

TETRODE for use as H.F. or L.F. amplifier
 TETRODE pour utilisation en amplificatrice H.F. ou B.F.
 TETRODE zur Verwendung als HF- oder NF-Verstärker

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

$V_f = 5 \text{ V}$
 $I_f = 6,5 \text{ A}$

Capacitances
 Capacités
 Kapazitäten

$C_a = 3,5 \text{ pF}$
 $C_{g1} = 10,8 \text{ pF}$
 $C_{ag1} = 0,05 \text{ pF}$

Typical characteristics
 Caractéristiques types
 Kerndaten

$\mu_{2g1} = 6,2$
 $S (I_a=40 \text{ mA}) = 2,2 \text{ mA/V}$

λ	Freq.	C telegr.		B teleph.		C ag2 mod.		B mod. ¹⁾	
		V_a (V)	W_o (W)	V_a (V)	W_o (W)	V_a (V)	W_o (W)	V_a (V)	W_o (W)
2,5	120	3000	375	3000	58	2500	300	2500	550
		2500	375	2500	55	2000	225	2000	550
		2000	275	2000	54	1500	157	1500	455
		1500	110						
2	150	2500	360						
1,5	200	2000	225						

¹⁾ Two tubes; deux tubes; zwei Röhren

Temperatures and cooling
 Températures et refroidissement
 Temperaturen und Kühlung

Temperature of anode seal
 Température de la sortie de l'anode = max.220 °C
 Temperatur der Anodendurchführung

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

Bulb temperature
 Température de l'ampoule = max.350 °C
 Kolbentemperatur

In general cooling of the tube is not necessary at normal ambient temperature at frequencies below 50 Mc/s. When the tube is used at or near maximum ratings at frequencies above 50 Mc/s, it will be necessary to direct a low velocity air flow on the anode seal and the bottom of the envelope.

In order to prevent overheating of the screen-grid pins by high-frequency current it is recommended to include both screen-grid socket connections in the circuit.

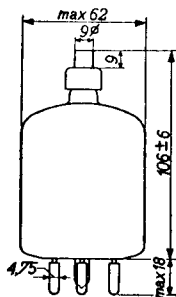
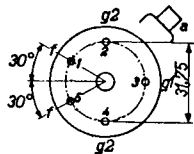
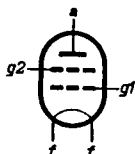
En général il ne faut pas refroidir le tube à la température normale de l'ambiance à des fréquences au-dessous de 50 Mc/s. Si le tube est utilisé à ou près des caractéristiques maximum admissibles au-dessus de 50 Mc/s, il faut diriger un léger courant d'air sur le scellement de la sortie de l'anode et sur le fond du tube.

Il est recommandé d'incorporer les deux bornes de raccordement de la grille-écran dans le circuit pour éviter le surchauffage des broches de la grille-écran par le courant haute fréquence.

Im allgemeinen braucht die Röhre bei normaler Umgebungstemperatur bei Frequenzen unterhalb 50 MHz nicht gekühlt zu werden. Wird die Röhre bei den maximalen Betriebsdaten bei Frequenzen höher als 50 MHz betrieben, so ist ein schwacher Luftstrom auf die Anodendurchführung und den Boden der Röhre notwendig.

Es empfiehlt sich, zur Vermeidung einer Überhitzung der Schirmgitterstifte vom Hochfrequenzstrom, beide Anschlussklemmen des Schirmgitters an der Schaltung zu beteiligen.

Dimensions in mm
 Dimensions en mm
 Abmessungen in mm



Socket
 Support
 Fassung

40211/01

Clip
 Borne de connexion
 Anschlussklemme

40624

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

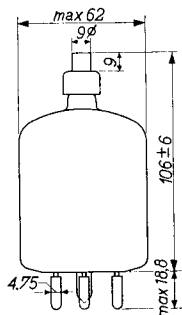
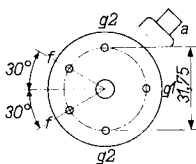
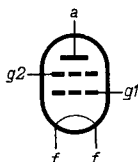
Net weight
 Poids net
 Nettogewicht

120 g

Shipping weight
 Poids brut
 Bruttogewicht

850 g

Dimensions in mm
 Dimensions en mm
 Abmessungen in mm



Base, culot, Sockel: GIANT 5p.

Socket
 Support
 Fassung

40211/01

Clip
 Borne de connexion
 Anschlussklemme

40624

Mounting position: vertical with base up or down
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 Einbau : senkrecht mit dem Sockel oben oder unten

Net weight
 Poids net
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120 g

Shipping weight
 Poids brut
 Bruttogewicht

850 g

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

Limiting values
 Caractéristiques limites
 Grenzdaten

f	= max.	120 Mc/s	f	= max.	170 Mc/s
V_a	= max.	3000 V	V_a	= max.	2500 V
I_a	= max.	225 mA	W_{ia}	= max.	560 W
W_{ia}	= max.	625 W			
W_a	= max.	125 W ¹⁾			
V_{g2}	= max.	400 V	f	= max.	200 Mc/s
W_{g2}	= max.	20 W	V_a	= max.	2200 V
$-V_{g1}$	= max.	500 V	W_{ia}	= max.	435 W
I_{g1}	= max.	15 mA			

Operating conditions
 Caractéristiques d'utilisation
 Betriebsdaten

f	=	< 120	< 120	< 120	< 120 Mc/s
V_a	=	3000	2500	2000	1500 V
V_{g2}	=	350	350	350	350 V
V_{g1}	=	-150	-150	-100	-150 V
I_a	=	167	200	200	110 mA
I_{g2}	=	30	40	50	56 mA
I_{g1}	=	6,5	9	9	8 mA
V_{g1p}	=	300	330	260	225 V
W_{ig1}	=	2	3	2,4	1,7 W
W_{g2}	=	10,5	14	17,5	19,6 W
W_{ia}	=	500	500	400	165 W
W_a	=	125	125	125	55 W
W_o	=	375	375	275	110 W
η	=	75	75	69	67 %

¹⁾ Anode red hot, temperature = 850 °C
 Anode portée au rouge, température = 850 °C
 Anode rotheiss, Temperatur = 850 °C

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

Limiting values
 Caractéristiques limites
 Grenzdaten

f	= max. 120 Mc/s	f	= max. 170 Mc/s
V_a	= max. 3000 V	V_a	= max. 2500 V
I_a	= max. 225 mA	W_{ia}	= max. 560 W
W_{ia}	= max. 625 W		
W_a	= max. 125 W ¹⁾		
V_{g2}	= max. 400 V		
W_{g2}	= max. 20 W	f	= max. 200 Mc/s
$-V_{g1}$	= max. 500 V	V_a	= max. 2200 V
I_{g1}	= max. 15 mA	W_{ia}	= max. 435 W

Operating conditions
 Caractéristiques d'utilisation
 Betriebsdaten

f	= <120	<120	<120	<120 Mc/s
V_a	= 3000	2500	2000	1500 V
V_{g2}	= 350	350	350	350 V
V_{g1}	= -150	-150	-100	-150 V
I_a	= 167	200	200	110 mA
I_{g2}	= 30	40	50	56 mA
I_{g1}	= 6,5	9	9	8 mA
V_{g1p}	= 300	330	260	225 V
W_{ig1}	= 2	3	2,4	1,7 W
W_{g2}	= 10,5	14	17,5	19,6 W
W_{ia}	= 500	500	400	165 W
W_a	= 125	125	125	55 W
W_o	= 375	375	275	110 W
η	= 75	75	69	67 %

¹⁾ Anode red hot, temperature = 850 °C
 Anode portée au rouge, température = 850 °C
 Anode rotheiss, Temperatur = 850 °C

H.F. class B telephony
 H.F. classe B téléphonie
 HF - Klasse B Telephonie

Limiting values
 Caractéristiques limites
 Grenzdaten

f = max. 120 Mc/s	f = max. 170 Mc/s	
V_a = max. 3000 V	V_a = max. 2500 V	←
I_a = max. 135 mA	W_{ia} = max. 190 W	
W_{ia} = max. 200 W		
W_a = max. 125 W ¹⁾	f = max. 200 Mc/s	
V_{g2} = max. 400 V	V_a = max. 2200 V	←
W_{g2} = max. 14 W	W_{ia} = max. 150 W	

Operating conditions
 Caractéristiques d'utilisation
 Betriebsdaten

f =	< 120	< 120	< 120 Mc/s
V_a =	3000	2500	2000 V
V_{g2} =	350	350	350 V
V_{g1} =	-50	-50	-50 V
I_a =	60	70	83 mA
I_{g2} =	1	1	1,5 mA
V_{g1p} =	50	55	65 V
W_{g2} =	0,35	0,35	0,52 W
W_{ia} =	180	175	166 W
W_a =	122	120	112 W
W_o =	58	55	54 W
η =	32	31,5	32,5 %

m =	100	100	100 %
I_{g1} =	4,5	4	4 mA
W_{ig1} =	0,45	0,44	0,52 W

¹⁾ See page 4
 Voir page 4
 Siehe Seite 4

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

Limiting values
 Caractéristiques limites
 Grenzdaten

f = max. 120 Mc/s	f = max. 170 Mc/s	
V_a = max. 2500 V	V_a = max. 2100 V	←
I_a = max. 200 mA	W_{ia} = max. 375 W	
W_{ia} = max. 415 W		
W_a = max. 83 W		
V_{g2} = max. 400 V		
W_{g2} = max. 20 W	f = max. 200 Mc/s	
$-V_{g1}$ = max. 500 V	V_a = max. 1800 V	←
I_{g1} = max. 15 mA	W_{ia} = max. 290 W	

Operating conditions
 Caractéristiques d'utilisation
 Betriebsdaten

f = < 120	< 120	< 120 Mc/s
V_a = 2500	2000	1500 V
V_{g2} = 350	350	300 V
V_{g1} = -210	-220	-150 V
I_a = 152	150	160 mA
I_{g2} = 30	33	33 mA
I_{g1} = 4,5	5	10 mA
V_{g1p} = 380	390	250 V
W_{ig1} = 1,7	2	2,5 W
W_{g2} = 10,5	11,5	10 W
W_{ia} = 380	300	240 W
W_a = 80	75	83 W
W_o = 300	225	157 W
η = 79	75	65 %

m = 100	100	100 %
V_{g2p} = 300	300	255 V
W_{mod} = 190	150	120 W

L.F. class B amplifier and modulator)
 Amplificatrice et modulatrice B.F. classe B) $I_{g1} = 0$
 NF - Verstärker und Modulator Klasse B)

Limiting values

 Caractéristiques limites
 Grenzdaten

V_a	= max.	3000 V
I_a	= max.	225 mA
W_a	= max.	125 W ¹⁾
V_{g2}	= max.	600 V
W_{g2}	= max.	20 W
$-V_{g1}$	= max.	500 V
R_{g1}	= max.	150 k Ω

Operating conditions, two valves

 Caractéristiques d'utilisation, deux tubes
 Betriebsdaten, zwei Röhren

V_a	=	2500		2000		1500	V
V_{g1}	=	-97		-95,5		-94	V
V_{g2}	=	600		600		600	V
R_{aa}	=	25		17,6		12	k Ω
V_{g1g1p}	=	0 190		0 186		0 185 V	
I_a	=	2x30	2x108	2x30	2x111	2x30	2x109 mA
I_{g2}	=	2x0,1	2x13	2x0,1	2x12	2x0,15	2x13,5 mA
W_{g2}	=	2x0,1	2x7,8	2x0,1	2x7,2	2x0,1	2x8,1 W
W_{ia}	=	2x75	2x270	2x60	2x222	2x45	2x163 W
W_a	=	2x75	2x97,5	2x60	2x92	2x45	2x78 W
W_o	=	0	345	0	260	0	170 W
η	=	-	64	-	58,5	-	52 %
$dtot$	=	-	4,0	-	3,6	-	3,5 %

¹⁾ Anode red hot, temperature = 850 °C
 Anode portée au rouge, température = 850 °C
 Anode rotheiss, Temperatur = 850 °C

L.F. class B amplifier and modulator
 Amplificatrice et modulatrice B.F. classe B } $I_{g1} > 0$
 NF - Verstärker und Modulator Klasse B }

Limiting values

Caractéristiques limites
 Grenzdaten

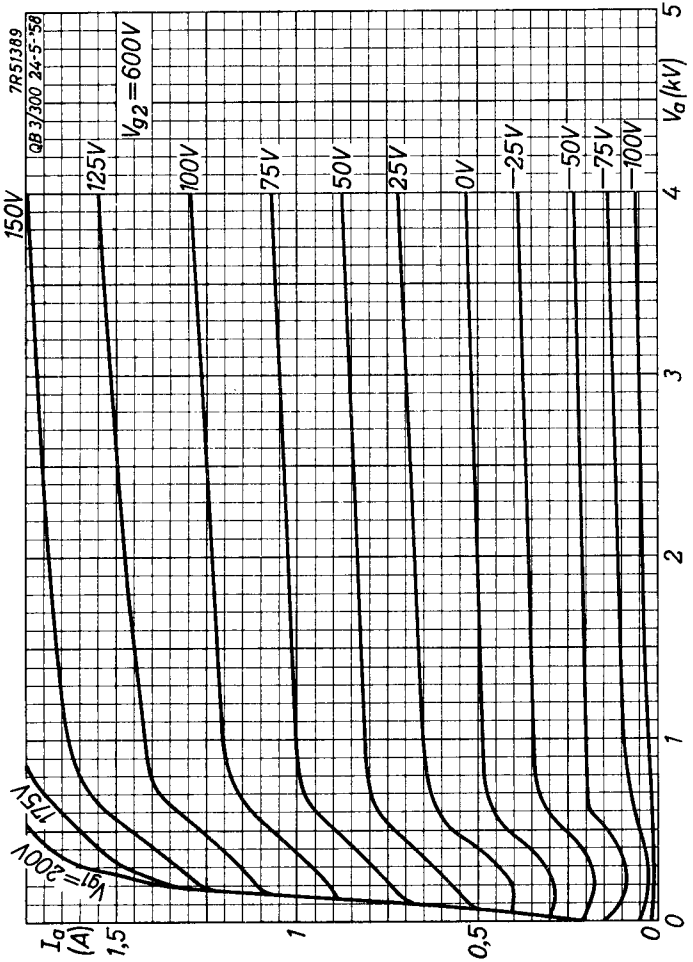
V_a	= max.	3000 V
I_a	= max.	225 mA
W_a	= max.	125 W ¹⁾
V_{g2}	= max.	400 V
W_{g2}	= max.	20 W
$-V_{g1}$	= max.	500 V

Operating conditions, two valves

Caractéristiques d'utilisation, deux tubes
 Betriebsdaten, zwei Röhren

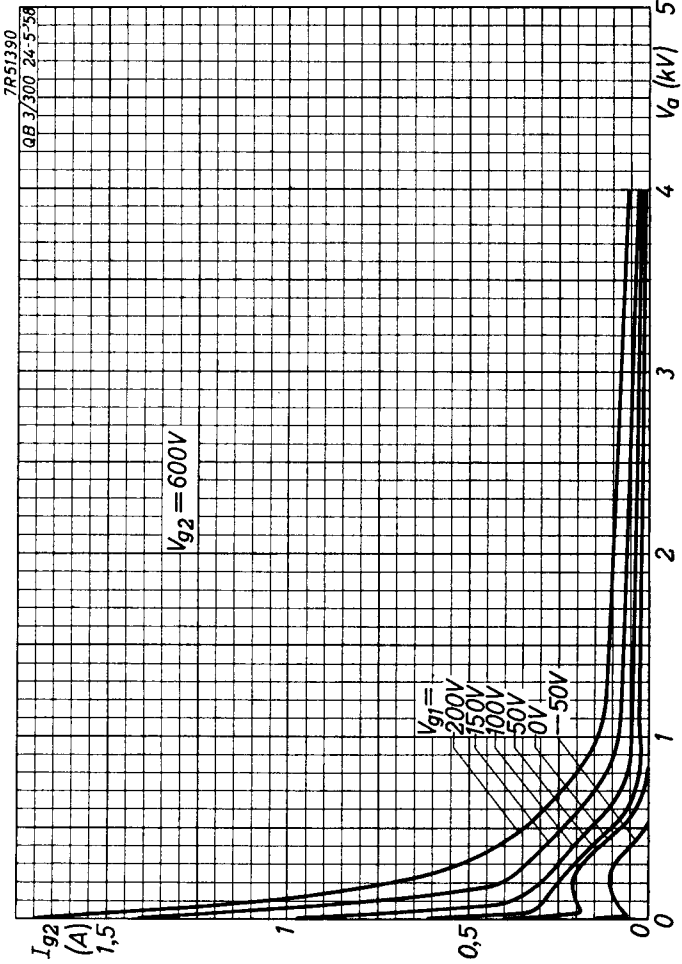
V_a	=	2500		2000		1500	V
V_{g1}	=	-51		-50		-48	V
V_{g2}	=	350		350		350	V
R_{aa}	=	20		12		7,2	k Ω
V_{g1E1p}	=	0	240	0	296	0	330 V
I_a	=	2x30	2x151	2x30	2x197,5	2x30	2x227,5 mA
I_{g1}	=	0	2x8,5	0	2x12	0	2x16 mA
I_{g2}	=	2x0,1	2x18	2x0,15	2x32	2x0,25	2x42 mA
W_{ig1}	=	0	2x0,9	0	2x1,6	0	2x2,4 W
W_{g2}	=	0	2x6,3	2x0,1	2x11,2	2x0,1	2x15 W
W_{ia}	=	2x75	2x377,5	2x60	2x395	2x45	2x341,5 W
W_a	=	2x75	2x102,5	2x60	2x120	2x45	2x114 W
W_o	=	0	550	0	550	0	455 W
η	=	-	72,5	-	69,5	-	66,5%
dtot	=	-	5	-	5	-	5%

¹⁾ Anode red hot, temperature = 850 °C
 Anode portée au rouge, température = 850 °C
 Anode rotheiss, Temperatur = 850 °C

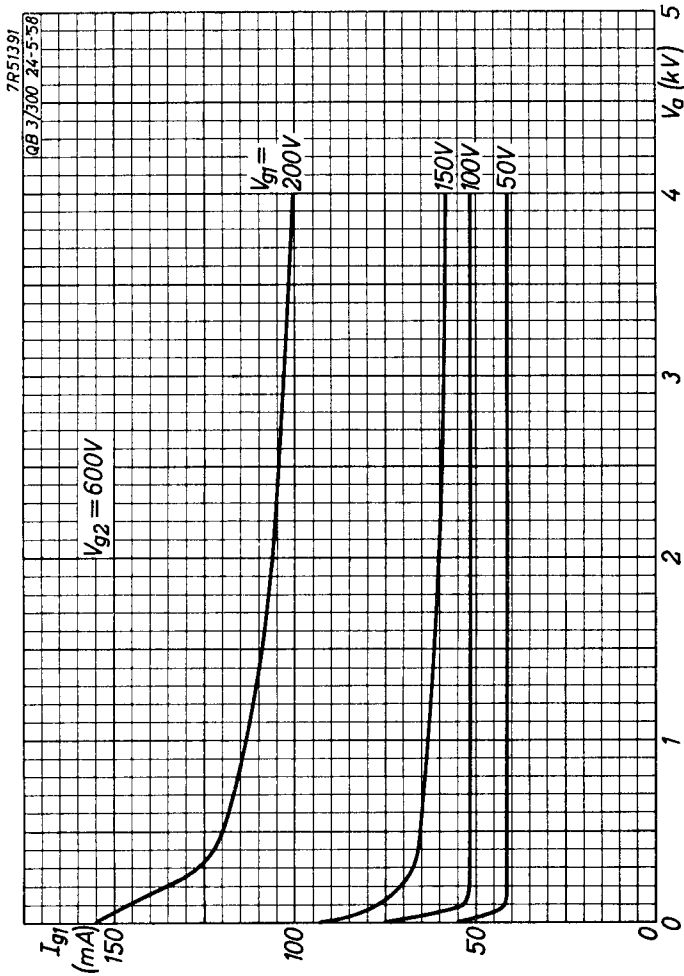


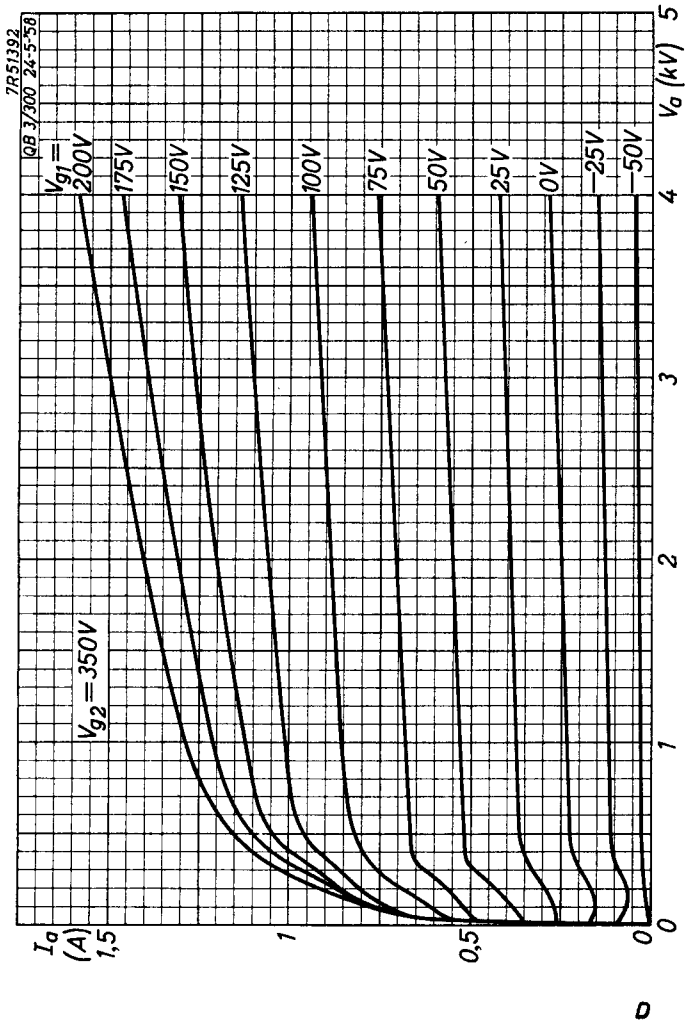
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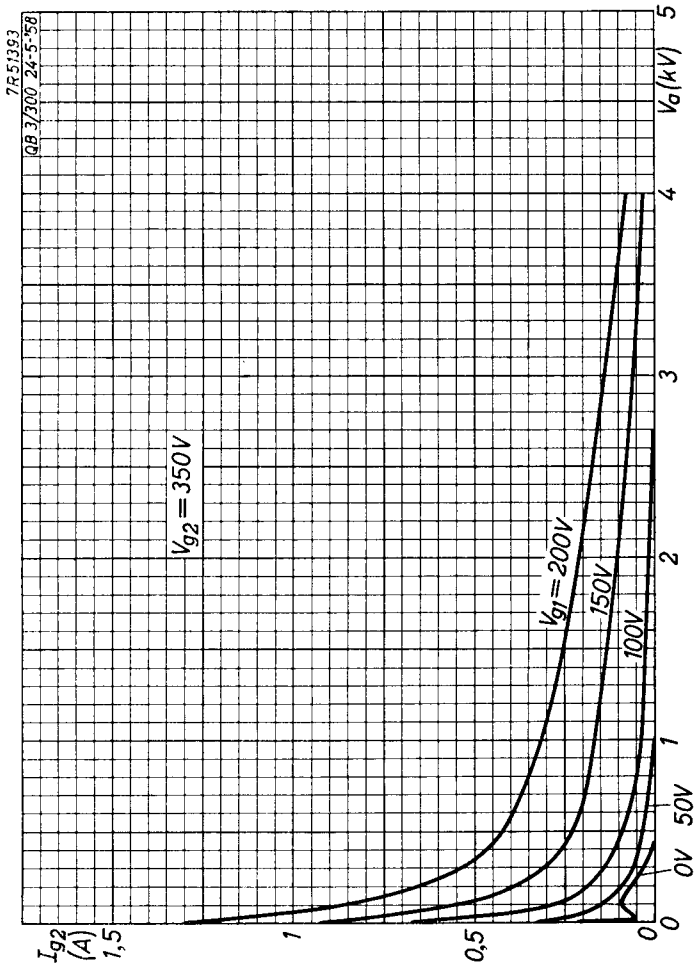
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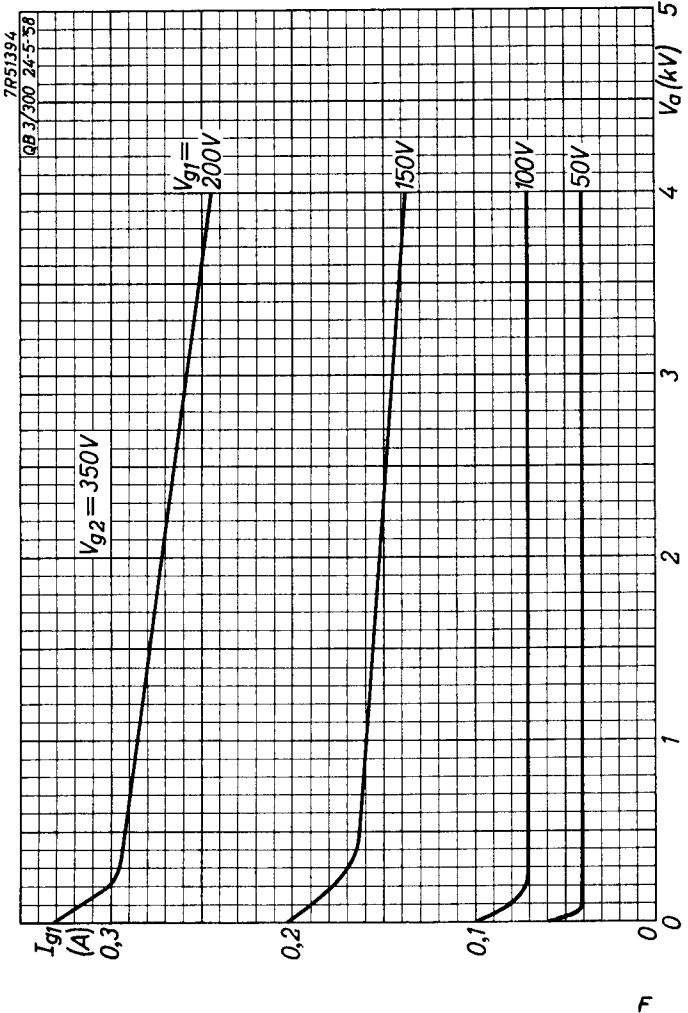


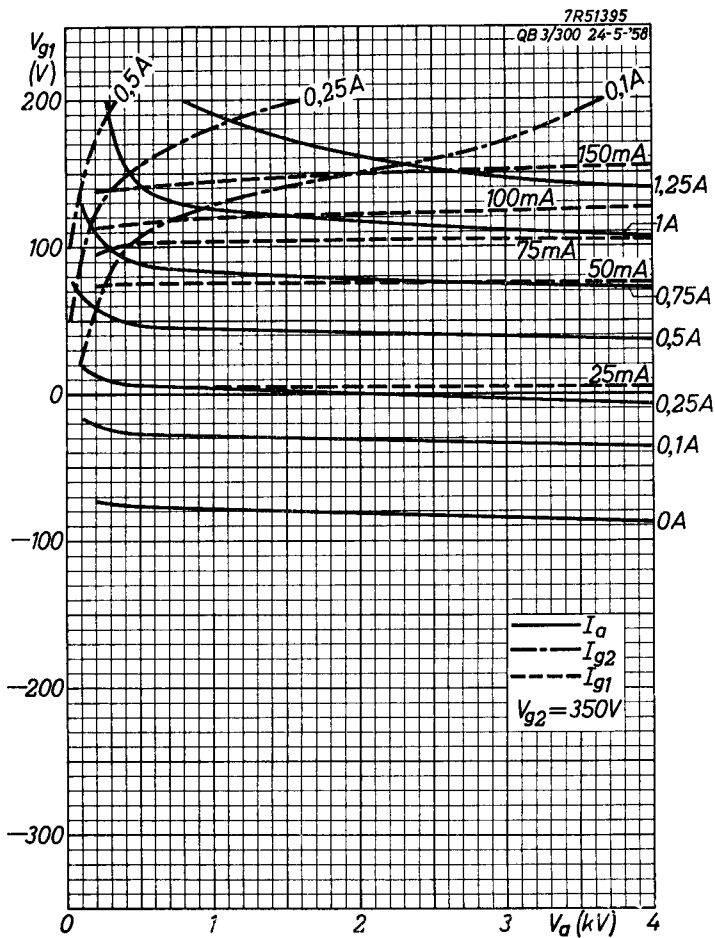
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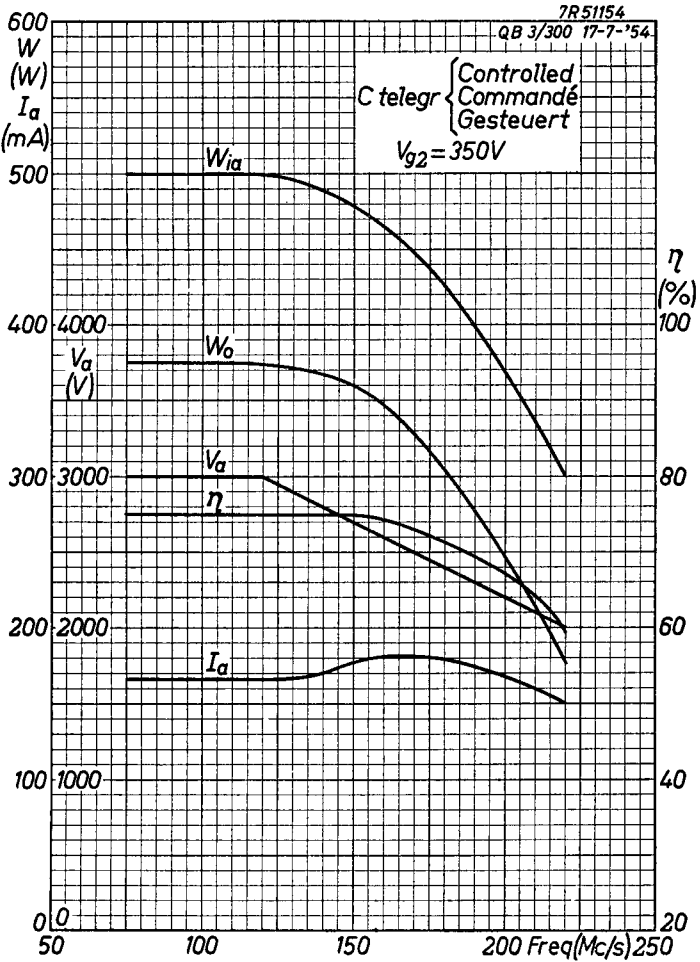




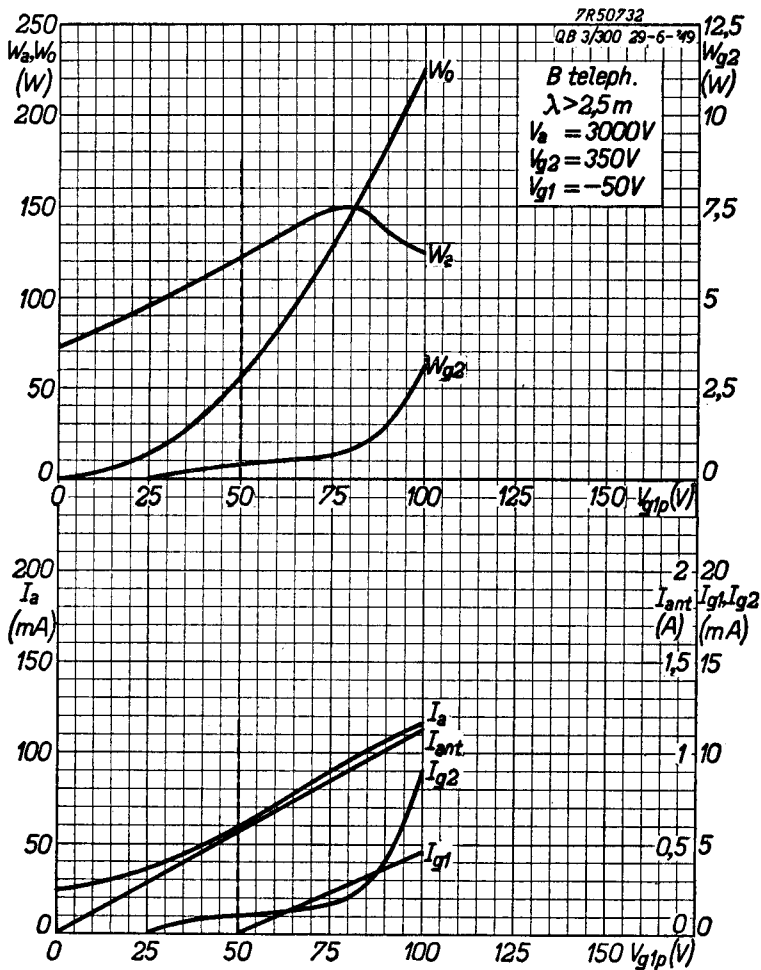


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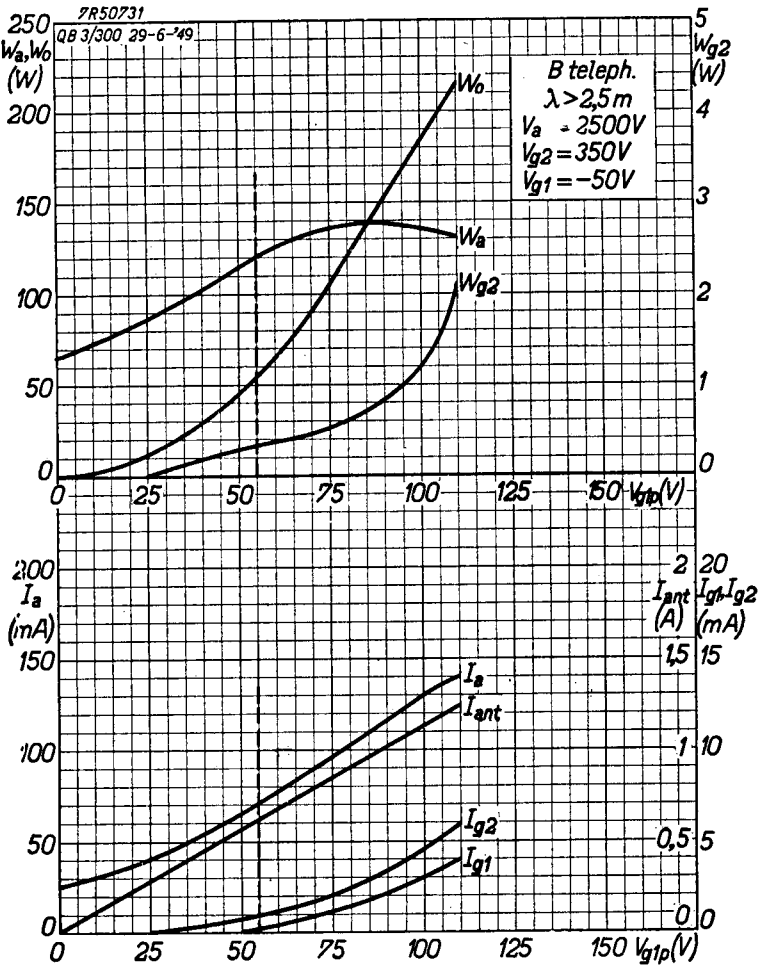


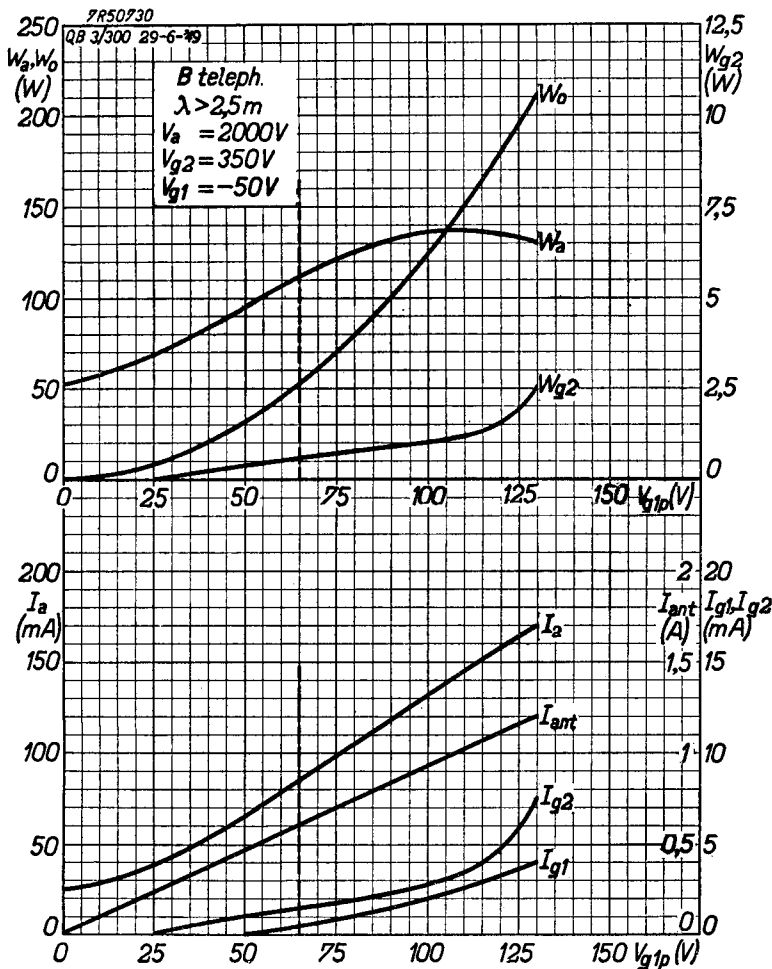
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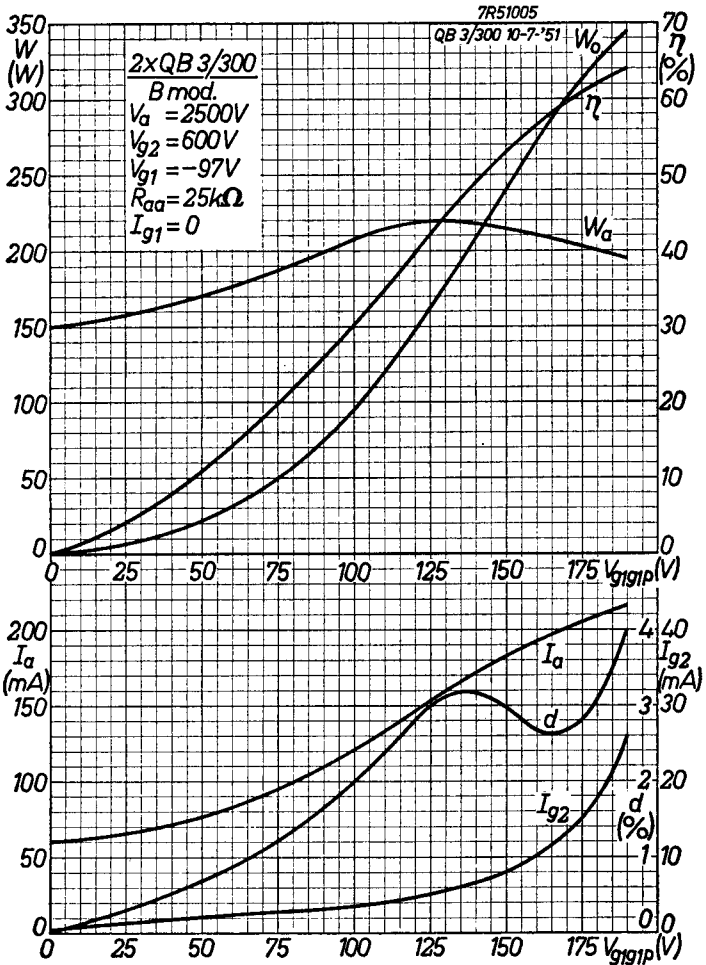
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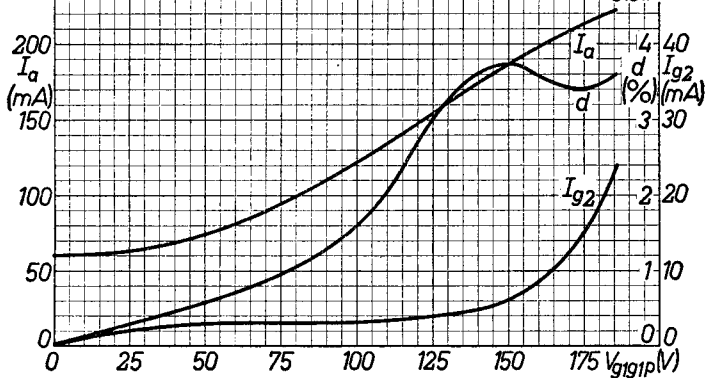
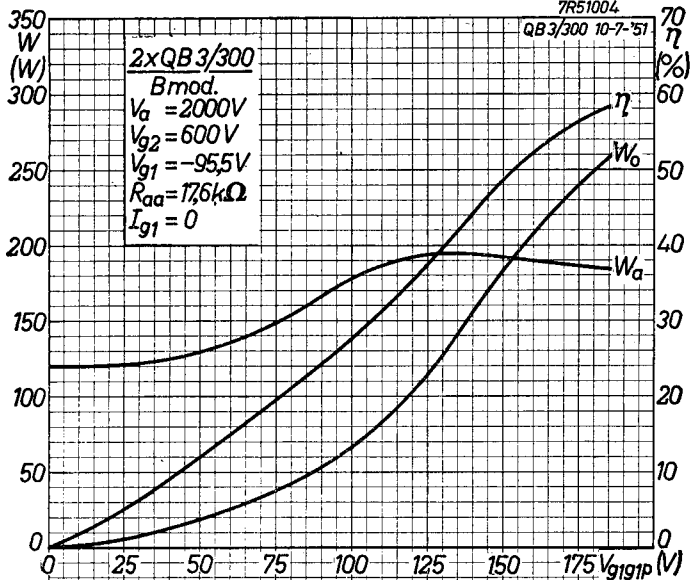




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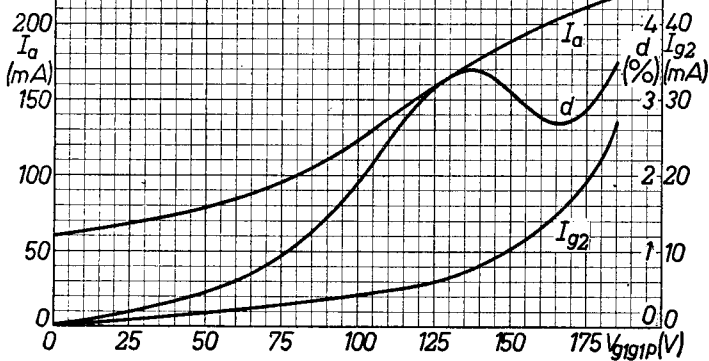
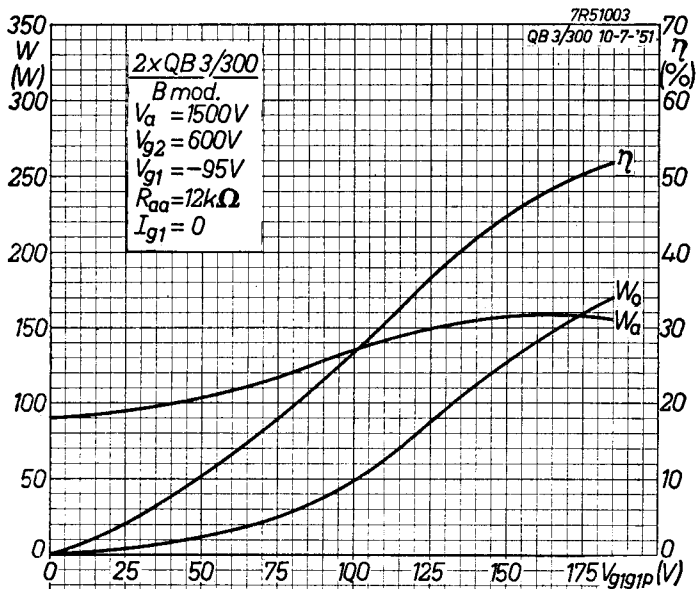
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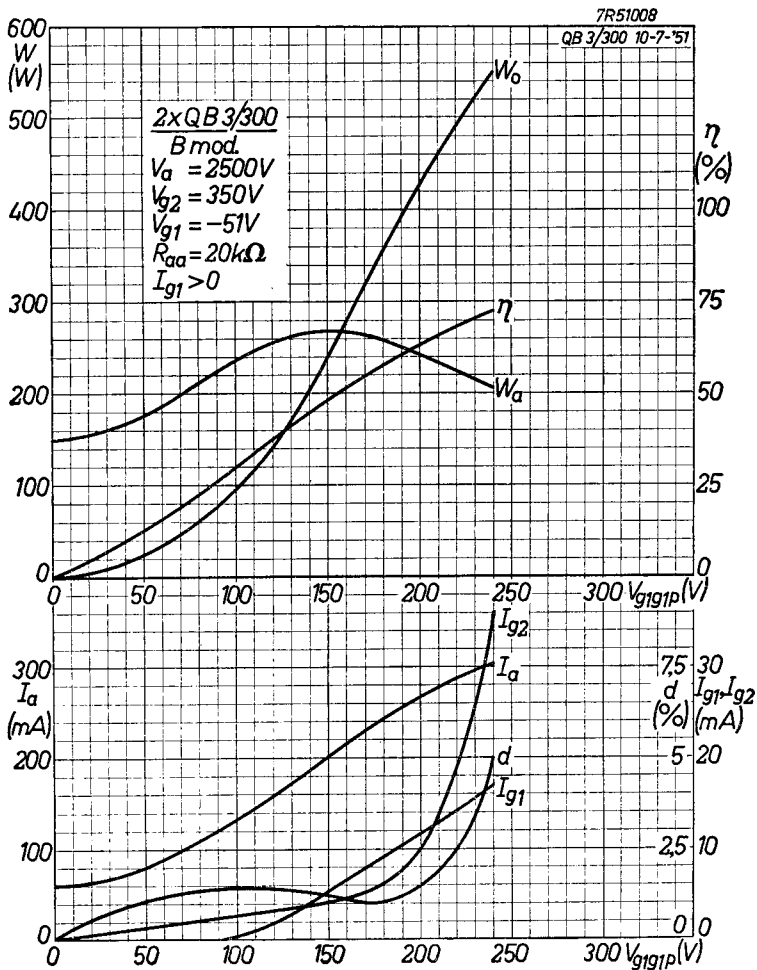
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QB 3/300

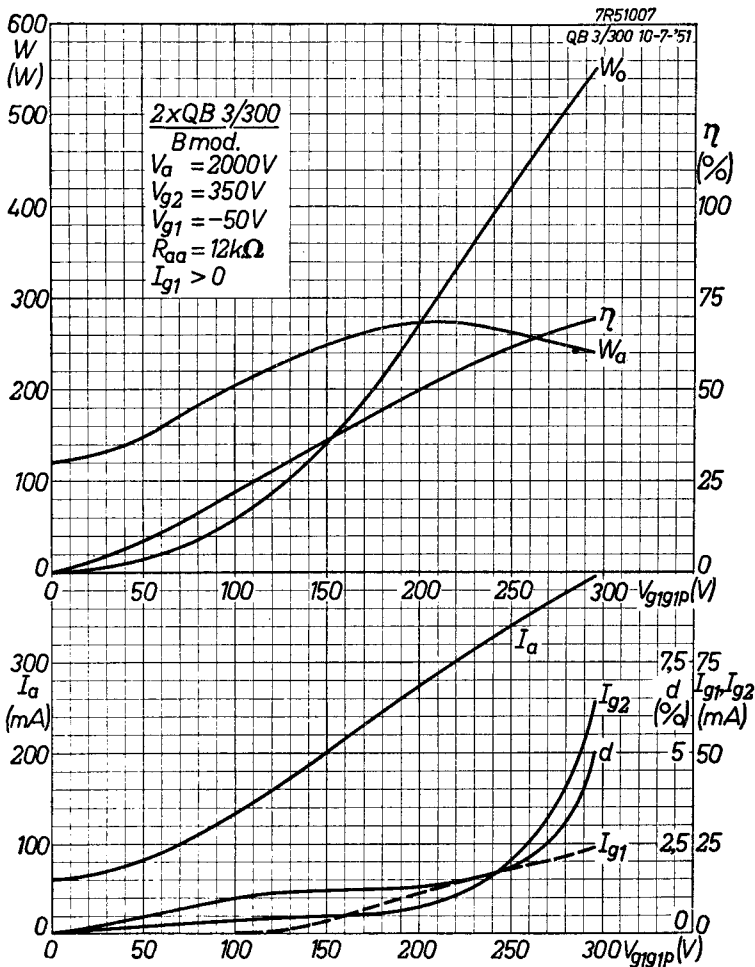
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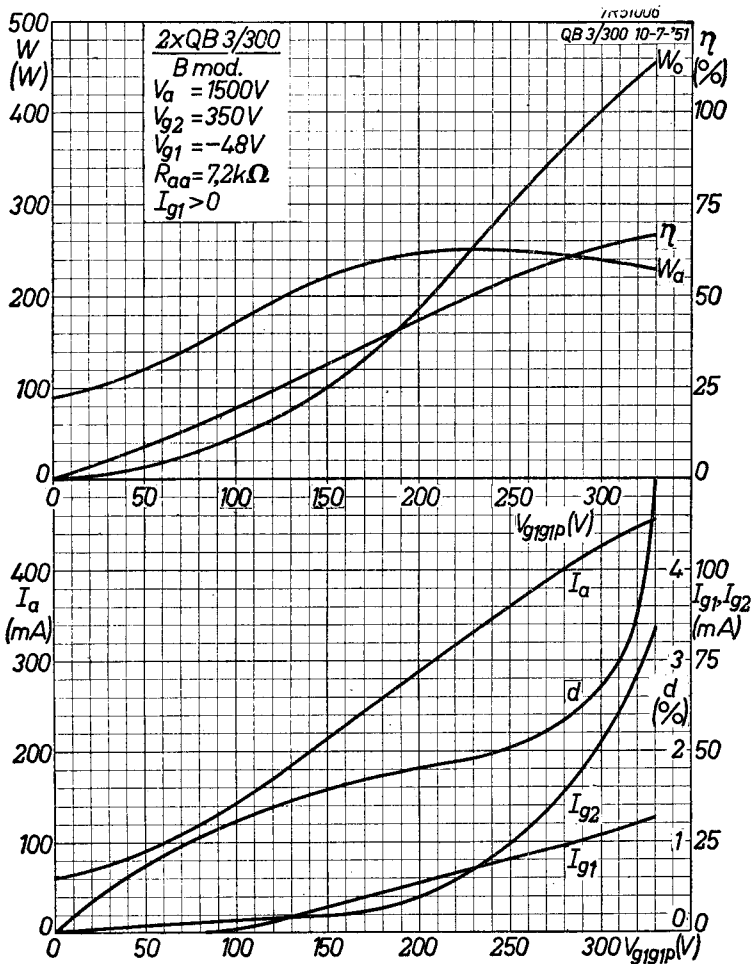




QB 3/300

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*Electronic
Tube*

HANDBOOK

QB3/300

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2	2	1954.07.07
3	3	1959.03.03
4	3	1960.09.09
5	4	1959.03.03
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25	O	1954.07.07
26	P	1954.07.07
27	Q	1954.07.07
28, 29	FP	2000.01.15