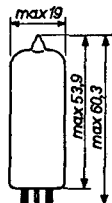
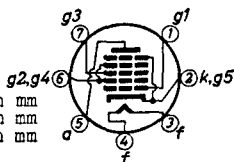


DUAL CONTROL HEPTODE for use in computer circuits
 HEPTODE A DOUBLE COMMANDE pour utilisation dans circuits de comptage
 DOPPELGESTEUERTE HEPTODE zur Verwendung in Zählschaltungen

Heating : indirect by A.C. or D.C.
 parallel supply
 Chauffage: indirect par C.A. ou C.C.
 alimentation parallèle
 Heizung : indirekt durch Wechsel-
 oder Gleichstrom; Paral-
 lelspeisung

$$\begin{aligned} V_f &= 6,3 \text{ V}^1) \\ I_f &= 270 \text{ mA}^2) \end{aligned}$$

Dimensions in mm
 Dimensions en mm
 Abmessungen in mm



Base, culot, Sockel: MINIATURE

Capacitances (without external shield)
 Capacités (sans blindage extérieur)
 Kapazitäten (ohne äussere Abschirmung)

$$C_a = 7,9 \text{ pF}$$

$$C_{g1} = 5,4 \text{ pF}$$

$$C_{g3} = 7,0 \text{ pF}$$

$$C_{ag1} < 0,08 \text{ pF}$$

$$C_{ag3} < 0,45 \text{ pF}$$

$$C_{g1g3} < 0,2 \text{ pF}$$

¹⁾ In order to obtain a prolonged tube life, the maximum variation of V_f should be less than $\pm 5\%$ (absolute limits)

Afin d'obtenir une vie prolongée du tube, la variation maximum de V_f sera moins de $\pm 5\%$ (limites absolues)

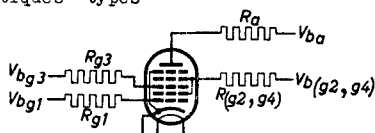
Zur Verlängerung der Lebensdauer der Röhre darf die maximale Heizspannungsschwankung nicht mehr als $\pm 5\%$ (absolute Werte) betragen

²⁾ At $V_f = 6,3 \text{ V}$ the spread of I_f from tube to tube can be $\pm 14 \text{ mA}$

Pour $V_f = 6,3 \text{ V}$, l'écart de I_f d'un tube à l'autre peut être de $\pm 14 \text{ mA}$

Bei $V_f = 6,3 \text{ V}$ kann die Streuung von I_f der Röhren bis zu $\pm 14 \text{ mA}$ betragen

Typical characteristics
Caractéristiques types
Kenndaten



V_{ba}	=	150	150	150	150 V
$V_{b(g2, g4)}$	=	75	75	75	75 V
V_{bg1}	=	0	0	-10	0 V
V_{bg3}	=	0	-10	0	+55 V
R_a	=	20	20	20	- k Ω
$R_{g2, g4}$	=	470	470	470	- Ω
R_{g1}	=	47	47	47	- k Ω
R_{g3}	=	47	47	47	- k Ω
I_a	=	>5,5	<0,2	<0,2	- mA
I_{g3}	=	-	-	-	>0 mA

Insulation ($V_f = 6,3$ V)
 Isolement ($V_{kf} = 120$ V)
 Isolation ($V_{kf} = 120$ V) $r_{kf} = \text{min. } 8 \text{ M}\Omega$

Inverse grid No.1 and grid No.3 current
 Courant inverse des grilles 1 et 3
 Negativen Gitterstrom der Gitter 1 und 3

V_{ba}	=	150 V
$V_{b(g2, g4)}$	=	75 V
V_{bg1}	=	-1,5 V
V_{bg3}	=	-1,5 V
R_a	=	20 k Ω
$R_{g2, g4}$	=	470 Ω
R_{g1}	=	47 k Ω
R_{g3}	=	47 k Ω
$-I_{g1}$	= max.	0,2 μ A
$-I_{g3}$	= max.	0,5 μ A

Operating characteristics as mixer
 Caractéristiques d'utilisation comme tube mélangeur
 Betriebsdaten als Mischröhre

V_a	=	250 V
V_{g2+g4}	=	100 V
V_{g3}	=	-5 V
V_{osc}	=	10 V_{eff} ²⁾
R_{g1}	=	20 k Ω
I_a	=	3,3 mA
I_{g1}	=	530 μ A
I_{g2+g4}	=	6,5 mA
S_c	=	450 μ A/V
R_1	=	0,85 M Ω

Limiting values (Absolute limits)
 Caractéristiques limites (Limites absolues)
 Grenzdaten (Absolutwerte)

V_{a0}	= max. 500 V	W_a	= max. 1,0 W
V_a	= max. 250 V	W_{g2+g4}	= max. 1,0 W
$V_{(g2+g4)0}$	= max. 500 V	W_{g1}	= max. 0,5 W
V_{g2+g4}	= max. 100 V	W_{g3}	= max. 0,5 W
$-V_{g3}$	= max. 100 V	I_k	= max. 20 mA
$+V_{g3}$	= max. 0 V	I_{kp}	= max. 70 mA
$-V_{g3p}$	= max. 200 V	V_{kf}	= max. 120 V
$+V_{g3p}$	= max. 90 V	R_{g1}	= max. 0,5 M Ω ⁴⁾
$-V_{g1}$	= max. 100 V	R_{g1}	= max. 1,0 M Ω ⁵⁾
$+V_{g1}$	= max. 0 V	R_{g3}	= max. 0,5 M Ω ⁴⁾
$-V_{g1p}$	= max. 200 V	R_{g3}	= max. 1,0 M Ω ⁵⁾
$+V_{g1p}$	= max. ³⁾		

²⁾ Oscillator voltage on g_1 ; signal voltage on g_3
 Tension d'oscillateur à g_1 ; tension de signal à g_3
 Oszillatorspannung an g_1 ; Signalspannung an g_3

³⁾ Limited by I_{kp} and W_{g1}
 Limité par I_{kp} et W_{g1}
 Begrenzt durch I_{kp} und W_{g1}

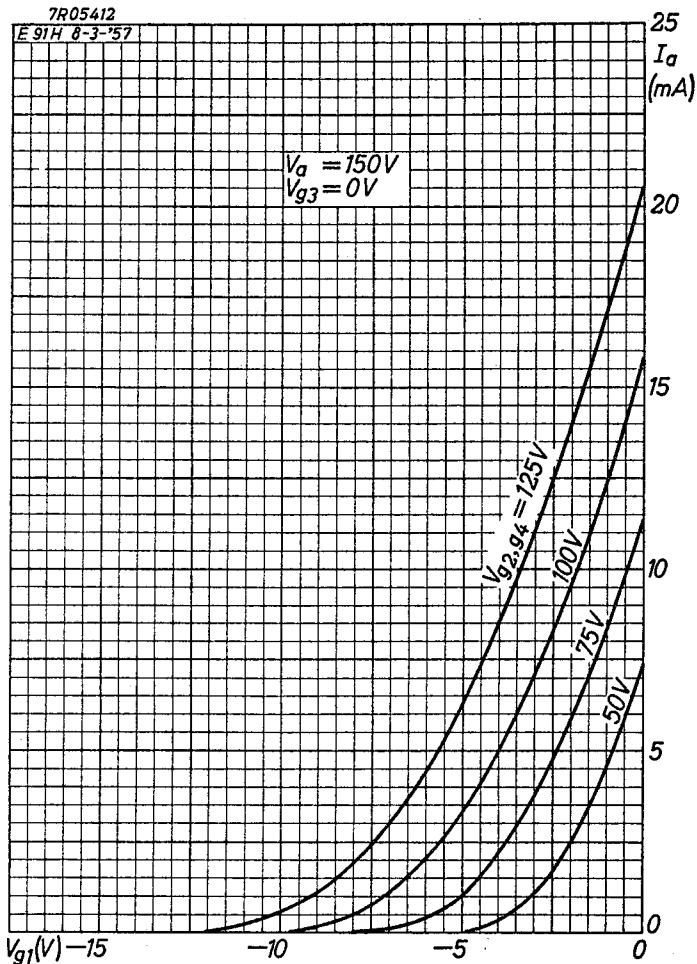
⁴⁾ With fixed bias
 En polarisation fixe
 Mit fester Gittervorspannung

⁵⁾ With automatic grid bias
 En polarisation automatique
 Mit automatischer Gittervorspannung

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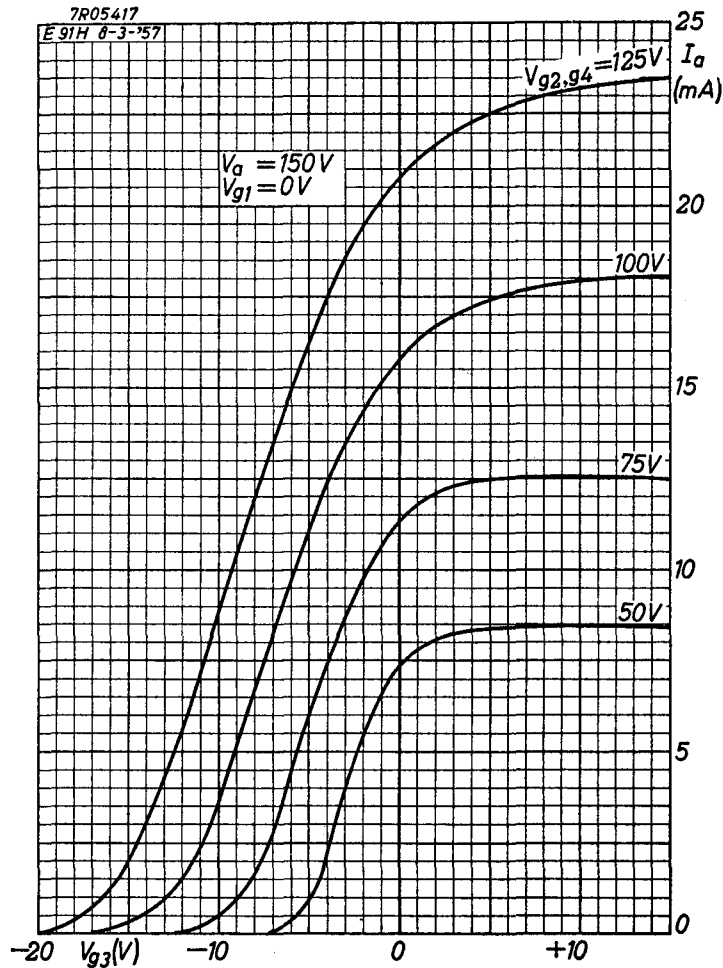
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E91H**PHILIPS**

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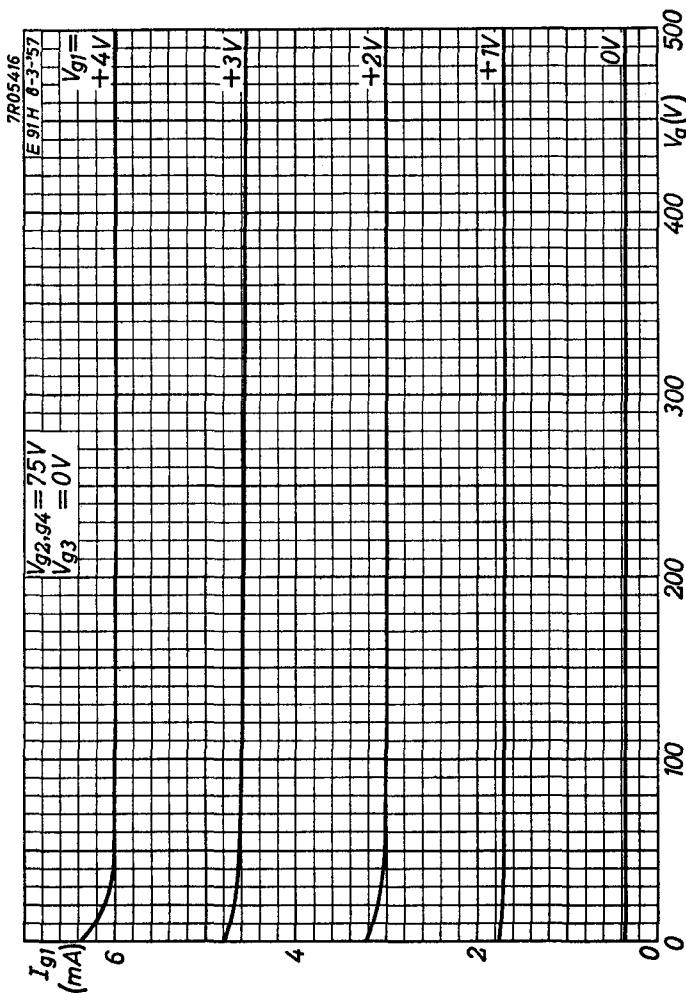
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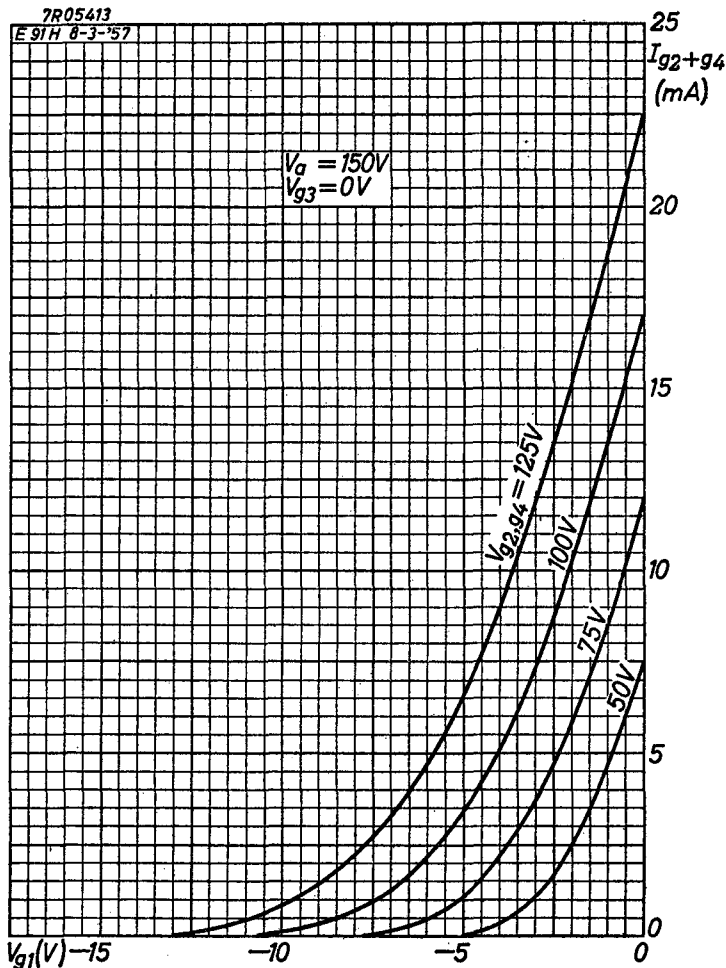
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E91H**PHILIPS**

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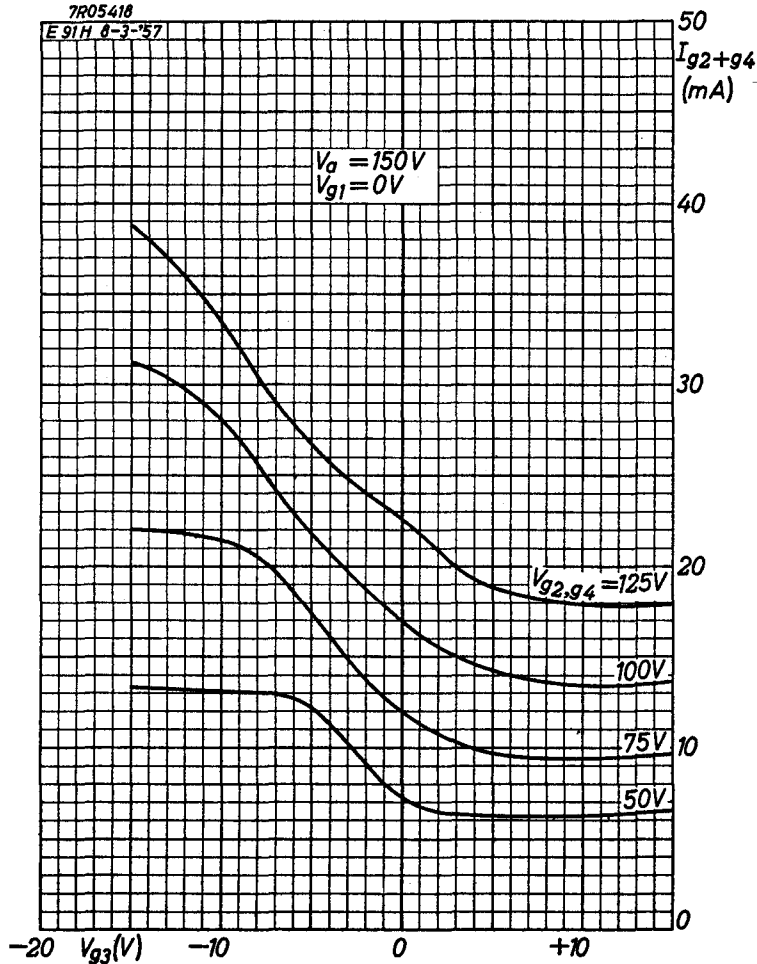
E91H 8-3-57

 $V_a = 150V$
 $V_{g3} = 0V$ 

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E91H 8-3-'57



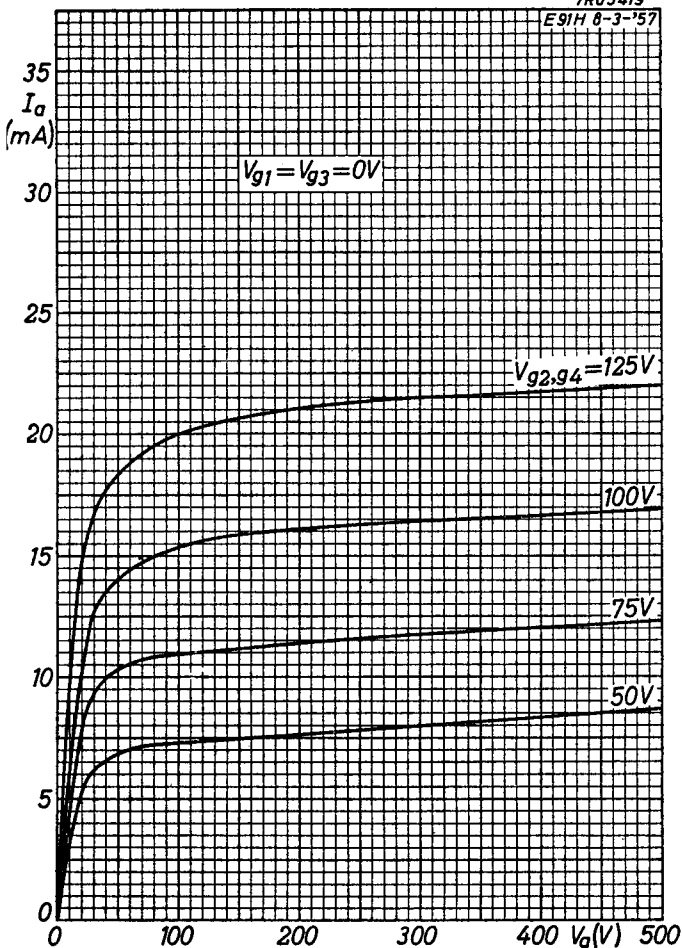
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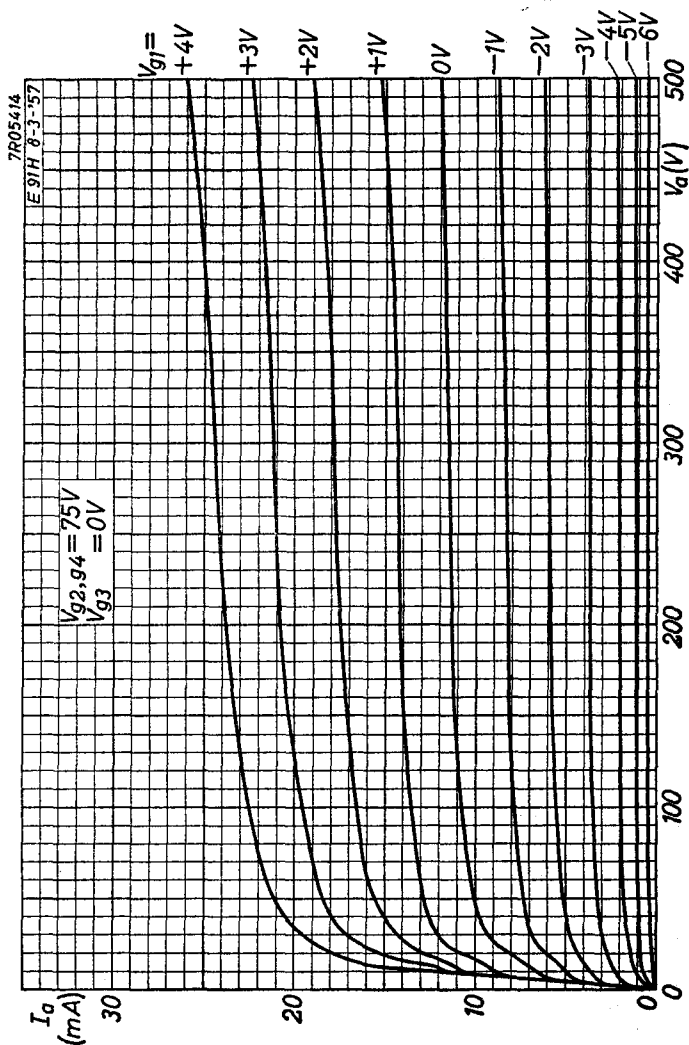
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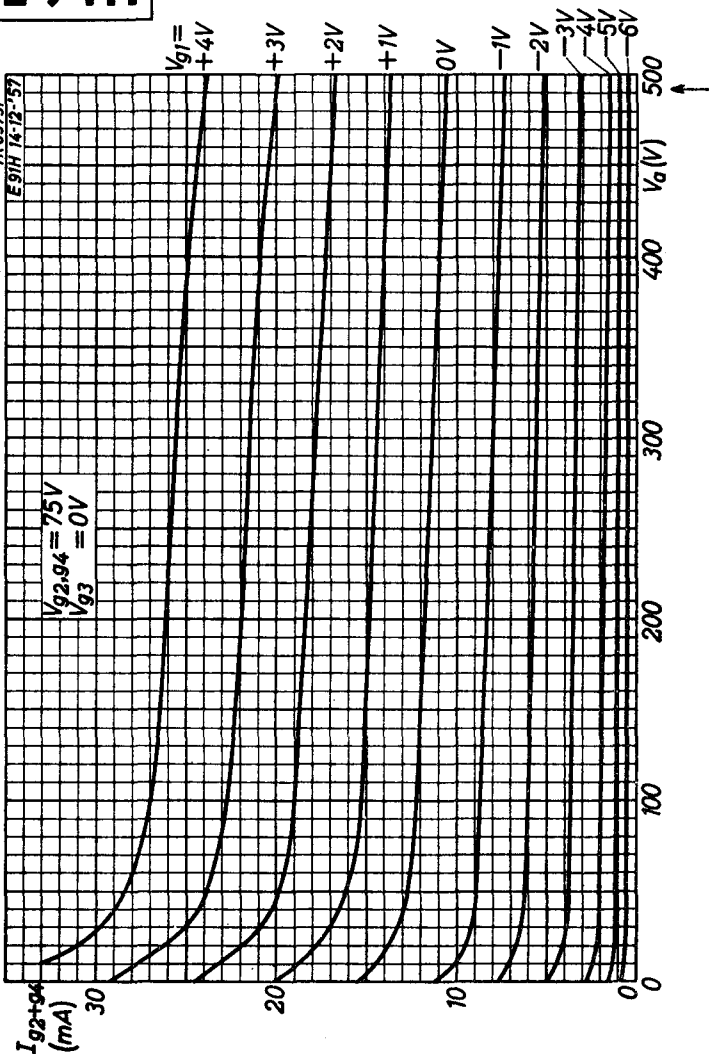
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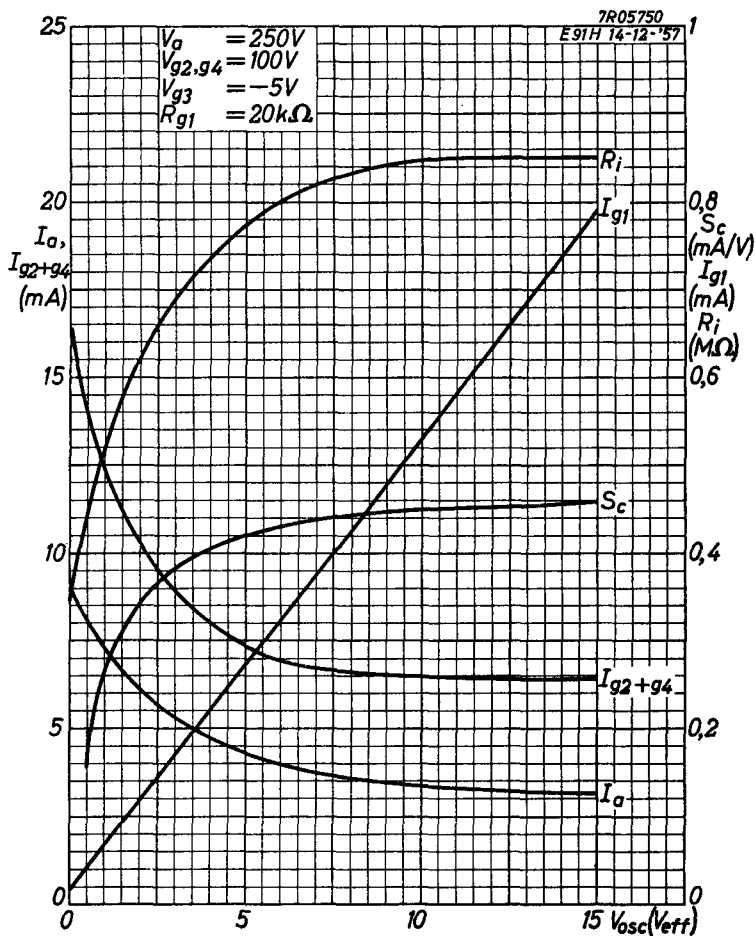
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12.12.1957

I



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5	B	1957.06.06
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7	D	1957.06.06
8	E	1957.06.06
9	F	1957.06.06
10	G	1957.12.12
11	H	1957.12.12
12	I	1957.12.12
13	FP	1999.06.11