

PENTODE with variable mutual conductance for use as R.F. amplifier, I.F. amplifier and mixer in car radio sets. The tube can directly be operated from a 6 V or 12 V storage battery

PENTHODE à pente variable pour l'utilisation comme amplificatrice H.F., amplificatrice M.F. et comme tube mélangeur dans récepteurs autoradio. On peut faire fonctionner le tube directement d'un accumulateur de 6 V ou de 12 V

PENTODE mit veränderlicher Steilheit zur Verwendung als HF-Verstärker, ZF-Verstärker und als Mischröhre in Autoempfängern. Die Röhre kann direkt von einer 6 V oder 12 V Batterie betrieben werden

Heating : indirect. Parallel or series supply

Chauffage: indirect. Alimentation série ou parallèle

Heizung : indirekt. Serien- oder Parallelspeisung

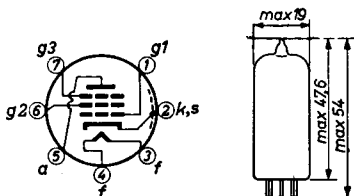
$$V_f = 6,3 \text{ V}$$

$$I_f = 300 \text{ mA}$$

Dimensions in mm

Dimensions en mm

Abmessungen in mm



Base, culot, Sockel: MINIATURE

Capacitances

Capacités

Kapazitäten

$$C_a = 4 \text{ pF}$$

$$C_{g1} = 6,5 \text{ pF}$$

$$C_{ag1} = 0,015 \text{ pF}$$

$$C_{g1g2} = 3 \text{ pF}$$

PENTODE with variable mutual conductance for use as R.F. or I.F. amplifier in carradio sets. The tube can be operated directly from a storage battery

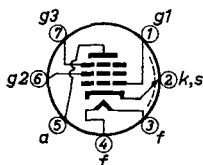
HEATING

Indirect; series or parallel supply

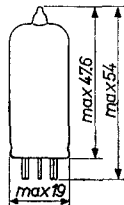
Heater voltage $V_f = 6.3 \text{ V}$

Heater current $I_f = 0.3 \text{ A}$

Dimensions in mm



Base: MINIATURE



CAPACITANCES

Grid No.1 to all other elements except anode $C_{g1} = 6.2 \text{ pF}$

Anode to all other elements except grid No.1 $C_a = 3.8 \text{ pF}$

Anode to grid No.1 $C_{ag1} = 0.015 \text{ pF}$

Grid No.1 to grid No.2 $C_{g1g2} = 3.0 \text{ pF}$

OPERATING CHARACTERISTICS for use as R.F. or I.F. amplifier

Anode voltage	$V_a =$	25	12.6	6.3 V
Grid No.3 voltage	$V_{g3} =$	0	0	0 V
Grid No.2 voltage	$V_{g2} =$	6.3	6.3	3.2 V
Grid No.1 voltage	$V_{g1} =$	-0.85	-0.85	-0.85 V
Anode current	$I_a =$	2.7	2.5	0.8 mA
Grid No.2 current	$I_{g2} =$	0.8	0.9	0.3 mA
Mutual conductance	$S =$	1.9	1.8	0.9 mA/V
Internal resistance	$R_i =$	60	120	60 k Ω
Equivalent noise resistance	$R_{eq} =$	5	5.5	8 k Ω
Grid No.1 voltage	$V_{g1} =$	-3.3	-3.3	-2.6 V
Mutual conductance	$S =$	0.19	0.18	0.09 mA/V
Grid No.1 voltage	$V_{g1} =$	-5	-5	-4 V
Mutual conductance	$S =$	0.095	0.09	0.045 mA/V

Operating characteristics as R.F. or I.F. amplifier
 Caractéristiques d'utilisation comme amplificateur H.F.
 ou M.F.

Betriebsdaten als HF- oder ZF-Verstärker

V_a	=	25			12,6	V
V_{g2}	=	6,3			6,3	V
V_{g3}	=	$\overbrace{0}$			$\overbrace{0}$	
V_{g1}	=	$-0,7^1)$	-3,5	-5	$-0,7^1)$	-3,5 -5 V
I_a	=	3,3	-	-	3	- - mA
I_{g2}	=	0,95	-	-	1,1	- - mA
S	=	2100	210	105	1900	190 95 $\mu A/V$
R_1	=	50	-	-	150	- - k Ω
R_{eq}	=	5	-	-	5,5	- - k Ω

V_a	=	12,6			6,3	V
V_{g2}	=	3,2			3,2	V
V_{g3}	=	$\overbrace{0}$			$\overbrace{0}$	
V_{g1}	=	$-0,7^1)$	-2,5	-4	$-0,7^1)$	-2,5 -4 V
I_a	=	1	-	-	1	- - mA
I_{g2}	=	0,35	-	-	0,4	- - mA
S	=	1100	110	55	1000	100 50 $\mu A/V$
R_1	=	200	-	-	70	- - k Ω
R_{eq}	=	7	-	-	8	- - k Ω

V_a	=	6,3			V
V_{g2}	=	1,6			V
V_{g3}	=	$\overbrace{0}$			V
V_{g1}	=	$-0,7^1)$	-2,5	-3,5	V
I_a	=	0,4	-	-	mA
I_{g2}	=	0,15	-	-	mA
S	=	500	50	25	$\mu A/V$
R_1	=	200	-	-	k Ω
R_{eq}	=	15	-	-	k Ω

¹⁾Obtained by grid current biasing; $R_{g1} = 10 M\Omega$
 Obtenu par moyen de $R_{g1} = 10 M\Omega$
 Erhalten mittels $R_{g1} = 10 M\Omega$

EF97**PHILIPS****OPERATING CHARACTERISTICS** for use as R.F. or I.F. amplifier
(continued)

Anode voltage	$V_a =$	12.6	6.3 V
Grid No.3 voltage	$V_{g3} =$	0	0 V
Grid No.2 voltage	$V_{g2} =$	3.2	1.6 V
Grid No.1 voltage	$V_{g1} =$	-0.85	-0.85 V
Anode current	$I_a =$	0.85	0.3 mA
Grid No.2 current	$I_{g2} =$	0.28	0.12 mA
Mutual conductance	$S =$	0.95	0.45 mA/V
Internal resistance	$R_i =$	180	180 k Ω
Equivalent noise resistance	$R_{eq} =$	7	15 k Ω
{ Grid No.1 voltage	$V_{g1} =$	-2.6	-2.3 V
{ Mutual conductance	$S =$	0.095	0.045 mA/V
{ Grid No.1 voltage	$V_{g1} =$	-4	-3.5 V
{ Mutual conductance	$S =$	0.047	0.022 mA/V

LIMITING VALUES (Design centre limits)

Anode voltage	$V_a = \text{max.}$	50 V
Anode dissipation	$W_a = \text{max.}$	0.5 W
Grid No.3 voltage	$V_{g3} = \text{max.}$	50 V
Grid No.3 circuit resistance	$R_{g3} = \text{max.}$	5 M Ω
Grid No.2 voltage	$V_{g2} = \text{max.}$	50 V
Grid No.2 dissipation	$W_{g2} = \text{max.}$	0.5 W
Grid No.1 circuit resistance	$R_{g1} = \text{max.}$	22 M Ω
Cathode current	$I_k = \text{max.}$	15 mA
Voltage between heater and cathode	$V_{kf} = \text{max.}$	50 V

Operating characteristics as mixer (R.F. voltage on g₁, oscillator voltage on g₃)

Caractéristiques d'utilisation comme tube mélangeur (tension H.F. à g₁, tension d'oscillateur à g₃)

Betriebsdaten als Mischröhre (HF-Spannung an g₁, Oszillatortension an g₃)

V _a	=	25		12,6	V
V _{g2}	=	6,3		6,3	V
R _{g3}	=	0,1		0,1	MΩ
V _{osc}	=	10		10	V _{eff}
V _{g1}	=	1) -3 -4		1) -3,5 -5	V
I _a	=	1,8 - -		1,3 - -	mA
I _{g2}	=	1,5 - -		1,7 - -	mA
S _c	=	600 60 30		550 55 27,5	μA/V
R _i	=	50 - -		25 - -	kΩ
R _{eq}	=	40 - -		40 - -	kΩ

V _a	=	6,3	V
V _{g2}	=	3,2	V
R _{g3}	=	0,1	MΩ
V _{osc}	=	5	V _{eff}
V _{g1}	=	1) -2,5 -3,5	V
I _a	=	0,45 - -	mA
I _{g2}	=	0,6 - -	mA
S _c	=	300 30 15	μA/V
R _i	=	30 - -	kΩ
R _{eq}	=	55 - -	kΩ

Limiting values

Caractéristiques limites

Grenzdaten

V _a	= max.	50	V
W _a	= max.	0,5	W
V _{g2}	= max.	50	V
W _{g2}	= max.	0,5	W
V _{g3}	= max.	50	V
I _k	= max.	15	mA
R _{g1}	= max.	22	MΩ
R _{g3}	= max.	5	MΩ
V _{kf}	= max.	50	V

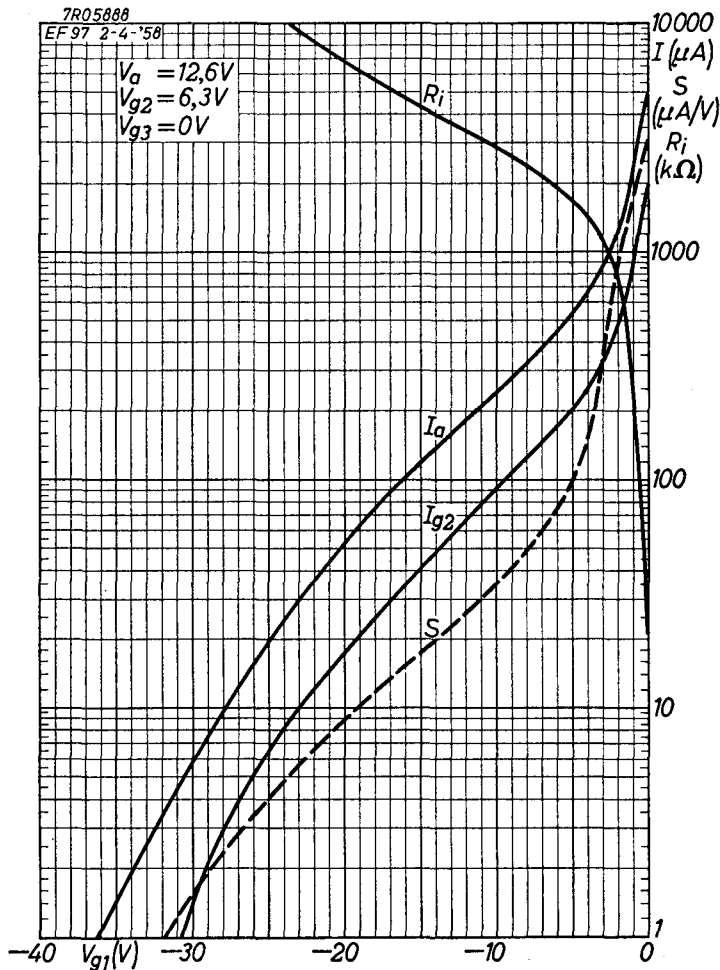
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 $V_a = 12,6V$ $V_{g2} = 6,3V$ $V_{g3} = 0V$ 

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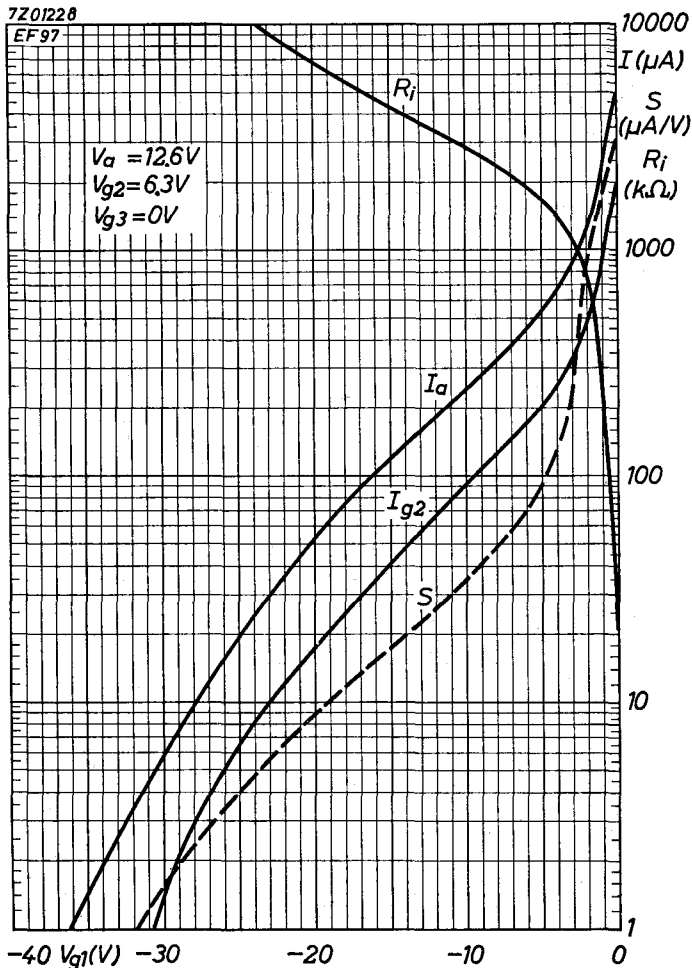
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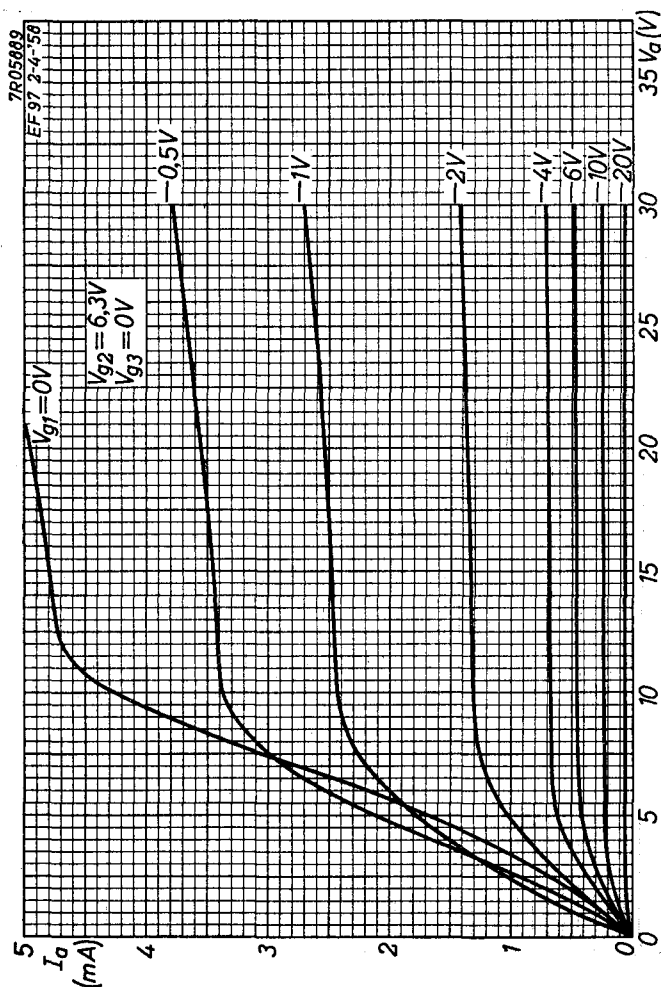
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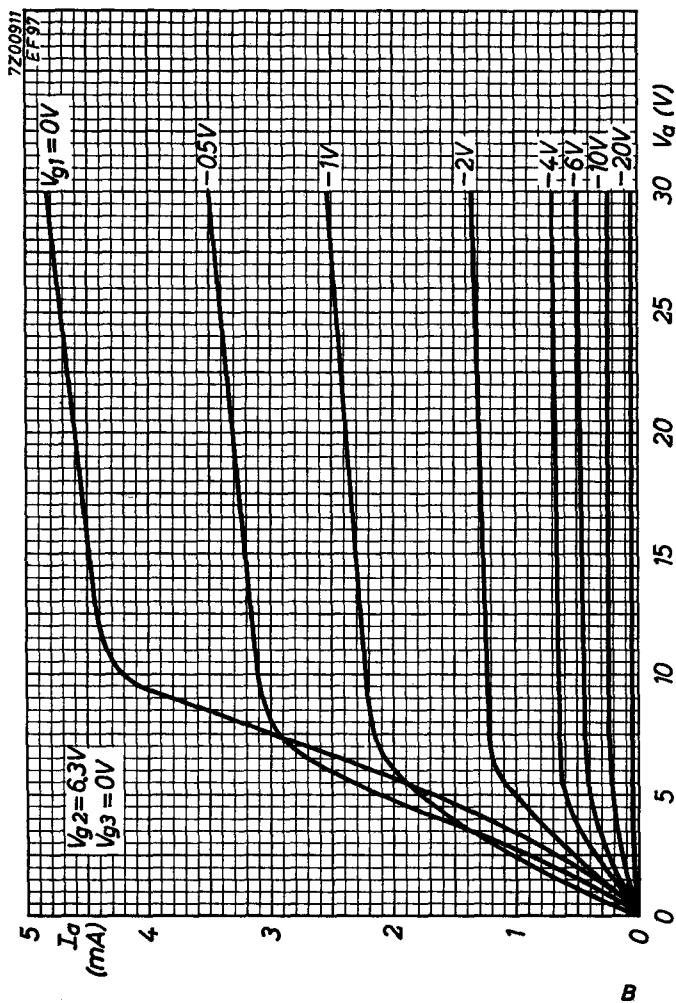
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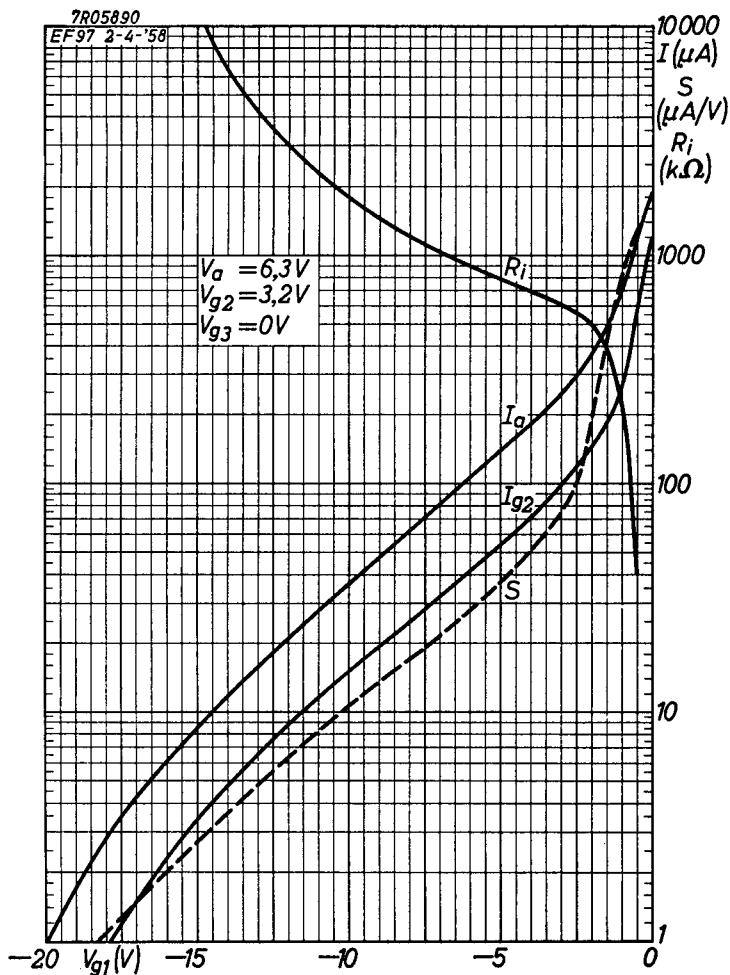
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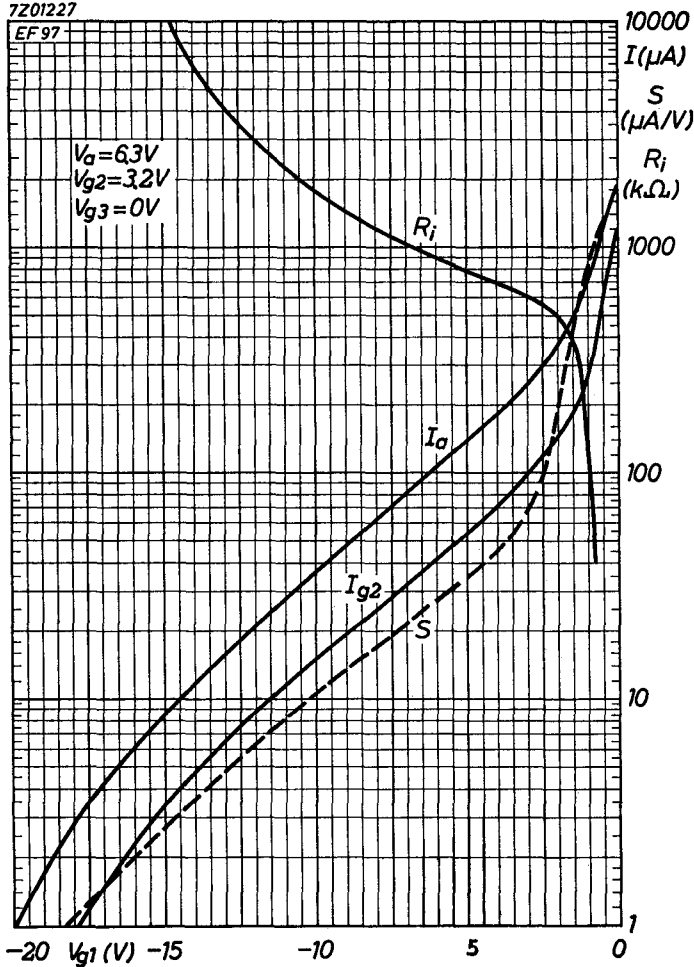
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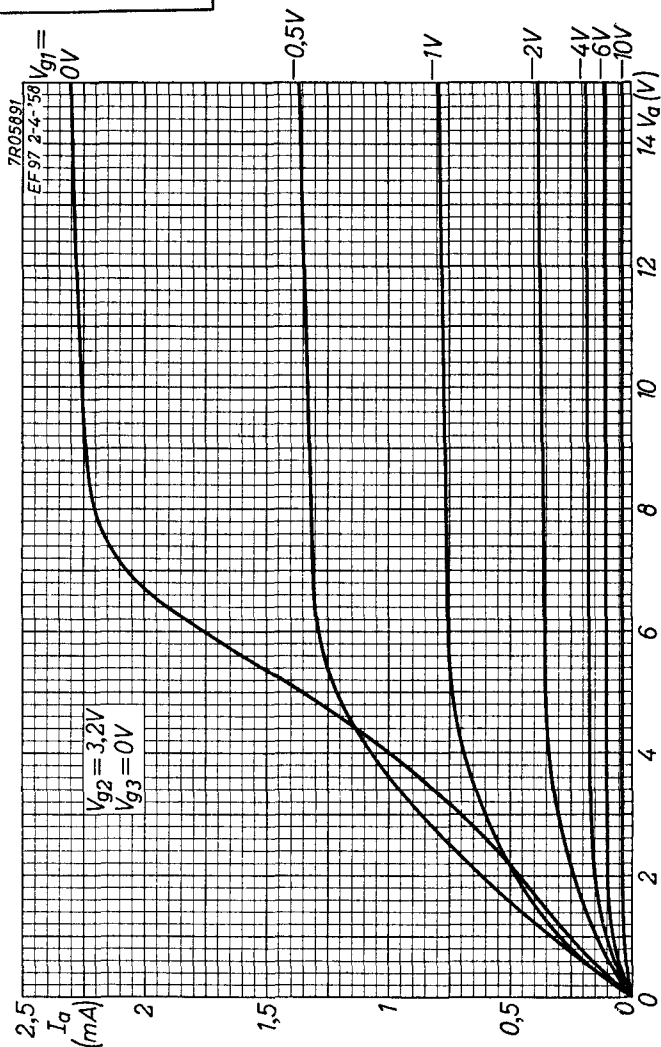
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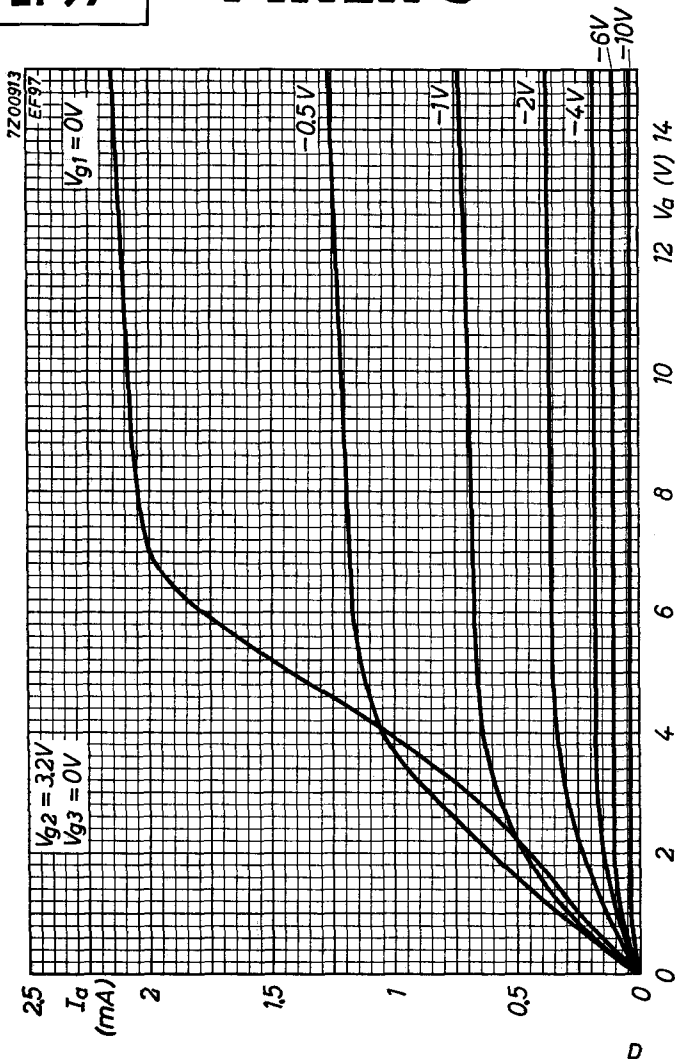
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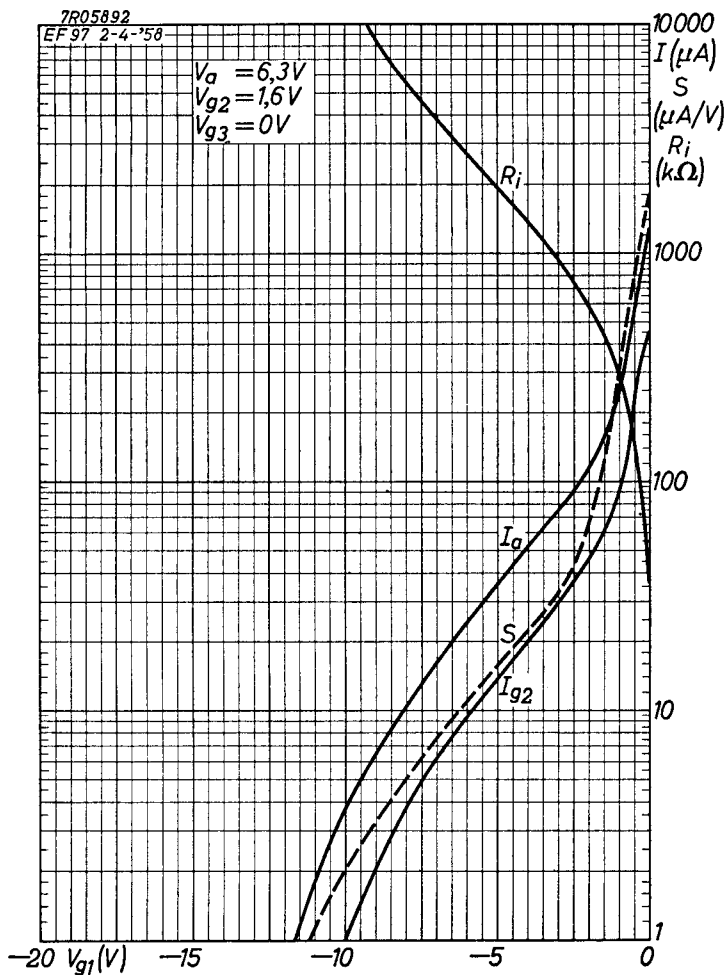
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$$V_a = 6,3V$$

$$V_{g2} = 1,6V$$

$$V_{g3} = 0V$$

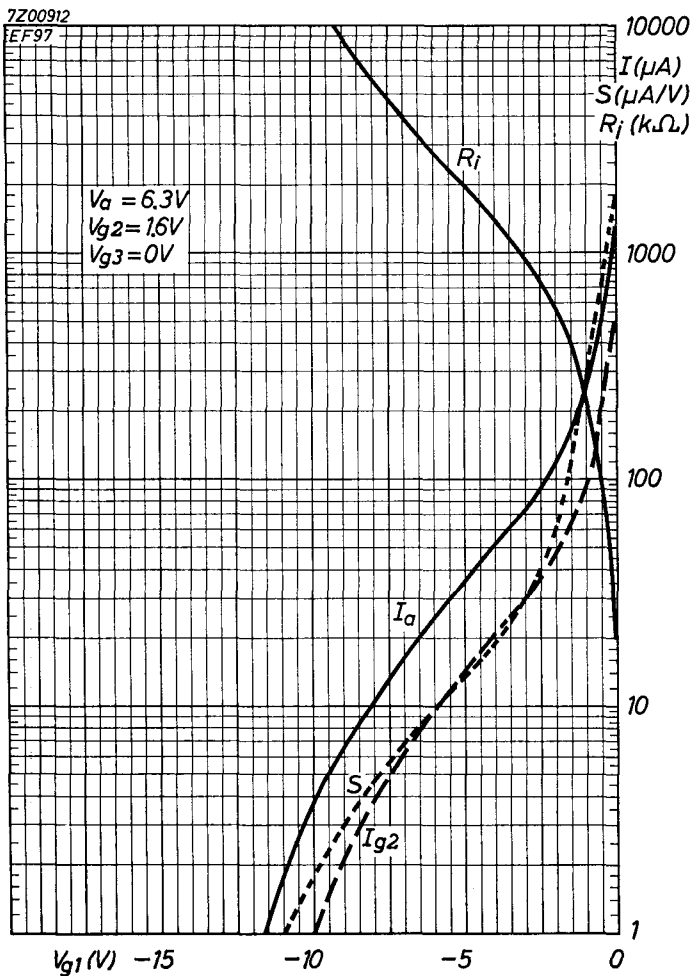


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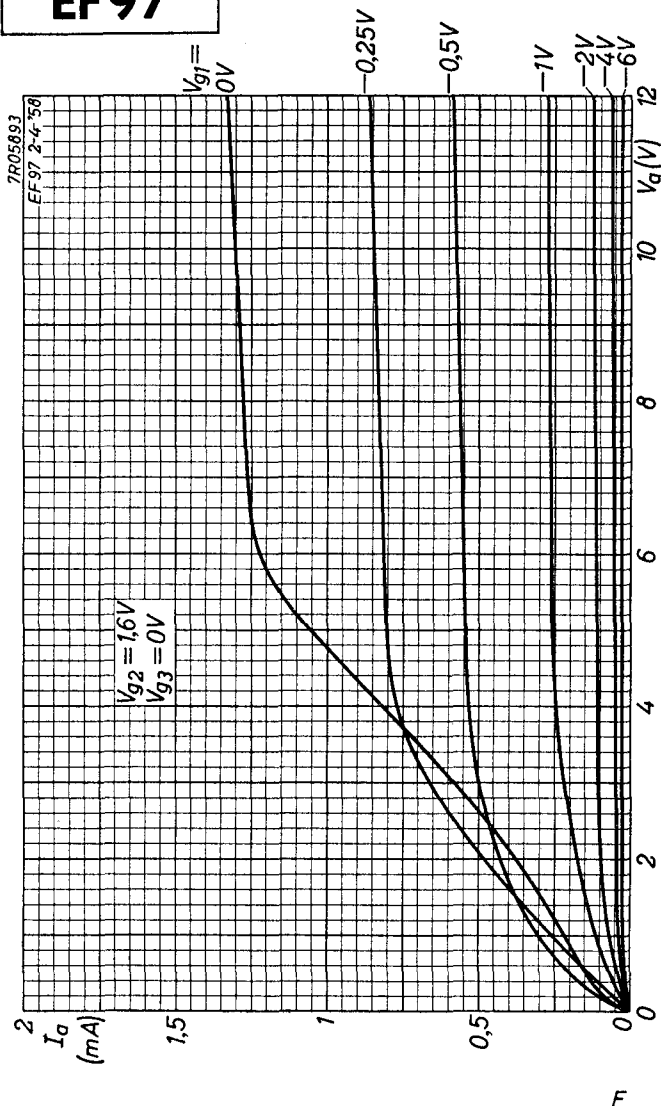


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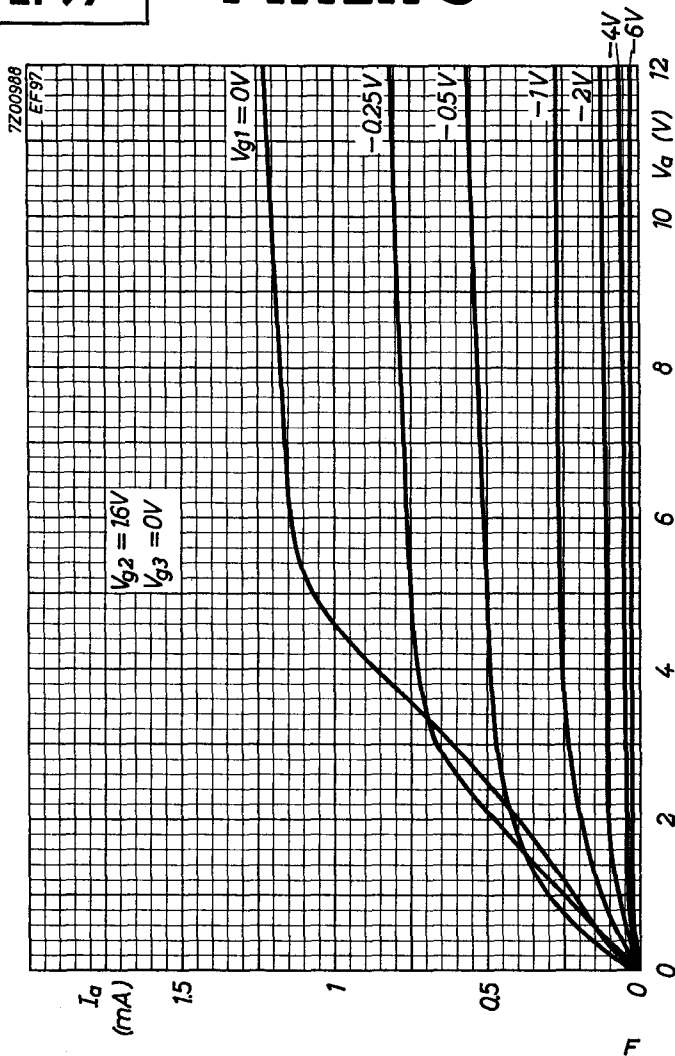
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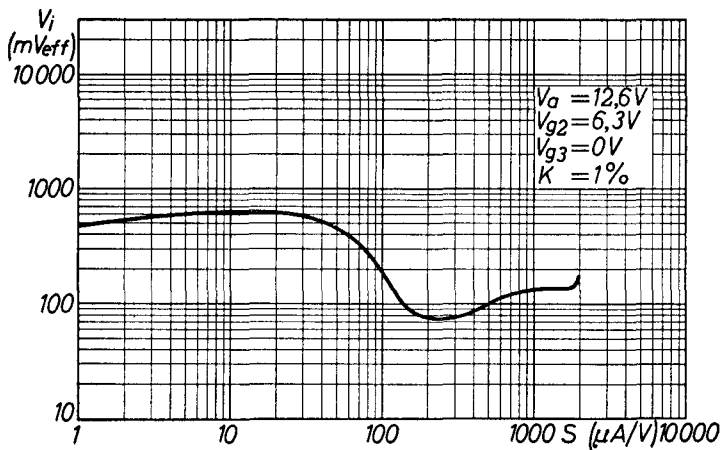
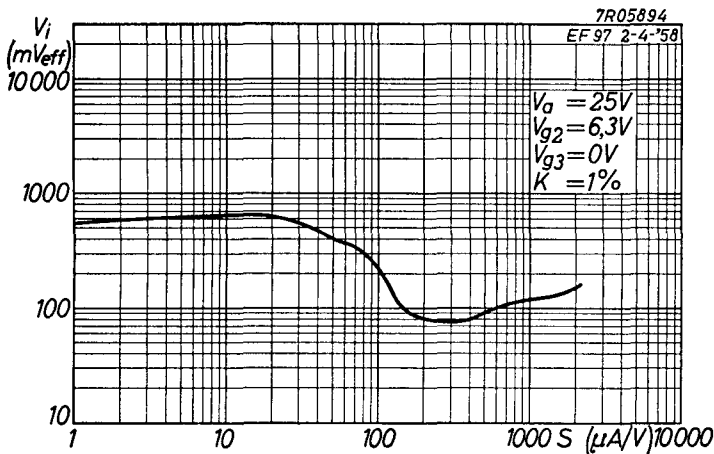
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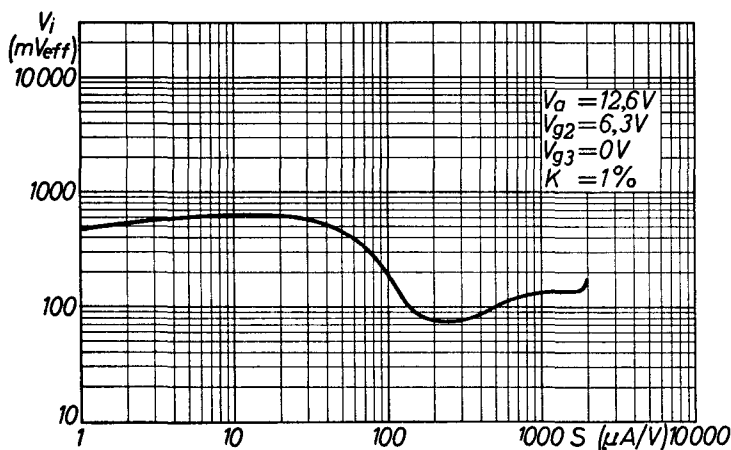
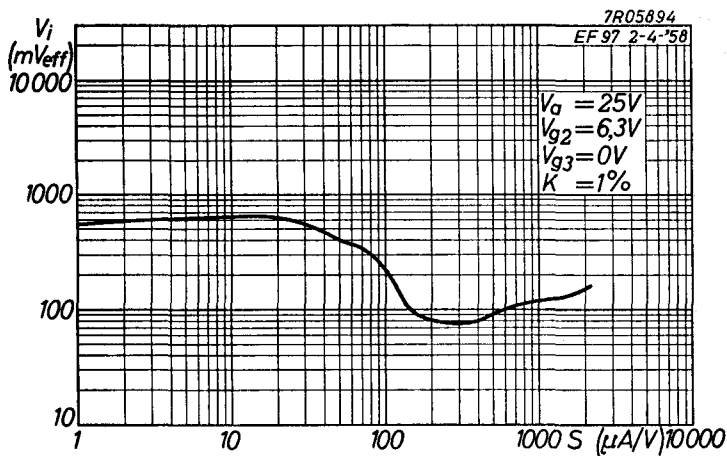
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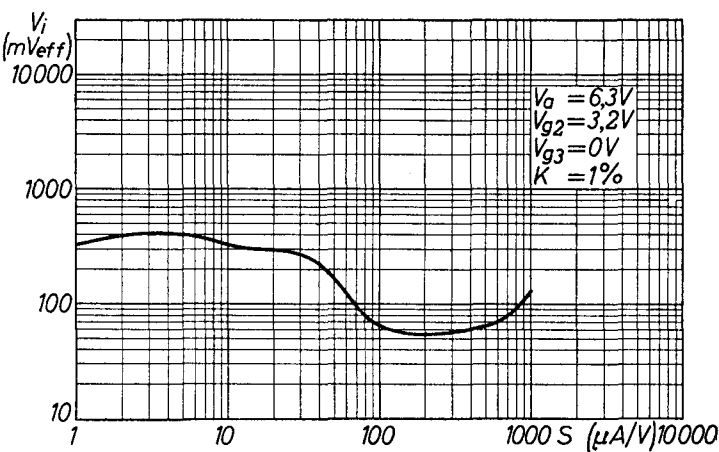
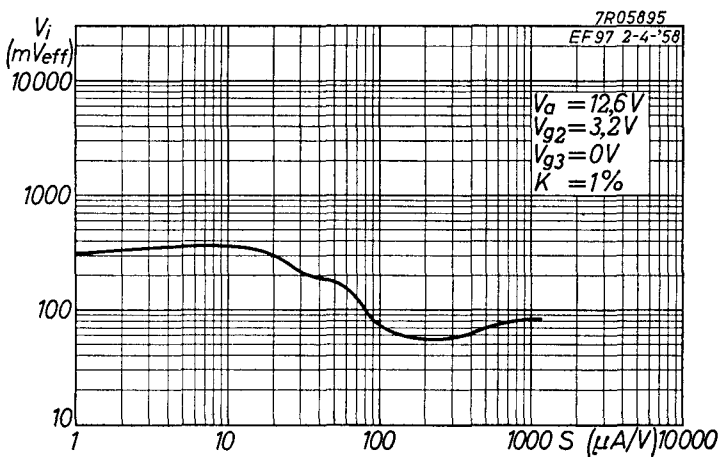




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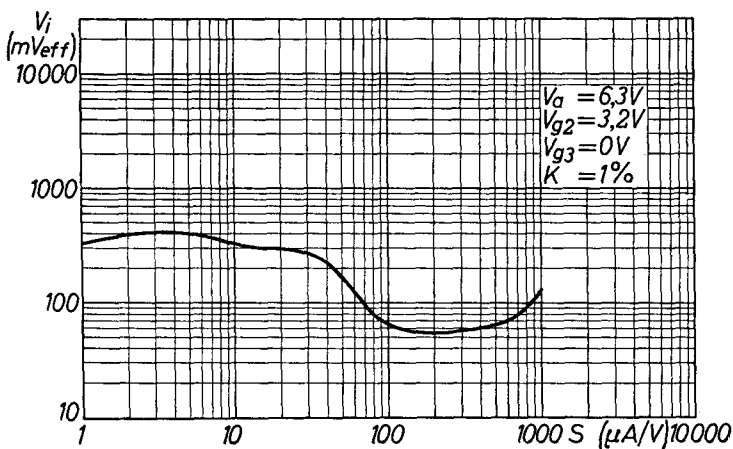
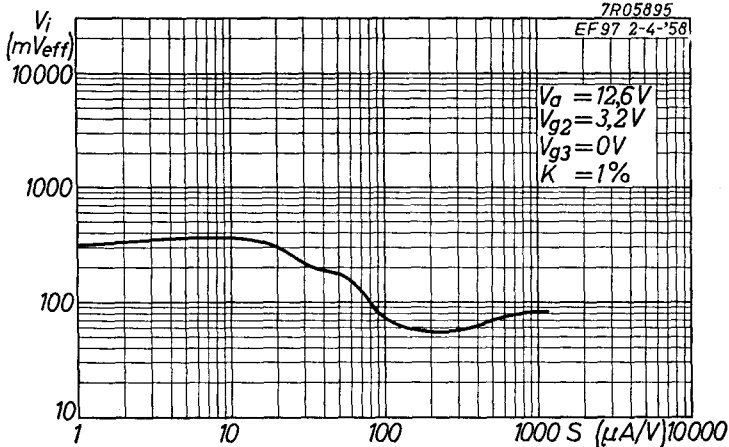


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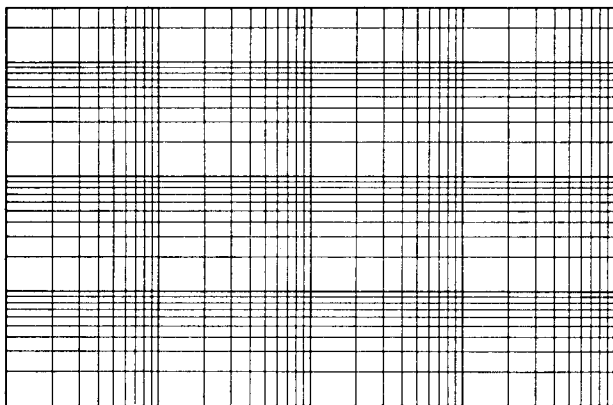
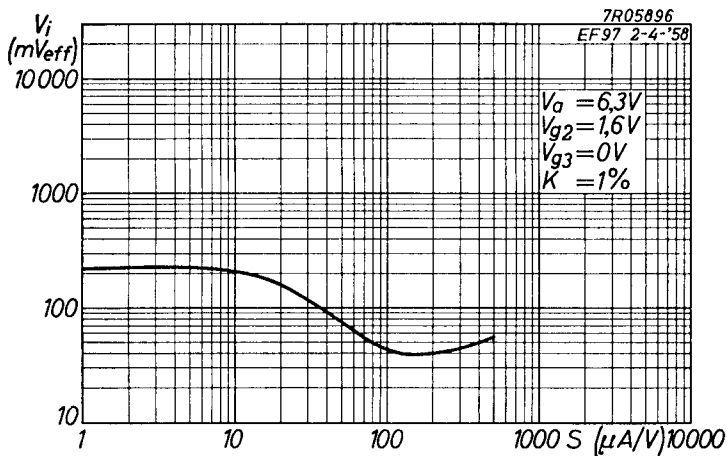
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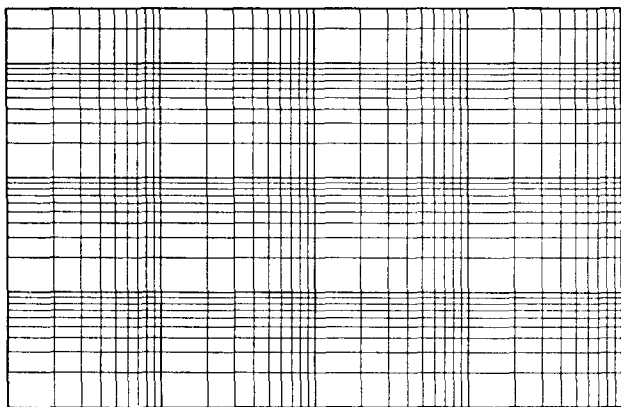
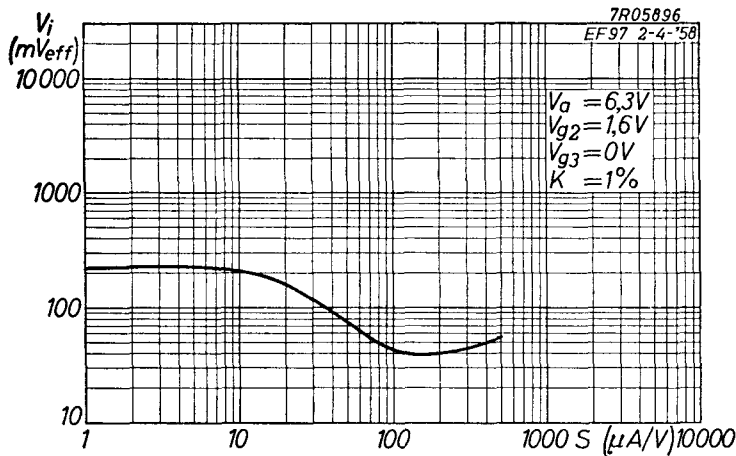
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