

SPECIAL QUALITY U.H.F. TRIODE

5718

Special quality subminiature medium- μ triode for use as an oscillator at frequencies up to 500Mc/s in equipment where high ambient temperatures, 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

MOUNTING POSITION

Any

Note—Direct soldered connections to the leads of this valve must be at least 5mm from the seal and any bending of the valve leads must be at least 1.5mm from the seal.

CAPACITANCES² (measured without external shield)

C_{ik}^g	1.3	pF
C_{in}	2.3	pF
C_{out}	800	mpF

CHARACTERISTICS³

V_a	100	V
V_g	-1.3	V
I_a	8.5	mA
g_m	5.8	mA/V
r_a	4.7	k Ω
μ	27	
R_k	0	Ω
$V_g(I_a < 100\mu A)$	-7.0	V

LIMITING VALUES⁴ (absolute ratings)

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.	900	mW
$+V_g$ max.	0	V $\leftarrow$
$-V_g$ max.	55	V
I_a max.	22	mA
I_g max.	5.5	mA
R_{g-k} max.	1.2	M Ω
V_{h-k} max.	200	V
Maximum acceleration (continuous operation)	2.5	g
Maximum shock (short duration)	500	g
T_{bulb} max.	220	$^{\circ}C$

TEST CONDITIONS (unless otherwise specified)

TESTS

GROUP A

	V_h (V)	V_{a-e} (V)	V_{g-e} (V)	R_k (Ω)	C_k (μF)	V_{h-k} (V)	Lot average ⁷		Lot standard deviation ⁸ Max.	
	6.3	100	0	150	1000	0	Min.	Max.	Min.	Max.
Heater current										
Heater-to-cathode leakage current										
$V_{h-k} = \pm 100V$										
Reverse grid current $R_g = 1.0M\Omega$										
$V_{a-e} = 150V, R_k = 380\Omega$										
Anode current										
Anode current $V_g = -7.0V, R_k = 0\Omega$										
Mutual conductance										
Sub-group quality level ¹⁰										
Inoperatives ¹⁶										



GROUP B

Insulation

a-rest, measured at -300V

g-rest, measured at -100V

Anode current $V_g = -4V$, $R_k = 0\Omega$ Change in mutual conductance $V_h = 5.7V$

Reverse grid current $V_h = 7.5V$, $V_{g-e} = -7.0V$
 $R_g = 1.0M\Omega$. Measured after 5 minutes pre-
 heat under standard test conditions, except
 $V_h = 7.5V$, $R_g = 1.0M\Omega$

†A.F. noise at anode, $R_g = 100k\Omega$, $R_a = 10k\Omega$
 $V_g = -4V$, $R_k = 0\Omega$

Amplification factor

Power oscillation

 $f = 500Mc/s$, $V_a = 150V$, R_g adjusted to give $I_a = 20mA$ Capacitances² (unshielded). No applied voltages C_{in} C_{out} C_{a-g}

Low pressure voltage breakdown

Pressure = $55 \pm 5mmHg$ Voltage = $300V_{r.m.s.}$. No other applied

voltages

Microphonic noise at the anode at 50c/s,

15g min peak acceleration, $R_a = 10k\Omega$

} 2.5 {

2.5

2.5

2.5

2.5

2.5

2.5

6.5

6.5

6.5

6.5

6.5

6.5

6.5

6.5

6.5

6.5

6.5

6.5

M Ω M Ω μA

%

%

%

 μA

mV

mV

mV

mV

mV

mV

mV

mV

mV

mV

mV

mV

mV

†The valve is tapped with a specified hammer and the output observed on a meter of specified dynamic response.



TESTS

GROUP C

Lead fragility test^{13B} 4 arcsFatigue^{1,4}

$V_h = 6.3V$. No other voltages applied. 2.5g min. 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

 $V_{h-k} = \pm 100V$.

Change in mutual conductance

Microphonic noise as in group B

Shock^{1,5} $V_{h-k} = 100V$ (cathode negative), $R_g = 100k\Omega$, 500g

Post shock tests

Heater-to-cathode leakage current

 $V_{h-k} = \pm 100V$

Change in mutual conductance

Microphonic noise as in group B

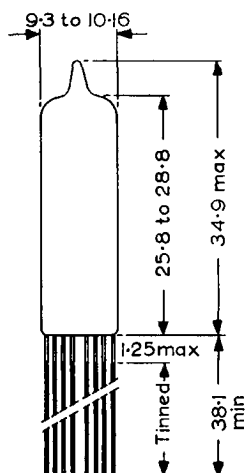
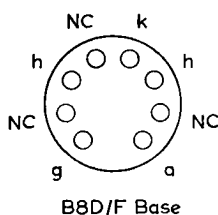
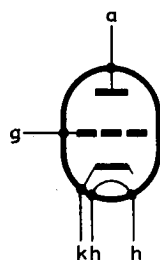
Glass strain test^{11B}. No applied voltages

A.Q.L. ⁵ (%)	Individuals ⁶		Lot average ⁷		Lot standard deviation ⁸ Max.
	Bogey ⁹	Min.	Max.	Min.	
2.5	—	—	—	—	—
6.5	—	—	—	—	μA
	—	—	—	—	%
	—	—	—	—	mV
20	—	—	—	—	μA
	—	—	—	—	%
	—	—	—	—	mV
6.5	—	—	—	—	—

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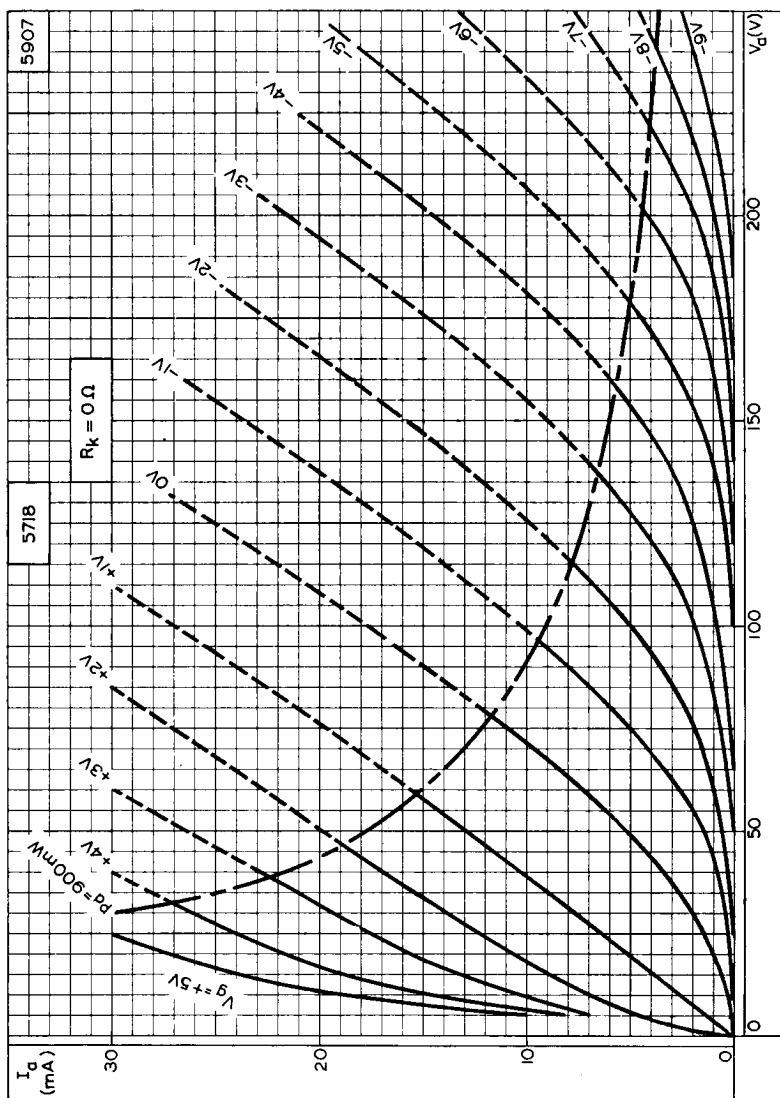
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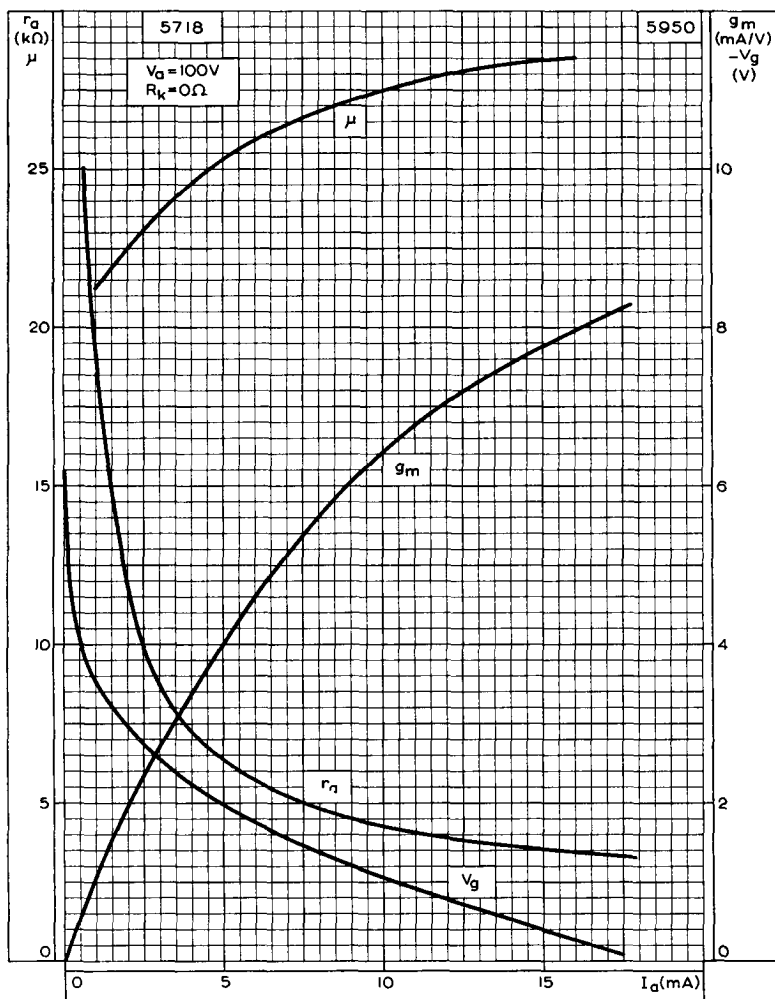


All dimensions in mm

The base and bulb dimensions of this valve are in accordance with BS.448, Section B8D/F.



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER



ANODE IMPEDANCE, MUTUAL CONDUCTANCE, GRID VOLTAGE AND AMPLIFICATION FACTOR PLOTTED AGAINST ANODE CURRENT