

SPECIAL QUALITY DOUBLE DIODE

M8212

Special quality double diode with separate cathodes and internal screening between sections for use in equipment where mechanical vibrations 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 specific note.

HEATER

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

V_h^1	6.3	V
I_h	300	mA

CAPACITANCES² (measured with an external shield)

$C_{a'-k'+h+s+S}$	3.2	pF
$C_{a''-k''+h+s+S}$	3.2	pF
$C_{k'-a'+h+s+S}$	3.9	pF
$C_{k''-a''+h+s+S}$	3.9	pF
$C_{a'-a''}$	<26	mpF

LIMITING VALUES⁴ (absolute ratings) each section

P.I.V. max.	360	V
I_a max.	10	mA
$i_{a(pk)}$ max.	60	mA
$i_{a(surge)}$ max.	350	mA
V_{h-k} max.	360	V
Maximum acceleration (continuous operation)	2.5	g
Maximum shock (short duration)	500	g
T_{bulb} max.	165	°C

TEST CONDITIONS (unless otherwise specified)

V_h (V)	$V_{a(r.m.s.)}$ (V)	R_{load} (k Ω)	C (μ F)
6.3	165	11	8.0

TESTS

	A.Q.L. ⁵ (%)	Individuals ⁶		Lot average ⁷		Lot standard deviation ⁸ Max.	
		Bogey ⁹	Min.	Max.	Min.	Max.	
GROUP A							
Insulation							
a-rest, screen-rest measured at -300V	0.25	—	100	—	—	—	M Ω
GROUP B							
Heater current	0.65	—	275	325	—	—	mA
Heater to cathode leakage current	0.65	—	—	—	—	—	
$V_{h-k} = 100V$ (cathode negative)	—	—	—	5.0	—	—	μ A
$V_{h-k} = 100V$ (cathode positive)	—	—	—	5.0	—	—	μ A
Output current	0.65	18	16	—	—	—	mA
Emission $V_a = 10V$	0.65	—	40	—	—	—	mA
Group quality level ¹⁰	1.0	—	—	—	—	—	

GROUP C

Anode current. $V_a = 0V$, $R_a = 40k\Omega$

Anode current difference between sections

 $V_a = 0V$, $R_a = 40k\Omega$ Change in emission $V_h = 5.7V$, $V_a = 7.0V$ Hum $V_h = 7.0V$ Tested in circuit shown belowGroup quality level¹⁰

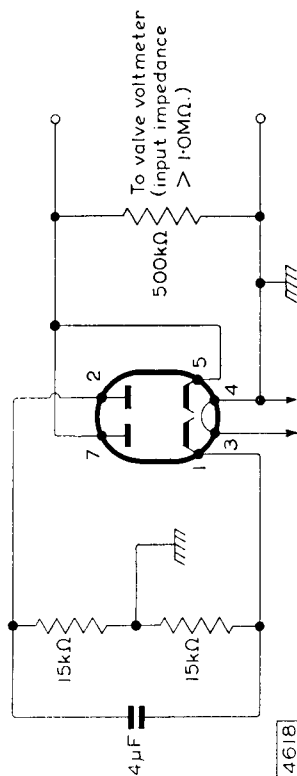
μA

μA

%

mV

(r.m.s.)



GROUP D

Glass strain test^{11A}. No applied voltagesBase strain test¹². No applied voltages

Capacitances (shielded). No applied voltages

 $C_{a'-a''}$ $C_{a'-k'+h+s+s}$ $C_{a''-k''+h+s+s}$ $C_{k'-a'+h+s+s}$ $C_{k''-a''+h+s+s}$

mpF

pF

pF

pF

pF

TESTS	A.Q.L. ⁵ (%)	Individuals ⁶		Lot average ⁷		Lot standard deviation ⁸ Max.
		Bogey ⁹	Min.	Max.	Min.	
GROUP E						
Fatigue¹⁴						
$V_h = 6.9V$, 1 minute on 3 minutes off. No other voltages applied, 5g min. peak acceleration, $f = 170c/s$ for 33 hours in each of 3 mutually perpendicular planes						
Post fatigue tests						
Heater to cathode leakage current.						
$V_{h-k} = \pm 100V$	2.5	—	—	—	—	μA
Output current	2.5	—	14	—	—	mA
Shock¹⁵						
No applied voltages, 500g						
Post shock tests						
Heater to cathode leakage current.						
$V_{h-k} = \pm 100V$	2.5	—	—	—	—	μA
Output current	2.5	—	14	—	—	mA
Group quality level ¹⁰	6.5	—	—	—	—	—

GROUP F

Intermittent life test

The valve is connected in a full wave rectifier circuit with a load resistor of 11k Ω and a reservoir capacitor of 8 μF . The supply impedance is adjusted so that the peak anode current is not less than 60mA for a nominal valve, the total output current being approximately 18mA.

The cathode to heater voltage is provided by the output voltage in series with 117Vr.m.s.

				A.Q.L. ⁵ (%)	Min.	Max.
Intermittent life test end points						
Sub-group (a)						
Inoperatives ¹⁶	..	..	..	2.5	—	—
				4.0	—	—
Heater current	..	..	..	2.5	275	325
				4.0	275	325
Heater to cathode leakage current. $V_{h-k} = \pm 100V$	..	..	..	2.5	—	10
				4.0	—	10
Emission $V_a = 10V$	..	..	..	2.5	35	—
				6.5	30	—
Sub-group (b)						
Change in emission $V_h = 5.7V$, $V_a = 7.0V$	..	..	..	4.0	—	20
Anode current $V_a = 0V$, $R_a = 40k\Omega$	..	..	..	4.0	1.0	20
Insulation as in group A	..	..	..	4.0	50	—
				6.5	50	—
Group quality level ¹⁰	..	..	..	6.5	—	—
				10	—	—

GROUP G

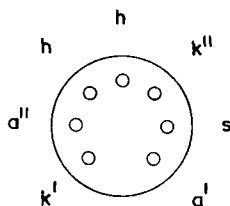
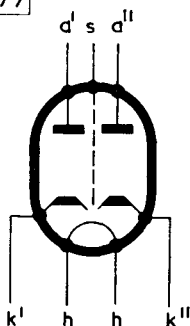
Valves are held for 28 days and retested for
Inoperatives¹⁶

0.5

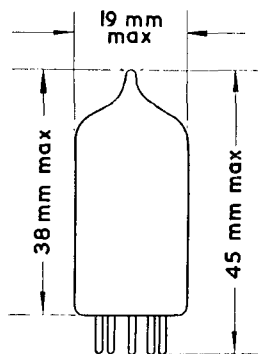
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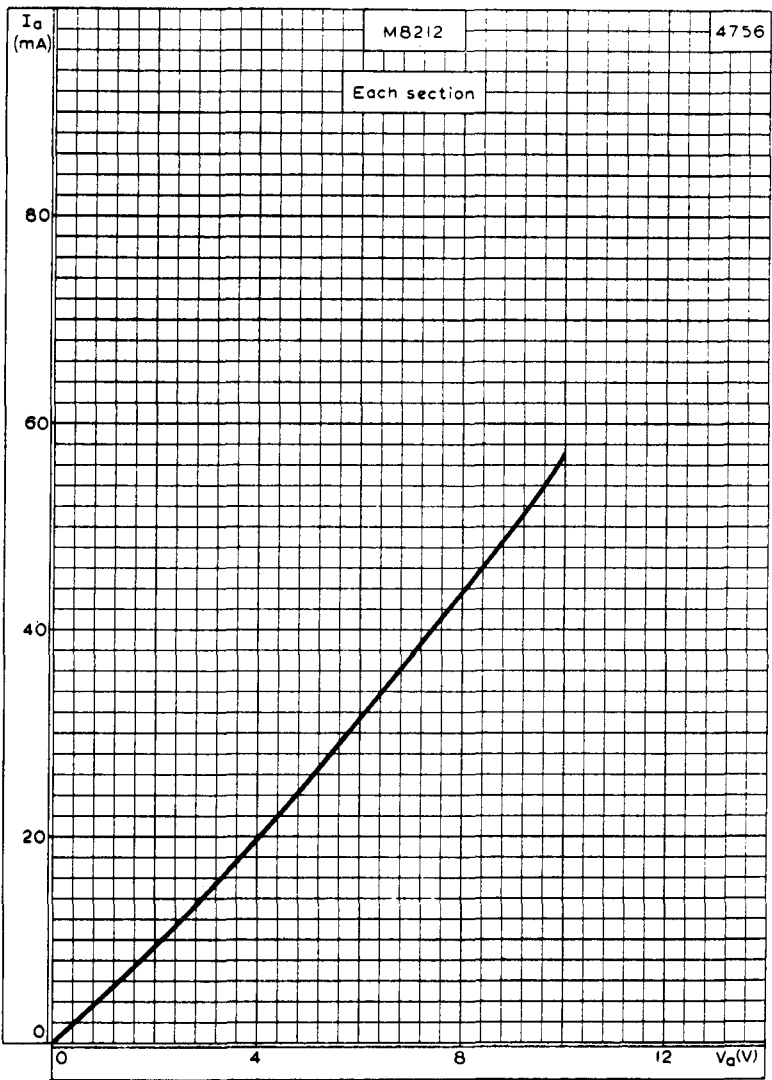
3577



B7G Base



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



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE

