Netzröhre für GW-Heizung
Indirekt geheizt
Parallelspeisung

DC-AC-Heating
Indirectly heated
connected in parallel

TELEFUNKEN

5894
QQE 06/40

Doppel-Tetrode
Twin-tetrode

Doppel-Tetrode mit innerer Neutralisation für HF-Verstärker, Oszillatoren, Frequenzvervielfacher und Modulatoren.

Twin-tetrode with internal neutralization for RF-amplifier, oscillators, frequency multipliers and modulators.

U_f	**6,3**	**12,6**	V
I_f	1,8	0,9	A

Oxyd-Kathode · Oxide-coated cathode

Meßwerte · Measuring values

je System bei I_a = 30 mA

S	4,5	mA/V
$\mu_{g2/g1}$	8,2	

Leistungs-Tabelle · Table of power output

	Telegraphie, C-Betrieb Telegraphy, class C		**Anoden-Schirmgitter-Modulation, C-Betrieb** Anode-grid 2-modulation, class C		**SSB-Verstärker, B-Betrieb** SSB, class B	
f	U_a	N	U_a	N	U_a	N_{sp}
30 MHz					750 V	74 W
60 MHz			600 V	71 W		
200 MHz	600 V	90 W				
250 MHz	750 V	85 W	600 V	64 W		
430 MHz	520 V	66 W				
500 MHz	500 V	60 W				

	Frequenz-Vervielfacher, C-Betrieb Frequency multiplier, class C		**Modulator, B-Betrieb** Modulator, class B	
f	U_a	N	U_a	N
50/150 MHz	500 V	20 W	600 V	86 W
	400 V	18 W	450 V	60 W
75/225 MHz	400 V	12 W	300 V	37 W

HF-Verstärker, Telegraphie C-Betrieb

RF-amplifier, telegraphy class C

System I und II in Gegentakt
System I and II in push-pull

Betriebswerte · Typical operation

		CCS			ICAS	
f	**200**	**250**	**430**	**500**	**250**	MHz
U_a	**600**	**750**	**520**	**500**	**750**	V
U_{g2}	**250**	**250**	**250**	**250**	**250**	V
U_{g1}	**−80**	**−80**	**−80**	—	**−80**	V
R_{g1}	—	—	—	**20**	—	kΩ
$U_{g1Isp/g1IIsp}$	200	250	—	—	260	V
I_a	2×100	2×80	2×100	2×100	2×90	mA
I_{g2}	16	17	18	20	14	mA
I_{g1}	2×2,5	2×1,5	2×2,8	2×3	2×1,7	mA
N_a	2×60	2×60	2×52	2×50	2×67,5	W
Q_a	2×15	2×17,5	2×19	2×20	2×19,5	W
Q_{g2}	4	4,25	4,5	5	3,5	W
N	90	85	66	60	96	W
η	75	71	64	60	71	%

Grenzwerte · Maximum ratings

f ≦ 250 MHz

	CCS	ICAS			CCS	ICAS	
U_a	**750**	**750**	V	I_{g1}	**2×5**	**2×5**	mA
N_a	**2×60**	**2×75**	W	R_{g1}	**50**	**50**	kΩ
Q_a	**2×20**	**2×22,5**	W	$U_{f/k}$	**100**	**100**	V
I_a	**2×110**	**2×120**	mA	f = 500 MHz			
U_{g2}	**300**	**300**	V	U_a	**600**	**600**	V
Q_{g2}	**7**	**8**	W	N_a	**2×50**	**2×60**	W
U_{g1}	**−175**	**−175**	V				

Frequenzverdreifacher, C-Betrieb · Frequency tripler, class C

System I und II in Gegentakt
System I and II in push-pull

Betriebswerte · Typical operation

f	**50/150**	**50/150**	**75/225**	MHz
U_a	**500**	**400**	**400**	V
U_{g2}	**250**	**250**	**250**	V
U_{g1}	**−150**	**−150**	**−150**	V
$U_{g1Isp/g1IIsp}$	360	360	360	V
N_e	1,2	1	0,6	W
I_a	2×60	2×73	2×65	mA
I_{g2}	10	16	20	mA
I_{g1}	2×3	2×2,5	2×1,5	mA
N_a	2×30	2×29	2×26	W
Q_a	2×20	2×20	2×20	W
Q_{g2}	2,5	4	5	W
N	20	18	12	W
η	33	31	23	%

Grenzwerte · Maximum ratings

f ≦ 250 MHz

	CCS			CCS	
U_a	**750**	V	I_{g1}	**2×5**	mA
N_a	**2×60**	W	R_{g1}	**50**	kΩ
Q_a	**2×20**	W	$U_{f/k}$	**100**	V
I_a	**2×110**	mA	f = 500 MHz		
U_{g2}	**300**	V	U_a	**600**	V
Q_{g2}	**7**	W	N_a	**2×50**	W
U_{g1}	**−175**	V			

TELEFUNKEN

HF-Einseitenbandverstärker, B-Betrieb

Single sideband amplifier, class B

$I_{g1} = 0$

System I und II parallel geschaltet
System I and II connected in parallel

Betriebswerte · Typical operation

Einzelton · Single sound f = 30 MHz

U_a	**750**		V
U_{g2}	**280**		V
U_{g1} [1]	**−30**		V
R_L	**2,86**		kΩ
U_{g1sp}	0	30	V
I_a	40	150	mA
I_{g2}	0	25	mA
N_a	30	112,5	W
Q_a	30	38,5	W
Q_{g2}	0	7	W
N_{sp} [2]	0	74	W

Grenzwerte · Maximum ratings

f ≦ 250 MHz

U_a	**750**	V
Q_a	**2×20**	W
I_a	**2×110**	mA
U_{g2}	**300**	V
Q_{g2}	**7**	W
U_{g1}	**−175**	V

[1] Für I_a = 40 mA einstellen · adjust for I_a = 40 mA

[2] Leistung beim Scheitelwert der Hüllkurve · power at peak value of envelope power

Anoden- und Schirmgittermodulation, C-Betrieb

Anode and grid 2 modulation, class C

System I und II in Gegentakt
System I and II in push-pull

Betriebswerte · Typical operation

	CCS		ICAS		
f	**60**	**250**	**60**	**250**	MHz
U_a	**600**	**600**	**600**	**600**	V
U_{g2}	**250**	**250**	**250**	**250**	V
U_{g1}	**−80**	**−80**	**−80**	**−80**	V
$U_{g1\,sp}$	105	130	105	130	V
N_a	2×45	2×45	2×50	2×50	W
I_a	2×75	2×75	2×83	2×83	mA
I_{g2}	20	18	16	16	mA
I_{g1}	2×3,8	2×1,6	2×4	2×1,7	mA
Q_a	2×9,5	2×13	2×10,5	2×14,5	W
Q_{g2}	5	4,5	4	4	W
N	71	64	79	71	W
η	79	71	79	71	%
m	100	100	100	100	%
U_{g2sp}	90	90	90	90	V
N_{mod}	45	45	50	50	W

Grenzwerte · Maximum ratings

	CCS	ICAS	
f ≦ 250 MHz			
U_a	**600**	**600**	V
N_a	**2×45**	**2×50**	W
Q_a	**2×14**	**2×15**	W
I_a	**2×92**	**2×100**	mA
U_{g2}	**300**	**300**	V
Q_{g2} [1]	**7**	**8**	W
Q_{g2} [2]	**4,6**	**5,2**	W
U_{g1}	**−175**	**−175**	V
I_{g1}	**2×5**	**2×5**	mA
R_{g1} [3]	**25**	**25**	kΩ
$U_{f/k}$	**100**	**100**	V
f = 500 MHz			
U_a	**480**	**480**	V
N_a	**2×33,5**	**2×40**	W

[1] Schirmgitter über Drosselspule moduliert · Screen grid modulated via choke coil
[2] Für alle anderen Modulationsarten · For all other types of modulation
[3] je Röhre; je System max. 50 kΩ · per tube; per section max. 50 kΩ

TELEFUNKEN

NF-Verstärker in B-Betrieb, Modulator

AF-amplifier class B, modulator

System I und II in Gegentakt · System I and II push-pull

Betriebswerte · Typical operation

$I_{g1} > 0$

U_a		**600**		**450**[2]		**300**	V
U_{g2}		**250**		**250**		**250**	V
U_{g1}[1]		**−25**		**−25**		**−25**	V
R_{aa}		**8**		**6**		**4**	kΩ
$U_{g1Isp/g1IIsp}$	0	78	0	76	0	75	V
N_e	0	2×0,1	0	2×0,1	0	2×0,1	W
I_a	2×25	2×100	2×25	2×97	2×25	2×94	mA
I_{g2}	1,2	26	1,9	28	2,8	28	mA
I_{g1}	0	2×2,6	0	2×2,6	0	2×2,6	mA
N_a	2×15	2×60	2×11,2	2×43,5	2×7,5	2×28,2	W
Q_a	2×15	2×17	2×11,2	2×13,5	2×7,5	2×9,7	W
Q_{g2}	0,3	6,5	0,5	7	0,7	7	W
N	0	86	0	60	0	37	W
η	—	71,5	—	69	—	65,5	%
k_{ges}	—	5	—	5	—	5	%

Grenzwerte · Maximum ratings

U_a	**600**	V
N_a	**2×60**	W
Q_a	**2×20**	W
I_a	**2×110**	mA
I_{g1}	**2×5**	mA
U_{g2}	**300**	V
Q_{g2}	**7**	W
R_{g1}	**50**	kΩ
$U_{f/k}$	**100**	V

[1]) Es wird empfohlen, die Gittervorspannung jedes Systems einzeln einzustellen.
It is recommended to adjust the grid bias of each section separately.

[2]) Betriebskennlinien für diese Einstellungen stehen auf Anforderung zur Verfügung.
On request characteristic curves for tube operation will be supplied to facilitate adjustements.

NF-Verstärker in B-Betrieb, Modulator

AF-amplifier class B, modulator

System I und II in Gegentakt · System I and II push-pull

Betriebswerte · Typical operation

$I_{g1} = 0$

U_a	**600**		**450**[2]		**300**		V
U_{g2}	**250**		**250**		**250**		V
U_{g1}[1]	**−27,5**		**−27,5**		**−26**		V
R_{aa}	**12,5**		**10**		**6,5**		kΩ
$U_{g1Isp/g1IIsp}$	0	55	0	55	0	52	V
I_a	2×20	2×62	2×20	2×58	2×20	2×56	mA
I_{g2}	0,9	23	1,4	27	2,2	28	mA
N_a	2×12	2×37	2×9	2×26	2×6	2×16,8	W
Q_a	2×12	2×12	2×9	2×8,5	2×6	2×5,6	W
Q_{g2}	0,2	5,8	0,4	6,7	0,6	7	W
N	0	50	0	35	0	22,5	W
η	—	67,5	—	67,5	—	67	%
k_{ges}	—	2,4	—	3,1	—	2,9	%

Grenzwerte · Maximum ratings

U_a	**600**	V
N_a	**2×60**	W
Q_a	**2×20**	W
I_a	**2×110**	mA
U_{g2}	**300**	V
Q_{g2}	**7**	W
R_{g1}	**50**	kΩ
$U_{f/k}$	**100**	V

[1] Es wird empfohlen, die Gittervorspannung jedes Systems einzeln einzustellen.
It is recommended to adjust the grid bias of each section separately.

[2] Betriebskennlinien für diese Einstellungen stehen auf Anforderung zur Verfügung.
On request characteristic curves for tube operation will be supplied to facilitate adjustements.

TELEFUNKEN

Impulsmodulator · Pulse modulator

System I und II parallel geschaltet · System I and II connected in parallel

Betriebswerte · Typical operation

t_{pulse}	0,1	1	10	1000	µs
f_{pulse}	**1000**	**1250**	**500**	**1**	Hz
U_a	**6**	**6**	**5**	**2,5**	kV
U_{g2}	**850**	**800**	**800**	**800**	V
U_{g1}	**−250**	**−200**	**−200**	**−150**	V
$U_{g1\,pulse}$	400	360	200	160	V
R_a	**0,83**	**0,7**	**4,9**	**3,85**	kΩ
$I_{a\,pulse}$	6	5	1	0,6	A
I_a	0,6	6,25	5	0,6	mA

Grenzwerte · Maximum ratings

U_a	**7**	**7**	**7**	kV
U_{g2}	**850**	**850**	**850**	V
U_{g1}	**−200**	**−200**	**−200**	V
Q_a	**20**	**20**	**20**	W
Q_{g2}	**3**	**3**	**3**	W
$I_{a\,pulse}$ [1]	**6**	**5**	**2,2**	A
$I_{g2\,pulse}$ [1]	**2**	**2**	**0,7**	A
$I_{g1\,pulse}$ [1]	**2**	**2**	**0,7**	A
t_{pulse} [1]	**0,1**	**1**	**10**	µs
V_T [1]	**0,001**	**0,001**	**0,001**	

[1] Die Spitzenströme sind absolute Maximalwerte, Impulsdauer t_{pulse} und Tastverhältnis V_T sind Maximalwerte für den betreffenden Spitzenstrom.

The peak currents are absolute maximum ratings, pulse duration t_{pulse} and keying ratio V_T are maximum ratings for the peak current concerned.

Impulsmodulierter HF-Verstärker · Pulse-modulated RF amplifier

System I und II parallel geschaltet · System I and II connected in parallel

Betriebswerte · Typical operation

Oszillator mit impulsförmiger Speisespannung Oscillator with interrupted (pulsed) supply voltage			Impulsmodulierter HF-Verstärker Pulse-modulated RF amplifier			
f	**420**	MHz	f	**200**	**0,2**	MHz
t_{pulse}	3000	µs	t_{pulse}	3	1000	µs
f_{pulse}	**50**	Hz	f_{pulse}	**1200**	**1**	Hz
$U_{a\,pulse}$	**1000**	V	U_a	**3**	**3**	kV
$U_{g2\,pulse}$	**250**	V	U_{g2}	**500**	**500**	V
R_{g1}	**3,3**	kΩ	U_{g1}	**−330**	**−330**	V
$U_{g1\,sp}$	150	V	$U_{g1\,sp}$	280	150	V
$I_{a\,pulse}$	300	mA	$U_{g1\,pulse}$	230	230	V
I_a	60	mA	$I_{a\,pulse}$	800	300	mA
$I_{g2\,pulse}$	36	mA	I_a	2,9	0,3	mA
I_{g2}	5	mA	$I_{g2\,pulse}$	350	80	mA
N_{pulse}	165	W	I_{g2}	1,4	0,08	mA
			N_{pulse}	1600	600	W

Grenzwerte · Maximum ratings

U_a	**3,5**	**3,5**	**3,5**	**3,5**	**1,2**	kV
U_{g2}	**650**	**650**	**650**	**650**	**300**	V
U_{g1}	**−400**	**−400**	**−400**	**−400**	**−200**	V
Q_a	**20**	**20**	**20**	**30**	**30**	W
Q_{g2}	**3**	**3**	**3**	**3**	**6**	W
Q_{g1}	**1**	**1**	**1**	**1**	**2**	W
$I_{a\,pulse}$ [1]	**8**	**3,5**	**2,5**	**1,3**	**1**	A
t_{pulse} [1]	**1**	**5**	**10**	**100**	**1000**	µs
V_T [1]	**0,001**	**0,001**	**0,001**	**0,001**	**0,001**	

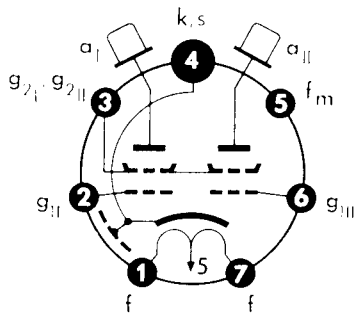
[1] Die Spitzenströme sind absolute Maximalwerte, Impulsdauer t_{pulse} und Tastverhältnis V_T sind Maximalwerte für den betreffenden Spitzenstrom.
The peak currents are absolute maximum ratings, pulse duration t_{pulse} and keying ratio V_T are maximum ratings for the peak current concerned.

Kapazitäten · Capacitances

ein System · one system			in Gegentaktschaltung · push-pull circuit		
c_e	10,5	pF	c_e	6,7	pF
c_a	3,2	pF	c_a	2,1	pF
$c_{a/g1}$	< 0,08	pF			

TELEFUNKEN

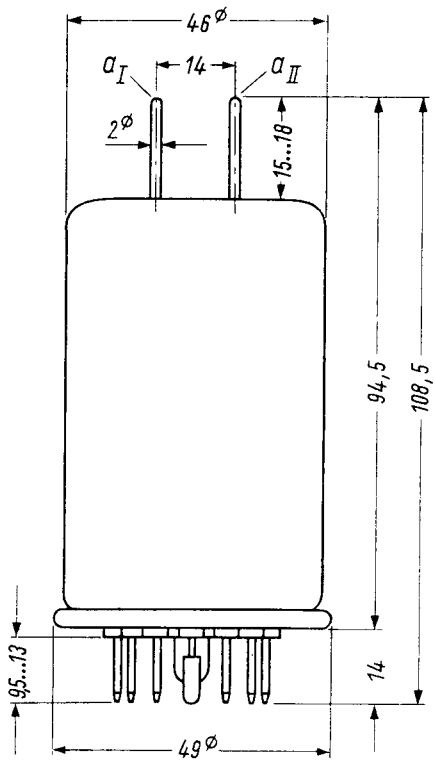
Sockelschaltung
Base connections



Septar

Sockel · Base	(E 7–21)
Fassung Socket	Lager-Nr. 30239 stock-no. 30239
Kühlklemmen Cooling clips	Lager-Nr. 30566 stock-no. 30566

max. Abmessungen
max. dimensions



Gewicht · Weight
max. 155 g

Kühlung durch Strahlung · Cooling by radiation

Temperatur des Kolbens und der Anodenanschlüsse max. 200 °C
Temperature of envelope and anode terminals max. 200 °C

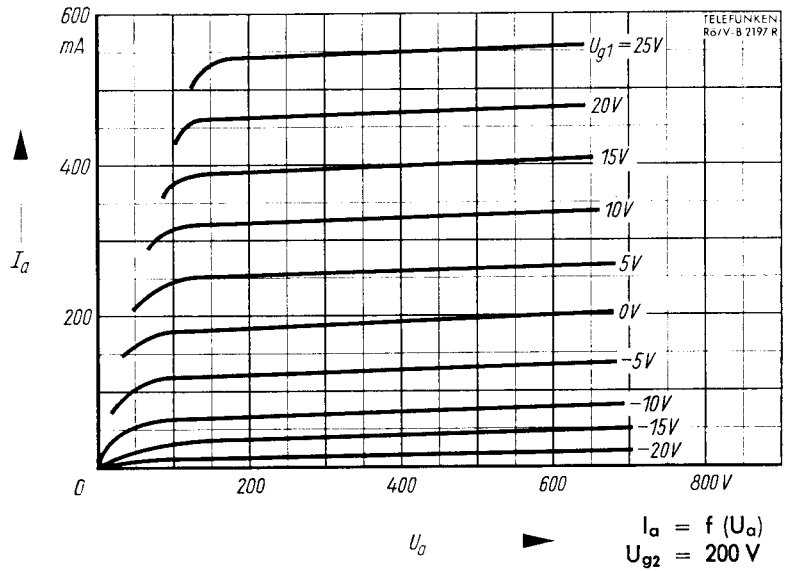
Temperatur der Sockelstifte max. 180 °C · Max. pin temperature 180 °C

Wenn die Röhre bei einer Frequenz > 150 MHz benutzt wird, kann ein schwacher Luftstrom auf den Kolben und die Anodenanschlüsse erforderlich werden.

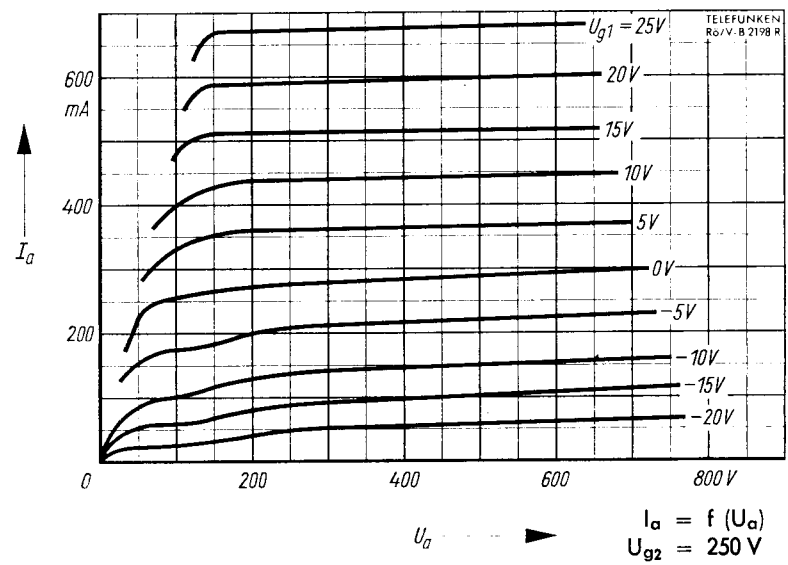
If the tube is operated at a frequency in excess of 150 Mc/s, a weak current of air directed at the envelope and anode terminals may be necessary.

Einbau: Senkrecht, Sockel oben oder unten.
Waagerecht, Anodenanschlüsse in einer waagerechten Ebene.

Mounting position: Vertical, base to top or bottom.
Horizontal, anode terminals in a horizontal plane.



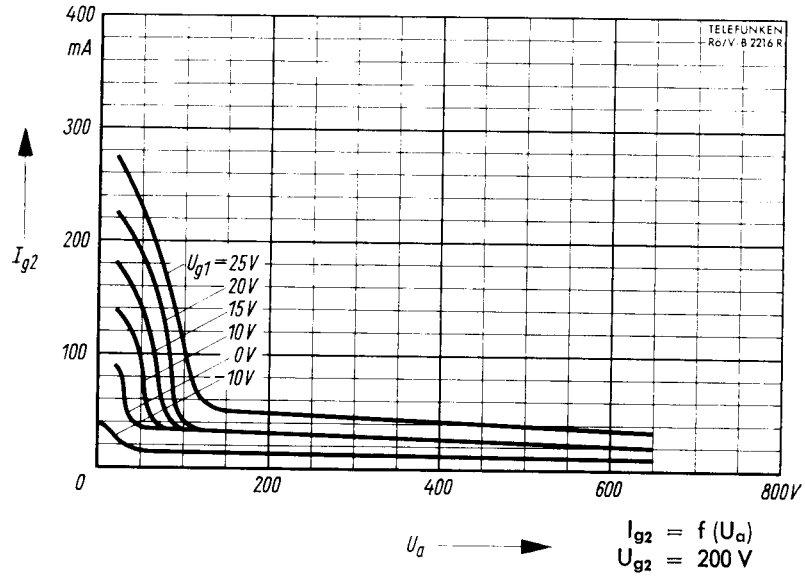
$I_a = f(U_a)$
$U_{g2} = 200\ V$
$U_{g1} =$ Parameter



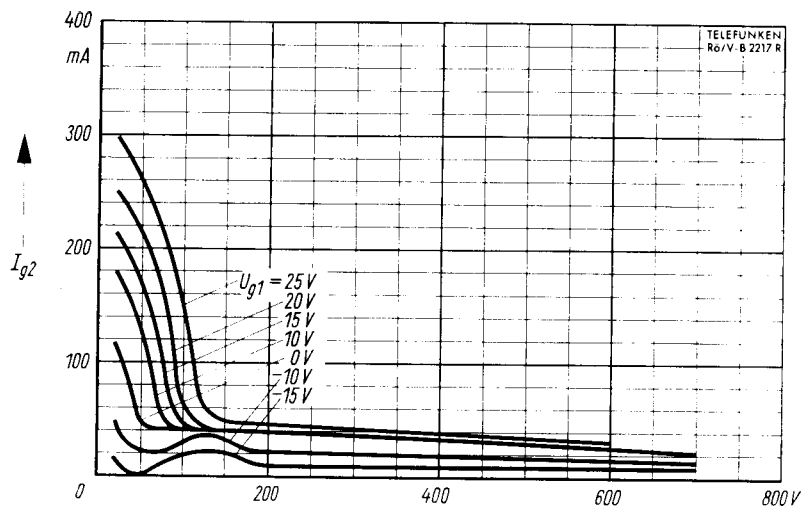
$I_a = f(U_a)$
$U_{g2} = 250\ V$
$U_{g1} =$ Parameter

je System

TELEFUNKEN

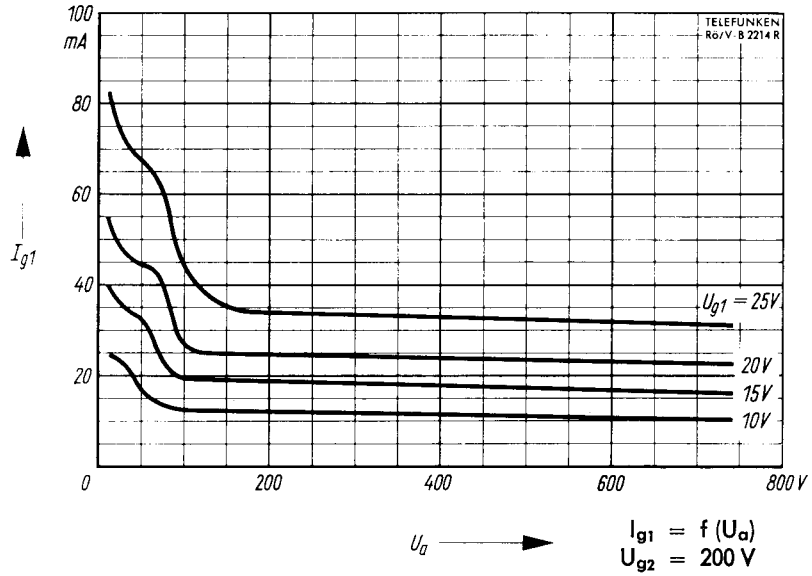


I_{g2} = f (U_a)
U_{g2} = 200 V
U_{g1} = Parameter

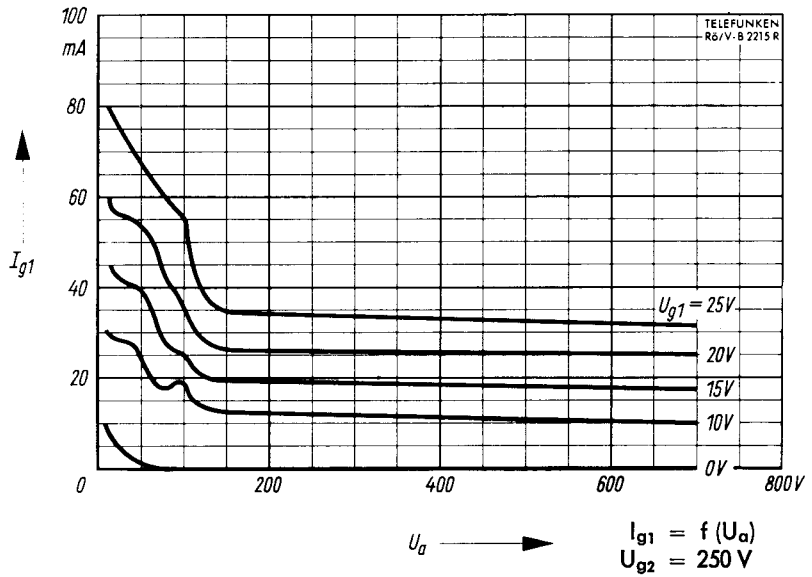


I_{g2} = f (U_a)
U_{g2} = 250 V
U_{g1} = Parameter

je System

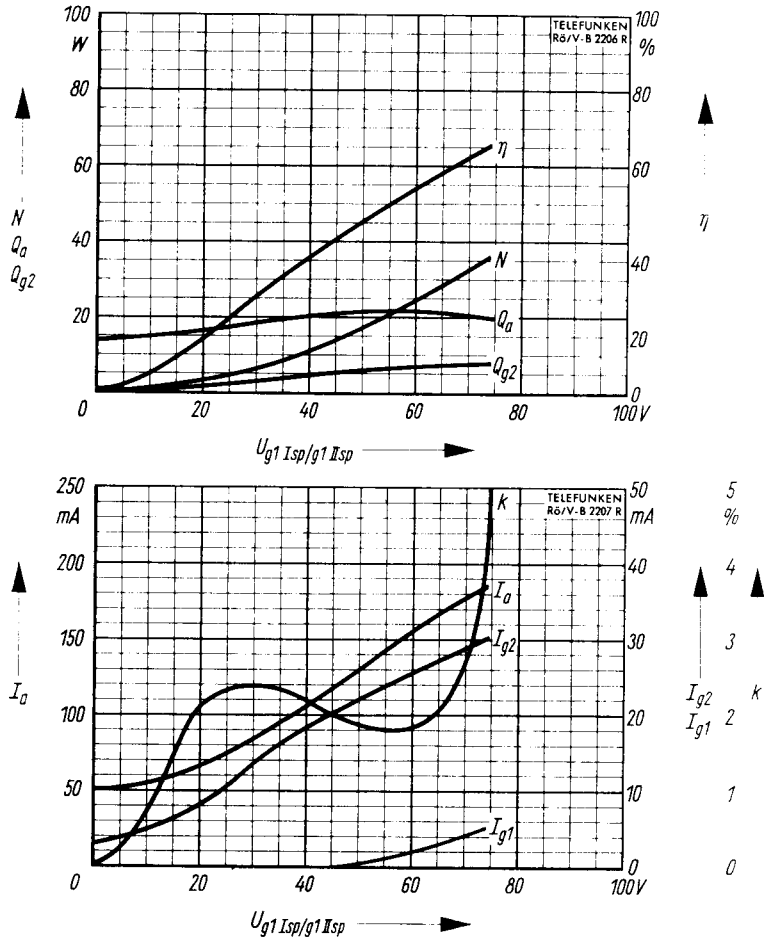


$I_{g1} = f(U_a)$
$U_{g2} = 200\ V$
U_{g1} = Parameter



$I_{g1} = f(U_a)$
$U_{g2} = 250\ V$
U_{g1} = Parameter

je System



NF-Verstärker in B-Betrieb, Modulator · ÄF amplifier class B, modulator

System I und II in Gegentakt · System I and II in push-pull

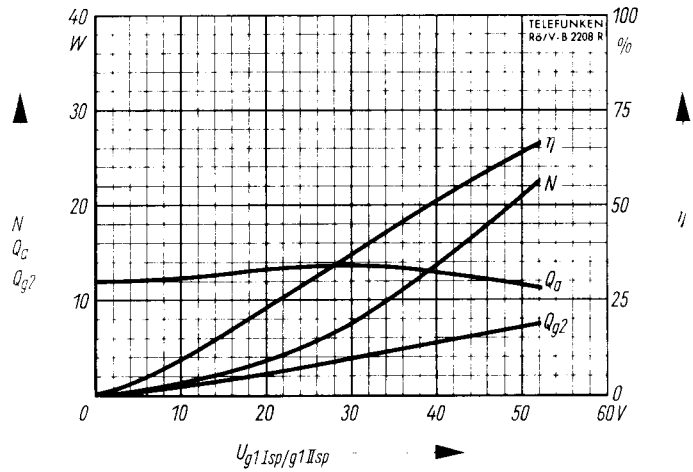
$N, Q_a, Q_{g2}, I_a, I_{g2}, I_{g1}, k, \eta = f\,(U_{g1Isp/g1IIsp})$

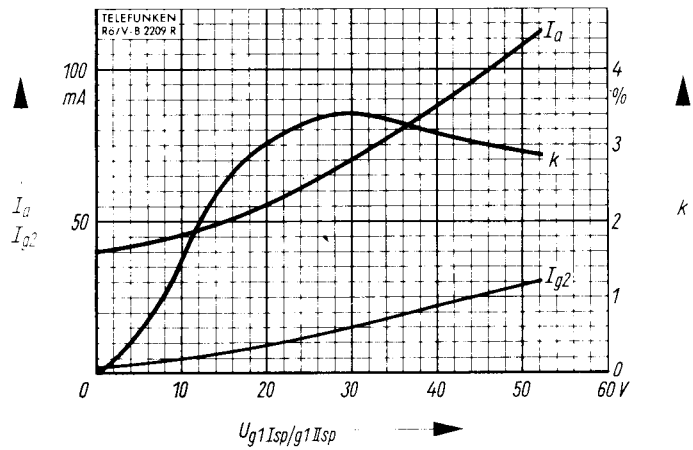
$U_a = 300$ V

$U_{g2} = 250$ V

$U_{g1} = -25$ V

$R_{aa} = 4$ kΩ





NF-Verstärker in B-Betrieb, Modulator · AF amplifier class B, modulator

System I und II in Gegentakt · System I and II in push-pull

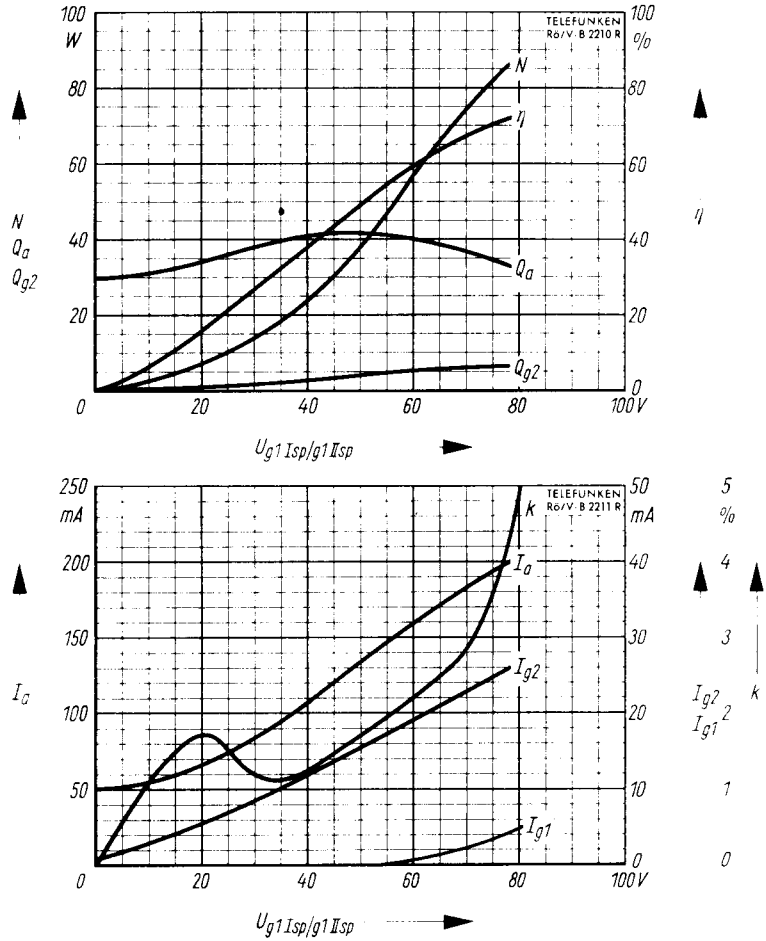
$N, Q_a, Q_{g2}, I_a, I_{g2}, k, \eta = f\,(U_{g1Isp/g1IIsp})$

$U_a = 300\ V$

$U_{g2} = 250\ V$

$U_{g1} = -26\ V$

$R_{aa} = 6{,}5\ k\Omega$



NF-Verstärker in B-Betrieb, Modulator · AF amplifier class B, modulator

System I und II in Gegentakt · System I and II in push-pull

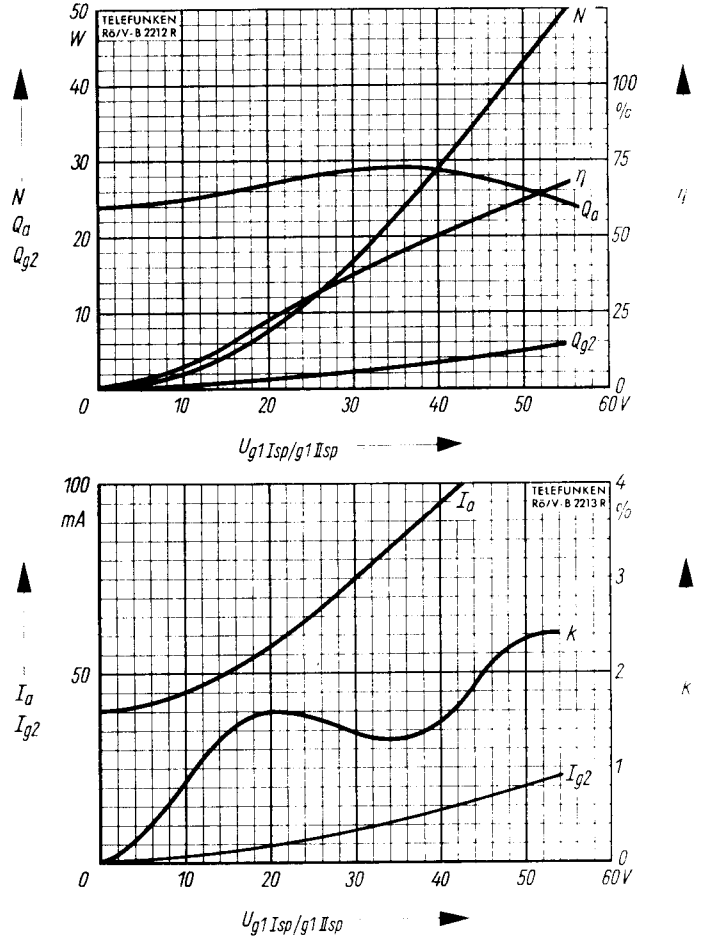
$N, Q_a, Q_{g2}, I_a, I_{g2}, I_{g1}, k, \eta = f\ (U_{g1Isp/g1IIsp})$

$U_a = 600\ V$

$U_{g2} = 250\ V$

$U_{g1} = -25\ V$

$R_{aa} = 8\ k\Omega$



NF-Verstärker in B-Betrieb, Modulator · AF amplifier class B, modulator

System I und II in Gegentakt · System I and II in push-pull

$N, Q_a, Q_{g2}, I_a, I_{g2}, k, \eta = f\,(U_{g1Isp/g1IIsp})$

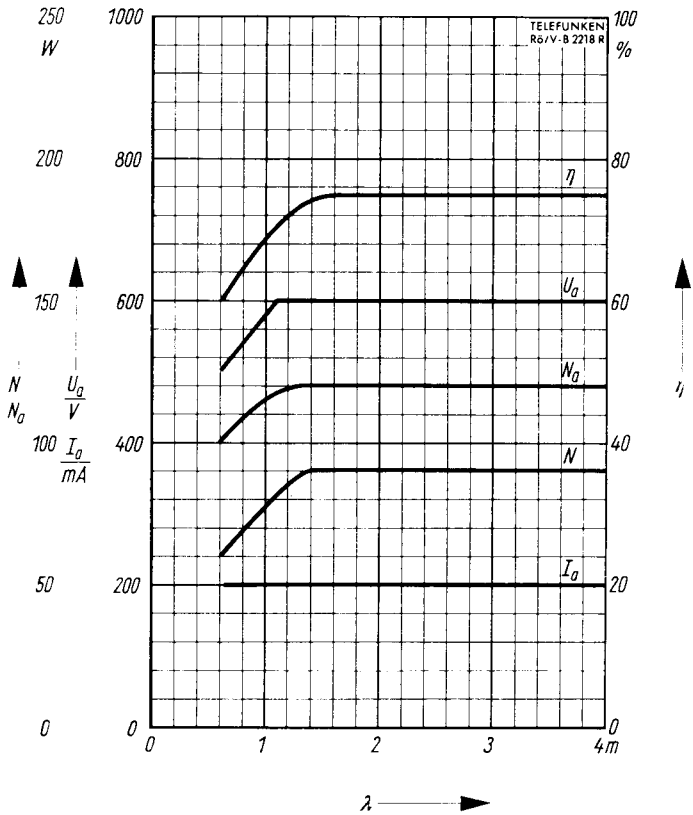
$U_a = 600\ V$

$U_{g2} = 250\ V$

$U_{g1} = -27{,}5\ V$

$R_{aa} = 12{,}5\ k\Omega$

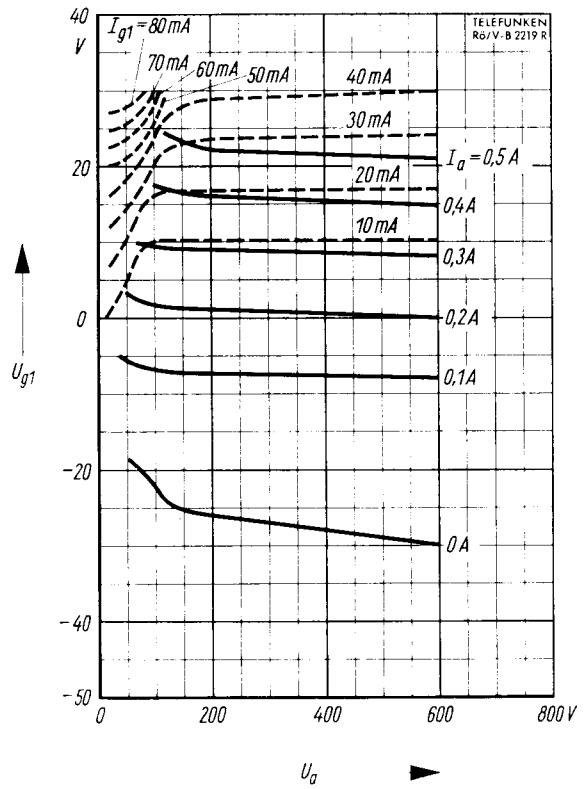
TELEFUNKEN



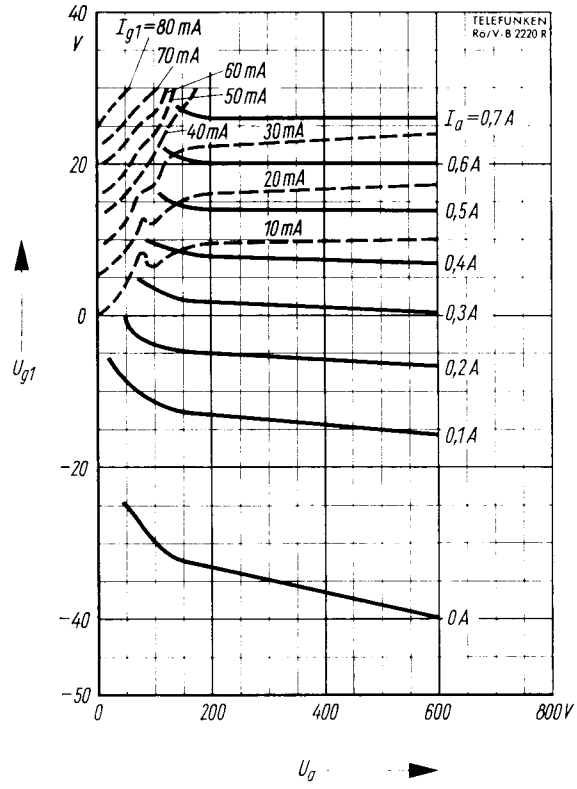
HF-Verstärker, Telegraphie C-Betrieb · RF amplifier, telegraphy class C

System I und II in Gegentakt · System I and II in push-pull

$N, N_a, U_a, I_a, \eta = f(\lambda)$
$U_{g2} = 250\ V$



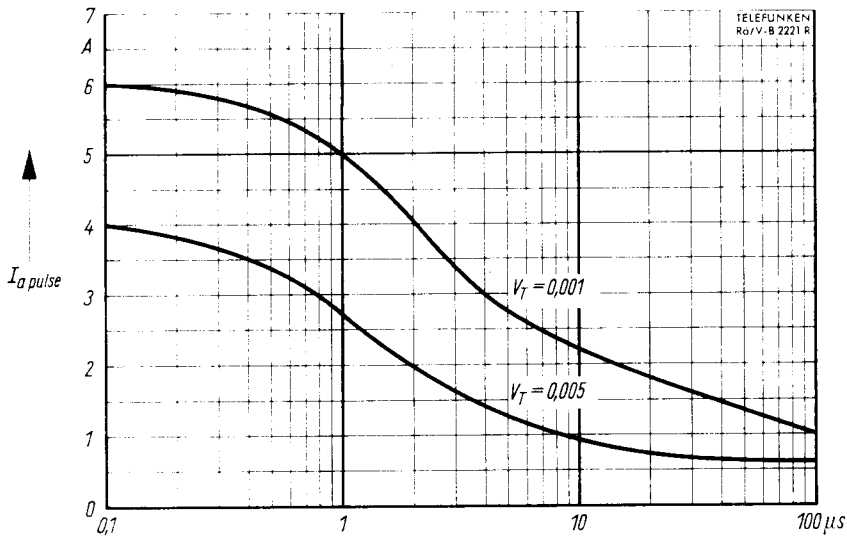
U_{g1} = f (U_a)
U_{g2} = 200 V



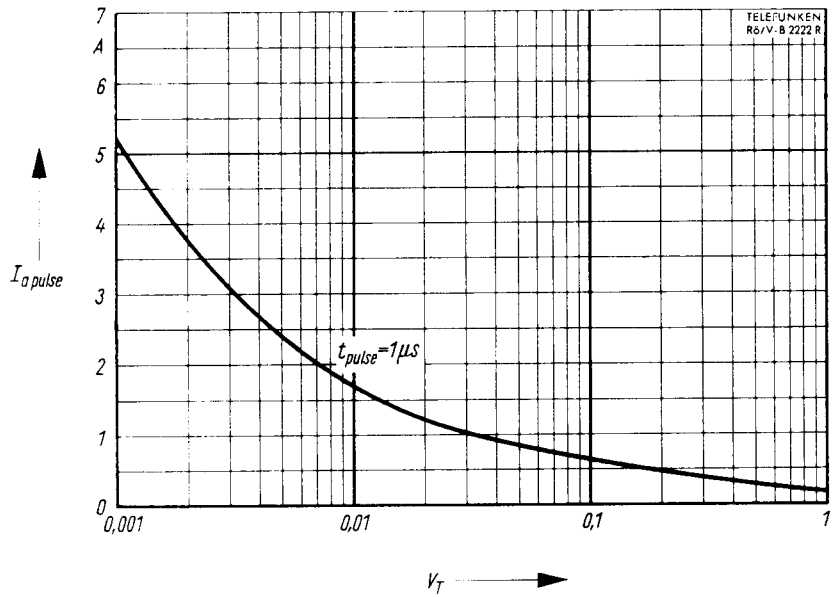
U_{g1} = f (U_a)
U_{g2} = 250 V

——— I_a - - - - I_{g1}

je System



$I_{a\,pulse} = f\,(t_{pulse})$



$I_{a\,pulse} = f\,(V_T)$