| $I_{g2}$  | =      | 80   | 75   | 90   | 85 mA   |
| $I_{g1}$  | =      | 35   | 25   | 39   | 27 mA   |
| $V_{g1p}$ | =      | 350  | 340  | 350  | 340 V   |
| $W_{1a}$  | =      | 2200 | 2200 | 1800 | 1800 W  |
| $W_{1g1}$ | =      | 12   | 8    | 14   | 8,5 W   |
| $W_{1g2}$ | =      | 48   | 52,5 | 54   | 59,5 W  |
| $W_a$     | =      | 440  | 440  | 390  | 390 W   |
| $W_o$     | =      | 1760 | 1760 | 1410 | 1410 W  |
| $\eta$    | =      | 80   | 80   | 78   | 78 %    |

<sup>1)</sup> See page N; voir page N; siehe Seite N

H.F.class C anode and screen grid modulation  
H.F.classe C modulation d'anode et de grille écran  
HF- Klasse C Anoden- und Schirmgittermodulation

Screen grid modulated via a choke of 2 H  
La grille-écran modulée à travers une bobine de 2 H  
Schirmgitter moduliert über eine Drosselspule von 2 H

Limiting values  
Caractéristiques limites  
Grenzdaten

|                  |        |         |
|------------------|--------|---------|
| f                | = max. | 75 Mc/s |
| V <sub>a</sub>   | = max. | 4 kV    |
| W <sub>ia</sub>  | = max. | 1600 W  |
| W <sub>a</sub>   | = max. | 330 W   |
| I <sub>a</sub>   | = max. | 400 mA  |
| V <sub>g2</sub>  | = max. | 700 V   |
| W <sub>g2</sub>  | = max. | 50 W    |
| -V <sub>g1</sub> | = max. | 500 V   |
| W <sub>g1</sub>  | = max. | 25 W    |

Operating conditions  
Caractéristiques d'utilisation  
Betriebsdaten

|                  |   |         |
|------------------|---|---------|
| f                | ≤ | 60 Mc/s |
| V <sub>a</sub>   | = | 4 kV    |
| V <sub>g2</sub>  | = | 600 V   |
| V <sub>g1</sub>  | = | -240 V  |
| V <sub>g2p</sub> | = | 340 V   |
| V <sub>g1p</sub> | = | 415 V   |
| I <sub>a</sub>   | = | 380 mA  |
| I <sub>g2</sub>  | = | 80 mA   |
| I <sub>g1</sub>  | = | 20 mA   |
| W <sub>ia</sub>  | = | 1520 W  |
| W <sub>ig1</sub> | = | 7,5 W   |
| W <sub>ig2</sub> | = | 48 W    |
| W <sub>a</sub>   | = | 320 W   |
| W <sub>o</sub>   | = | 1200 W  |
| η                | = | 79 %    |
| m                | = | 100 %   |
| W <sub>mod</sub> | = | 760 W   |

H.F. class C control grid modulation  
 H.F. classe C modulation de grille de commande  
 HF-Klasse C Steuergittermodulation

Limiting values  
 Caractéristiques limites  
 Grenzdaten

|           |        |         |
|-----------|--------|---------|
| $f$       | = max. | 75 Mc/s |
| $V_a$     | = max. | 5000 V  |
| $W_{1a}$  | = max. | 1000 W  |
| $W_a$     | = max. | 500 W   |
| $I_a$     | = max. | 225 mA  |
| $V_{g2}$  | = max. | 700 V   |
| $W_{g2}$  | = max. | 50 W    |
| $-V_{g1}$ | = max. | 500 V   |

Operating conditions  
 Caractéristiques d'utilisation  
 Betriebsdaten

|                |          |           |               |
|----------------|----------|-----------|---------------|
| $f$            | $\Delta$ | 60        | 60 Mc/s       |
| $V_a$          | =        | 4500      | 4000 V        |
| $V_{g2}$       | =        | 600       | 600 V         |
| $V_{g1}$       | =        | $-180^1)$ | $-180^1)V$    |
| $R_{g1}$       | =        | 1400      | 1400 $\Omega$ |
| $V_{g1p}$      | =        | 220       | 210 V         |
| $I_a$          | =        | 200       | 200 mA        |
| $I_{g2}$       | =        | 5         | 5 mA          |
| $I_{g1}$       | =        | 6,5       | 6,5 mA        |
| $W_{ig1}$      | =        | 1,3       | 1,2 W         |
| $W_{1a}$       | =        | 900       | 800 W         |
| $W_a$          | =        | 500       | 470 W         |
| $W_{g2}$       | =        | 3         | 3 W           |
| $W_o$          | =        | 400       | 330 W         |
| $\eta$         | =        | 44,5      | 41 %          |
| $m$            | =        | 100       | 100 %         |
| $V_{g1modp}$   | =        | 100       | 100 V         |
| $I_{g1}^{2)}$  | =        | 26        | 27 mA         |
| $W_{ig1}^{2)}$ | =        | 5         | 5 W           |

<sup>1)2)</sup> See page 7; voir page 7; siehe Seite 7

H.F. class B amplifier single side band  
H.F. classe B amplificateur à une bande latérale  
HF-Klasse B Einseitenbandverstärker

Limiting values  
Caractéristiques limites  
Grenzdaten

|          |        |               |
|----------|--------|---------------|
| $f$      | = max. | 75 Mc/s       |
| $V_a$    | = max. | 5000 V        |
| $W_{1a}$ | = max. | 2250 W        |
| $W_a$    | = max. | 500 W         |
| $I_a$    | = max. | 450 mA        |
| $V_{g2}$ | = max. | 700 V         |
| $W_{g2}$ | = max. | 65 W          |
| $R_{g1}$ | = max. | 50 k $\Omega$ |

Operating conditions  
Caractéristiques d'utilisation  
Betriebsdaten

|           |   |      |        |
|-----------|---|------|--------|
| $f$       | = | 60   | Mc/s   |
| $V_a$     | = | 5000 | V      |
| $V_{g2}$  | = | 700  | V      |
| $V_{g1}$  | = | -90  | V      |
| $V_{g1p}$ | = | 0    | 130 V  |
| $I_a$     | = | 56   | 280 mA |
| $I_{g2}$  | = | 0    | 25 mA  |
| $I_{g1}$  | = | 0    | 1 mA   |
| $W_{1g1}$ | = | 0    | 1 W    |
| $W_{1a}$  | = | 280  | 1400 W |
| $W_a$     | = | 280  | 500 W  |
| $W_{g2}$  | = | 0    | 18 W   |
| $W_o$     | = | 0    | 900 W  |
| $\eta$    | = |      | 64,5 % |

<sup>1</sup>) With -170 V from fixed bias supply included  
Y compris une tension de polarisation fixe de -170 V  
Einschliesslich einer festen Vorspannung von -170 V

<sup>2</sup>) At crest of modulation  
À la crête de modulation  
Beim Scheitel der Modulation

Operating conditions as H.F. class C amplifier for industrial use with self rectification

Caractéristiques d'utilisation en amplificatrice H.F. classe C pour des applications industrielles à auto redressement  
 Betriebsdaten als HF-Klasse C Verstärker für industrielle Anwendungen mit Selbstgleichrichtung

Limiting values (absolute values)

Caractéristiques limites (valeurs absolues)

Grenzdaten (absolute Werte)

|                                        |                                        |
|----------------------------------------|----------------------------------------|
| $f$ ----- = max. 75 Mc/s               | $V_{trg2}^{1)} = \text{max.}$ 780 Veff |
| $V_{tra}^{1)} = \text{max.}$ 5600 Veff | $W_{g2} = \text{max.}$ 65 W            |
| $W_{1a} = \text{max.}$ 1460 W          | $-V_{g1} = \text{max.}$ 500 V          |
| $W_a = \text{max.}$ 500 W              | $I_{g1} = \text{max.}$ 25 mA           |
| $I_a = \text{max.}$ 240 mA             | $R_{g1} = \text{max.}$ 50 k $\Omega$   |

Operating conditions

Caractéristiques d'utilisation <sup>2)</sup>

Betriebsdaten

|                 |        |               |
|-----------------|--------|---------------|
| $f$             | $\leq$ | 60 Mc/s       |
| $V_{tra}^{1)}$  | $=$    | 4800 Veff     |
| $V_{trg2}^{1)}$ | $=$    | 670 Veff      |
| $R_{g1}$        | $=$    | 16 k $\Omega$ |
| $V_{g1p}$       | $=$    | 350 V         |
| $I_a$           | $=$    | 200 mA        |
| $I_{g2}$        | $=$    | 32 mA         |
| $I_{g1}$        | $=$    | 11 mA         |
| $W_{ig1}$       | $=$    | 3,5 W         |
| $W_{1a}$        | $=$    | 1060 W        |
| $W_a$           | $=$    | 310 W         |
| $W_{g2}$        | $=$    | 24 W          |
| $W_o$           | $=$    | 750 W         |
| $\eta$          | $=$    | 71 %          |

<sup>1)</sup> See page 9; voir page 9; siehe Seite 9

<sup>2)</sup> Under these conditions normal deviations of voltages and load are permissible. The absolute limiting values of the tube must, however, not be exceeded.

Dans ces conditions des déviations normales des tensions et de la charge sont permises. Il ne faut cependant pas dépasser les caractéristiques limites absolues.  
 Unter diesen Bedingungen sind normale Abweichungen der Spannungen und der Belastung gestattet. Die absoluten Grenzwerte dürfen jedoch nicht überschritten werden.

Operating conditions as H.F. class C amplifier for industrial use with anode voltage from two-phase half-wave rectifier without filter

Caractéristiques d'utilisation en amplificatrice H.F. classe C pour des applications industrielles avec tension anodique dérivée d'un redresseur biphasé à une alternance sans filtre

Betriebsdaten als HF-Klasse C Verstärker für industrielle Anwendungen mit der Anodenspannung abgenommen von einem Zweiphasen-Einweggleichrichter ohne Filter

Limiting values (absolute limits)

Caractéristiques limites (valeurs absolues)

Grenzdaten (absolute Werte)

|                  |                              |                   |                             |
|------------------|------------------------------|-------------------|-----------------------------|
| $f$              | = max. 75 Mc/s               | $V_{tr\ g2}^{1)}$ | = max. 700 V <sub>eff</sub> |
| $V_{tr\ a}^{1)}$ | = max. 5000 V <sub>eff</sub> | $W_{g2}$          | = max. 65 W                 |
| $W_{ia}$         | = max. 2250 W                | $-V_{g1}$         | = max. 500 V                |
| $W_a$            | = max. 500 W                 | $W_{g1}$          | = max. 25 W                 |
| $I_a$            | = max. 400 V <sub>eff</sub>  | $I_{g1}$          | = max. 45 mA                |
|                  |                              | $R_{g1}$          | = max. 50 kΩ                |

Operating conditions

Caractéristiques d'utilisation <sup>2)</sup>

Betriebsdaten

|                   |                         |
|-------------------|-------------------------|
| $f$               | ≤ 60 Mc/s               |
| $V_{tr\ a}^{1)}$  | = 4250 V <sub>eff</sub> |
| $V_a^{3)}$        | = 3825 V                |
| $V_{tr\ g2}^{1)}$ | = 600 V                 |
| $V_{g2}^{3)}$     | = 540 V                 |
| $R_{g1}$          | = 14 kΩ                 |
| $V_{g1p}$         | = 300 V                 |
| $I_a$             | = 325 mA                |
| $I_{g2}$          | = 20 mA                 |
| $I_{g1}$          | = 15 mA                 |
| $W_{ig1}$         | = 4 W                   |
| $W_{ia}$          | = 1535 W                |
| $W_a$             | = 425 W                 |
| $W_{g2}$          | = 13,3 W                |
| $W_o$             | = 1110 W                |
| $\eta$            | = 72 %                  |

<sup>1)</sup>  $V_{tr\ a}$  und  $V_{tr\ g2}$  are the anode transformer secondary voltage per phase and the screen grid transformer secondary voltage per phase respectively

$V_{tr\ a}$  et  $V_{tr\ g2}$  sont les tensions secondaires par phase des transformateurs d'anode respectivement de la grille-écran

$V_{tr\ a}$  und  $V_{tr\ g2}$  sind die Sekundärspannungen pro Phase des Anoden-bzw. Schirmgittertransformators.

<sup>2)</sup> See page 8; voir page 8; siehe Seite 8

<sup>3)</sup> D.C. value; valeur moyenne; mittlerer Wert

L.F. class B amplifier and modulator  
 Amplificatrice et modulatrice B.F. classe B  
 NF-Verstärker und Modulator Klasse B

## Limiting values

Caractéristiques limites

Grenzdaten

|           |                      |
|-----------|----------------------|
| $V_a$     | = max. 5000 V        |
| $W_{1a}$  | = max. 2250 W        |
| $W_a$     | = max. 500 W         |
| $I_a$     | = max. 450 mA        |
| $V_{g2}$  | = max. 700 V         |
| $W_{g2}$  | = max. 65 W          |
| $-V_{g1}$ | = max. 500 V         |
| $I_{g1}$  | = max. 45 mA         |
| $R_{g1}$  | = max. 50 k $\Omega$ |

## Operating conditions, two tubes

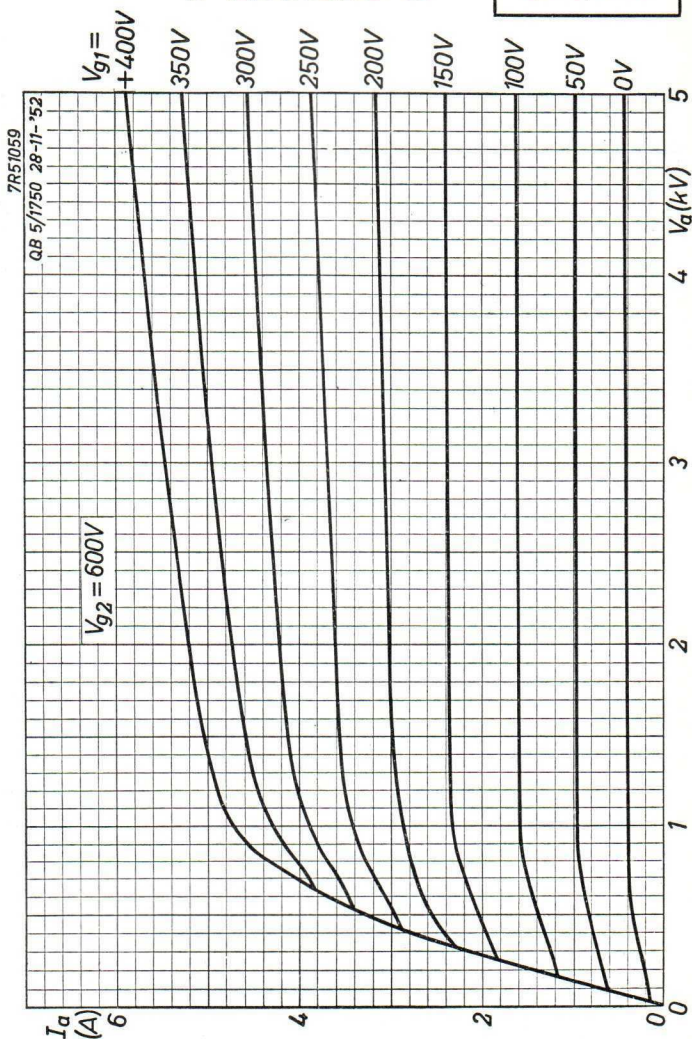
Caractéristiques d'utilisation, deux tubes

Betriebsdaten, zwei Röhren

|             |   |              |              |              |            |
|-------------|---|--------------|--------------|--------------|------------|
| $V_a$       | = | 5000         | 4000         | 4000         | V          |
| $V_{g2}$    | = | 600          | 600          | 600          | V          |
| $V_{g1}$    | = | -62,5        | -62,5        | -60          | V          |
| $R_{aa}$    | = | 26           | 20           | 16           | k $\Omega$ |
| $V_{g1g1p}$ | = | 0 260        | 0 254        | 0 305        | V          |
| $I_a$       | = | 2x50 2x290   | 2x45 2x285   | 2x55 2x366   | mA         |
| $I_{g2}$    | = | 0 2x43       | 0 2x40       | 0 2x60       | mA         |
| $I_{g1}$    | = | 0 2x13       | 0 2x13,5     | 0 2x18       | mA         |
| $W_{ig1}$   | = | 0 2x1,5      | 0 2x1,5      | 0 2x2,5      | W          |
| $W_{1a}$    | = | 2x250 2x1450 | 2x180 2x1140 | 2x220 2x1465 | W          |
| $W_a$       | = | 2x250 2x340  | 2x180 2x300  | 2x220 2x340  | W          |
| $W_{g2}$    | = | 0 2x26       | 0 2x24       | 0 2x36       | W          |
| $W_o$       | = | 0 2220       | 0 1680       | 0 2250       | W          |
| $d_{tot}$   | = | - 5          | - 4,7        | - 5          | %          |
| $\eta$      | = | - 76,5       | - 74         | - 76,5       | %          |

# PHILIPS

QB 5/1750

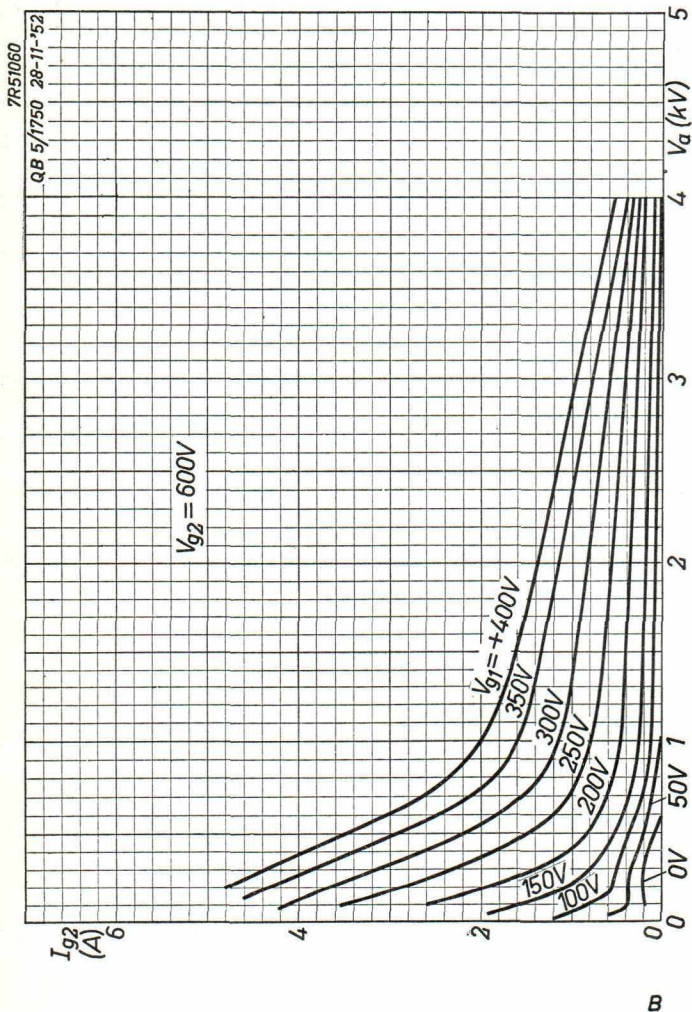


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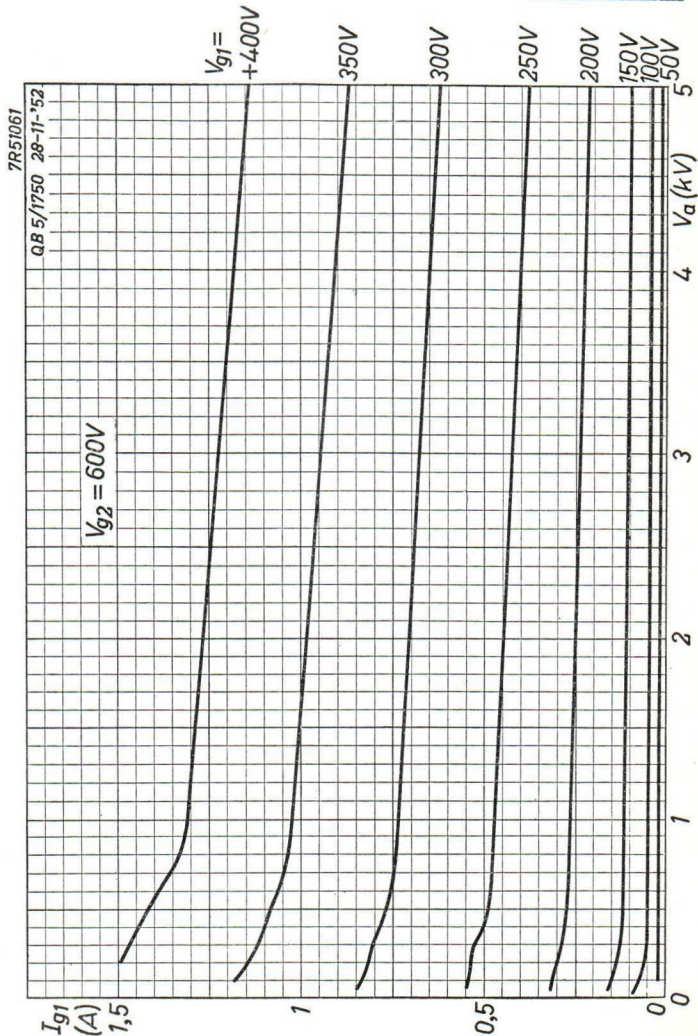
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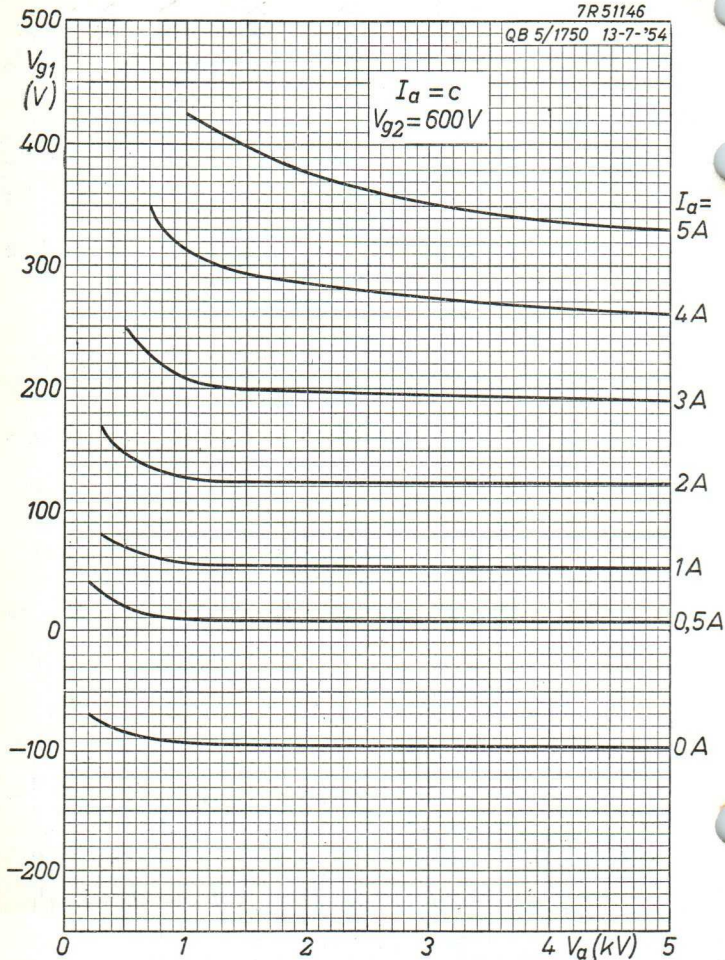
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QB 5/1750 13-7-'54

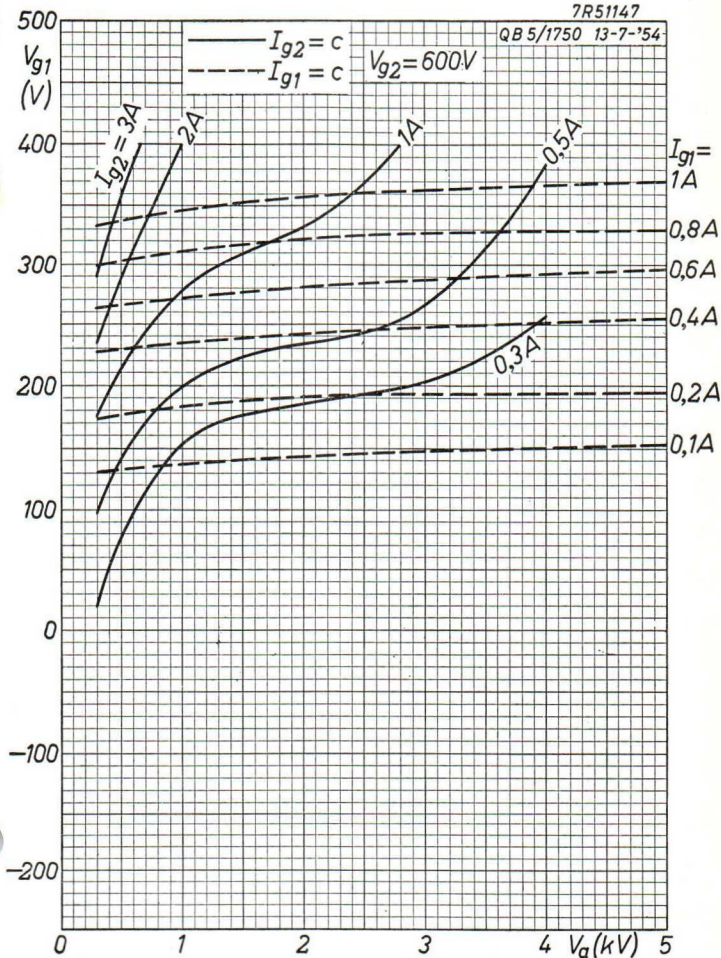


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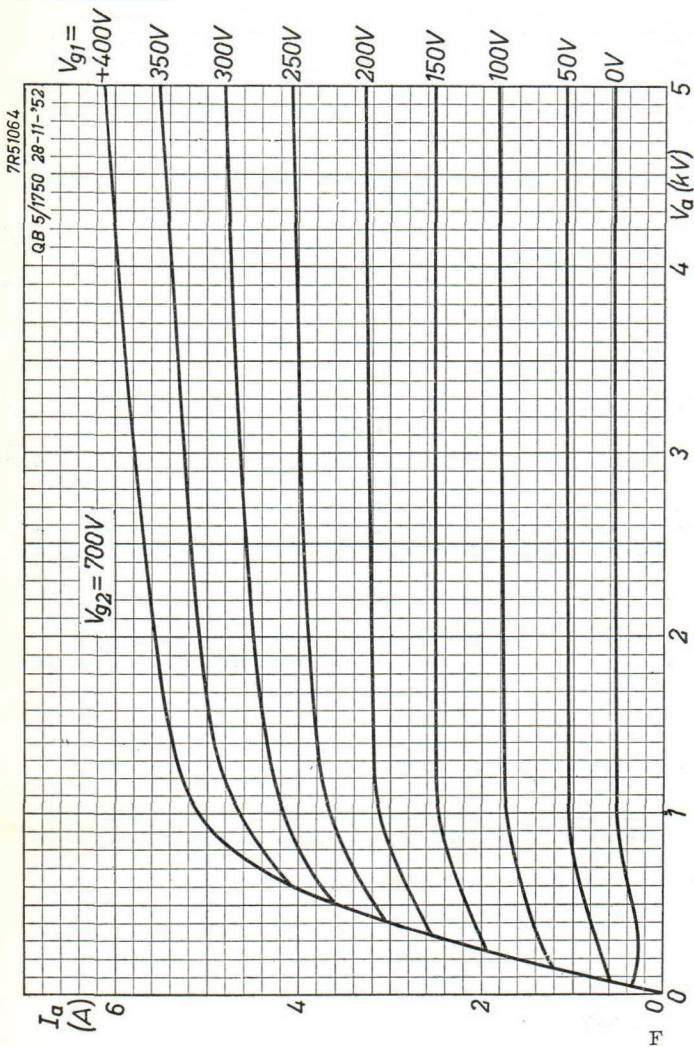


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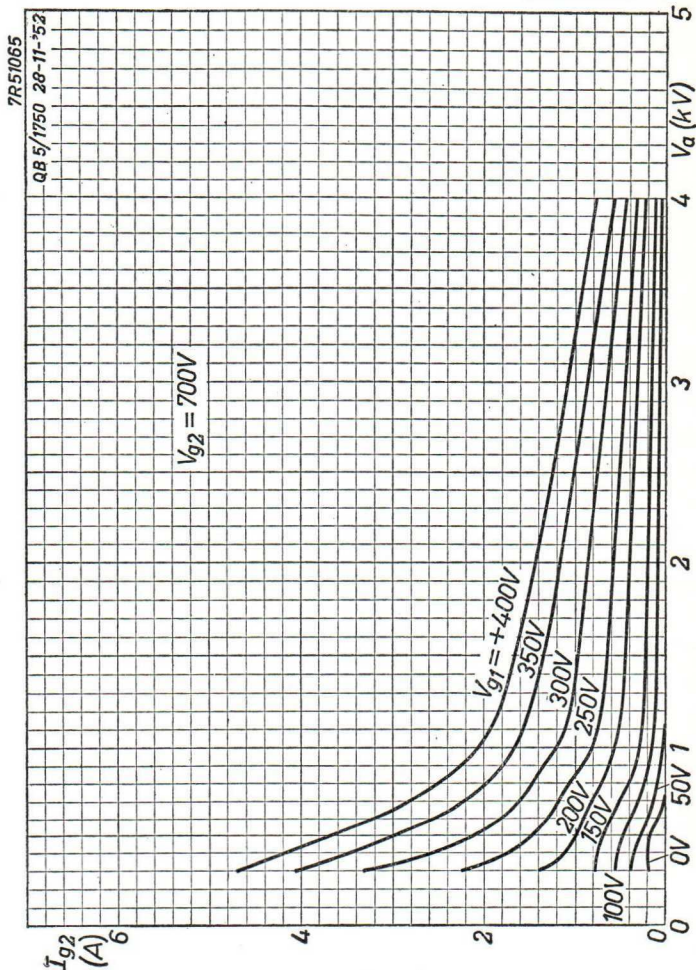
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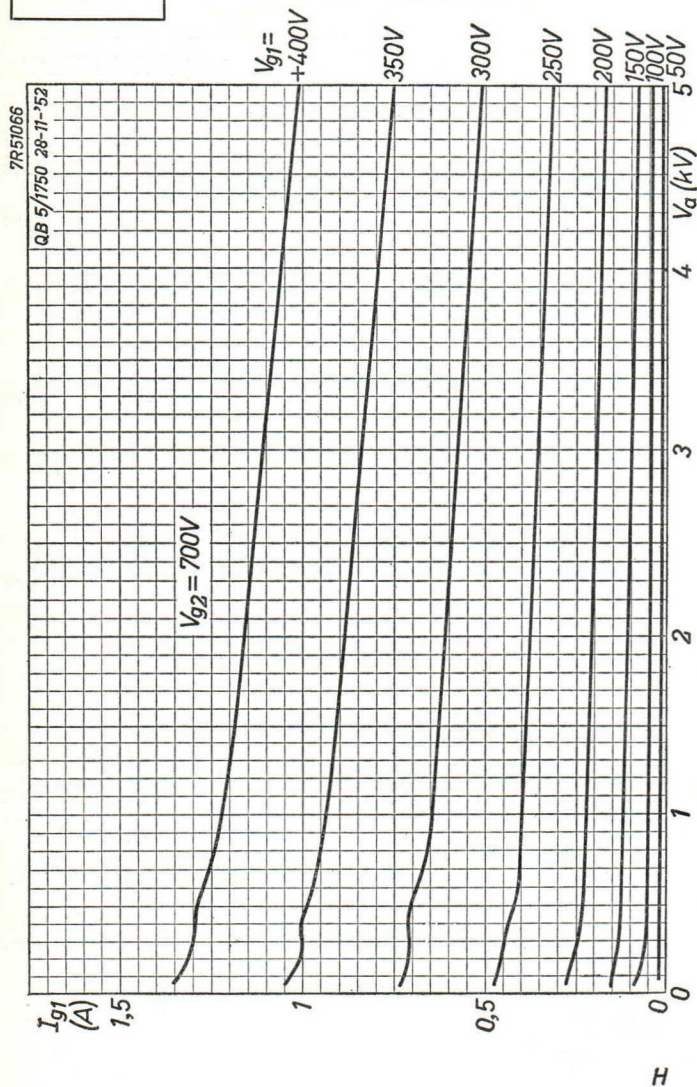
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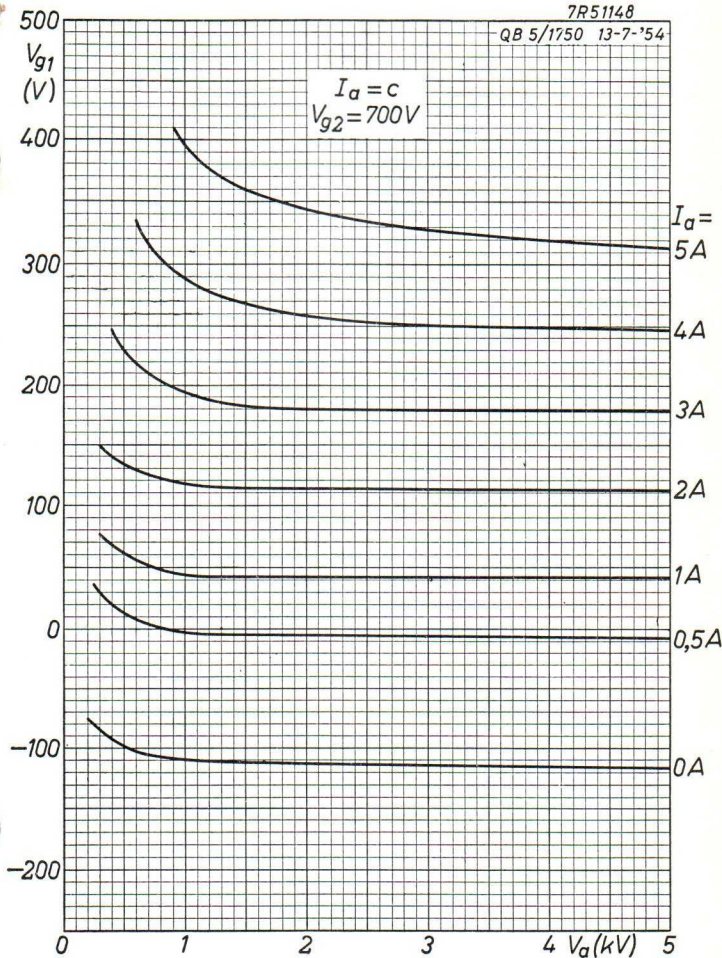


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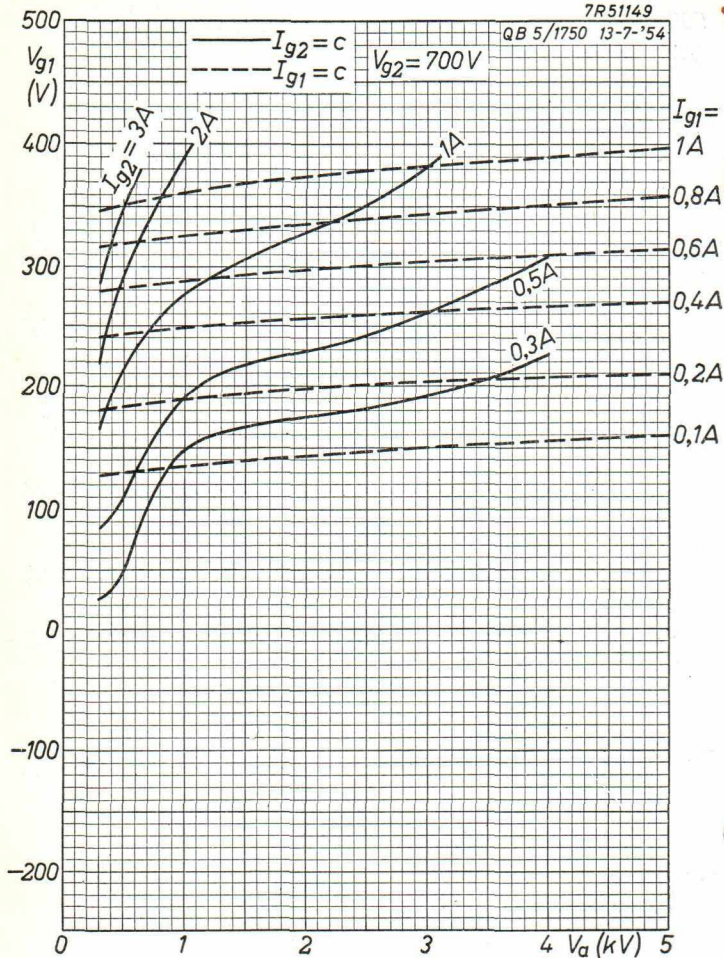
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QB 5/1750 13-7-'54



7R51219

QB 5/1750 15-4-'55

2x QB 5/1750

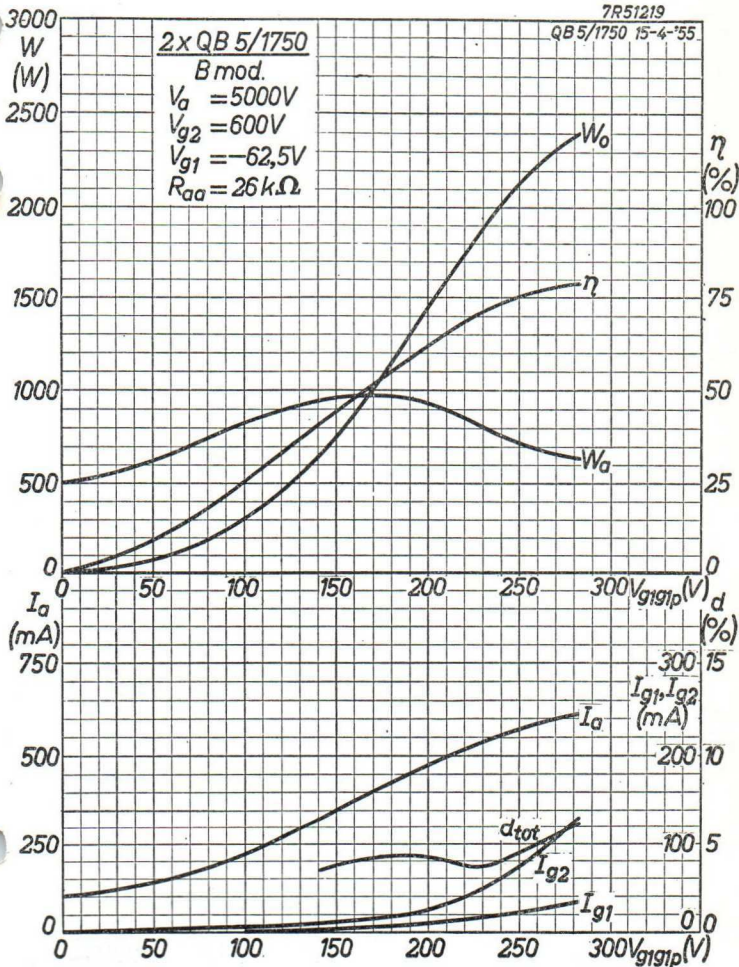
B mod.

$V_a = 5000V$

$V_{g2} = 600V$

$V_{g1} = -62,5V$

$R_{aa} = 26 k\Omega$

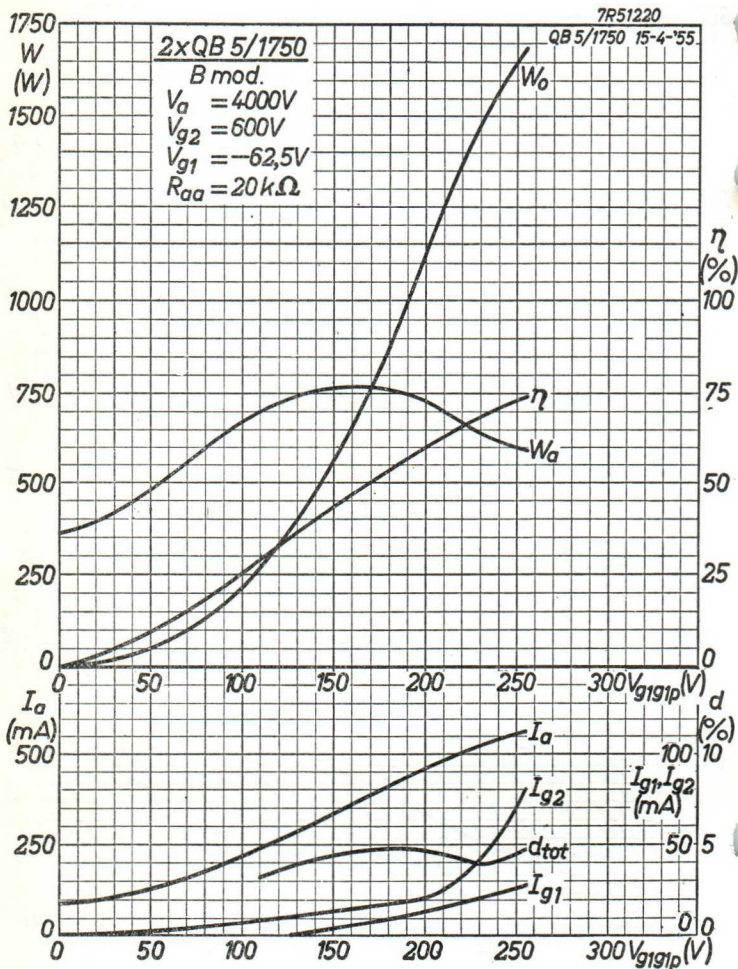


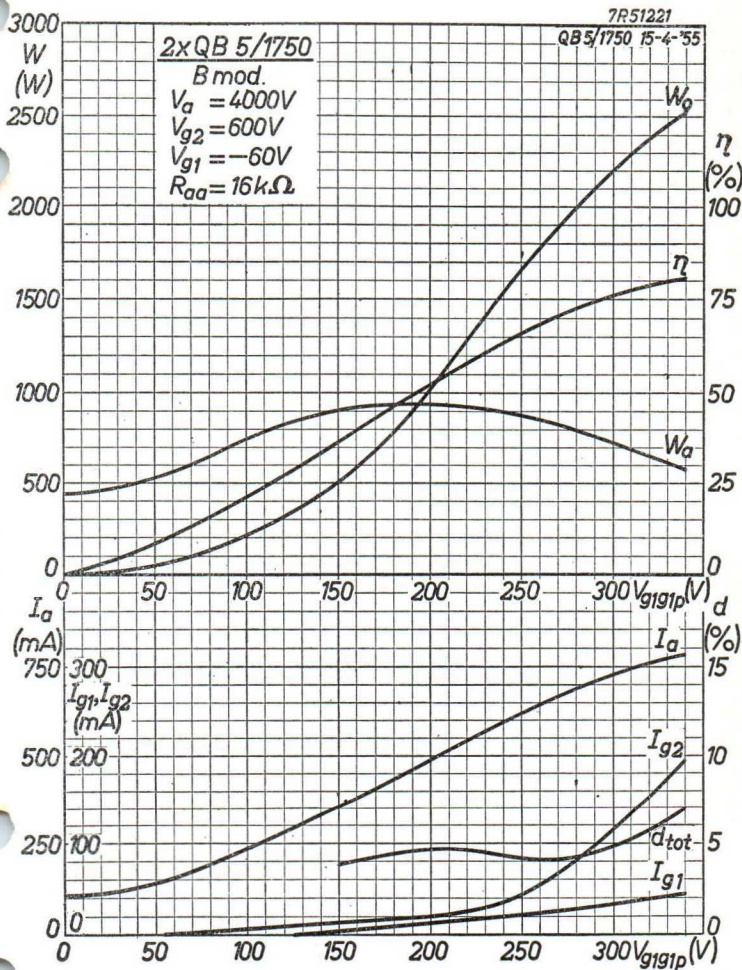
10.10.1955

K

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# PHILIPS



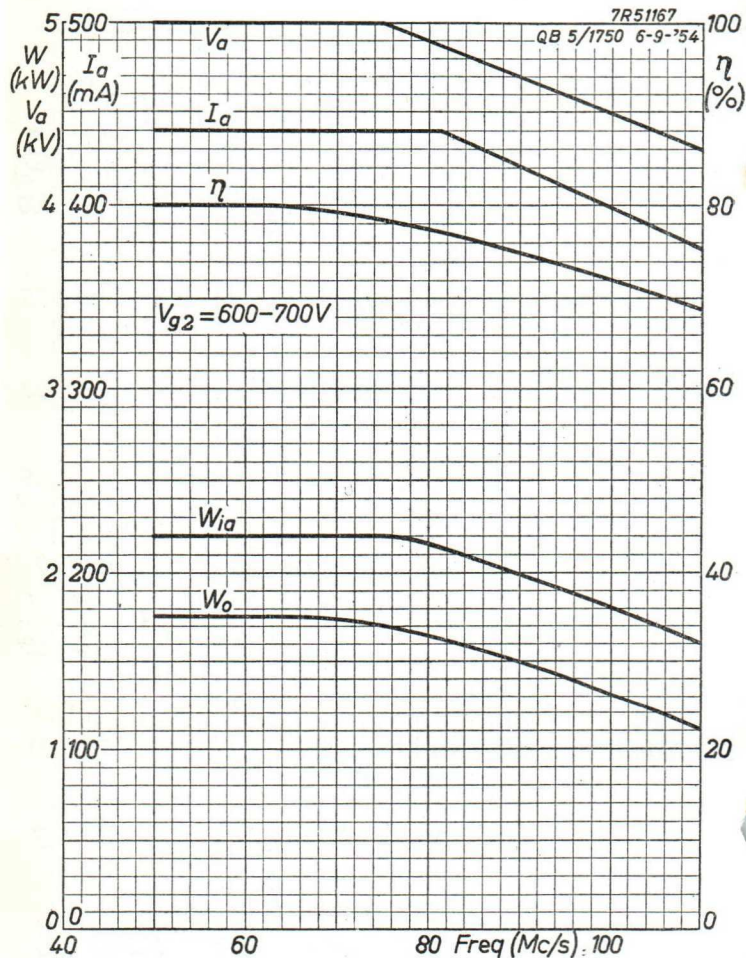


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# PHILIPS

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