SPECIAL QUALITY R.F. POWER TRIODE

M8080

Special quality power triode for use as an r.f. power amplifier or oscillator in equipment where mechanical vibration and shocks are unavoidable and where statistically controlled major electrical characteristics are required.

This data should be read in conjunction with GENERAL NOTES – SPECIAL QUALITY VALVES which precede this section of the handbook, and the index numbers are used to indicate where reference should be made to a specific note.

HEATER

V_h[1]	6.3	V
I_h	150	mA

CAPACITANCES[2] (measured without an external shield)

c_{in}	1.5	pF
c_{out}	1.2	pF
c_{a-g}	1.4	pF

CHARACTERISTICS[3]

V_a	250	V
I_a	10.5	mA
V_g	–8.5	V
g_m	2.2	mA/V
μ	17	
r_a	7.7	kΩ
R_k	0	Ω

LIMITING VALUES[4] (absolute ratings)

f max.	150	Mc/s
$V_{a(b)}$ max.	550	V
V_a max.	330	V
p_a max.	3.8	W
$-V_g$ max.	110	V
I_g max.	5.5	mA
I_k max.	21	mA
R_{g-k} max. (cathode bias)	1.0	MΩ
R_{g-k} max. (fixed bias)	250	kΩ
V_{h-k} max.	150	V
Maximum acceleration (continuous operation)	2.5	g
Maximum shock (short duration)	500	g
T_{bulb} max.	170	°C

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TEST CONDITIONS (unless otherwise specified)

V_h (V)	V_a (V)	V_g (V)	R_k (Ω)	V_{h-k} (V)
6.3	250	–8.5	0	0

TESTS	A.Q.L.[5] (%)	Individuals[6] Bogey[9]	Min.	Max.	Lot average[7] Min.	Max.	Lot standard deviation[8] Max.	
GROUP A								
Insulation								
a-rest measured at –300V	0.25	—	100	—	—	—	—	MΩ
g-rest measured at –100V	0.25	—	100	—	—	—	—	MΩ
Reverse grid current, R_{g1} max. = 500kΩ	0.25	—	—	0.5	—	—	—	μA
GROUP B								
Heater current	0.65	—	138	162	—	—	—	mA
Heater cathode leakage current	0.65	—	—	—	—	—	—	
V_{h-k} = 100V (cathode negative)	—	—	—	10	—	—	—	μA
V_{h-k} = 100V (cathode positive)	—	—	—	10	—	3.0	—	μA
Anode current	0.65	10.5	6.5	14.5	—	—	—	mA
	—	—	—	—	9.0	12	1.22	mA
Mutual conductance	0.65	2.2	1.75	2.65	—	—	—	mA/V
	—	—	—	—	2.0	2.4	0.157	mA/V
Group qaulity level[10]	1.0	—	—	—	—	—	—	

GROUP C

Anode current. V_g = −30V	2.5	—	—	50	—	—	—	μA
Reverse grid current. V_h = 6.9V, V_{a-e} = 250V V_{g-e} = 0V, R_k = 810Ω	2.5	—	—	1.0	—	—	—	μA
Microphonic noise at the anode at 50c/s and 2.5g min. peak acceleration, V_b = 250V, R_a = 2kΩ, V_{g-e} = 0V, R_k = 810Ω, C_k = 1000μF	2.5	—	—	7.0	—	—	—	mV (r.m.s.)
Group quality level[10]	6.5	—	—	—	—	—	—	

GROUP D

Glass strain test[11A]. No applied voltages	6.5	—	—	—	—	—	—	
Base strain test[12]. No applied voltages	6.5	—	—	—	—	—	—	
Capacitances (unshielded). No applied voltages; pin 2 connected to pin 7	6.5	—	—	—	—	—	—	
c_{in}	—	—	1.35	2.25	—	—	—	pF
c_{out}	—	—	0.98	1.62	—	—	—	pF
c_{a-g}	—	—	1.2	2.0	—	—	—	pF
Mutual conductance. V_a = 100V, V_g = 0V	6.5	3.25	2.5	4.0	—	—	—	mA/V
	—	—	—	—	2.82	3.68	0.33	mA/V
Change of mutual conductance. V_a = 100V, V_g = 0V, V_h = 5.7V	6.5	—	—	15	—	—	—	%
Amplification factor	6.5	17	15.5	18.5	—	—	—	
	—	—	—	—	16.15	17.85	0.66	
Power oscillation. V_a = 300V, R_g = 8.5kΩ, f = 150Mc/s	4.0	—	1.8	—	—	—	—	W

TESTS	A.Q.L.[5] (%)	Individuals[6] Bogey[9]	Min.	Max.	Lot average[7] Min.	Max.	Lot standard deviation[8] Max.	
GROUP E								
Fatigue[14]								
V_h = 6.9V, 1 minute on 3 minutes off. No other voltages applied, 5g min. peak acceleration, f = 170±5c/s for 33 hours in each of 3 mutually perpendicular planes								
Post fatigue tests								
Heater to cathode leakage current V_{h-k} = ±100V	2.5	—	—	20	—	—	—	μA
Reverse grid current $R_g$max. = 500kΩ	2.5	—	—	1.0	—	—	—	μA
Mutual conductance	2.5	—	1.6	2.65	—	—	—	mA/V
Microphonic noise as in group C	2.5	—	—	15	—	—	—	mV (r.m.s.)
Shock[15]								
No applied voltages, 500g								
Post shock tests								
Heater to cathode leakage current V_{h-k} = ±100V	2.5	—	—	20	—	—	—	μA
Reverse grid current $R_g$max. = 500kΩ	2.5	—	—	1.0	—	—	—	μA
Mutual conductance	2.5	—	1.6	2.65	—	—	—	mA/V
Microphonic noise as in group C	2.5	—	—	15	—	—	—	mV (r.m.s.)

TESTS

GROUP F

Stability life test[14]

Running conditions. V_{a-e} = 250V, R_k = 500Ω, V_{h-k} = 150V (cathode negative)

Stability life test end point

Change in mutual conductance after 1 hour	1.0	—	—	10	—	—	—	%

Intermittent life test

Running conditions. V_{a-e} = 250V, R_k = 500Ω, V_{h-k} = 150V (cathode negative)

Intermittent life test end points

		A.Q.L.[5] (%)	Min.	Max.	
Sub-group (a)					
Inoperatives[16]	500 hours	2.5	—	—	
	1000 hours	4.0	—	—	
Heater current	500 hours	2.5	138	162	mA
Heater to cathode leakage current V_{h-k} = ±100V	500 hours	2.5	—	20	μA
	1000 hours	4.0	—	20	μA
Reverse grid current. R_g max. = 500kΩ	500 hours	2.5	—	0.5	μA
	1000 hours	4.0	—	0.5	μA
Mutual conductance	500 hours	2.5	1.6	2.65	mA/V
	1000 hours	4.0	1.5	2.65	mA/V
Average change in mutual conductance	500 hours	—	—	15	%
Sub-group (b)					
Anode current	500 hours	4.0	5.5	14.5	mA
	1000 hours	6.5	5.0	14.5	mA
Insulation as in group A	500 hours	4.0	50	—	MΩ
	1000 hours	6.5	30	—	MΩ
Group quality level[10]	500 hours	6.5	—	—	
	1000 hours	10	—	—	

GROUP G	A.Q.L.[5] (%)	Min.	Max.	
Valves are held for 28 days and retested for				
Inoperatives[16]	0.5	—	—	
Reverse grid current. R_g max. = 500kΩ	0.5	—	0.5	μA

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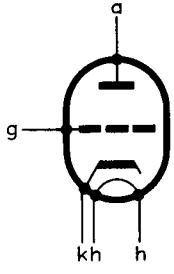
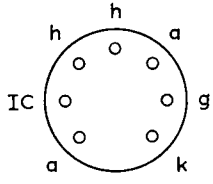
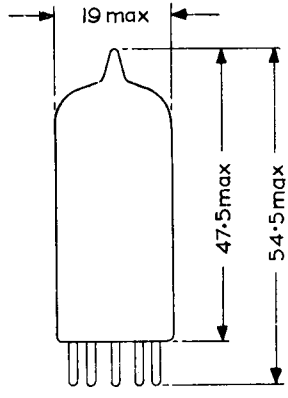




B7G Base



All dimensions in mm

The bulb and base dimensions of this valve are in accordance with BS448 Section B7G.