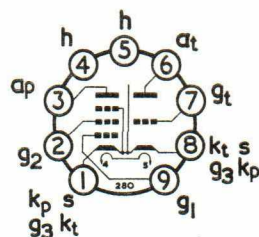


V.H.F. TRIODE PENTODE FREQUENCY CHANGER



B9A Base

GENERAL

This valve is a V.H.F. triode pentode frequency changer for use in AC/DC television receivers. In design, the internal layout is arranged to minimise cathode lead inductance and the basing has been selected to make the valve particularly suitable for use in printed circuits, but it can also be used with advantage in wired circuits. The triode is identical to that used in the 30C1/PCF80.

Heater Current	I_h	0.3	A
Heater Voltage	V_h	9.0	V

RATINGS

	Triode	Pentode	
Maximum Anode Dissipation	$P_a(\max)$	1.5	1.7 W
Maximum Screen Dissipation	$P_{g2}(\max)$	—	0.5 W
Maximum Anode Voltage	$V_a(\max)$	250	V
Maximum Screen Voltage	$V_{g2}(\max)$	—	175 V
Maximum Heater to Cathode Voltage (RMS)	$V_{h-k(r.m.s.)\max}$	200	V
Maximum Cathode Current	$I_k(\max)$	15	14 mA ←

INTER-ELECTRODE CAPACITANCES

	*	†	‡	
Grid 1 to all	$c_{in}(p)$	6.6	6.8	7.7 pF ←
Anode Pentode to all	$c_{out}(p)$	4.6	4.9	5.9 pF ←
Anode Pentode to Grid 1	c_{ap-g1}	0.013	0.017	0.02 pF ←
Grid 1 to Grid 2	c_{g1-g2}	2.3	2.3	2.3 pF ←
Grid Triode to Earth	c_{gt-E}	2.8	3.0	3.8 pF ←
Anode Triode to Earth	c_{at-E}	2.7	2.9	3.7 pF ←
Anode Triode to Grid Triode	c_{at-gt}	1.6	1.7	1.8 pF ←
Anode Triode to Anode Pentode	c_{at-ap}	0.016	0.022	0.026 pF ←
Anode Pentode to Grid Triode	c_{ap-gt}	0.003	0.005	0.006 pF ←
Grid 1 to Grid Triode	c_{g1-gt}	0.012	0.02	0.04 pF ←
Grid 1 to Anode Triode	c_{g1-at}	0.006	0.01	0.015 pF ←

* In fully shielded socket, with cylindrical screening can.

† With holder capacity balanced out but with cylindrical screening can.

‡ Total capacity including B9A holder with cylindrical screen. (Plessey holder type CP180024/3).

"Earth" denotes the electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shields joined to cathode.

Indicates a change ←

CHARACTERISTICS

	Triode	Pentode	
Anode Voltage	V_a 100	170	V
Screen Voltage	V_{g2} —	170	V
Anode Current	I_a 15	10	mA
Mutual Conductance	g_m 6	9	mA/V ←
Amplification Factor (Pentode g_1 to g_2)	μ 20	55	←

TYPICAL OPERATION

As frequency changer with oscillator voltage applied to grid 1

PENTODE

Supply Voltage	V_b	200	V
Anode Voltage (Decoupling resistance = $4.7k\Omega$)	V_a	164	V
Screen Voltage ($R_{g2} = 27k\Omega$)	V_{g2}	138	V
Grid 1 Resistance for Grid Current Bias	R_{g1}	100	$k\Omega$
Grid 1 Current	I_{g1}	33	μA ←
Conversion Conductance	g_c	3.3	mA/V ←
Heterodyne Peak Voltage	$v_{het(pk)}$	3.7	V
Anode Current (Approximate)	I_a	7.6	mA ←
Screen Current (Approximate)	I_{g2}	2.3	mA

TRIODE

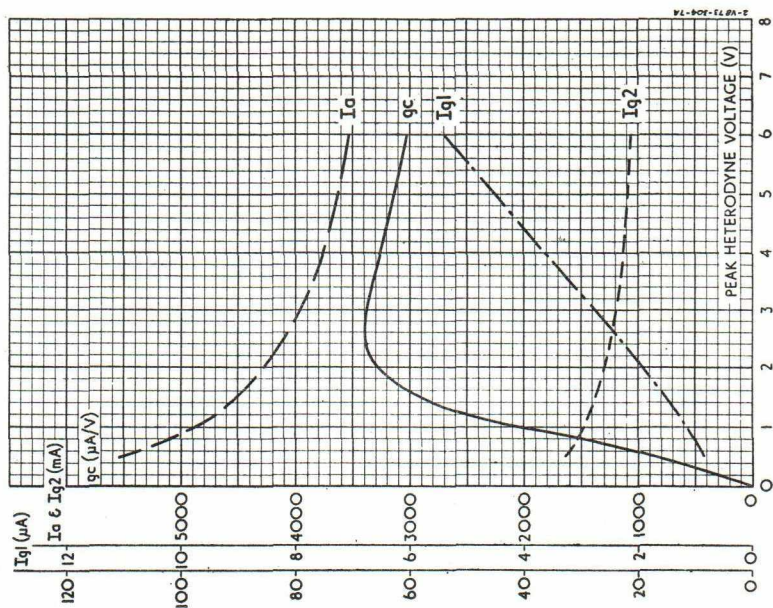
Anode Voltage	V_a	120	V
Average Anode Current	$I_{a(av)}$	6	mA

MOUNTING POSITION—Unrestricted.

APPROXIMATE WEIGHT

Net	0.5 oz
Packed	0.75 oz

CHARACTERISTIC CURVES: Conversion Conductance



TEST CIRCUIT: Conversion Conductance

