SPECIAL QUALITY U.H.F. TRIODE

M8248

Special quality triode for use as a grounded grid amplifier 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 the 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

Suitable for parallel operation a.c. or d.c.

V_h[1]	6.3	V
I_h	400	mA

CAPACITANCES[2] (measured with external shield)

c_{a-k}	80	mpF
c_{a-k} max.	150	mpF
c_{h-k}	3.8	pF
c_{a-g}	2.8	pF
$c_{k-g+h+sh}$	8.8	pF
$c_{a-g+h+sh}$	4.0	pF

CHARACTERISTICS[3]

V_a	150	V
I_a	13.5	mA
V_g	–1.35	V
g_m	13.5	mA/V
r_a	3.7	kΩ
μ	50	
R_k	0	Ω
V_g ($I_a \leqslant 60\mu A$)	–15	V

ABSOLUTE MAXIMUM RATINGS[4]

V_h max.	6.6	V
V_h min.	6.0	V
$V_{a(b)}$ max.	330	V
V_a max.	165	V
p_a max.	2.7	W
$+V_g$ max.	0	V
$-V_g$ max.	55	V
I_k max.	20	mA
I_g max.	3.5	mA
R_{g-k} max.	250	kΩ
V_{h-k} max.	90	V
Maximum acceleration (continuous operation)	50	g
Maximum shock (short duration)	500	g
T_{bulb} max.	120	°C

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TEST CONDITIONS (unless otherwise specified)

V_h (V)	V_{a-e} (V)	V_{g1-e} (V)	R_k (Ω)	C_k (μF)
6.3	150	0	100	1000

TESTS	A.Q.L.[5] (%)	Individuals[6] Bogey[9]	Min.	Max.	Lot average[7] Min.	Max.	Lot standard deviation[8] Max.	
GROUP A								
Heater current	0.65	400	375	425	—	—	—	mA
Heater-cathode leakage current V_{h-k} ±100V	0.65	—	—	10	—	—	—	μA
Reverse grid current V_{a-e} 175V, R_k 150Ω, R_{g1} 250kΩ	0.65	—	—	0.5	—	—	—	μA
Anode current	0.65	13.5	9.0	18.0	—	—	—	mA
	—	—	—	—	11.8	15.2	1.35	mA
Anode current $V_g = -15V$, $R_k = 0Ω$	0.65	—	—	60	—	—	—	μA
Mutual conductance	0.65	13.5	11.0	16.0	—	—	—	mA/V
	—	—	—	—	12.6	14.4	0.73	mA/V
Sub-group quality level[10]	1.0	—	—	—	—	—	—	
Inoperatives[16]	0.4	—	—	—	—	—	—	

GROUP B

Insulation								
a-rest measured at –300V g-rest measured at –100V	2.5	— —	200 200	—	—	—	—	MΩ MΩ
Change in mutual conductance. $V_h = 5.7V$	2.5	—	—	15	—	—	—	%
Amplification factor	6.5	—	40	65	—	—	—	
Capacitances[2] (shielded). No applied voltages	6.5							
c_{a-k} shield to earth		—	—	150	—	—	—	mpF
c_{h-k} shield to earth		—	2.5	5.0	—	—	—	pF
c_{a-g} shield to earth		—	2.3	3.3	—	—	—	pF
c_{k-g+h} shield to grid		—	8.0	11.0	—	—	—	pF
c_{a-g+h} shield to grid		—	—	5.0	—	—	—	pF
Low pressure voltage breakdown pressure 55±5mm Hg, voltage 500V o.c. No other applied voltages	6.5	—	—	—	—	—	—	
Microphone noise at the anode at 50c/s, 2.0g minimum peak acceleration, $R_a = 2000\Omega$	6.5	—	—	200	—	—	—	mV (r.m.s.)

TESTS	A.Q.L.[5]	Individuals[6]			Lot average[7]		Lot standard deviation[8]	
GROUP C	(%)	Bogey[9]	Min.	Max.	Min.	Max.	Max.	
Fatigue[14]								
V_h = 6.3V. No other voltages applied. 2.5g minimum peak acceleration, fixed frequency. f = 25c/s min., 60c/s max. for 32 hours in each of 3 mutually perpendicular planes.								
Post Fatigue Tests								
Heater to cathode leakage current V_{h-k} ± 100V	6.5	—	—	20	—	—	—	μA
Change in mutual conductance		—	—	20	—	—	—	%
Reverse grid current		—	—	1.0	—	—	—	μA
Microphonic noise as in Group B		—	—	300	—	—	—	mV (r.m.s.)
Shock[15]								
V_{h-k} = 100V (cathode negative) V_g = −1.5V d.c. R_g = 100kΩ, 500g.								
Post Shock Tests								
Heater-cathode leakage current V_{h-k} ± 100V	20	—	—	20	—	—	—	μA
Change in mutual conductance		—	—	20	—	—	—	%
Reverse grid current		—	—	1.0	—	—	—	μA
Microphonic noise as in Group B		—	—	300	—	—	—	mV (r.m.s.)
Base strain[12]. No applied voltages	—	—	—	—	—	—	—	
Glass strain[11A]. No applied voltages	2.5	—	—	—	—	—	—	
GROUP D								
Heater cycling life test V_h = 7.0V. V_{h-k} + 100V d.c. 1 minute on 4 minutes off. No other voltages.								

Heater cycling life end points								
Heater to cathode leakage								
$V_{h-k} \pm 100V$ d.c.	1.0	—	—	20	—	—	—	μA
Insulation as in Group B	2.5	—	30	—	—	—	—	MΩ
Stability life test[14]								
Running conditions, $V_{h-k}+100V$ d.c. $R_g = 250$ kΩ								
$T_{ambient}$ = Room temperature.								
Stability life end point								
Change in mutual conductance after 1 hour	1.0	—	—	10	—	—	—	%
Survival rate life test[14]								
Running conditions. $V_{h-k}+100V$ d.c. $R_g = 250k\Omega$								
$T_{ambient}$ = room temperature								
Survival rate end points (100 hours)								
Inoperatives[16]	0.65	—	—	—	—	—	—	
Mutual conductance	1.0	—	10	—	—	—	—	mA/V
Intermittent life test								
Running conditions								
$V_{h-k}+100V$ d.c. $R_g = 250k\Omega$								
T_{bulb} min. = 120°C								
Intermittent life test end points (500 hours)								
Inoperatives[16]	2.5							
Heater current	2.5	—	370	460	—	—	—	mA
Reverse grid current	2.5	—	—	2.0	—	—	—	μA
Change in mutual conductance. $V_h = 5.7V$	4.0	—	—	15	—	—	—	%
Change in mutual conductance (individuals)	2.5	—	—	20	—	—	—	%
Heater to cathode leakage								
$V_{h-k} = \pm 100V$ d.c.	2.5	—	—	20	—	—	—	μA
Insulation as in Group B	2.5	—	100	—	—	—	—	MΩ
Average change in mutual conductance	—	—	—	10	—	—	—	%
Sub-group quality level[19]	10.0							

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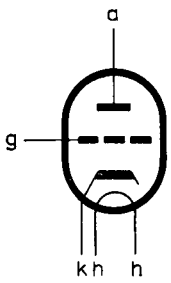
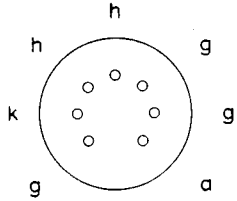
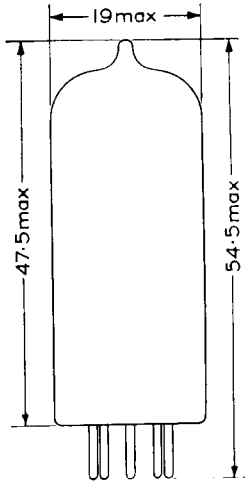




B7G Base



All dimensions in mm

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