

OUTPUT PENTODE for battery receivers
PENTHODE DE SORTIE pour des appareils batterie
ENDPENTODE für Batteriegeräte

Heating: direct by battery current, rectified A.C. or D.C.; series or parallel supply

Chauffage: direct par courant batterie, C.A. redressé ou C.C.; alimentation en série ou en parallèle

Heizung: direkt durch Batteriestrom, gleichgerichteten Wechselstrom oder Gleichstrom; Serien- oder Parallelspeisung

Parallel supply; alimentation en parallèle; Parallelspeisung

V _f =	1,4 V ¹⁾	1,4 V ²⁾	2,8 V ³⁾
I _f =	50 mA	100 mA	50 mA
Pins neg.	5	5	1
Broches pos.	7	1+7	7
Stifte			

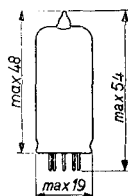
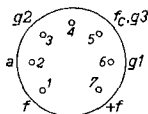
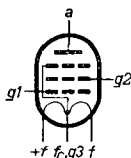
Series supply; alimentation en série; Serienspeisung

V _f =	1,3 V ¹⁾	1,3 V ²⁾	2,6 V ³⁾
Pins neg.	5	5	1
Broches pos.	7	1+7	7
Stifte			

Dimensions in mm

Dimensions en mm

Abmessungen in mm



Base, culot, Sockel: Miniature

Capacitances

C_{g1} = 5,0 pF

Capacités

C_a = 3,8 pF

Kapazitäten

C_{ag1} < 0,40 pF

¹⁾, ²⁾, ³⁾ see page 10; voir page 10; siehe Seite 10

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PENTHODE DE SORTIE pour des appareils batterie
ENDPENTODE für Batteriegeräte

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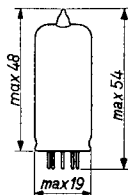
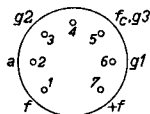
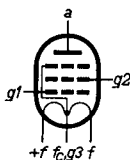
Parallel supply; alimentation en parallèle;
Parallelspeisung

V _f =	1,4 V ¹⁾	1,4 V ²⁾	2,8 V ³⁾
I _f =	50 mA	100 mA	50 mA
Pins neg.	5	5	1
Broches pos.	7	1+7	7
Stifte			

Series supply; alimentation en série; Serienspeisung

V _f =	1,3 V ¹⁾	1,3 V ²⁾	2,6 V ³⁾
Pins neg.	5	5	1
Broches pos.	7	1+7	7
Stifte			

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Base, culot, Sockel: Miniature

Capacitances
Capacités
Kapazitäten

C_{g1} = 5,0 pF
C_a = 3,8 pF
C_{ag1} < 0,40 pF

^{1), 2), 3)} see page 2; voir page 2; siehe Seite 2

Operating characteristics class A
 Caractéristiques d'utilisation classe A
 Betriebsdaten Klasse A

$V_f = 1,4 \text{ V}^{1)}$; $I_f = 50 \text{ mA}$; pins, broches, Stifte 5-7				
V_a	= 90	86 ⁷⁾	120	8) ⁸⁾ 113 V
V_{g2}	= 90	86	120	113 V
V_{g1}	= -5,5	-4,5	-8,5	-7,5 V
I_a	= 4,0	4,5	5,0	5,0 mA
I_{g2}	= 0,8	0,9	1,0	1,0 mA
S	= 1,0	1,0	1,0	1,0 mA/V
μ_{g2g1}	= 7,2	7,2	7,3	7,3
R_i	= 200	180	200	180 k Ω
R_a	= 20	20	20	20 k Ω
W_o (d = 10%)	= 170	150	290	250 mW
V_i (d = 10%)	= 4,1	3,9	5,1	5,1 V_{eff}
W_o ($I_{g1}=+0,3\mu A$)	= 180	160	350	300 mW
d ($I_{g1}=+0,3\mu A$)	= 13	12	15	14,5 %
V_i ($W_o = 50 \text{ mW}$)	= 1,8	1,8	1,7	1,7 V_{eff}

Operating characteristics class A push-pull
 Caractéristiques d'utilisation classe A push-pull
 Betriebsdaten Klasse A Gegentakt

$V_f = 1,4 \text{ V}^{4)}$; $I_f = 2 \times 50 \text{ mA}$; pins, broches, Stifte 5-7				
V_a	= 90	85 ⁷⁾	120	8) ⁸⁾ 113 V
V_{g2}	= 90	85	120	113 V
V_{g1}	= -5,5	-5,4	-8,5	-7,5 V
I_a	= 2x4	2x3,25	2x5	2x5 mA
I_{g2}	= 2x0,8	2x0,7	2x1,0	2x1,0 mA
R_{aa}	= 28	28	28	28 k Ω
V_i	= 4,8	4,8	7,5	6,6 V_{eff}
W_o	= 340	320	750	650 mW
d	= 8	8	10	10 %
V_i ($W_o = 50 \text{ mW}$)	= 1,45	1,5	1,35	1,35 V_{eff}

^{1), 4)} see page 10; voir page 10; siehe Seite 10

⁷⁾ " " C; " " C; " " C

⁸⁾ " " G; " " G; " " G

Operating characteristics class A
 Caractéristiques d'utilisation classe A
 Betriebsdaten Klasse A

$V_f = 1,4 \text{ V}^2$; $I_f = 100 \text{ mA}$; pins, broches, Stifte 5-(1+7)					
V_a	=	90	86	120	113 V
V_{g2}	=	90	86	120	113 V
V_{g1}	=	-5,1	-4,5	-8,1	-7,1 V
I_a	=	8,0	8,0	10	10 mA
I_{g2}	=	1,8	1,8	2,3	2,3 mA
S	=	2,0	2,0	2,0	2,0 mA/V
μ_{g2g1}	=	7,3	7,3	7,3	7,3
R_1	=	110	110	110	110 k Ω
R_a	=	8	8	8	8 k Ω
W_o ($d = 10 \%$)	=	310	280	550	500 mW
V_1 ($d = 10 \%$)	=	4,1	4,0	5,0	4,9 V_{eff}
W_o ($I_{g1} = +0,3 \mu A$)	=	340	290	680	570 mW
V_1 ($I_{g1} = +0,3 \mu A$)	=	4,5	4,1	6,6	5,9 V_{eff}
d ($I_{g1} = +0,3 \mu A$)	=	12	11	15	14 %
V_1 ($W_o = 50 \text{ mW}$)	=	1,35	1,35	1,3	1,3 V_{eff}

1) One filament section
 Une partie du filament
 Ein Glühfadenteil

2) Two filament sections in parallel
 Deux parties du filament reliées en parallèle
 Zwei Glühfadenteile parallelgeschaltet

3) Two filament sections in series
 Deux parties du filament reliées en série
 Zwei Glühfadenteile in Serie

4) With cold tube; avec tube froid; bei kalter Röhre

Operating characteristics class B push-pull
Caractéristiques d'utilisation classe B push-pull
Betriebsdaten Klasse B Gegentakt

$V_f = 1,4 V^4$; $I_f = 2 \times 50 \text{ mA}$; pins, broches, Stifte 5-7

V_a	=	90	82 ⁹⁾	V
V_{g2}	=	90	82	V
V_{g1}	=	-8,5	-7,5	V
R_{aa}	=	28	28	k Ω
V_i ($W_o = 50 \text{ mW}$)	=	2,5	2,6	V_{eff}
V_i	=	0 7,2	0 6,4	V_{eff}
I_a	=	$2 \times 1,0$ $2 \times 3,2$	$2 \times 1,0$ $2 \times 3,0$	mA
I_{g2}	=	$2 \times 0,2$ $2 \times 1,05$	$2 \times 0,2$ $2 \times 1,0$	mA
W_c	=	0 300	0 265	mW
d	=	- 3,5	- 4	%

Operating characteristics class A
Caractéristiques d'utilisation classe A
Betriebsdaten Klasse A

$V_f = 1,4 V^2$; $I_f = 100 \text{ mA}$; pins, broches, Stifte 5-(1+7)

V_a	=	90	86 ¹⁰⁾	120 ¹¹⁾	113	V
V_{g2}	=	90	86	120	113	V
V_{g1}	=	-5,1	-4,5	-8,1	-7,1	V
I_a	=	8,0	8,0	10	10	mA
I_{g2}	=	1,8	1,8	2,3	2,3	mA
S	=	2,0	2,0	2,0	2,0	mA/V
μ_{g2g1}	=	7,3	7,3	7,3	7,3	
R_i	=	110	110	110	110	k Ω
R_a	=	8	8	8	8	k Ω
W_o (d = 10%)	=	310	280	550	500	mW
V_i (d = 10%)	=	4,1	4,0	5,0	4,9	V_{eff}
W_o ($I_{g1} = +0,3 \mu A$)	=	340	290	680	570	mW
V_i ($I_{g1} = +0,3 \mu A$)	=	4,5	4,1	6,6	5,9	V_{eff}
d ($I_{g1} = +0,3 \mu A$)	=	12	11	15	14	%
V_i ($W_o = 50 \text{ mW}$)	=	1,35	1,35	1,3	1,3	V_{eff}

^{2), 4)} See page 10; voir page 10; siehe Seite 10

⁹⁾ " " D; " " D; " " D

¹⁰⁾ " " J; " " J; " " J

¹¹⁾ " " N; " " N; " " N

Operating characteristics class A
Caractéristiques d'utilisation classe A
Betriebsdaten Klasse A

$V_f = 2,8 \text{ V}^3$; $I_f = 50 \text{ mA}$; pins, broches, Stifte 1-7				
V_a	=	90	86	120 113 V
V_{g2}	=	90	86	120 113 V
V_{g1}	=	-4,2	-4,3	-8,1 -7,2 V
I_a	=	8,0	7,0	9,0 9,0 mA
I_{g2}	=	1,7	1,5	1,8 1,8 mA
S	=	2,0	1,9	2,0 2,0 mA/V
μ_{g2g1}	=	7,3	7,3	7,3 7,3
R_1	=	120	120	120 120 k Ω
R_a	=	10	10	10 10 k Ω
W_o ($d = 10 \%$)	=	280	250	500 420 mW
V_i ($d = 10 \%$)	=	3,8	3,7	4,8 4,4 V_{eff}
W_o ($I_{g1} = +0,3 \mu A$)	=	290	270	620 525 mW
V_f ($I_{g1} = +0,3 \mu A$)	=	4,0	4,0	6,6 6,1 V_{eff}
d ($I_{g1} = +0,3 \mu A$)	=	12	11,5	17 16 %
V_i ($W_o = 50 \text{ mW}$)	=	1,35	1,40	1,35 1,35 V_{eff}

Limiting values
Caractéristiques limites
Grenzdaten

V_a	= max.	150 V
V_a ($V_i = 0 \text{ V}$)	= max.	180 V
V_a	= max.	200 V ⁴⁾
W_a	= max.	1,2 W
V_{g2}	= max.	150 V
V_{g2} ($V_i = 0 \text{ V}$)	= max.	180 V
V_{g2}	= max.	200 V ⁴⁾
W_{g2}	= max.	0,45 W
I_k	= max.	6 mA ¹⁾
I_k	= max.	12 mA ²⁾
I_k	= max.	11 mA ³⁾
R_{g1}	= max.	1 M Ω
V_{g1} ($I_{g1} = +0,3 \mu A$)	= max.	0 V

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

Operating characteristics class A push-pull
 Caractéristiques d'utilisation classe A push-pull
 Betriebsdaten Klasse A Gegentakt

$V_f = 1,4 \text{ V}^5$; $I_f = 2 \times 100 \text{ mA}$; pins, broches, Stifte 5-(1+7)

V_a	=	90	85 ¹⁰⁾	120	113 ¹¹⁾ V
V_{g2}	=	90	85	120	113 V
V_{g1}	=	-5,1	-5,2	-8,1	-7,1 V
I_a	=	2x8	2x6,5	2x10	2x10 mA
I_{g2}	=	2x1,8	2x1,4	2x2,3	2x2,3 mA
R_{aa}	=	14	14	14	14 k Ω
V_i	=	4,4	4,5	6,8	5,9 V_{eff}
W_o	=	650	550	1300	1160 mW
d	=	10	10	10	10 %
V_i ($W_o = 50 \text{ mW}$)	=	1,0	1,0	0,95	0,95 V_{eff}

Operating characteristics class B push-pull
 Caractéristiques d'utilisation classe B push-pull
 Betriebsdaten Klasse B Gegentakt

$V_f = 1,4 \text{ V}^5$; $I_f = 2 \times 100 \text{ mA}$; pins, broches, Stifte 5-(1+7)

V_a	=	90		82 ¹²⁾	V
V_{g2}	=	90		82	V
V_{g1}	=	-9,8		-8,3	V
R_{aa}	=	14		14	k Ω
V_i ($W_o = 50$ mW)	=	2,0		2,0 V_{eff}	
V_i	=	0 8		0 6,6 V_{eff}	
I_a	=	2x1,5	2x6,3	2x1,5	2x5,25 mA
I_{g2}	=	2x0,32	2x2,25	2x0,32	2x1,75 mA
W_o	=	0	580	0	445 mW
d	=	-	5	-	4 %

⁵⁾ See page 10; voir page 10; siehe Seite 10

¹⁰⁾ " " J; " " J; " " J

¹¹⁾ " " N; " " N; " " N

¹²⁾ " " K; " " K; " " K

Operating characteristics class B push-pull
Caractéristiques d'utilisation classe B push-pull
Betriebsdaten Klasse B Gegentakt

$V_f = 1,4 \text{ V}^5$; $I_f = 2 \times 100 \text{ mA}$: pins, broches, Stifte 5-(1+7)

V_a	=	120	108 ¹³⁾	V
V_{g2}	=	120	108	V
V_{g1}	=	-13,7	-12,2	V
R_{aa}	=	14	14	k Ω
V_i ($W_o = 50 \text{ mW}$)	=	$\overbrace{0 \quad 11}^{2,4}$	$\overbrace{0 \quad 10}^{2,5}$	V_{eff}
V_i	=	$\overbrace{0 \quad 11}^{2,4}$	$\overbrace{0 \quad 10}^{2,5}$	V_{eff}
I_a	=	$2 \times 1,5$ 2×9	$2 \times 1,5$ 2×8	mA
I_{g2}	=	$2 \times 0,32$ $2 \times 3,1$	$2 \times 0,32$ $2 \times 2,6$	mA
W_o	=	0 1200	0 900	mW
d	=	- 5	- 5	%

V_a	=	150 ¹⁴⁾	V
V_{g2}	=	150	V
V_{g1}	=	-17,4	V
R_{aa}	=	12	k Ω
V_i ($W_o = 50 \text{ mW}$)	=	$\overbrace{0 \quad 13,3}^{2,3}$	V_{eff}
V_i	=	$\overbrace{0 \quad 13,3}^{2,3}$	V_{eff}
I_a	=	$2 \times 2,0$	$2 \times 12,5 \text{ mA}$
I_{g2}	=	$2 \times 0,42$	$2 \times 4,4 \text{ mA}$
W_o	=	0	2150 mW
d	=	-	4,5 %

⁵⁾ See page 10; voir page 10; siehe Seite 10

¹³⁾ " " 0; " " 0; " " 0

¹⁴⁾ " " R; " " R; " " R

Operating characteristics class AB push-pull
 Caractéristiques d'utilisation classe AB push-pull
 Betriebsdaten Klasse AB Gegentakt

$V_f = 1,4 \text{ V}^{15}$; $I_f = 2 \times 100 \text{ mA}$; pins, broches, Stifte 5-(7+1)

V_{ba}	=	120 ¹³⁾	V
V_{bg2}	=	120	V
R_k	=	470	$\Omega^{15)}$
R_{aa}	=	14	k Ω
V_i ($W_o = 50$ mW)	=	1,2	V_{eff}
V_i	=	0 9,9	V_{eff}
I_a	=	2x5,7 2x7,65	mA
I_{g2}	=	2x1,25 2x2,9	mA
W_o	=	0 900	mW
d	=	- 5	%

Operating characteristics class A
 Caractéristiques d'utilisation classe A
 Betriebsdaten Klasse A

$V_f = 2,8 \text{ V}^{13)}$; $I_f = 50 \text{ mA}$; pins, broches, Stifte 1-7

V_a	=	90	86 ¹⁶⁾	120	113 ¹⁷⁾	V
V_{g2}	=	90	86	120	113	V
V_{g1}	=	-4,2	-4,3	-8,1	-7,2	V
I_a	=	8,0	7,0	9,0	9,0	mA
I_{g2}	=	1,7	1,5	1,8	1,8	mA
S	=	2,0	1,9	2,0	2,0	mA/V
μ_{g2g1}	=	7,3	7,3	7,3	7,3	
R_i	=	120	120	120	120	k Ω
R_a	=	10	10	10	10	k Ω
W_o (d = 10%)	=	280	250	500	420	mW
V_i (d = 10%)	=	3,8	3,7	4,8	4,4	V_{eff}
W_o ($I_{g1} = +0,3 \mu A$)	=	290	270	620	525	mW
V_i ($I_{g1} = +0,3 \mu A$)	=	4,0	4,0	6,6	6,1	V_{eff}
d ($I_{g1} = +0,3 \mu A$)	=	12	11,5	17	16	%
V_i ($W_o = 50 \text{ mW}$)	=	1,35	1,40	1,35	1,35	V_{eff}

3), 5), 15) See page 10; voir page 10; siehe Seite 10

13)	"	"	0;	"	"	0;	"	"	0
16)	"	"	U;	"	"	U;	"	"	U
17)	"	"	Y;	"	"	Y;	"	"	Y

Operating characteristics class A push-pull
Caractéristiques d'utilisation classe A push-pull
Betriebsdaten Klasse A Gegentakt

$$V_f = 2,8 \text{ V}^{6)}; I_f = 2 \times 50 \text{ mA}; \text{pins, broches, Stifte 1-7}$$

V_a	=	90	85 ¹⁶⁾	120	113 ¹⁷⁾ V
V_{g2}	=	90	85	120	113 V
V_{g1}	=	-5,2	-4,8	-8,2	-7,2 V
I_a	=	2x6	2x5,5	2x8	2x8 mA
I_{g2}	=	2x1,3	2x1,2	2x1,8	2x1,8 mA
R_{aa}	=	16	16	14	14 k Ω
V_i	=	4,8	4,3	6,9	6,0 V_{eff}
W_o	=	550	500	1200	1000 mW
d	=	10	10	10	10 %
$V_i (W_o = 50 \text{ mW})$	=	1,1	1,1	1,05	1,05 V_{eff}

Operating characteristics class B push-pull
Caractéristiques d'utilisation classe B push-pull
Betriebsdaten Klasse B Gegentakt

$V_f = 2,8 \text{ V}^{6)}$	$I_f = 2 \times 50 \text{ mA}$	pins, broches, Stifte 1-7	
V_a	= 90	82 ¹⁸⁾	V
V_{g2}	= 90	82	V
V_{g1}	= -8,8	-7,6	V
R_{aa}	= 14	14	k Ω
$V_i (W_o = 50 \text{ mW})$	= 2,25	2,3	V_{eff}
V_i	= $\underbrace{\quad 0 \quad 7,6 \quad}$	$\underbrace{\quad 0 \quad 6,4 \quad}$	V_{eff}
I_a	= 2x1,5 2x5,75	2x1,5 2x5,25	mA
I_{g2}	= 2x0,32 2x1,7	2x0,32 2x1,5	mA
W_o	= 0 530	0 420	mW
d	= - 4	-	3,5 %

⁶⁾ See page 10; voir page 10; siehe Seite 10
¹⁶⁾ " " U; " " U; " " U
¹⁷⁾ " " Y; " " Y; " " Y
¹⁸⁾ " " V; " " V; " " V

Operating characteristics class B push-pull
 Caractéristiques d'utilisation classe B push-pull
 Betriebsdaten Klasse B Gegentakt

$V_f = 2,8 V^6$; $I_f = 2 \times 50 \text{ mA}$; pins, broches, Stifte 1-7

V_a	=	120	108 ¹⁹⁾	V
V_{g2}	=	120	108	V
V_{g1}	=	-13	-11	V
R_{aa}	=	14	14	k Ω
V_i ($W_o = 50 \text{ mW}$)	=	$\overbrace{2,4}^{0 \quad 10}$	$\overbrace{2,4}^{0 \quad 9}$	V_{eff}
I_a	=	$2 \times 1,5$	$2 \times 8,5$	$2 \times 1,5$
		$2 \times 7,5$	mA	
I_{g2}	=	$2 \times 0,32$	$2 \times 3,0$	$2 \times 0,32$
		$2 \times 2,4$	mA	
W_o	=	0	1100	0
		850	mW	
d	=	-	6	-
		4	%	

V_a	=	150 ²⁰⁾	V
V_{g2}	=	150	V
V_{g1}	=	-16,8	V
R_{aa}	=	14	k Ω
V_i ($W_o = 50$ mW)	=	2,4	V_{eff}
V_i	=	$\overbrace{0 \quad 13}$	V_{eff}
I_a	=	2x2,0 2x11,5	mA
I_{g2}	=	2x0,47 2x4,3	mA
W_o	=	0 2000	mW
d	=	- 4,5	%

⁶⁾ See page 10; voir page 10; siehe Seite 10

¹⁹⁾ " " Z; " " Z; " " Z

²⁰⁾ " " AC; " " AC; " " AC

Operating characteristics class AB push-pull
 Caractéristiques d'utilisation classe AB push-pull
 Betriebsdaten Klasse AB Gegentakt

$V_f = 2,8 V^6$; $I_f = 2 \times 50 \text{ mA}$; pins, broches, Stifte 1-7

V_{ba}	=	120 ¹⁹⁾	V
V_{bg2}	=	120	V
R_k	=	470	$\Omega^{15)}$
$R_{aa\sim}$	=	14	k Ω
$V_i(W_o = 50\text{mW})$	=	1,3	V_{eff}
V_1	=	0	9,7 V_{eff}
I_a	=	$2 \times 5,3$	$2 \times 7,5 \text{ mA}$
I_{g2}	=	$2 \times 1,1$	$2 \times 2,6 \text{ mA}$
W_o	=	0	850 mW
dt_{tot}	=	-	5 %

Limiting values
 Caractéristiques limites
 Grenzdaten

V_a	= max.	150 V
$V_a (V_i = 0 \text{ V})$	= max.	180 V
V_a	= max.	200 V ²¹⁾
W_a	= max.	1,2 W
V_{g2}	= max.	150 V
$V_{g2}(V_i = 0 \text{ V})$	= max.	180 V
V_{g2}	= max.	200 V ²¹⁾
W_{g2}	= max.	0,45 W
I_k	= max.	6 mA ¹⁾
I_k	= max.	12 mA ²⁾
I_k	= max.	11 mA ³⁾
R_{g1}	= max.	1 M Ω
$V_{g1}(I_{g1}=+0,3\mu\text{A})$	= max.	0 V

1)2)3)6)15) See page 10; voir page 10; siehe Seite 10
 19) See page Z; voir page Z; siehe Seite Z
 21) With tube cold; avec tube froid; bei kalter Röhre

- 1) One filament section
Une partie du filament
Ein Glühfadenteil
- 2) Two filament sections in parallel
Deux parties du filament connectées en parallèle
Zwei Glühfadenteile parallelgeschaltet
- 3) Two filament sections in series
Deux parties du filament connectées en série
Zwei Glühfadenteile in Serie
- 4) One filament section of each valve.
Filaments of both valves in parallel.

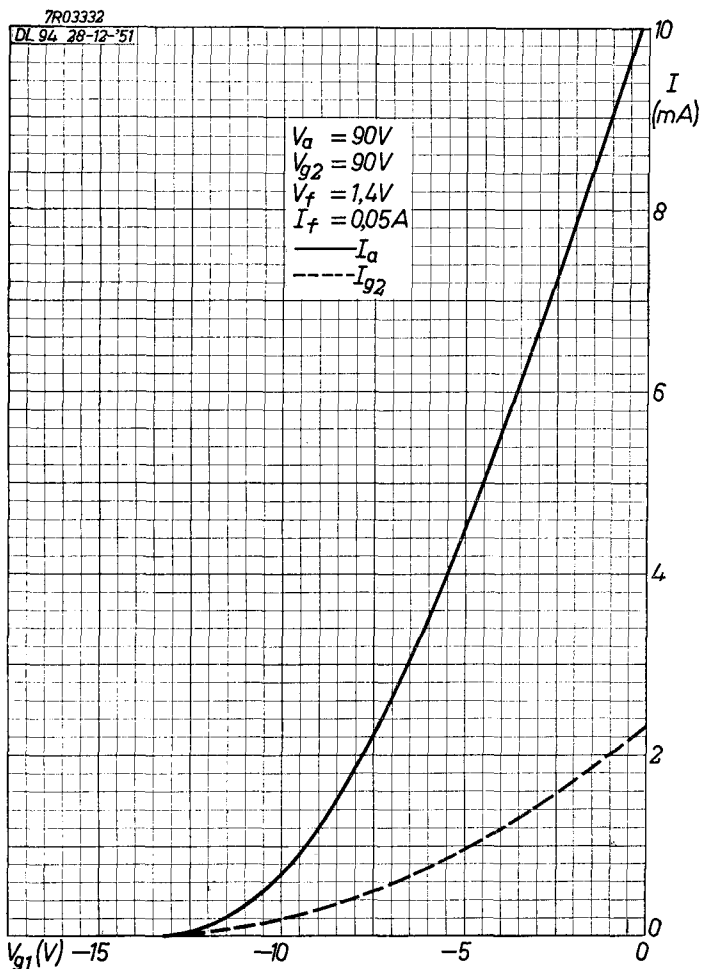
Une partie du filament de chaque tube. Les filaments des deux tubes connectés en parallèle.
Ein Glühfadenteil jeder Röhre.
Die Glühfäden beider Röhren parallelgeschaltet.
- 5) Four filament sections in parallel.
Les quatre parties des filaments connectées en parallèle
Vier Glühfadenteile parallelgeschaltet.
- 6) Two filament sections of each valve in series.
Filaments of both valves in parallel.

Deux parties du filament de chaque tube connectées en série. Filaments des deux tubes connectés en parallèle.

Zwei Glühfadenteile beider Röhren in Serie.
Die Glühfäden beider Röhren parallelgeschaltet.
- 15) R_k is taken up in the negative lead of the H.T. supply. It is assumed that an additional current of 5 mA from the valves preceding the push-pull stage also flows through R_k .

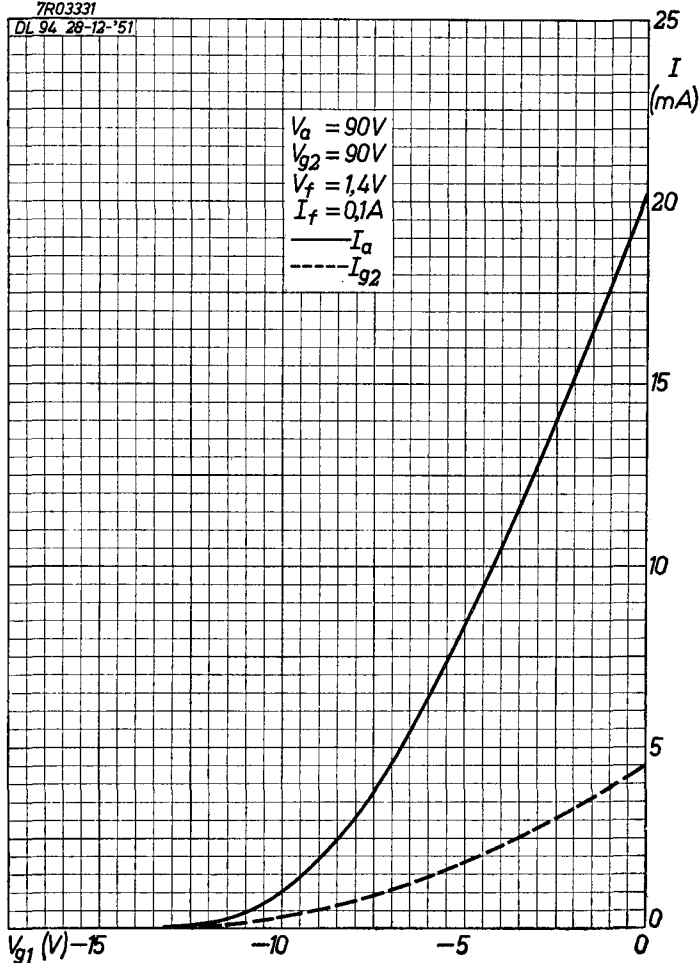
 R_k est connecté dans le conducteur négatif de l'alimentation haute tension. Il est supposé qu'un courant additionnel de 5 mA des tubes précédents l'étage finale traverse cette même résistance.

 R_k ist in der negativen Leitung der Hochspannungsspeisung geschaltet. Es wird angenommen dass ein zusätzlicher Strom von 5 mA der der Endstufe vorangehenden Röhren durch diesen Widerstand fließt.



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$$V_a = 90V$$

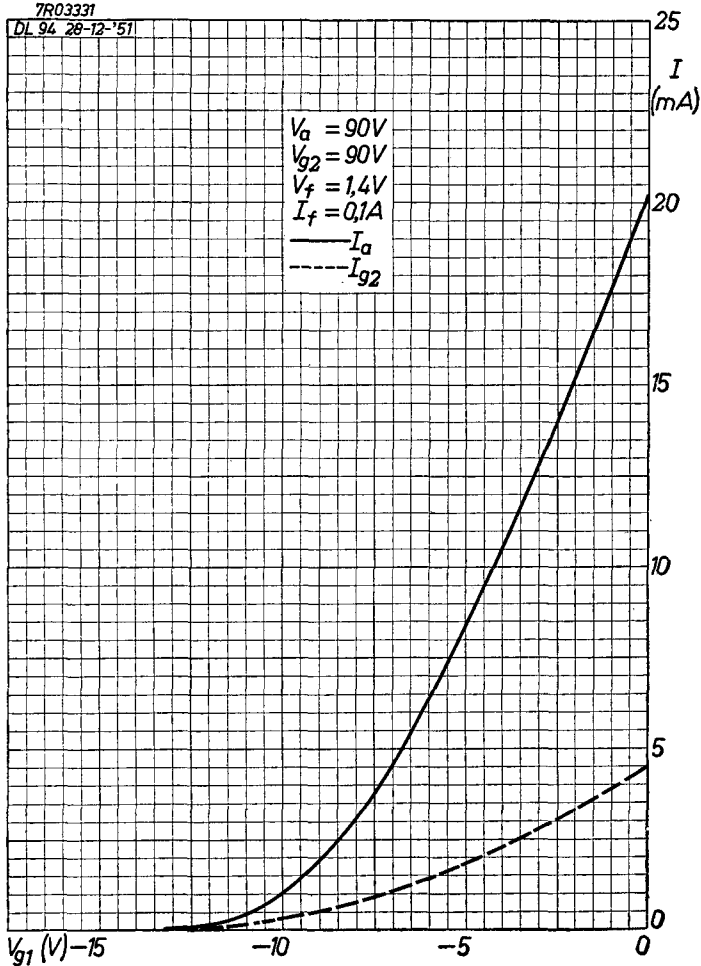
$$V_{g2} = 90V$$

$$V_f = 1,4V$$

$$I_f = 0,1A$$

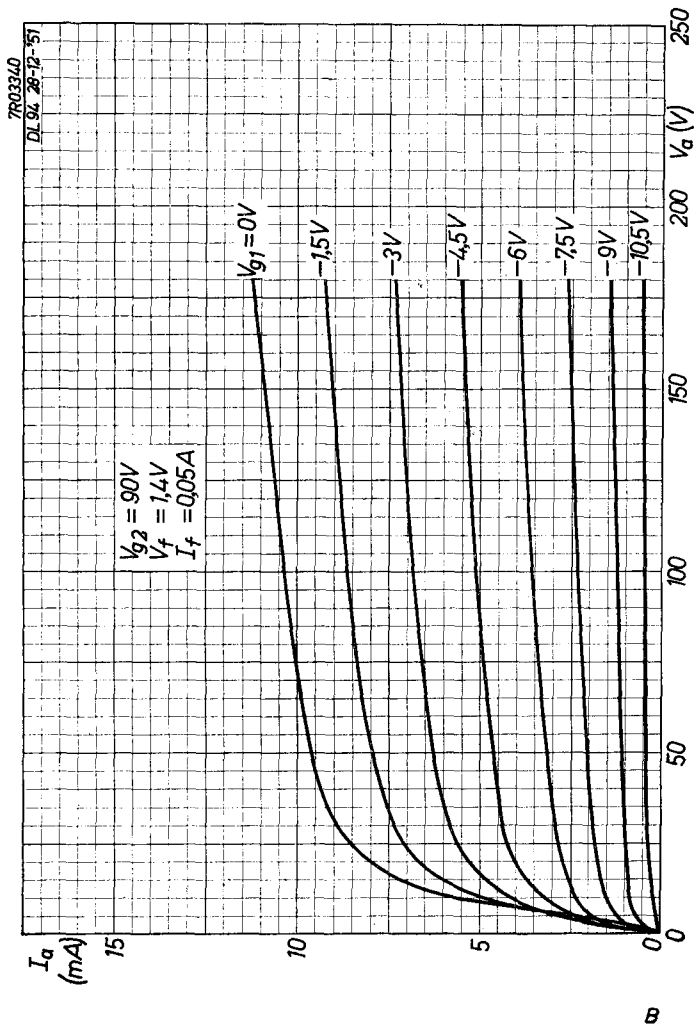
$$I_a$$

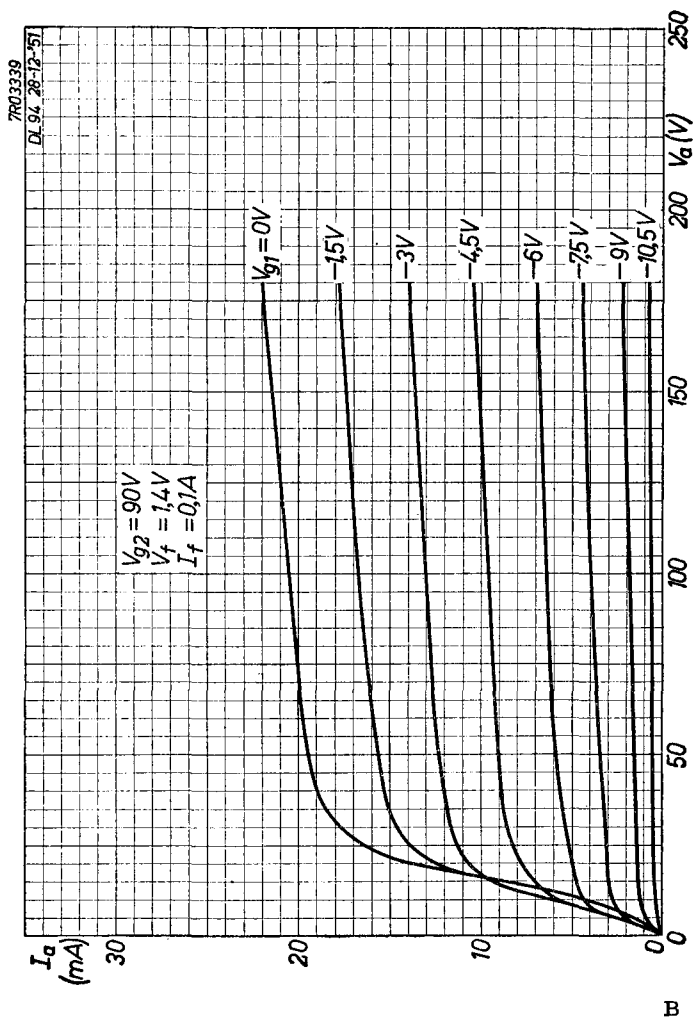
$$I_{g2}$$

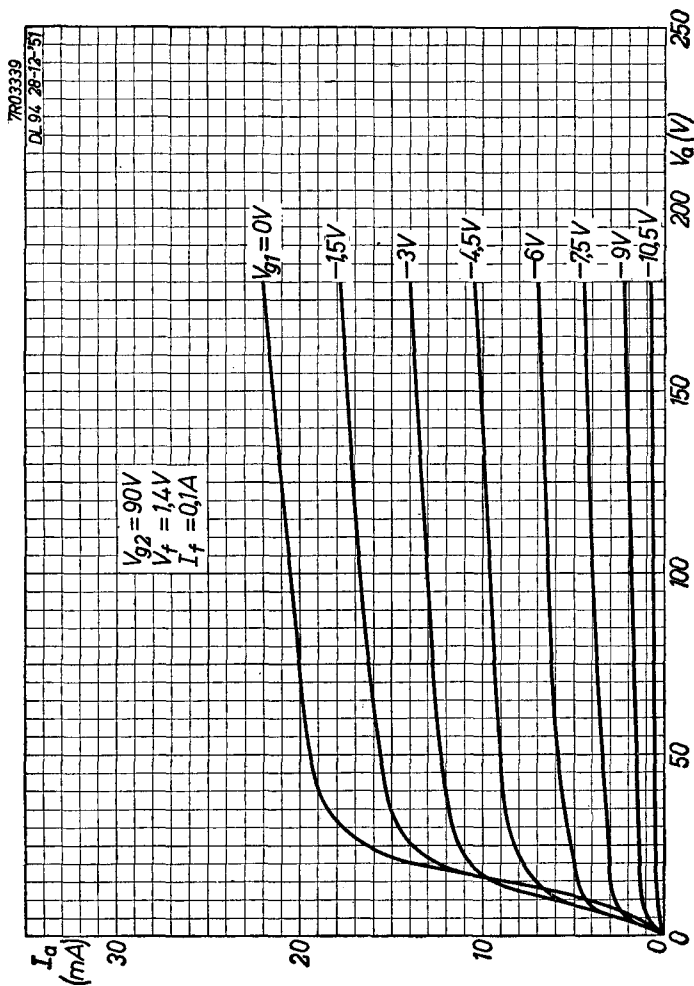
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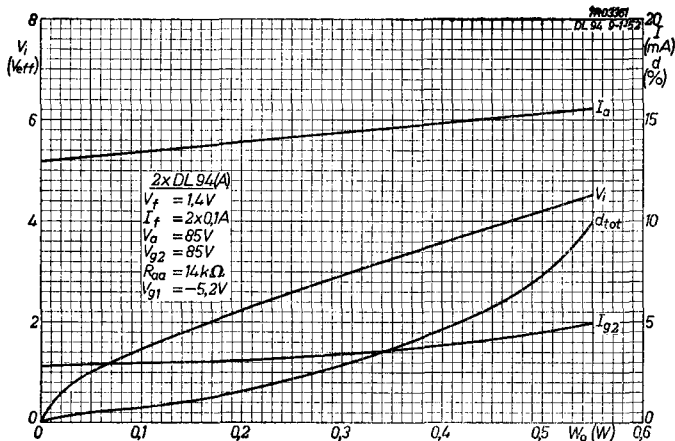
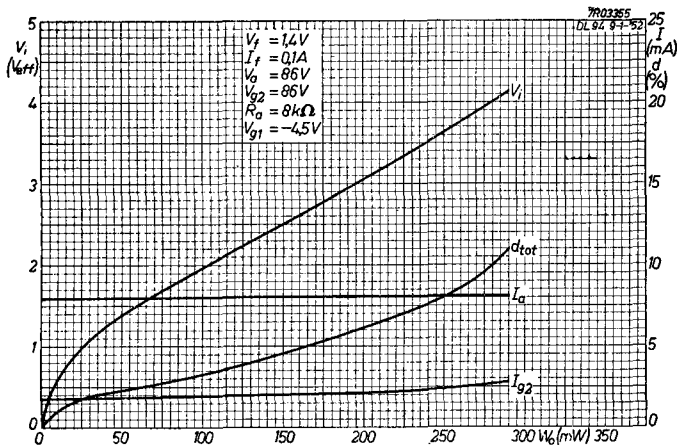


DL 94**PHILIPS**



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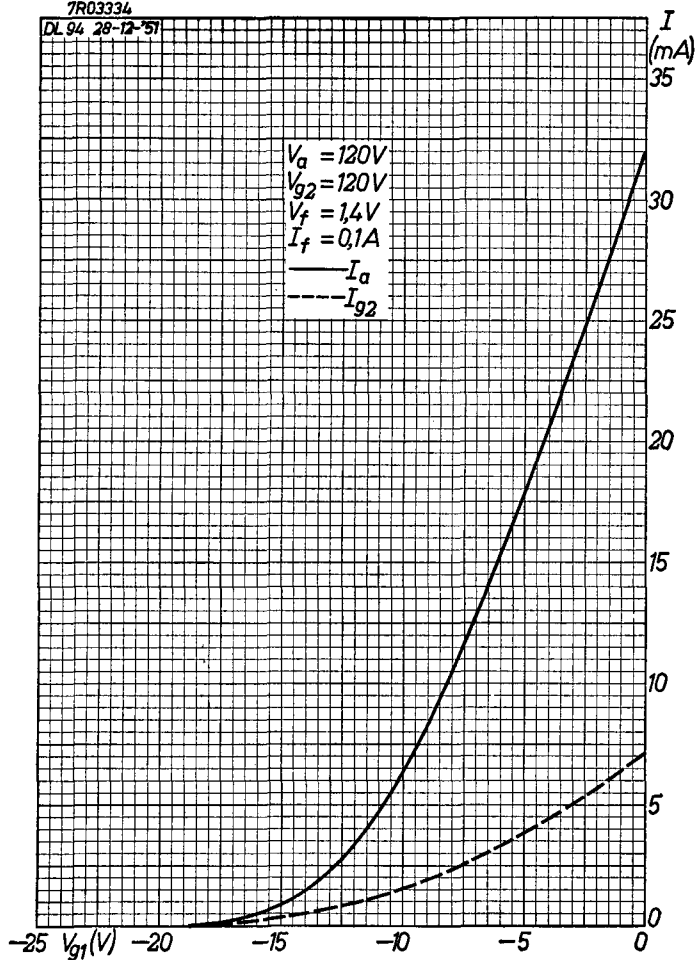
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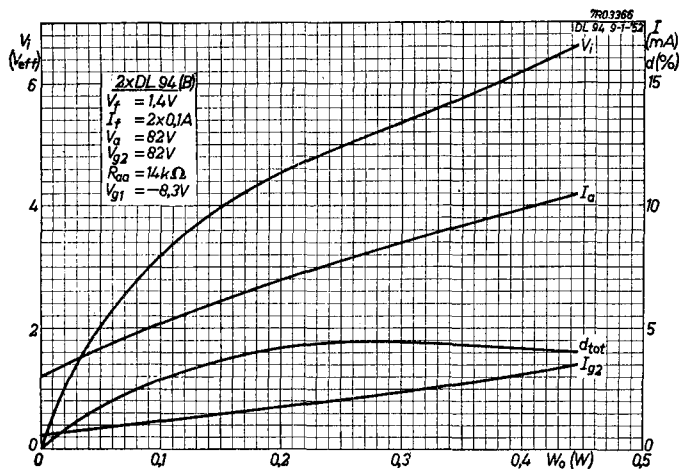
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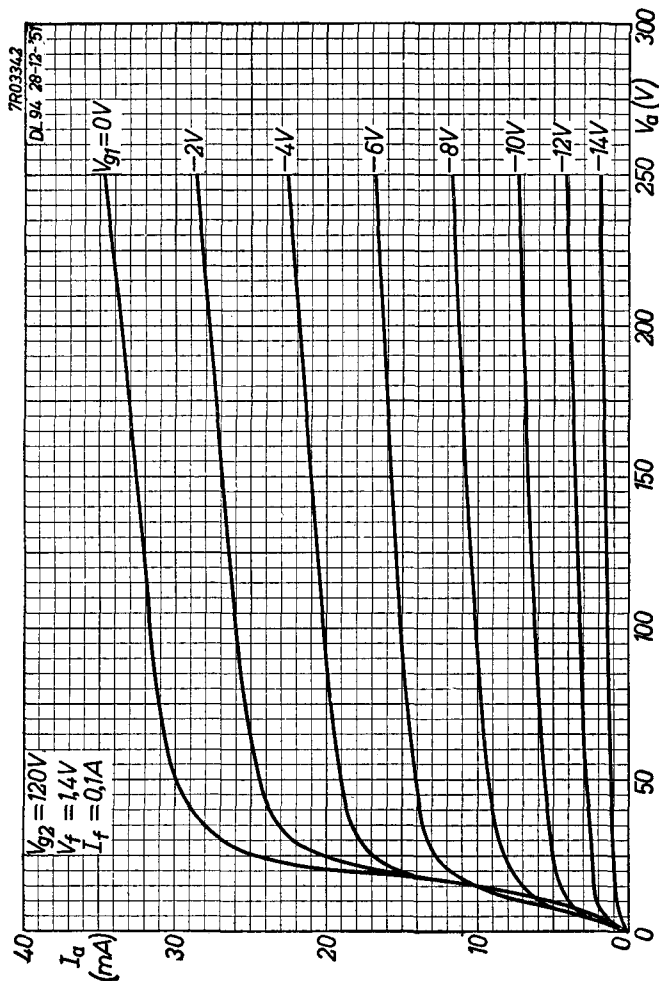
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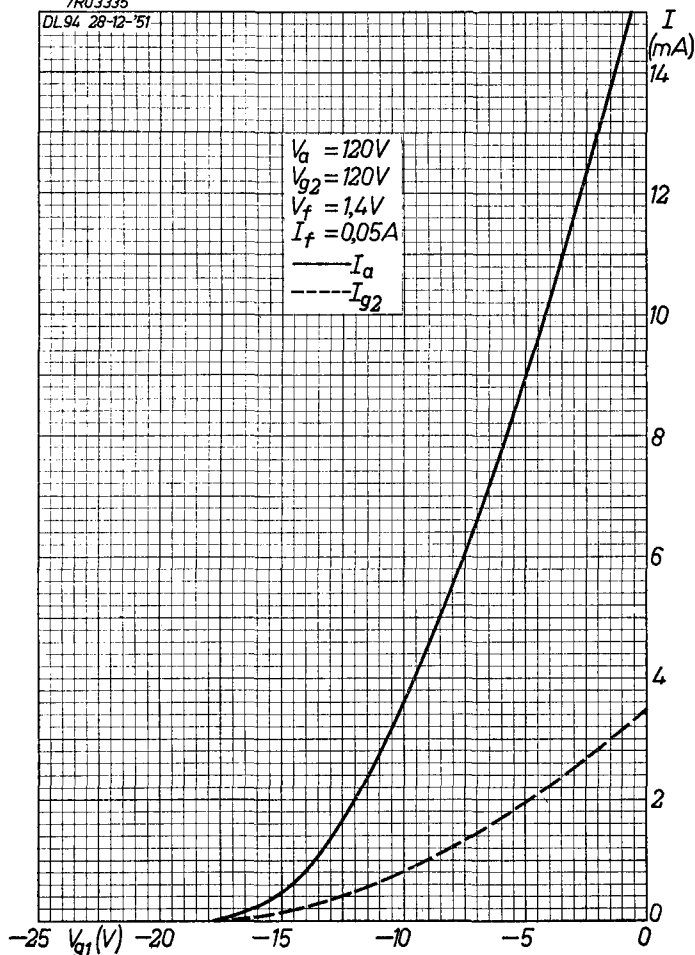
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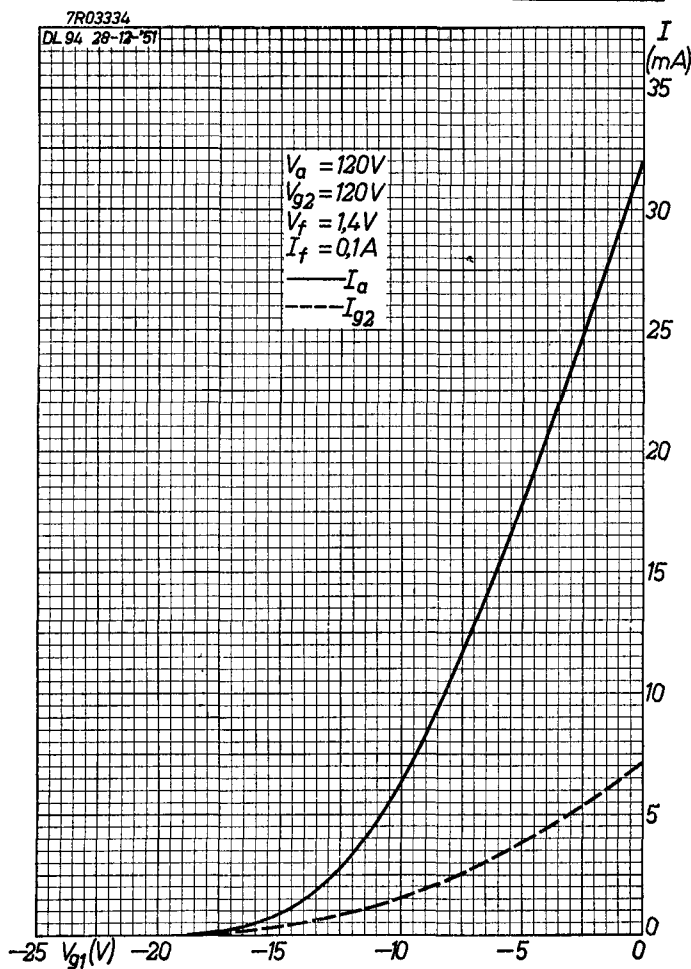
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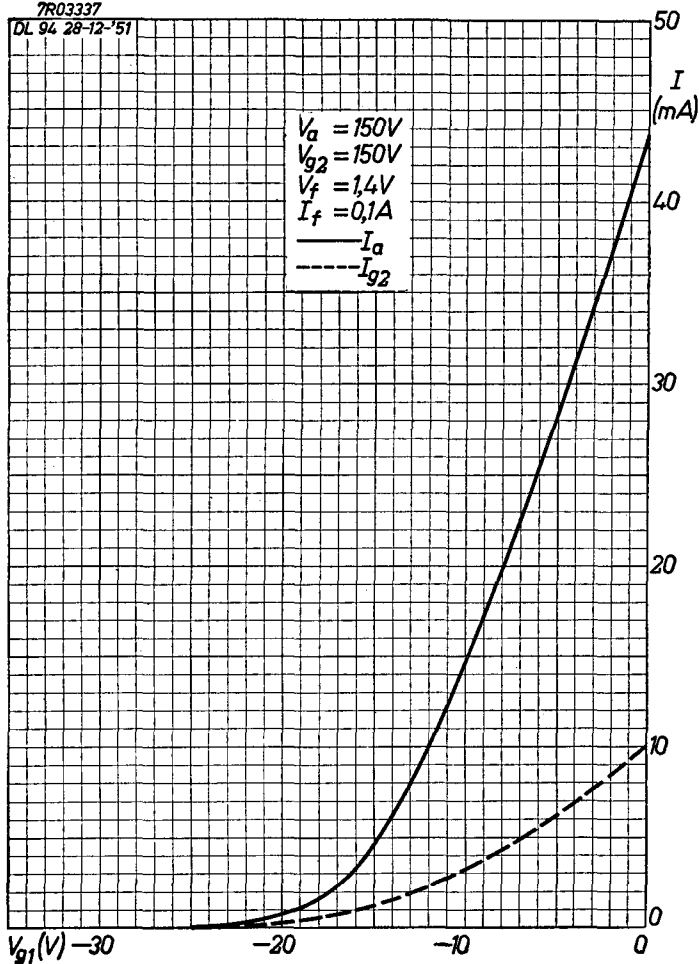




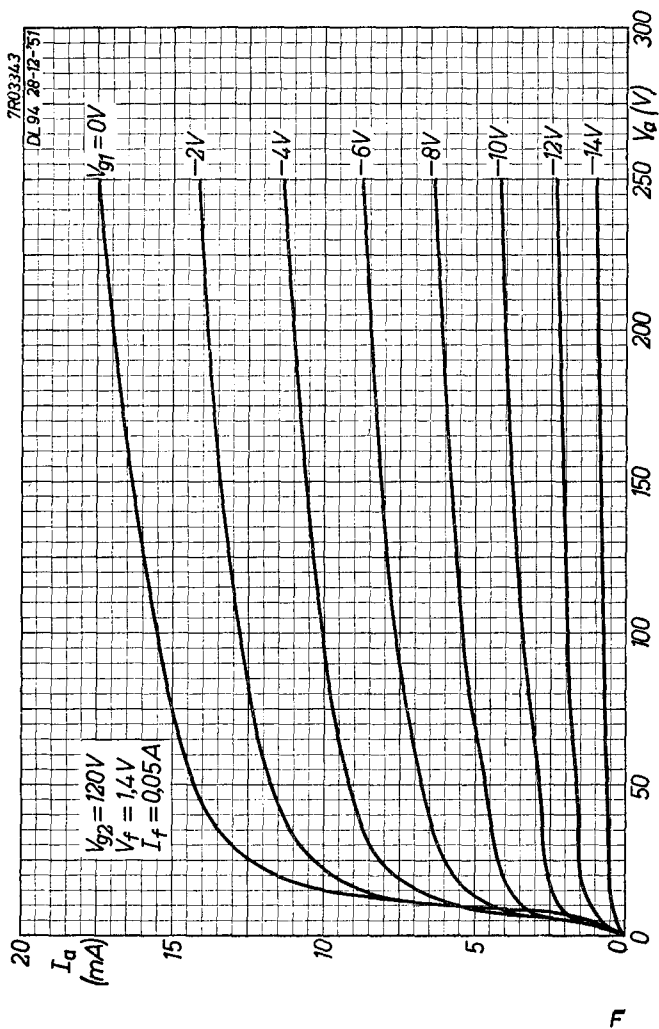
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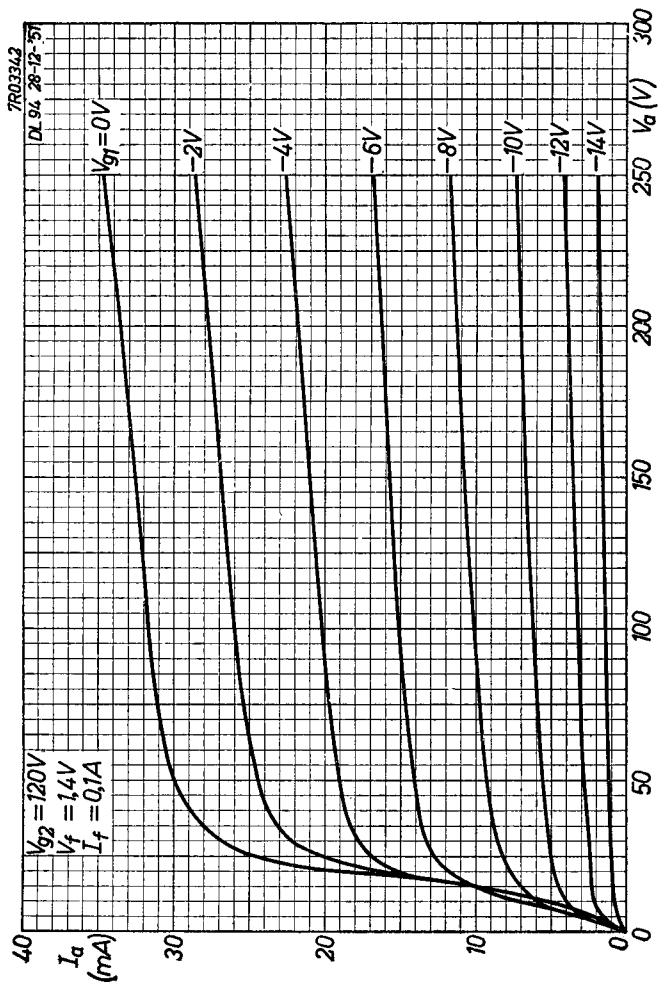
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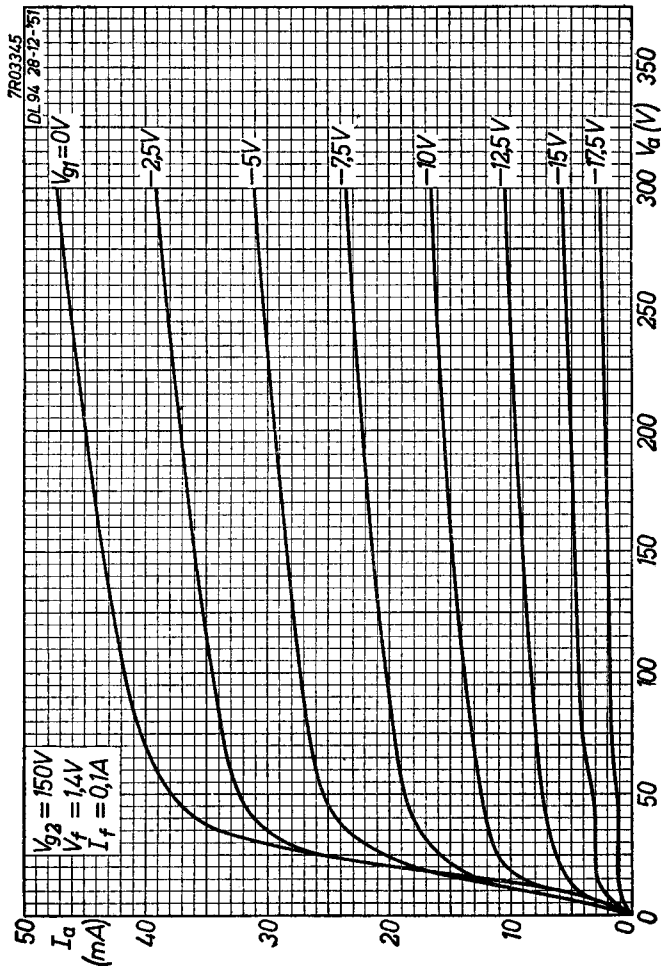
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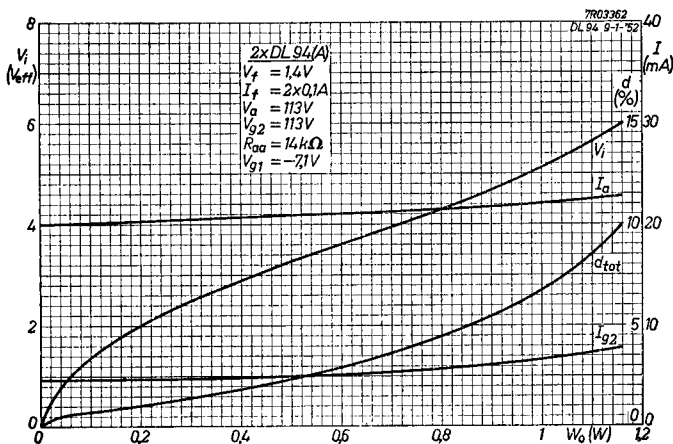
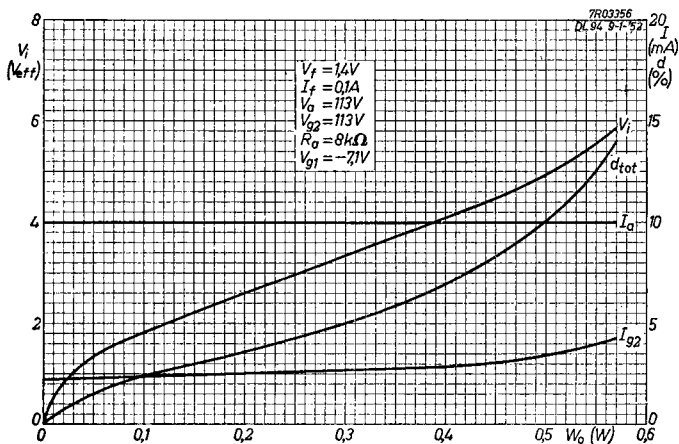
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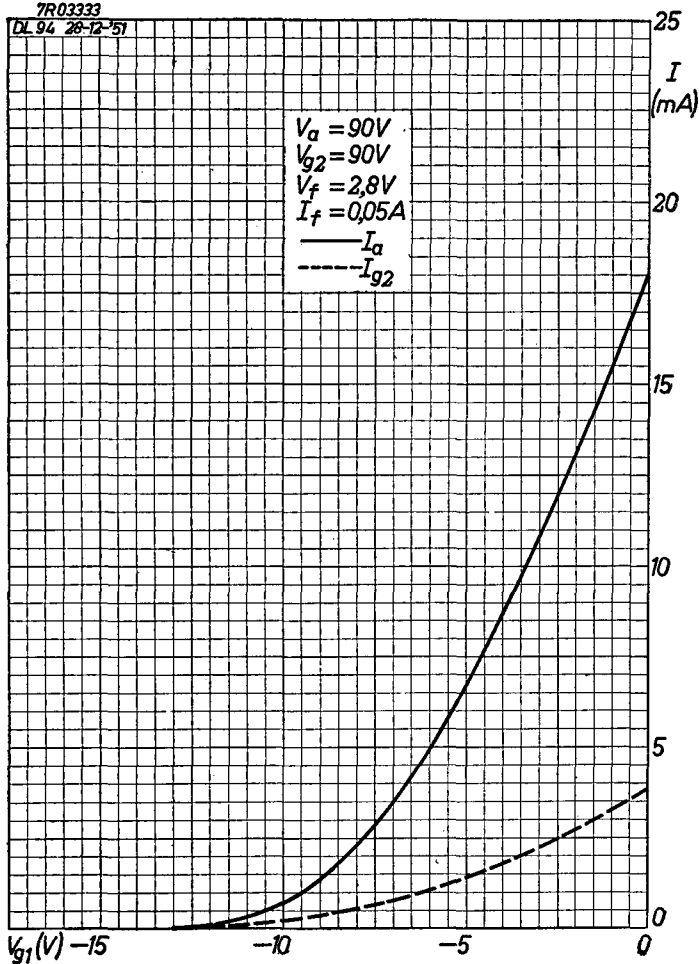
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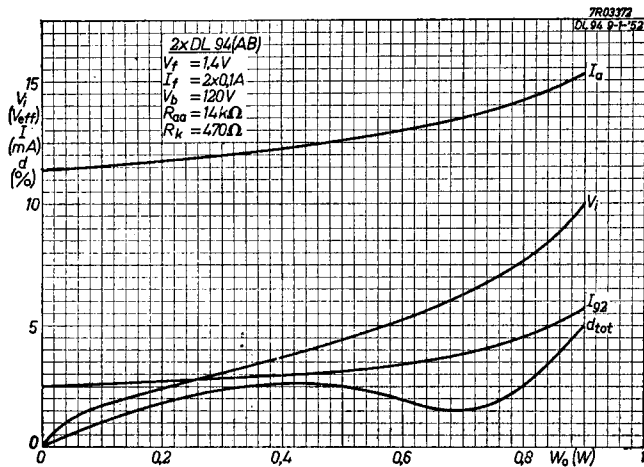
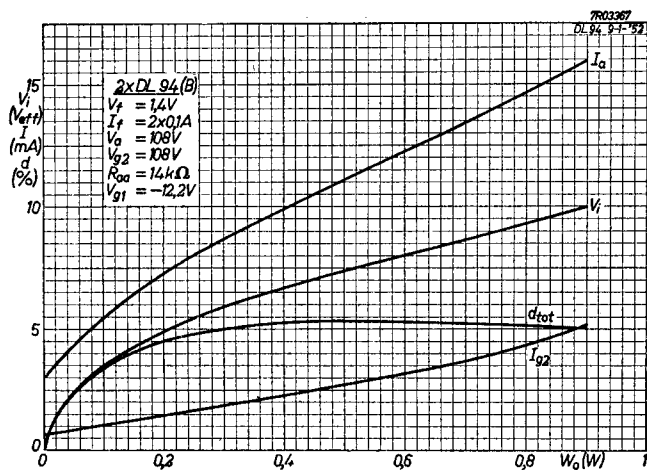
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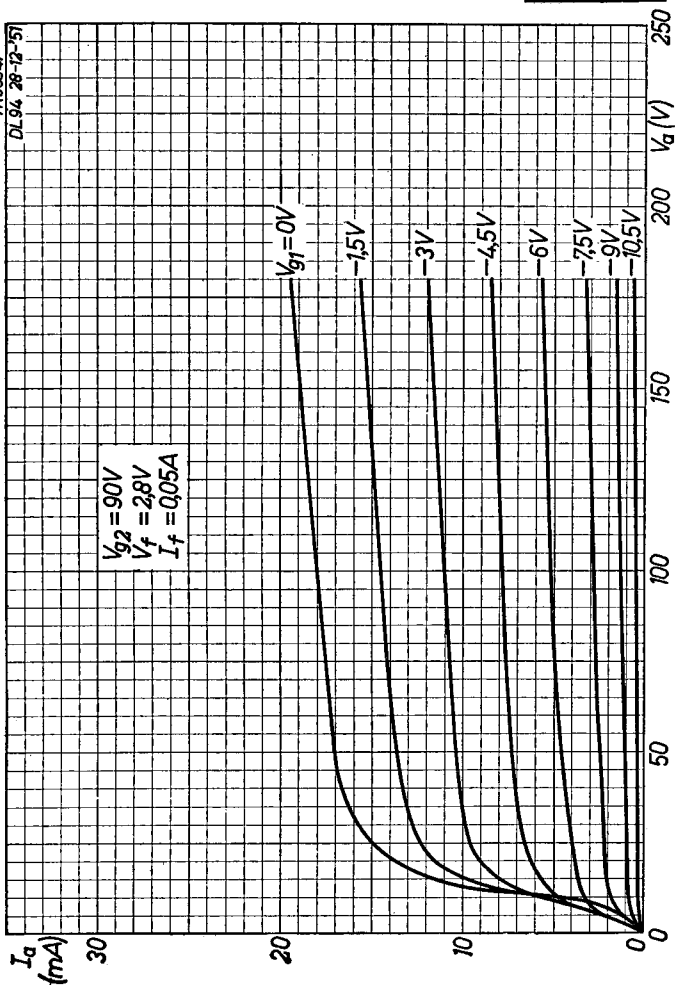


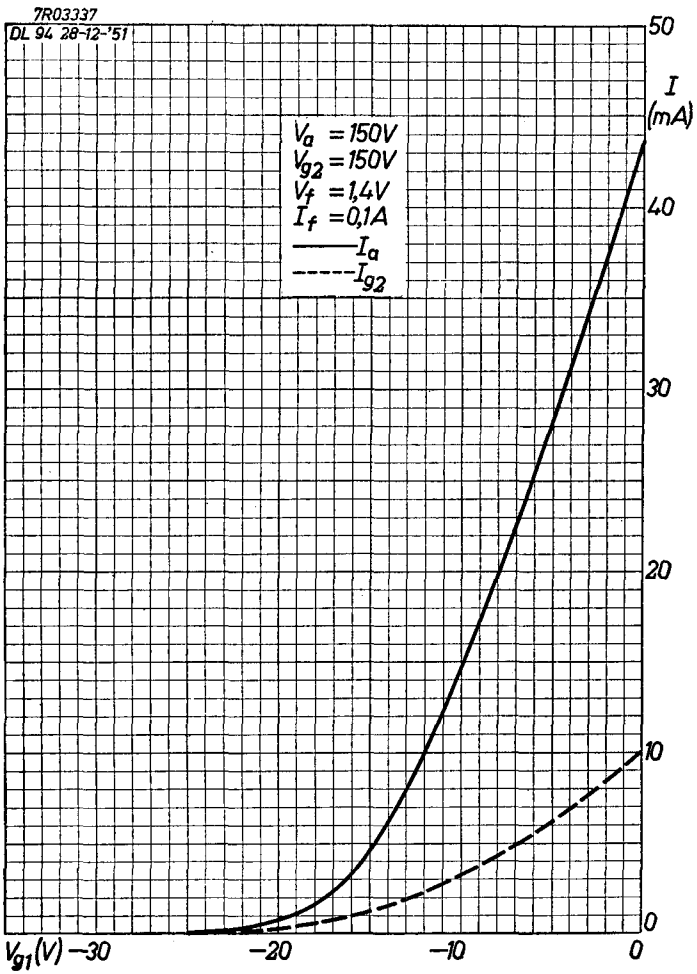
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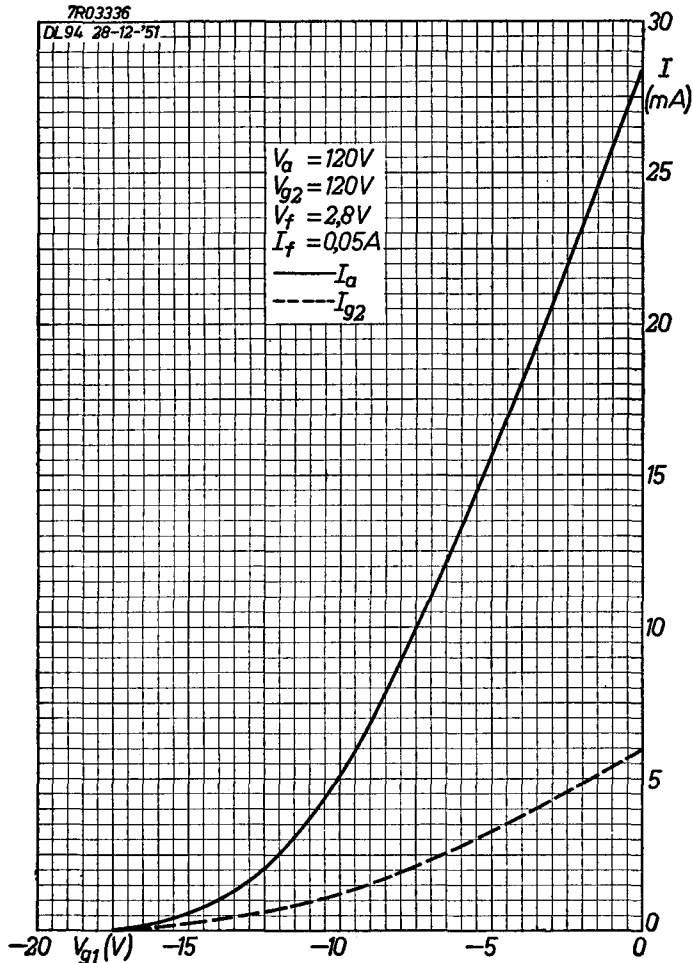


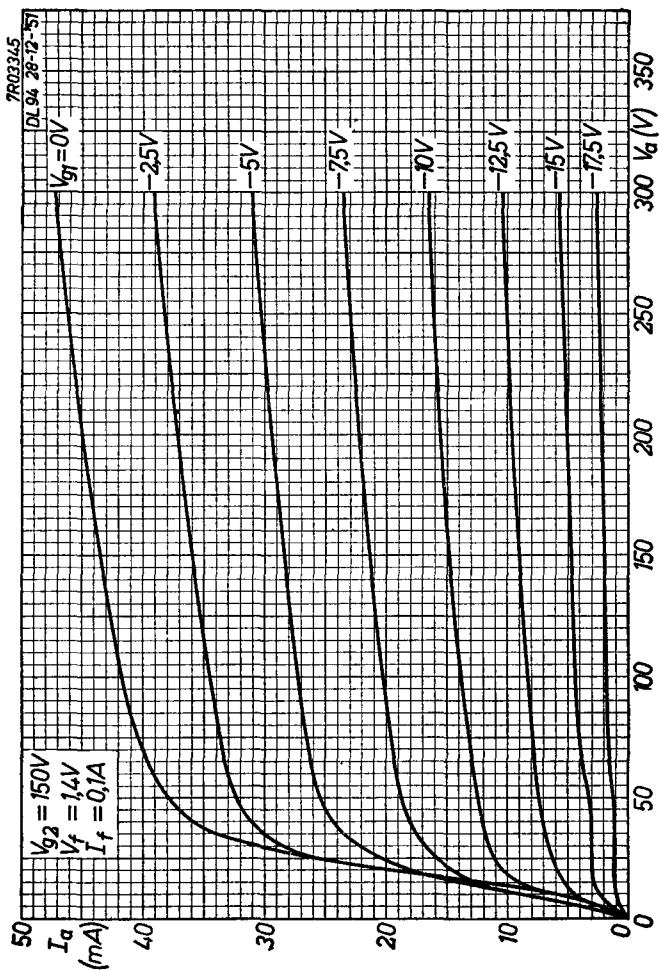


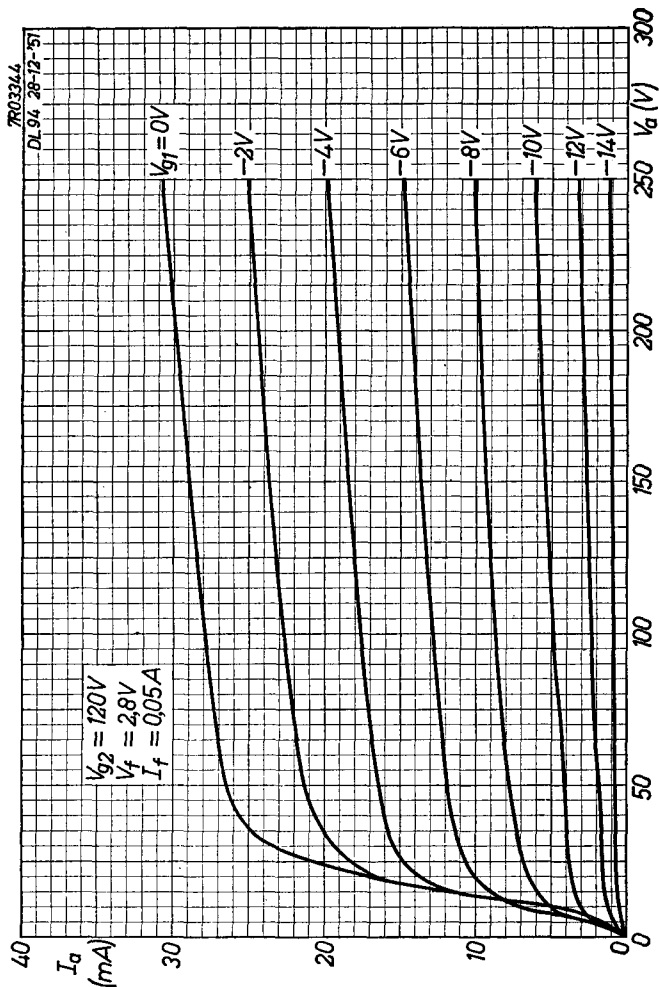
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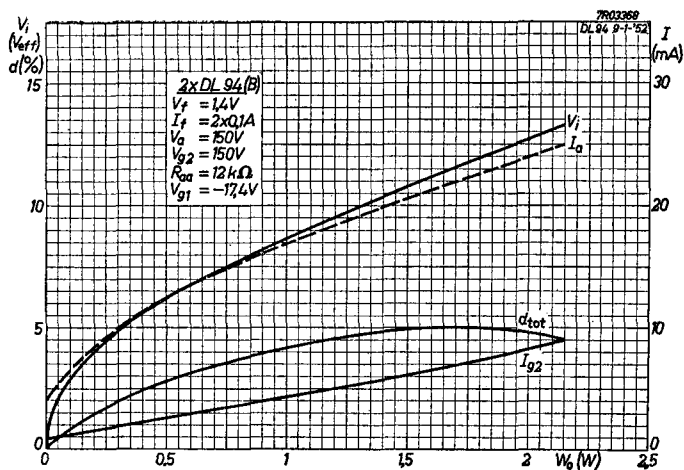
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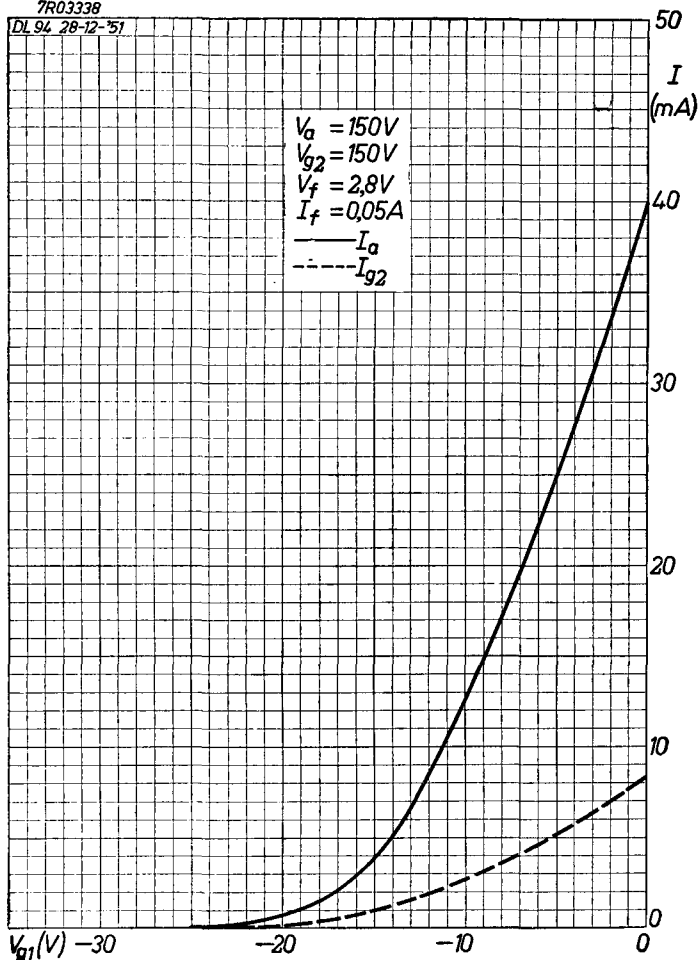




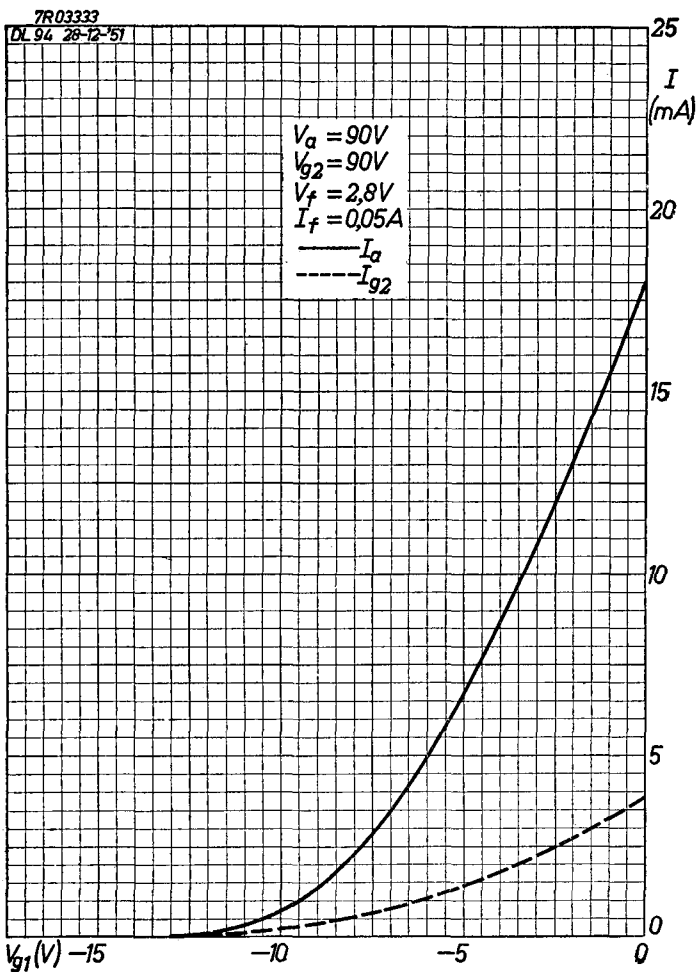
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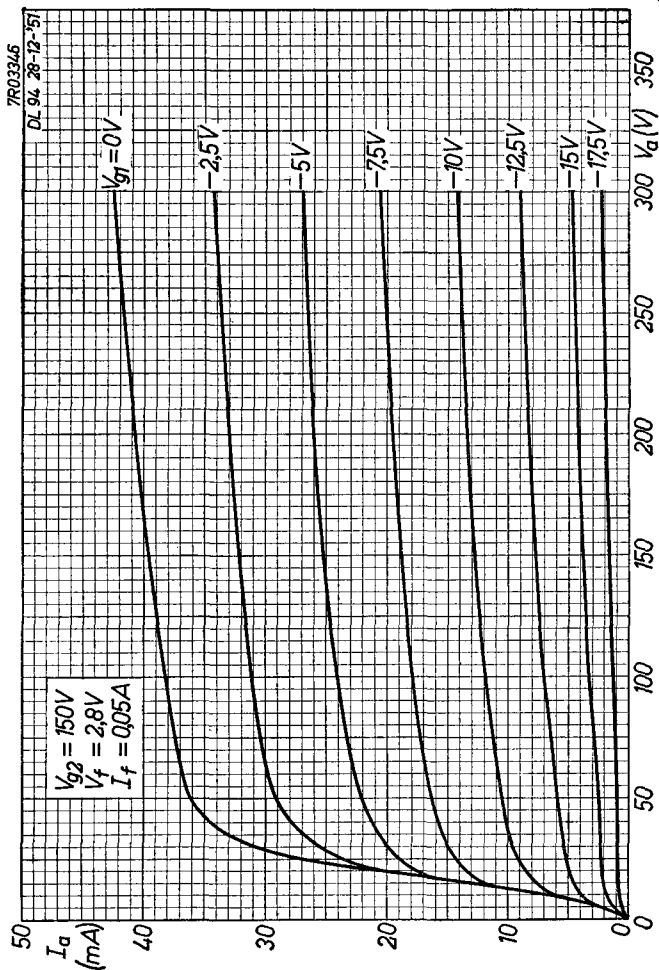
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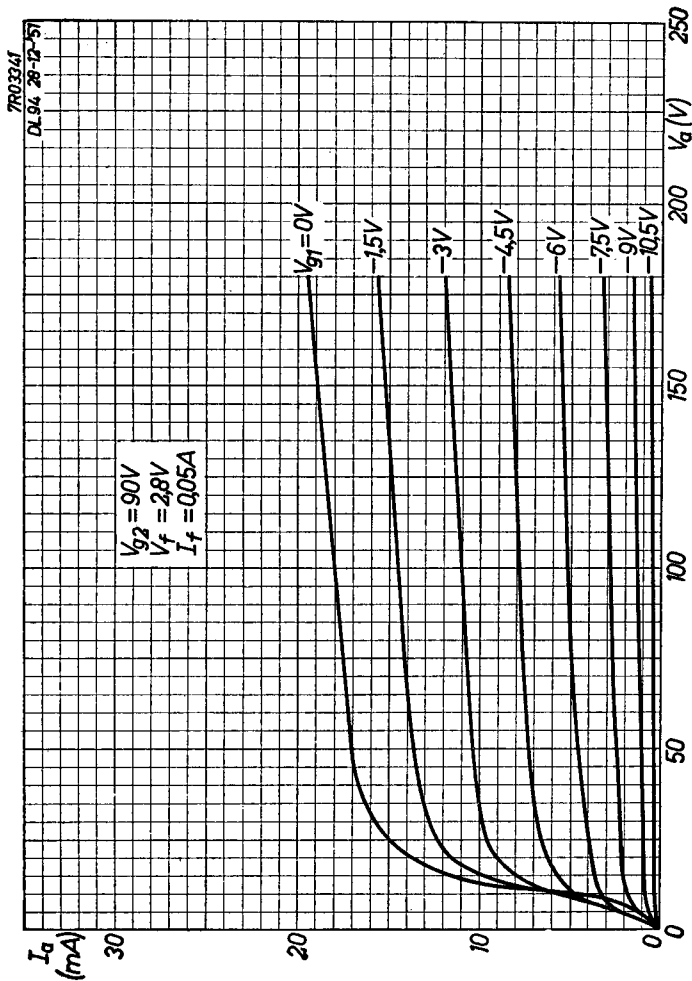
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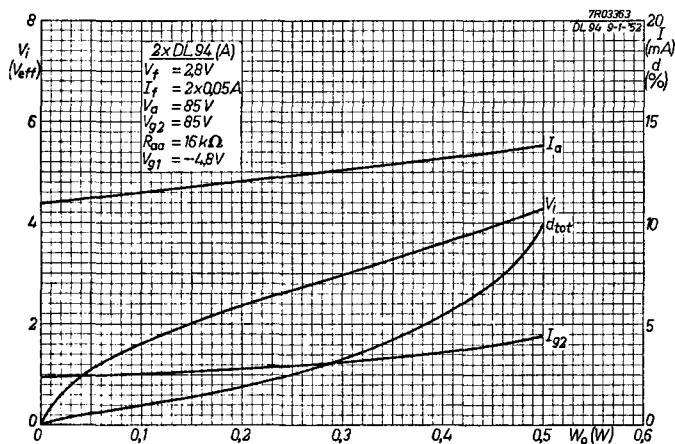
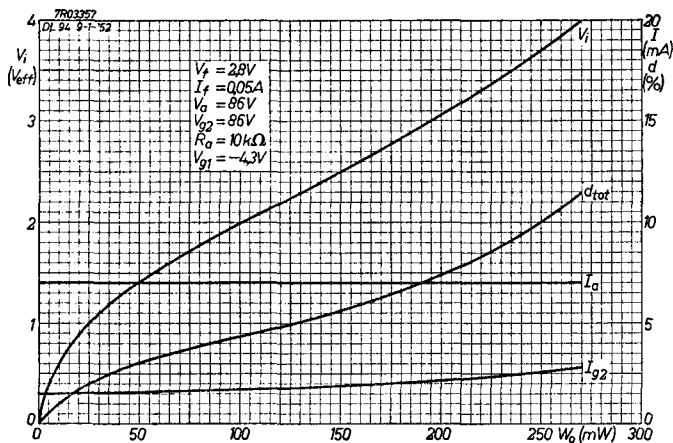


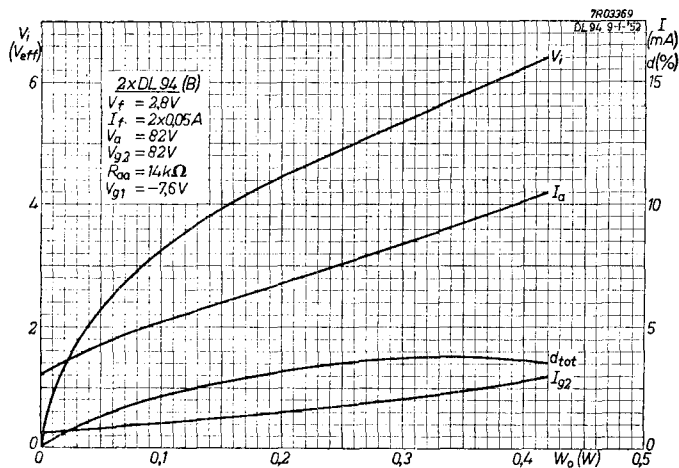
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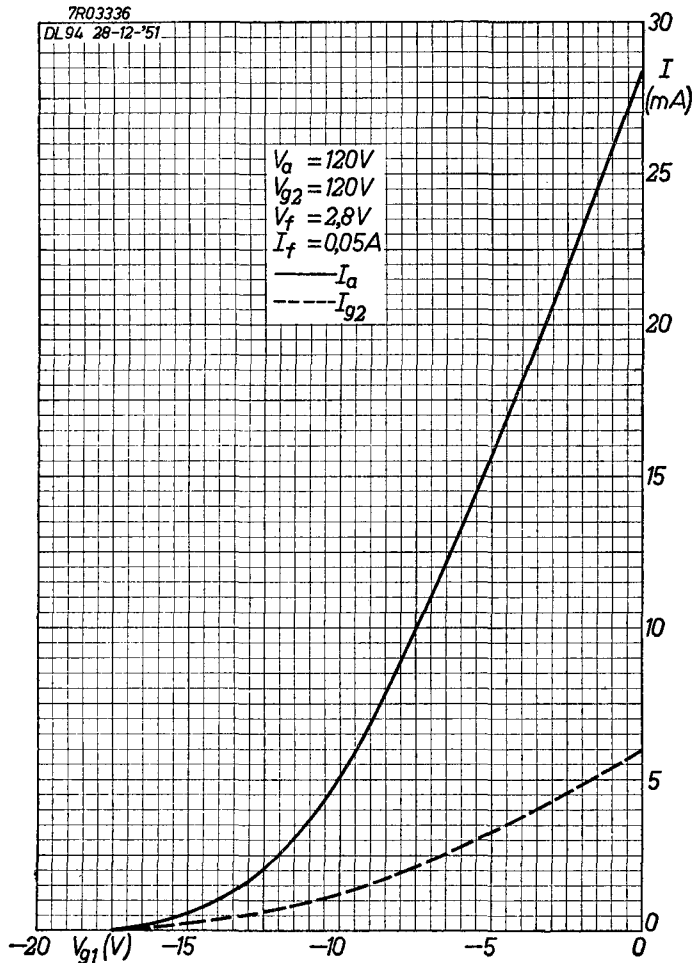
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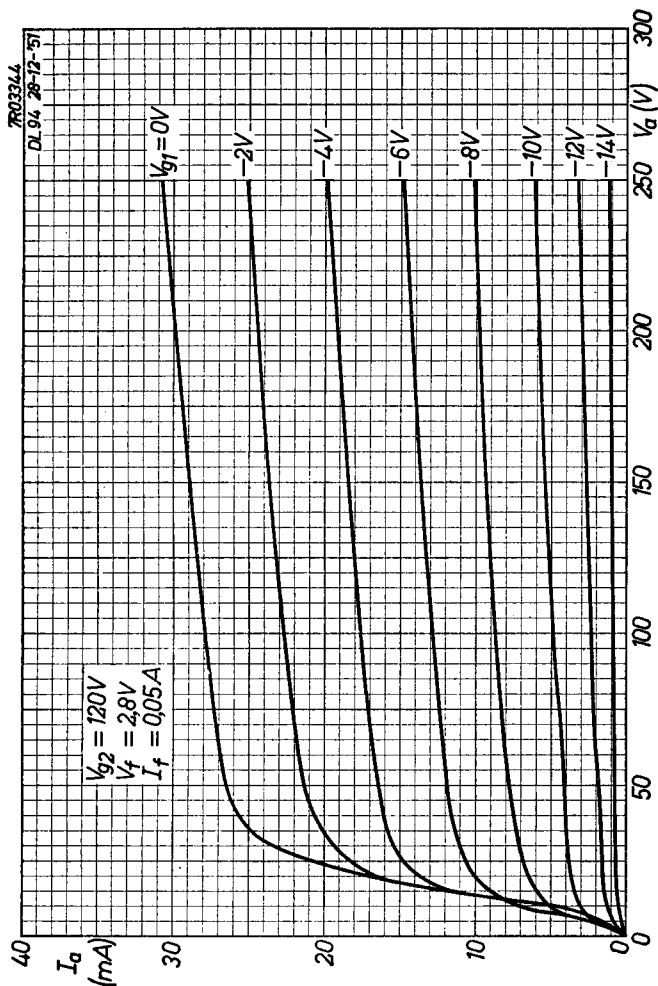


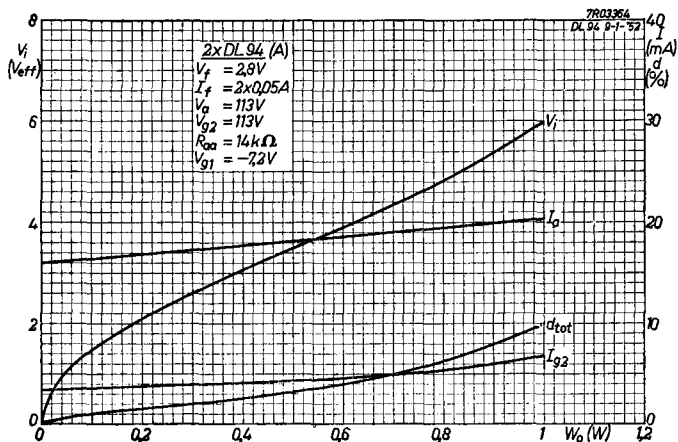
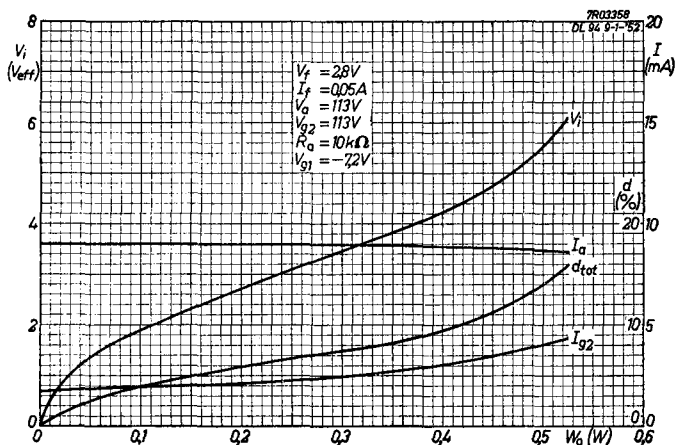
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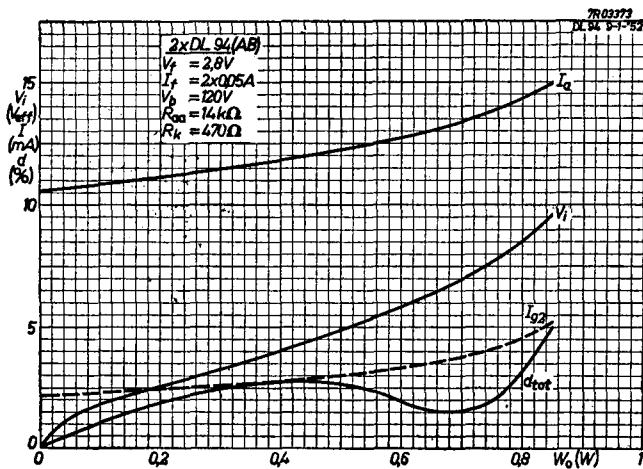
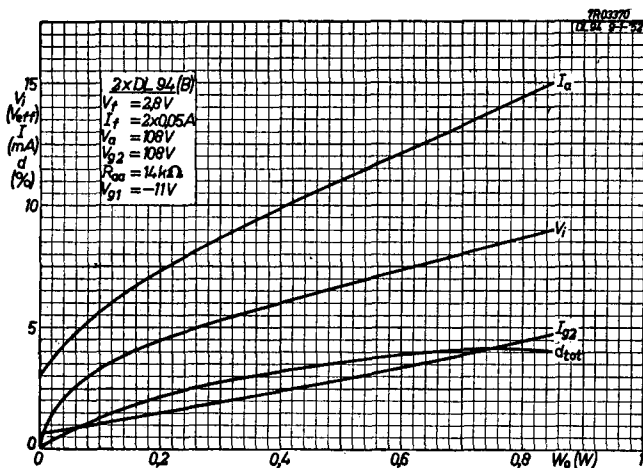




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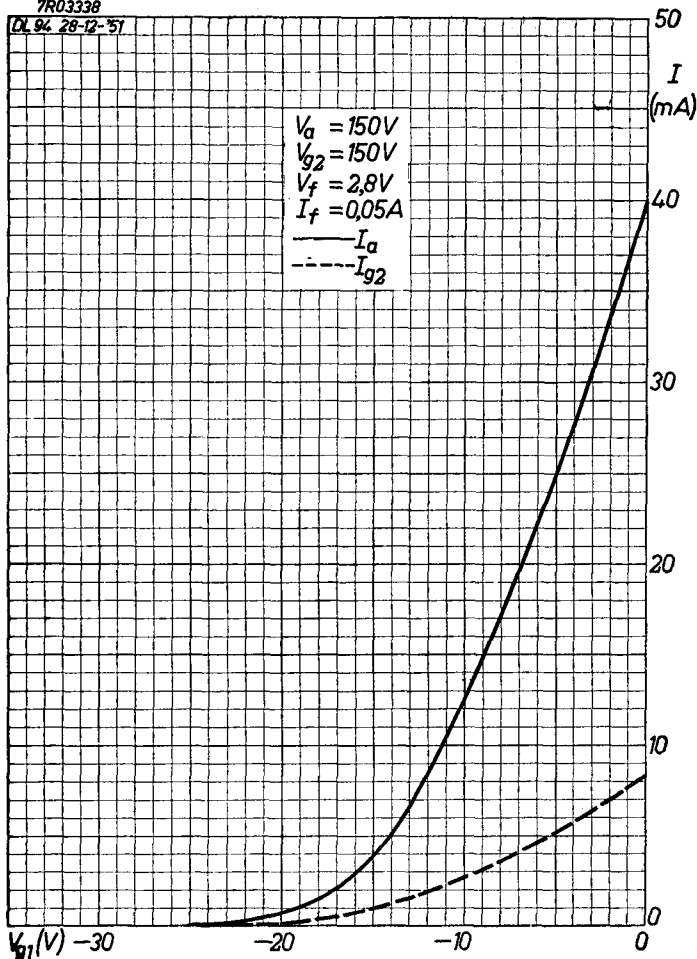
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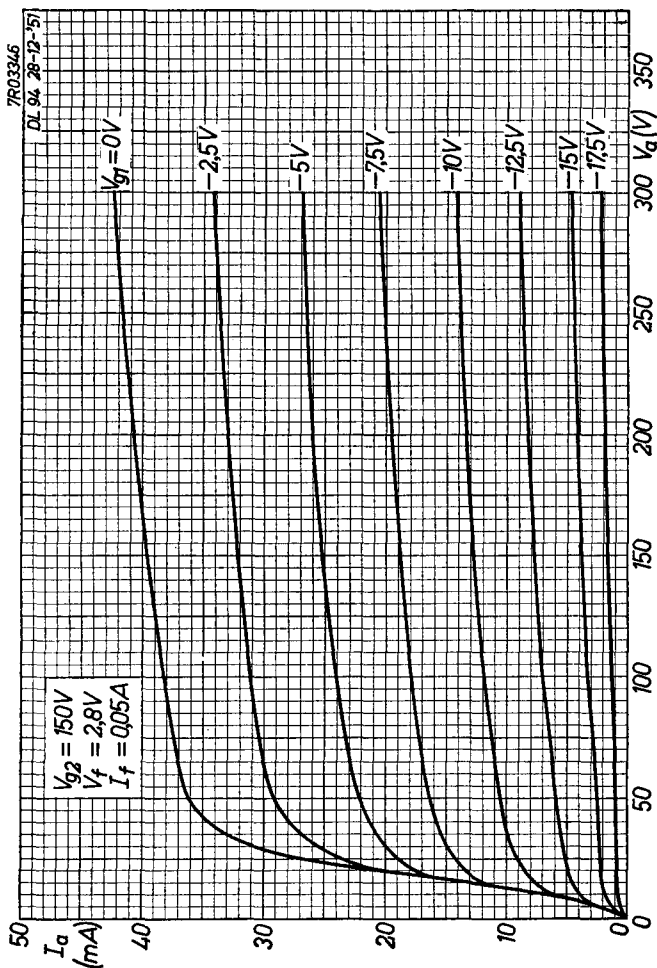
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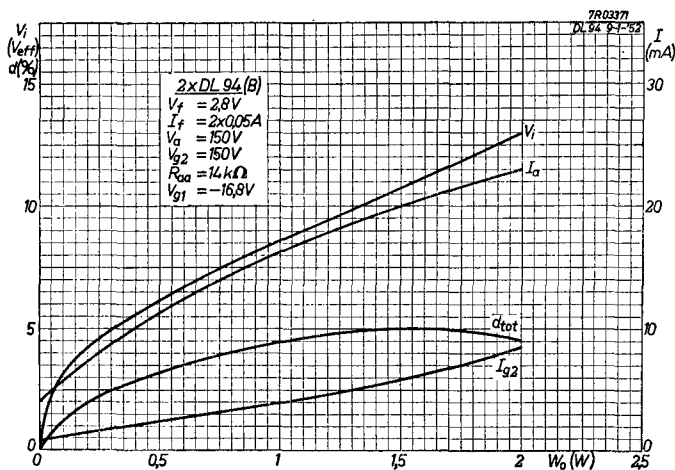
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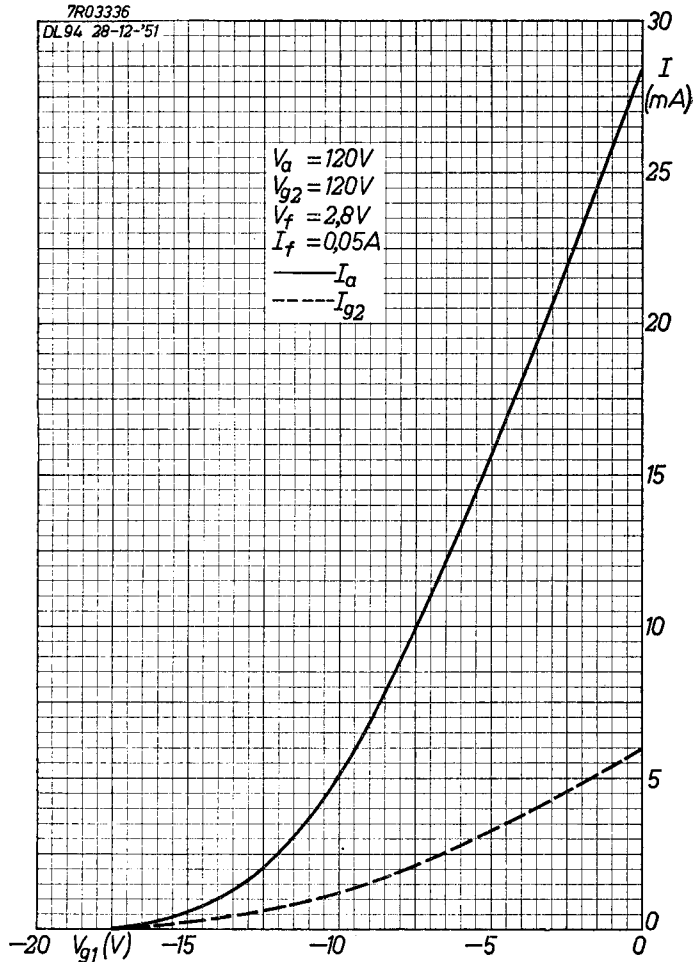
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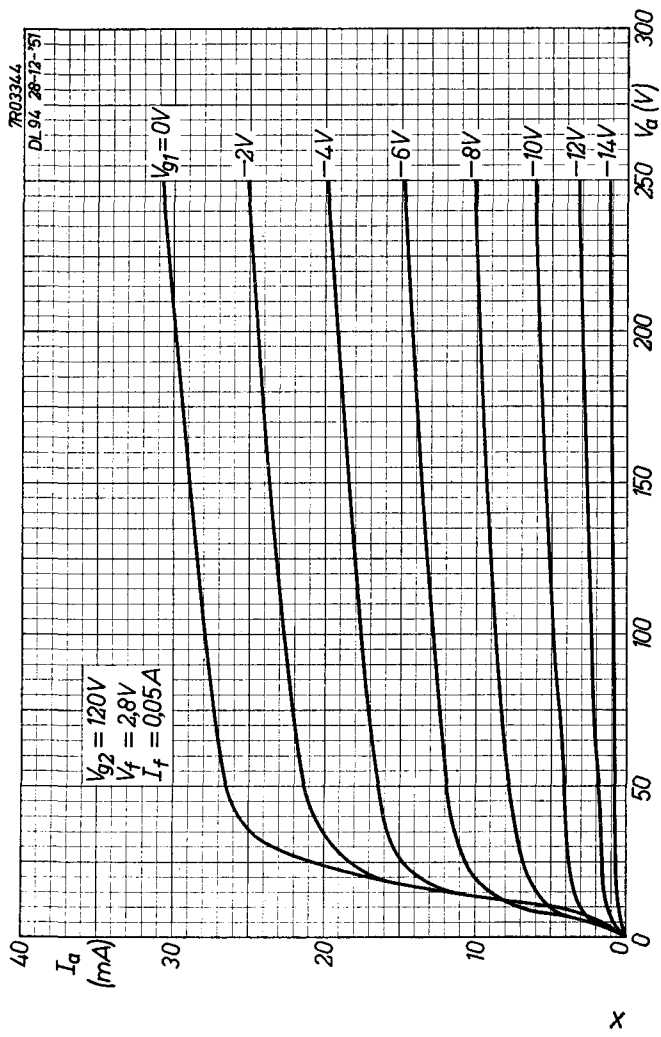


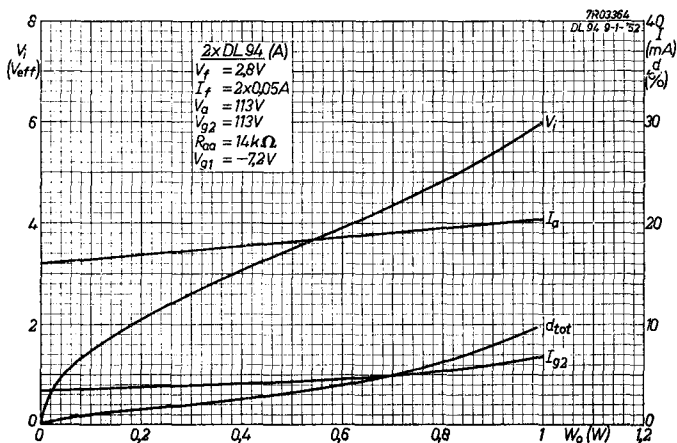
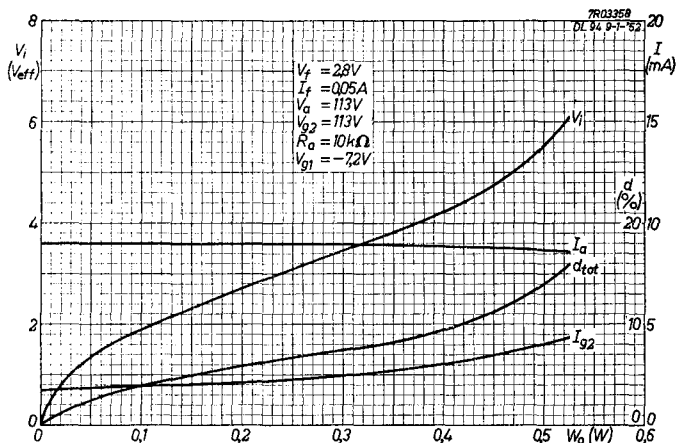
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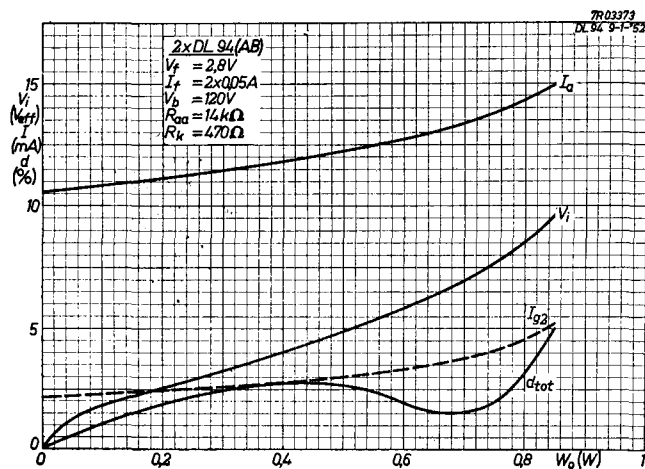
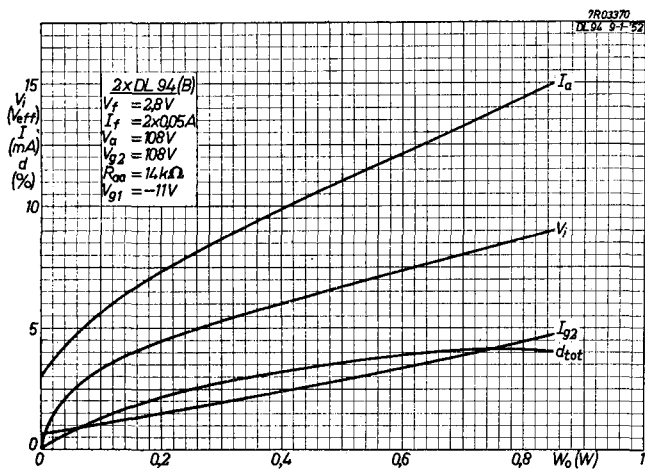
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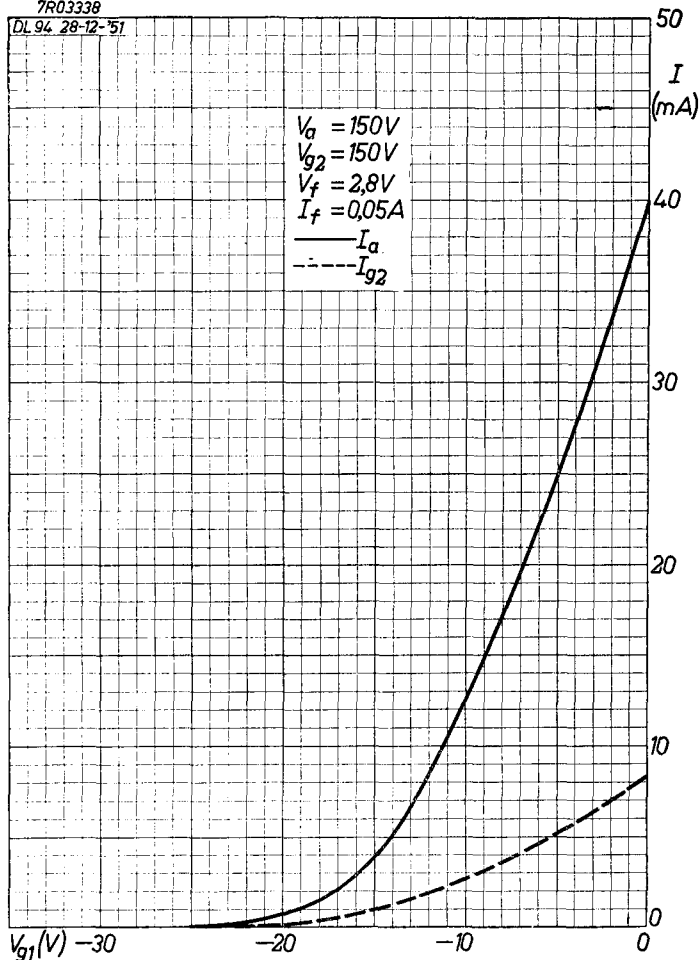


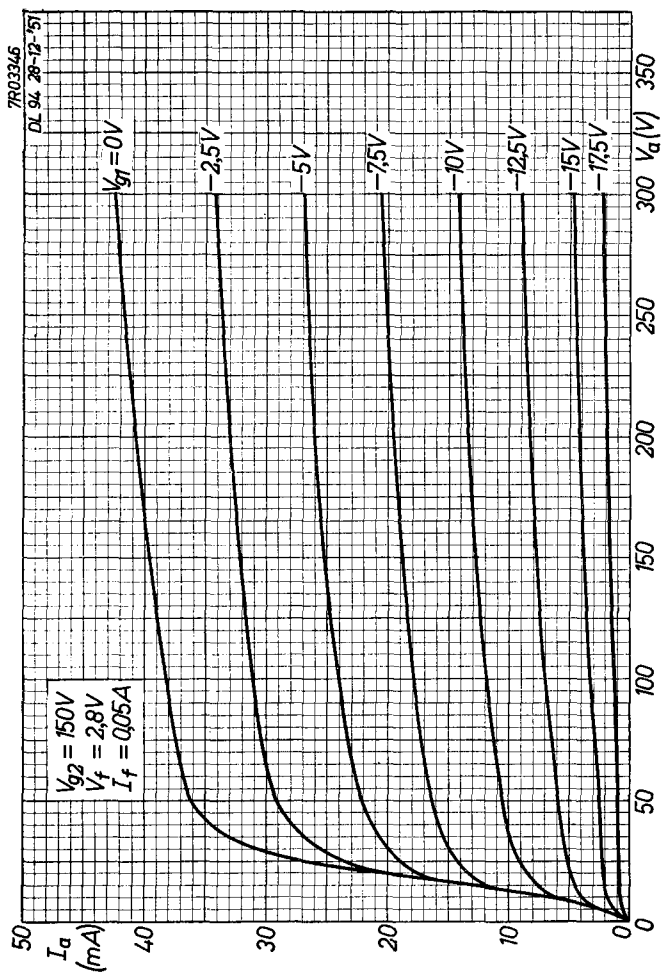


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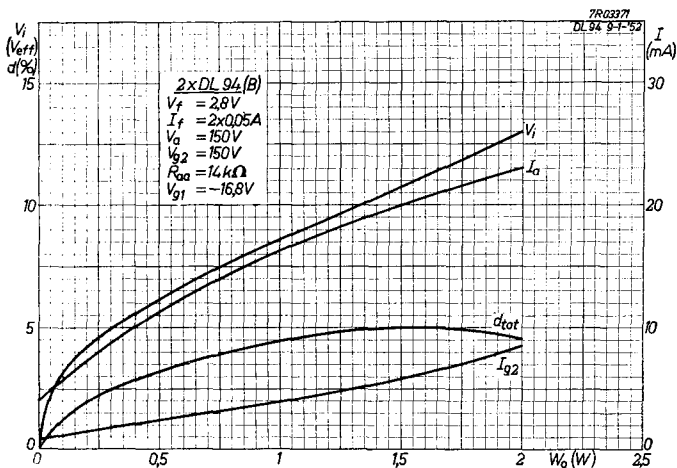
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AB





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