

SPECIAL QUALITY, SHOCK AND VIBRATION RESISTANT TETRODE, nuvistor type

HEATING

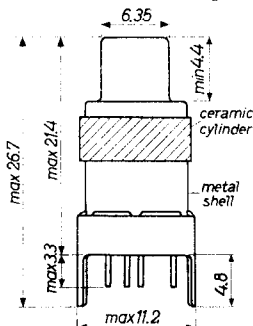
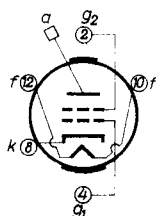
Indirect by A.C. or D.C.; parallel supply

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

Heater current $I_f = 150 \text{ mA}$

Dimensions in mm

Base: TWELFAR 5 pin



LIMITING VALUES (Absolute limits)

Anode voltage in cold condition	V_{a0}	= max.	330 V
Anode voltage	V_a	= max.	250 V
Anode dissipation	W_a	= max.	2.2 W
Grid No.2 voltage in cold condition	V_{g20}	= max.	330 V
Grid No.2 voltage	V_{g2}	= max.	110 V
Grid No.2 dissipation	W_{g2}	= max.	0.2 W
Negative grid No.1 voltage	$-V_{g1}$	= max.	55 V
Peak positive grid No.1 voltage	$+V_{g1 p}$	= max.	2 V
Grid No.1 current	I_{g1}	= max.	2 mA
External grid No.1 resistance with fixed bias	R_{g1}	= max.	0.5 MΩ
External grid No.1 resistance with automatic bias	R_{g1}	= max.	1.0 MΩ
Cathode current	I_k	= max.	20 mA
Peak voltage between heater and cathode	$V_{kf p}$	= max.	100 V
Shell temperature	t_{bulb}	= max.	150 °C
Altitude			any

CHARACTERISTICS

Column I: Setting of the tube and average measuring results of new tubes

II: Characteristics range values for equipment design

Heater current

	I	II
Heater voltage	$V_f = 6.3$	V
Heater current	$I_f = 150$	140-160 mA

Capacitances

	I	II
Anode to grid No.1	$C_{ag1} = 0.01$	0.009-0.011 pF
Grid No.1 to all other elements except anode	$C_{g1} = 6.5$	6.0-7.0 pF
Anode to all other elements except grid No.1	$C_a = 1.4$	1.2-1.6 pF
Cathode to heater	$C_{kf} = 1.4$	1.1-1.7 pF

Typical characteristics

	I	II
Heater voltage	$V_f = 6.3$	V
Anode supply voltage	$V_{ba} = 125$	V
Grid No.2 supply voltage	$V_{bg2} = 50$	V
Cathode resistor	$R_k = 68$	Ω
Anode current	$I_a = 10$	8.5-11.5 mA
Grid No.2 current	$I_{g2} = 2.7$	1.8-3.6 mA
Internal resistance	$R_1 = 0.2$	M Ω
Mutual conductance	$S = 10.6$	9.0-12.2 mA/V ¹)

Cut-off voltage

	I	II
Heater voltage	$V_f = 6.3$	V
Anode voltage	$V_a = 125$	V
Grid No.2 voltage	$V_{g2} = 50$	V
Anode current	$I_a = 10$	μ A
Negative grid No.1 bias	$-V_{g1} = 4.5$	V

¹) Mutual conductance at underheating ($V_f = 5.7$ V) = min. 8.0 mA/V

Decrease of mutual conductance by underheating
($V_f = 6.3$ V $\rightarrow$ 5.7 V) = max. 20 %

CHARACTERISTICS (continued)Grid current

		I	II
Heater voltage	V_f	= 6.3	V
Anode voltage	V_a	= 200	V
Grid No.2 voltage	V_{g2}	= 70	V
Grid No.1 supply voltage	V_{bg1}	= -1.6	V
Grid No.1 resistor	R_{g1}	= 0.5	MΩ
Negative grid No.1 current	$-I_{g1}$	=	< 0.1 μA

Insulation

		I	II
Heater voltage	V_f	= 6.3	V
Voltage between heater and cathode	V_{kf}	= 100	V
Heater to cathode current	I_{kf}	=	< 5 μA

		I	II
Heater voltage	V_f	= 6.3	V
Voltage between grid No.1 and all other electrodes + metal shell	$V_{g1-(a+g2+k+s)}$	= 100	V
Insulation resistance between grid No.1 and all other electrodes + metal shell	$R_{g1-(a+g2+k+s)}$	=	> 500 MΩ

		I	II
Heater voltage	V_f	= 6.3	V
Voltage between anode and all other electrodes + metal shell	$V_{a-(g2+g1+k+s)}$	= 300	V
Insulation resistance between anode and all other electrodes + metal shell	$R_{a-(g2+g1+k+s)}$	=	> 500 MΩ

		I	II
Heater voltage	V_f	= 6.3	V
Voltage between grid No.2 and all other electrodes + metal shell	$V_{g2-(a+g1+k+s)}$	= 100	V
Insulation resistance between grid No.2 and all other electrodes + metal shell	$R_{g2-(a+g1+k+s)}$	=	> 500 MΩ

CHARACTERISTICS (continued)Vibrational noise output

Heater voltage	V_f	=	6.3	V
Anode supply voltage	V_{ba}	=	125	V
Grid No.2 supply voltage	V_{bg2}	=	50	V
Cathode resistor	R_k	=	68	Ω
Cathode capacitor	C_k	=	1000	μF
Anode resistor	R_a	=	2	k Ω
Vibrational acceleration	a	=	1	g
{ Vibrational frequency	f	=	50-6000	c/s
{ Noise output	V_o	=	< 35	mV
{ Vibrational frequency	f	=	6-15	kc/s
{ Noise output	V_o	=	< 500	mV

Shock resistance: 1000 g ¹⁾

20 shocks as produced by the NRL impact machine, lifting the hammer over an angle of 60°

Vibration resistance: 2.5 g ¹⁾

Vibrational acceleration of 2.5 g during 48 hours at a frequency of 60 c/s

¹⁾ The specified conditions are test conditions for evaluation of the ruggedness of the tube and should not be interpreted as suitable operating conditions



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