

SPECIAL QUALITY DOUBLE DIODE

M8079

Special quality miniature double diode with separate cathodes and internal screening between sections for use 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

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.	460	V
I_a max.	10	mA
$i_{a(pk)}$ max.	60	mA
V_{h-k} max.	360	V
$V_{in(r.m.s.)}$ max.	165	V
R_{lim} min. (per anode)	600	Ω
Maximum acceleration (continuous operation)	2.5	g
Maximum shock (short duration)	500	g
T_{bulb} max.	165	$^{\circ}\text{C}$

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

Lot average?
Min. Max.
Lot standard
deviation⁸
Max.

Individuals⁶
Bogey⁹ Min. Max.

A.Q.L.⁵
(%)

GROUP A

Insulation

a-rest, screen-rest measured at -300V

M Ω

GROUP B

Heater current

Heater to cathode leakage current

$V_{h-k} = 100V$ (cathode negative)

$V_{h-k} = 100V$ (cathode positive)

Output current

Emission $V_a = 10V$

Group quality level¹⁰

0.65	—	275	325	—	—	—	mA
0.65	—	—	—	—	—	—	—
—	—	—	5.0	—	—	—	μ A
—	—	—	5.0	—	—	—	μ A
0.65	18	16	—	—	—	—	mA
0.65	—	40	—	—	—	—	mA
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.)

—

—

—

—

—

—

—

—

—

—

—

—

—

—

—

2.0

5.0

15

10

—

—

—

—

—

—

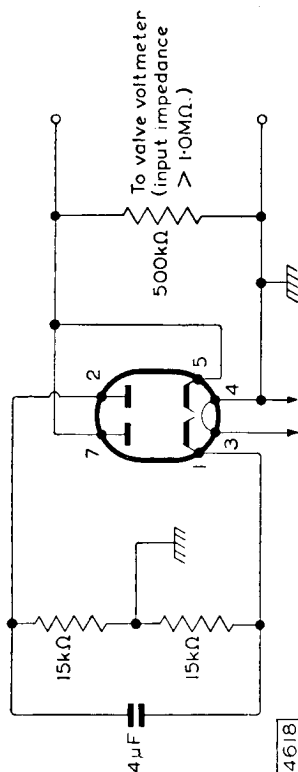
2.5

2.5

2.5

2.5

6.5



GROUP D

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

Capacitances (shielded). No applied voltages

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

mpF

pF

pF

pF

pF

—

—

—

—

—

—

—

—

—

—

—

—

—

—

—

26

4.0

4.0

5.0

5.0

—

2.4

2.4

2.5

2.5

6.5

6.5

6.5

—

—

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.	2.5	—	—	15	—	μA
$V_{h-k} = \pm 100V$	2.5	—	14	—	—	mA
Output current						
Microphonic noise measured at the cathode with both sections in parallel. 50c/s, 2.0g min. peak acceleration, $R_k = 4.7k\Omega$, $I_a = 20mA$	2.5	—	—	5.0	—	mV (r.m.s.)
Shock¹⁵						
No applied voltages, 500g						
Post shock tests						
Heater to cathode leakage current.	2.5	—	—	15	—	μA
$V_{h-k} = \pm 100V$	2.5	—	14	—	—	mA
Output current						
Microphonic noise (conditions as above)	—	—	—	5.0	—	mV (r.m.s.)

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 μ F. 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.

Intermittent life test end points

Sub-group (a)				A.Q.L. ⁵ (%)	Min.	Max.
Inoperatives ¹⁶	..	..	..	2.5	—	—
			{ 500 hours 1000 hours	4.0	—	—
Heater current	..	..	..	2.5	275	325
Heater to cathode leakage current. $V_{h-k} = \pm 100V$	..	..	{ 500 hours 1000 hours	2.5	—	10
			{ 500 hours 1000 hours	4.0	—	10
Emission $V_a = 10V$	..	..	{ 500 hours 1000 hours	2.5	35	—
			{ 500 hours 1000 hours	4.0	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	..	..	{ 500 hours 1000 hours	4.0	50	—
			{ 500 hours 1000 hours	6.5	50	—
Group quality level ¹⁰	..	..	{ 500 hours 1000 hours	6.5	—	—
			{ 500 hours 1000 hours	10	—	—

GROUP G

Valves are held for 28 days and retested for Inoperatives¹⁴

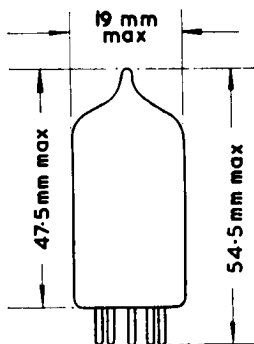
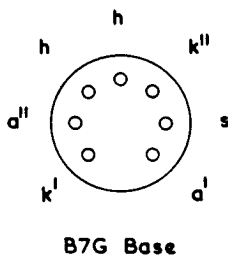
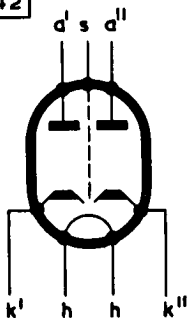
0.5



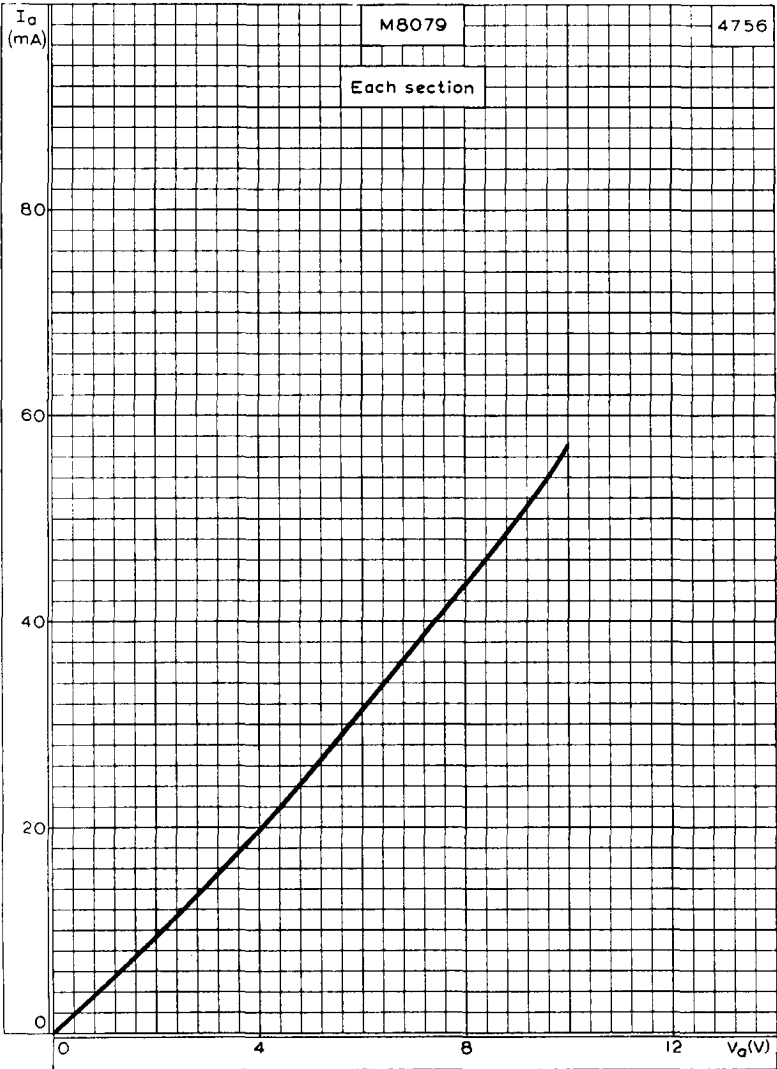
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SPECIAL QUALITY DOUBLE DIODE

4942



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



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE

