

S.Q. TUBE

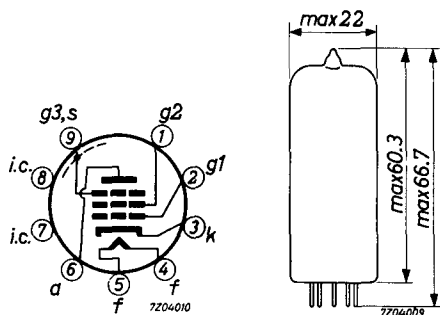
Special quality pentode designed for use in telephone equipment.

QUICK REFERENCE DATA			
Life expectancy	10 000 hours		
Low interface resistance			
Base	Noval. Gold plated pins		
Heating	Indirect A.C. or D.C. Series or parallel supply		
Heater voltage	V_f	6.3	V
Heater current	I_f	0.3	A
Anode current	I_a	10	mA
Mutual conductance	S	9	mA/V

DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



CHARACTERISTICS

Column I Nominal value or setting of the tube.

II Range values for equipment design: Initial spread

III Range values for equipment design: End of life

		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	300	285 - 315		mA
Anode voltage	V_a	210			V
Grid No.3 voltage	V_{g3}	0			V
Grid No.2 voltage	V_{g2}	120			V
Cathode resistor	R_k	165			Ω
Anode current	I_a	10	8.7 - 11.3	7	mA
Grid No.2 current	I_{g2}	2.1	1.7 - 2.5	1.25	mA
Mutual conductance	S	9	7.8 - 10.2	6.4	mA/V
Internal resistance	R_i	0.5	min. 0.3		M Ω
Amplification factor grid No.2 to grid No.1	μ_{g2g1}	38			
Equivalent noise resistance (R.F.)	R_{eq}	750	max. 1000		Ω
Equivalent noise resistance (A.F.)	R_{eq}		max. 36		k Ω
<u>Negative grid No.1 current</u>	$-I_{g1}$		max. 0.5	max. 1.0	μA
<u>Hum voltage</u>	V_{g1}		max. 0.5		mV _{RMS}
Grid resistor $R_{g1} = 0.5$ M Ω					
Cathode resistor by passed					
<u>Cut off voltage</u>	$-V_{g1}$	5	max. 5.25		V
Anode voltage	V_a	210			V
Grid No.3 voltage	V_{g3}	0			V
Grid No.2 voltage	V_{g2}	120			V
Anode current	I_a	0.5			mA

CHARACTERISTICS (continued)

<u>Leakage current between cathode and heater</u>	I	II	III	
I_{kf}		max. 15		μA
Voltage between heater and cathode $V_{kf} = 100$ V				
<u>Insulation resistance between two arbitrary electrodes</u>	R	min. 100		$M\Omega$
Voltage between electrodes $V = 250$ V				

CAPACITANCES

Radiation capacitances measured to a surrounding cylinder, internal diameter 52 mm, height 98 mm.

	I	II	
Grid No.1 to grid No.2, grid No.3, cathode, heater and screen	$C_{g1/g2g3kfs}$	8	8.7 pF
Grid No.1 to grid No.2, grid No.3, cathode, heater and screen Cathode current = 12.1 mA	$C_{g1/g2g3kfs}$	10.8	pF
Anode to grid No.2, grid No.3, cathode, heater and screen	$C_{a/g2g3kfs}$	3.5	max. 4.1 pF
Anode to grid No.1	C_{ag1}		max. 15 mpF
Grid No.1 to heater	C_{g1f}		max. 0.15 pF
Cathode to heater	C_{kf}	4	pF
Grid No.1 radiation capacitance	C_{rg1}	max. 25	mpF
Anode radiation capacitance	C_{ra}	max. 25	mpF

LIFE EXPECTANCY

When the tube is operated under the following conditions the range values of the characteristics in column III may be expected not to be exceeded during an operation period of 10 000 hours.

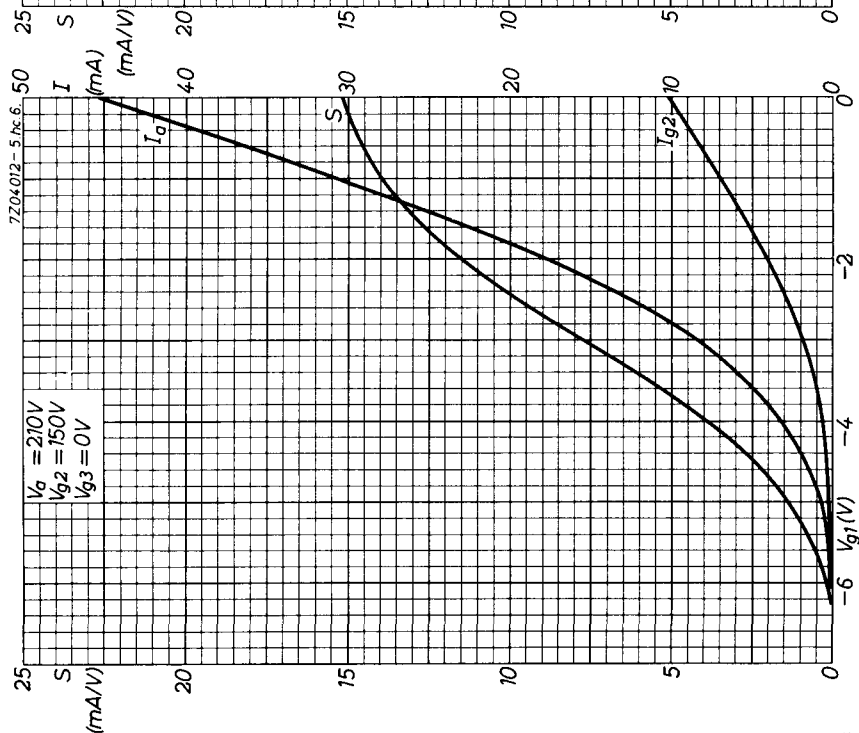
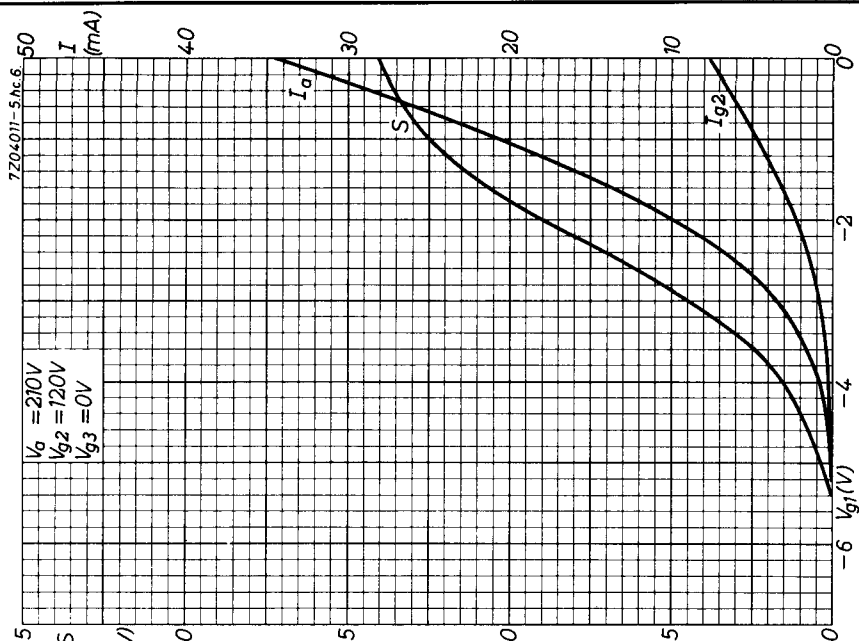
Anode voltage	V_a	210 V
Grid No.3 voltage	V_{g3}	0 V
Grid No.2 voltage	V_{g2}	120 V
Cathode resistor	R_k	165 Ω

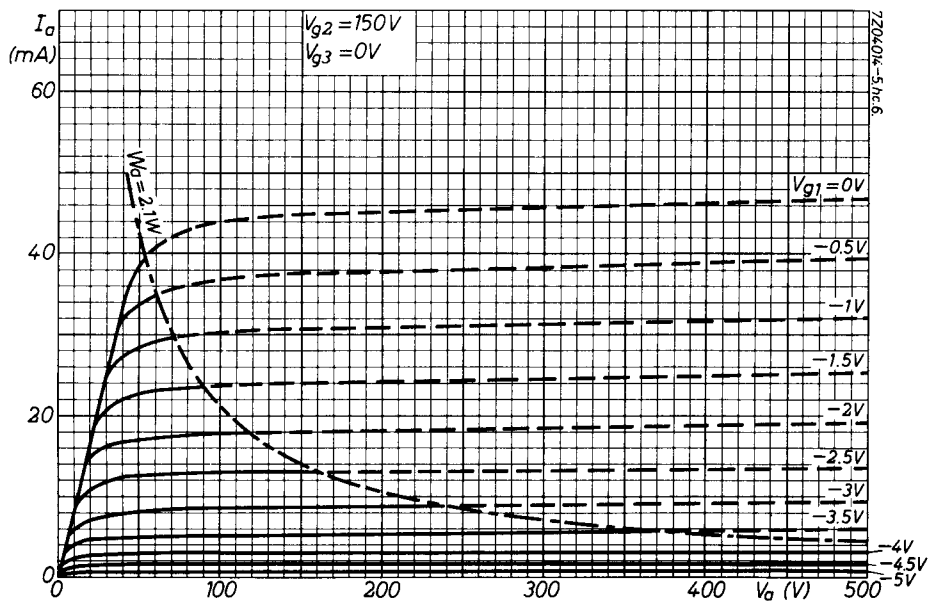
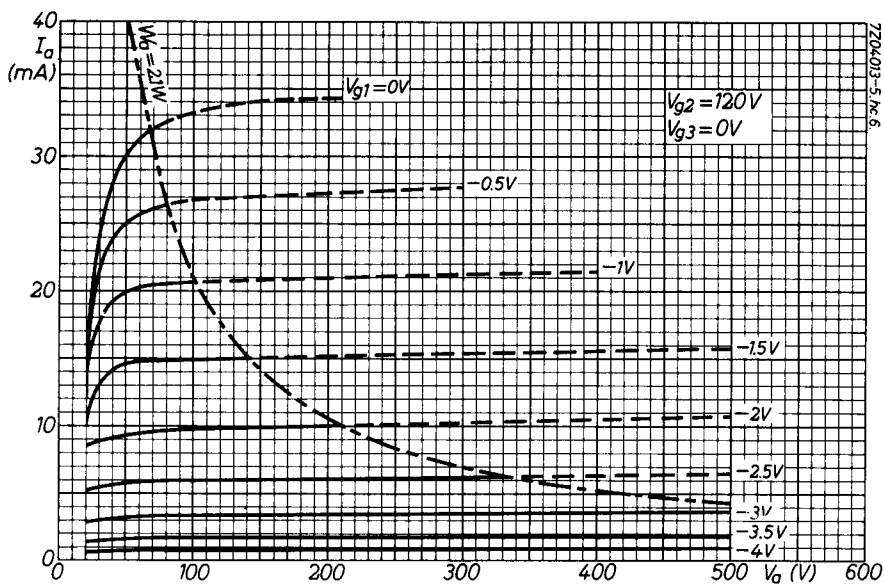
LIMITING VALUES (Design centre rating system)

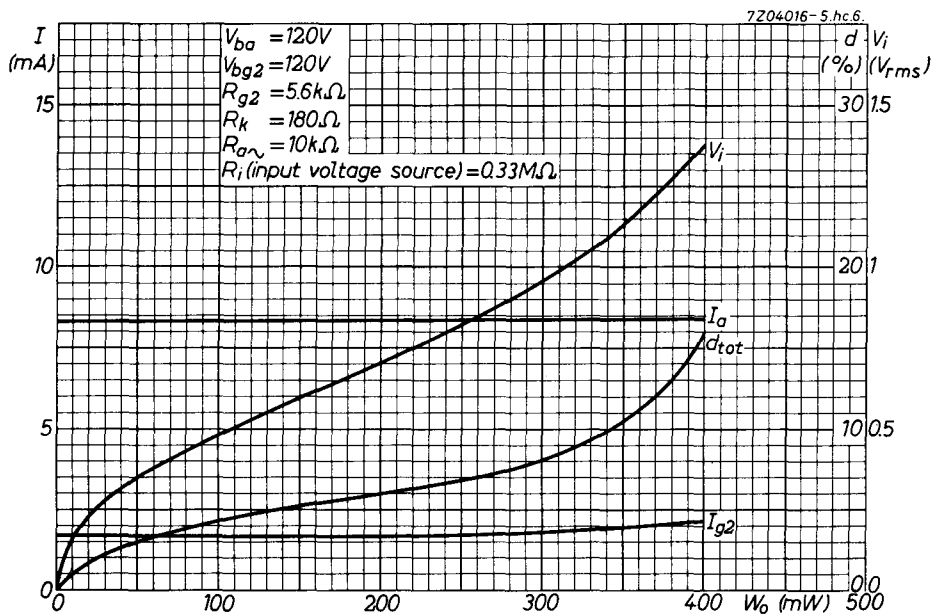
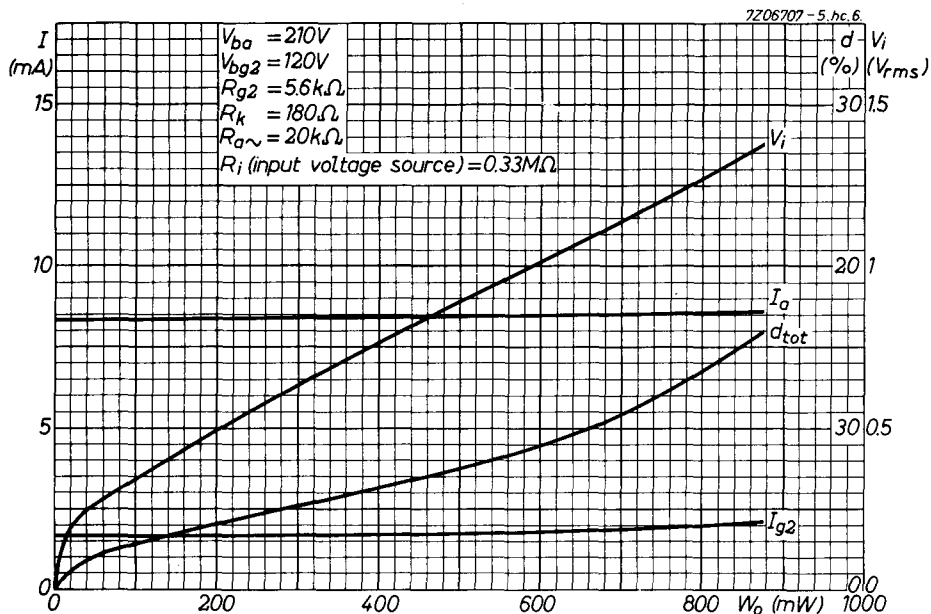
Anode voltage	V_{a0}	max.	550	V
	V_a	max.	210	V
Anode dissipation	W_a	max.	2.1	W
Grid No.2 voltage	V_{g20}	max.	550	V
	V_{g2}	max.	210	V
Grid No.2 dissipation	W_{g2}	max.	0.35	W
Grid No.1 voltage	$-V_{g1}$	max.	100	V
Grid No.1 voltage, peak	$-V_{g1p}$	max.	200	V
Duty factor max.			0.1	
Pulse duration max.			200	μ s
Grid No.1 dissipation	W_{g1}	max.	50	mW
Grid No.1 resistor (automatic bias)	R_{g1}	max.	1	M Ω
Cathode current	I_k	max.	16	mA
Cathode current peak value	I_{kp}	max.	80	mA
Duty factor max.			0.1	
Pulse duration max.			200	μ s
Voltage between heater and cathode	V_{kf}	max.	100	V
Bulb temperature (absolute maximum)	t_{bulb}	max.	170	$^{\circ}$ C

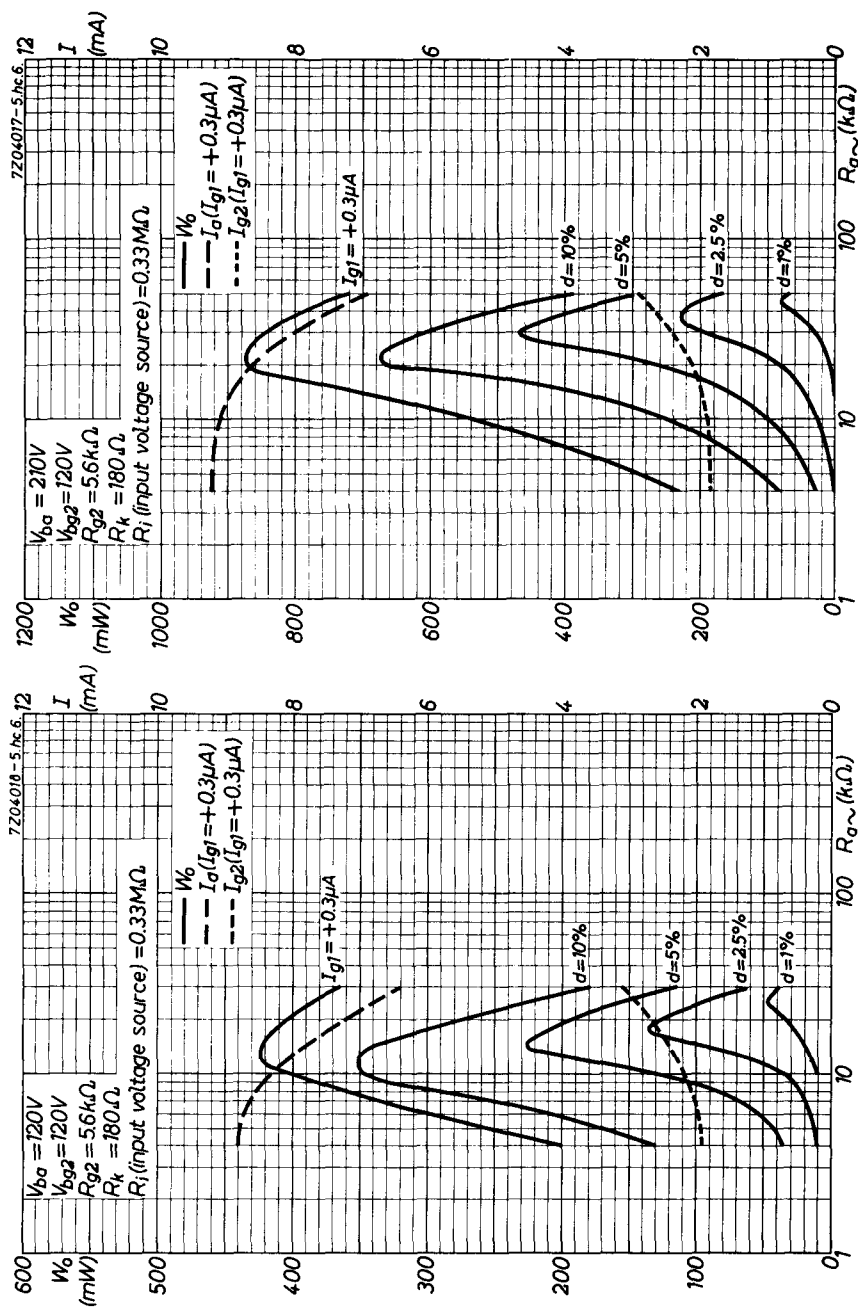
OPERATING CHARACTERISTICSOutput tube. Class A

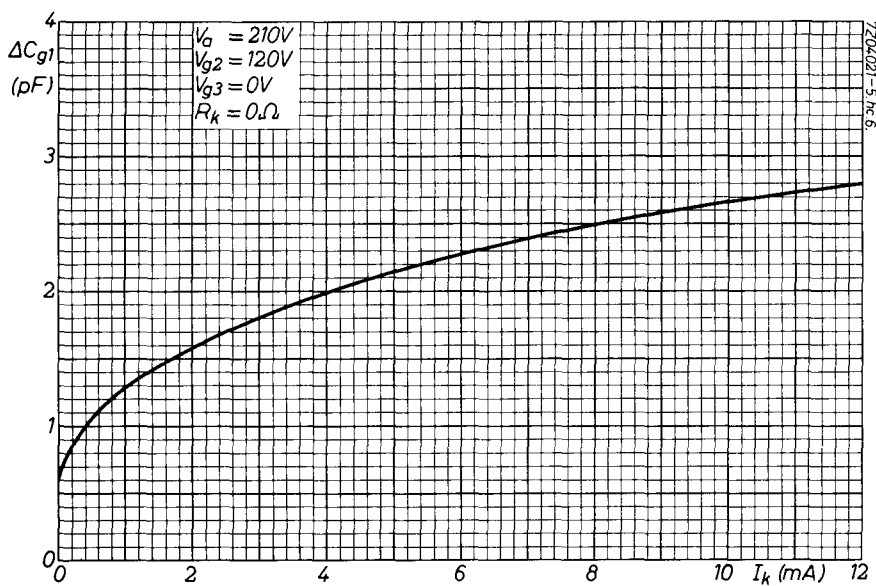
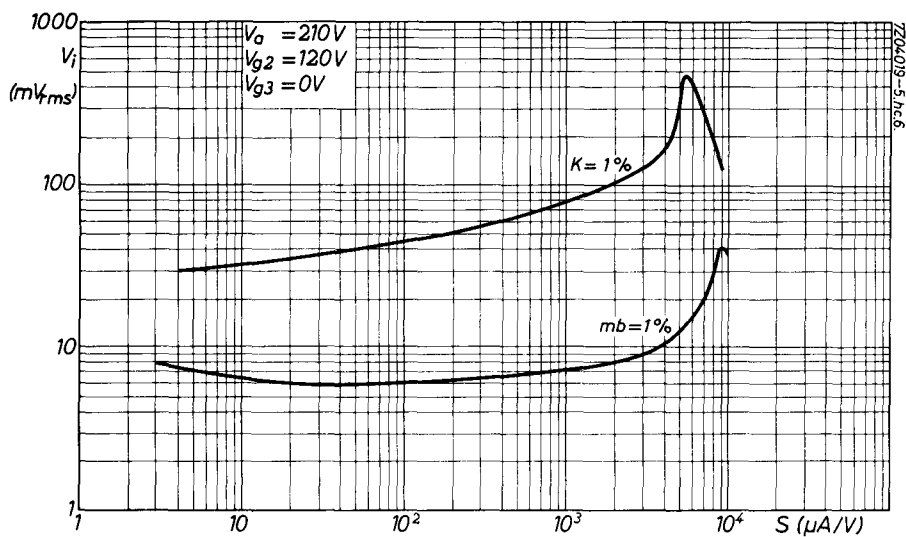
Anode voltage	V_a	120			210			V
Grid No.3 voltage	V_{g_3}	0			0			V
Grid No.2 supply voltage	V_{bg_2}	120			120			V
Grid No.2 resistor	R_{g_2}	5.6			5.6			k Ω
Cathode resistor	R_k	180			180			Ω
Anode current	I_a	8.3			8.3			mA
Grid No.2 current	I_{g_2}	1.7			1.7			mA
Mutual conductance	S	8.2			8.2			mA/V
Internal resistance	R_i	0.42			0.44			M Ω
Load resistance	$R_{a\sim}$	10			20			k Ω
Input voltage	V_i	0.35	1.1	-	0.25	1.1	-	V_{RMS}
Grid No.1 current	$+I_{g_1}$	-	-	0.3	-	-	0.3	μA
Grid No.1 resistor	R_{g_1}	-	-	0.33	-	-	0.33	M Ω
Total distortion	dt_{tot}	-	10	-	-	10	-	%
Output power	W_o	50	340	400	50	660	870	mW

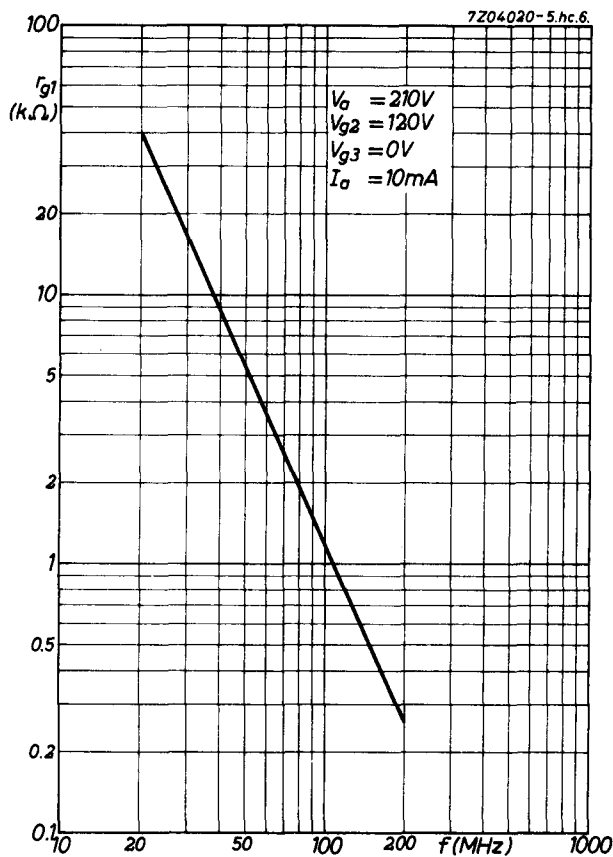












PHILIPS

Data handbook



**Electronic
components
and materials**

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