VALVE ELECTRONIC

CV452

MINISTRY OF SUPPLY (D.C.D.)

Specification MAP/CV452 Issue 3. Dated 23.7.51 To be read in conjunction with K1001	SECURITY Specification: UNCLASSIFIED Valve: UNCLASSIFIED

→ Indicates a change

TYPE OF VALVE - Double Diode Triode
CATHODE - Indirectly Heated
ENVELOPE - Glass, unmetallised
PROTOTYPE - 6AT6

MARKING
See K1001/4

RATING

		Note
Heater Voltage (V)	6.3	
Heater Current (A)	0.3	
Max. Anode Voltage (V)	330	
Max. Diode Anode Current (mA)	1.0	
Mutual Conductance (mA/V)	1.2	A
Amplification Factor	70	A
Anode Impedance (ohms)	58000	A

CAPACITANCES (pF)

Ca-g	2.1	B
Cg-c+h	2.3	B
Ca-c+h	1.1	B
Cad-g (max)	0.025	B

BASE
B7G

CONNECTIONS

Pin	Electrode
1	G
2	C
3	H
4	H
5	Ad(b)
6	Ad(a)
7	A

DIMENSIONS
See K1001/A1/D4

Dimension	Min.	Max.
Amm	-	54.01
Bmm	-	19.05
Lmm		47.75
Fmm	34.04	42.16

NOTES

A. Measured at; Va = 250V. Vg1 = -3V. Ia = 1.0mA.
Vad (a) = 0. Vad (b) = 0.

B. Measured without metal screen

CV452

TESTS

To be performed in addition to those detailed in K1001

	Test Conditions					Test	Limits		No. Tested	Note
	Vh (V)	Va (V)	Vgl (V)	Vad(a) (V)	Vad(b) (V)		Min.	Max.		
a	6.3	0	0	0	0	Ih (A)	.275	.325	100% or S	
b	6.3	250	-3	0	0	Ia (mA)	0.5	1.8	100%	
c	6.3	250	-3	0	0	Reverse Igl (μA)	0	0.5	100%	
d	6.3	250	-3	0	0	gm (mA/V)	0.9	1.7	100%	
e	6.3	250	-3	0	0	μ	57	83	20 per week	
f	6.3	30 (max)	30	0	0	Emission (mA)	25	-	100%	1
g	6.3	-	-	10	-	Iad (mA)	0.8	-	100%	
h	6.3	-	-	-	10	Iad (mA)	0.8	-	100%	
j	6.3	250	-6	0	0	Ia tail (μA)	-	100	100%	
k	6.3	Resistance between cathode and anode = 1000 ohms				Diode current (μA)	5	-	100% or S	2

NOTES

1. Test voltages to be applied only for sufficient time to obtain steady reading.

2. Test each Diode separately.

DATA SHEET

Valve Electronic Type CV 452

TYPICAL OPERATING CONDITIONS

As Class A1 amplifier

Heater	6.3	6.3	Volts
Anode	100	250	Volts
Grid	-1	-3	Volts
Amplification factor (μ)	70	70	
Anode impedance	54,000	58,000	Ohms
Mutual conductance	1.3	1.2	mA/V
Anode current	0.8	1.0	mA

As Resistance coupled amplifier

The valve is very suitable for use as a resistance coupled amplifier and below is a table giving a summary of useful values and two different supply voltages for a distortion of approximately 4%:-

Anode supply voltage = 100 volts

Anode load (Ra megohms)	0.10		0.22		0.47	
Grid leak (succeeding valve megohms)	0.22	0.47	0.22	0.47	0.47	1.0
Cathode resistance (ohms)	4700	4800	7000	7800	12000	14000
Output voltage (peak)	7.5	9.1	7.3	10	10	14
Voltage gain	27	30	30	34	36	39

Anode supply voltage = 250 volts

Anode load (Ra megohms)	0.10		0.22		0.47	
Grid leak (succeeding valve megohms)	0.22	0.47	0.22	0.47	0.47	1.0
Cathode resistance (ohms)	1800	2100	2600	3300	5200	6000
Output voltage (peak)	40	47	38	49	45	56
Voltage gain	36	40	40	45	46	48

Zero bias operation

The triode unit may also be used with a high value grid resistor the bias being provided by contact potential. A summary of useful values employing a 10 megohm grid resistor and two different supply voltages for a distortion of 5% are given below:-

Anode supply voltage = 100 volts

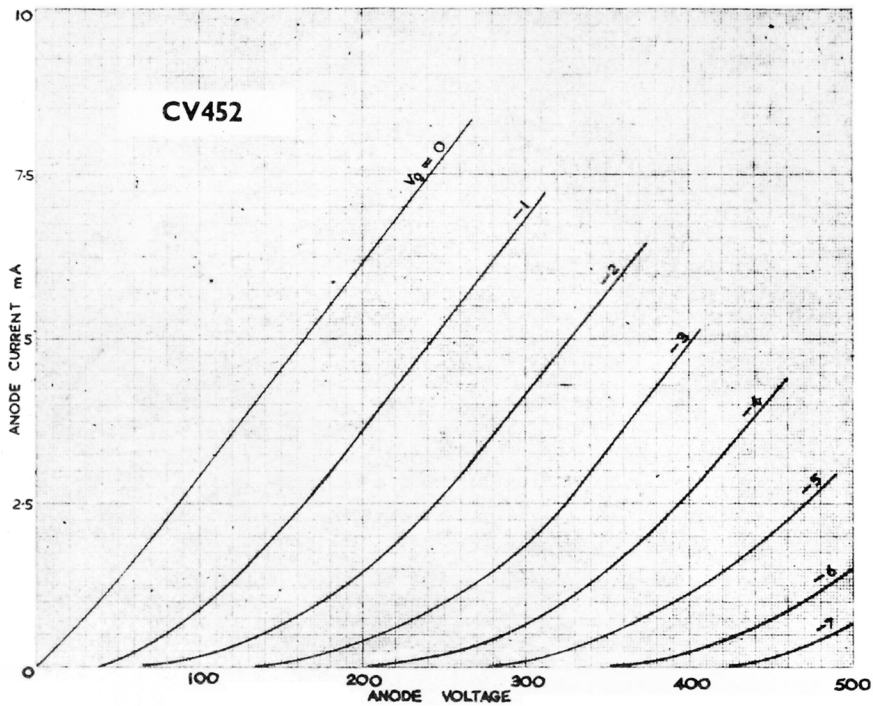
Anode load (Ra megohms)	0.22		0.47	
Grid leak (succeeding valve megohms)	0.22	0.47	0.47	1.0
Output voltage (peak)	7	10	10.5	14
Voltage gain	31	37	39	40

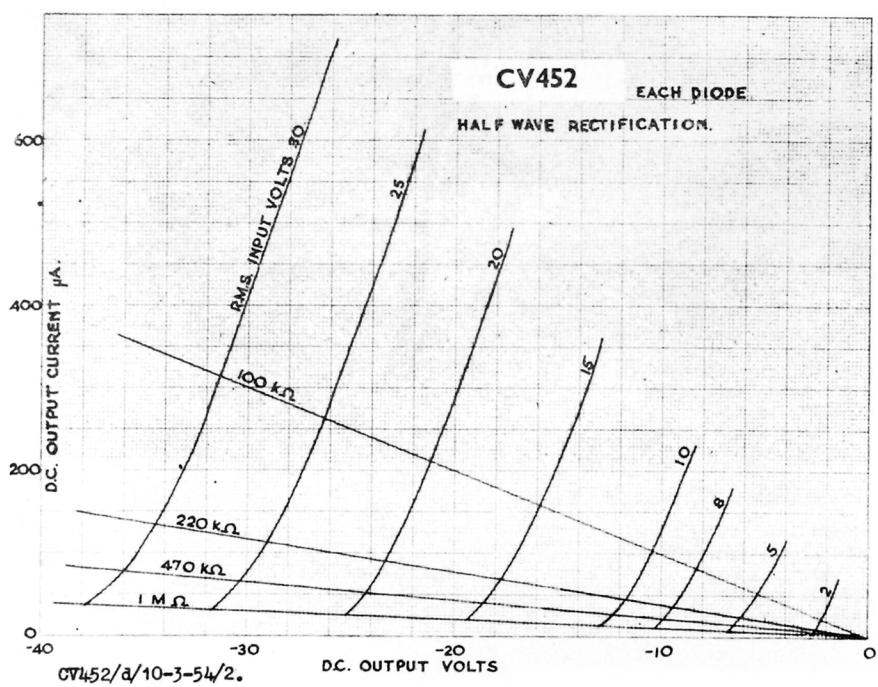
Anode supply voltage = 250 volts

Anode load (Ra megohms)	0.22		0.47	
Grid leak (succeeding valve megohms)	0.22	0.47	0.47	1.0
Output voltage (peak)	42	54	47	60
Voltage gain	46	51	53	56

Mounting Position - Any.

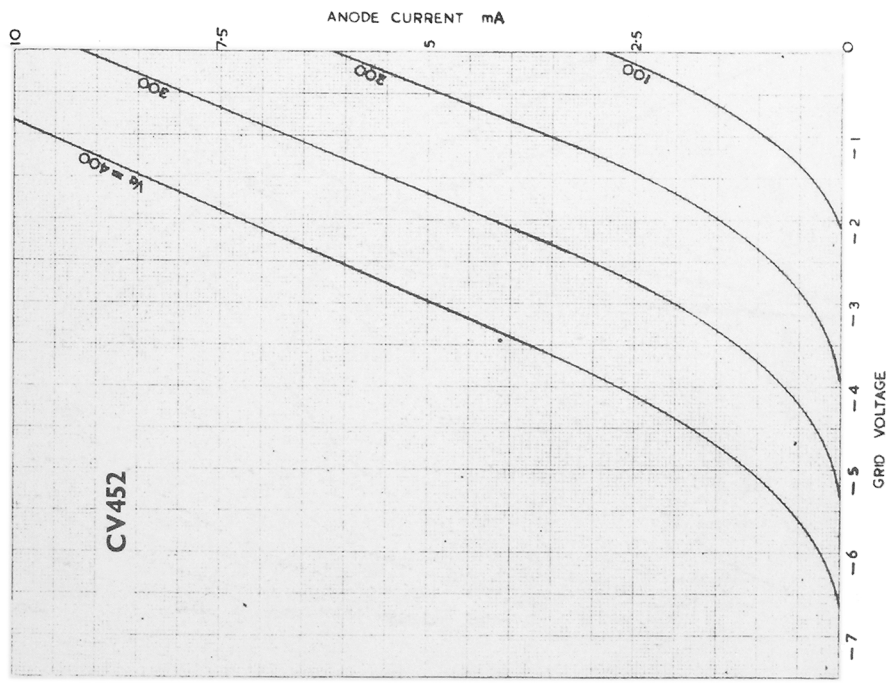
DATA SHEET

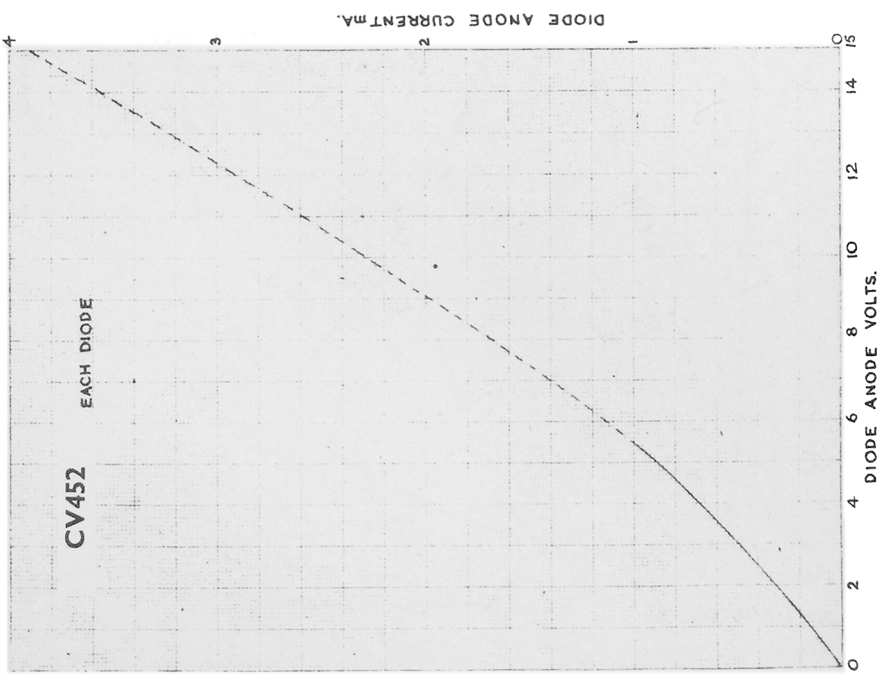




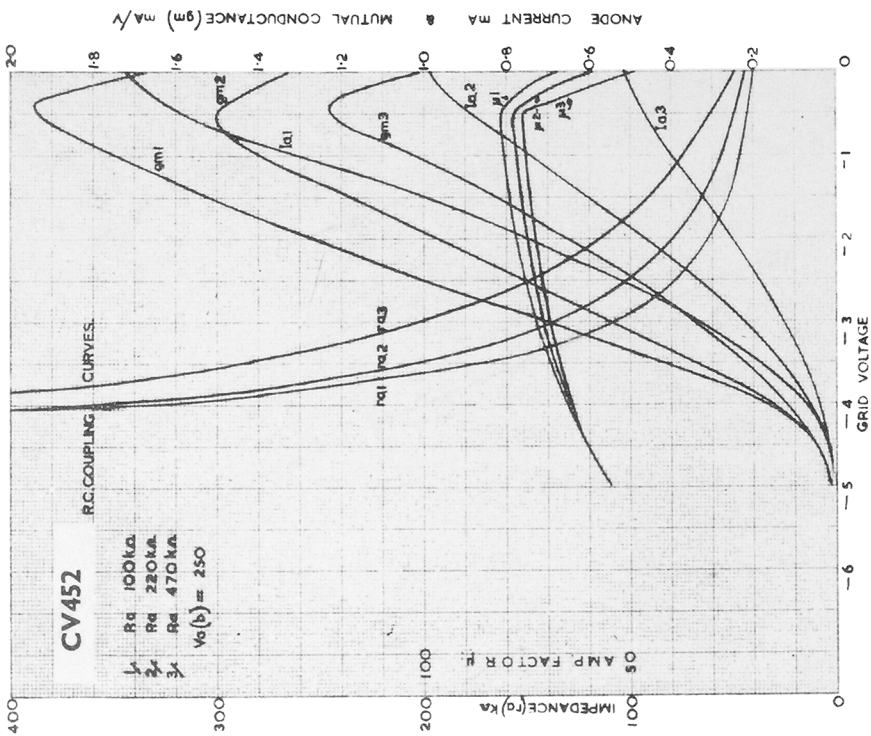
CV452/a/10-3-54/2.

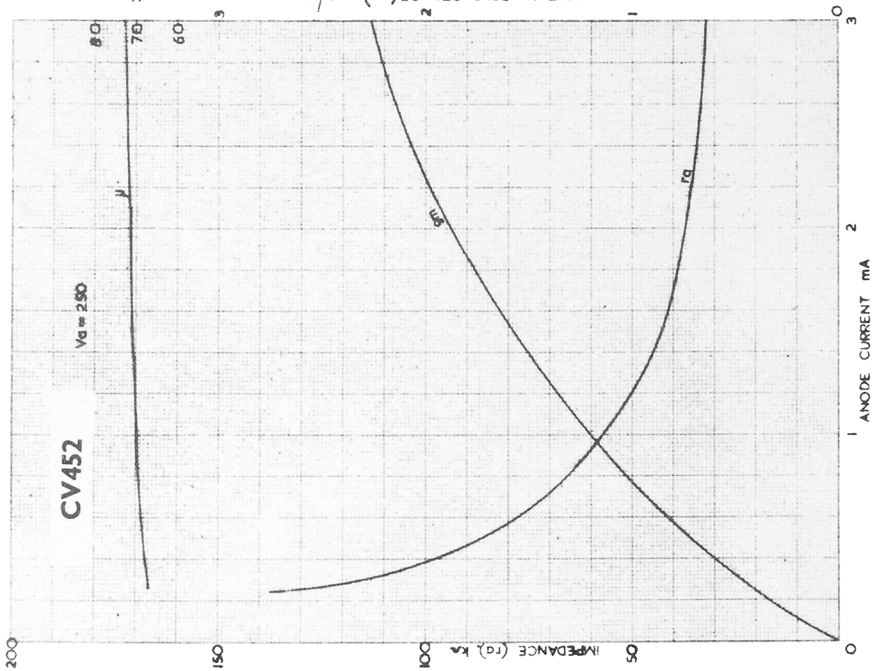
DATA SHEET


ANODE CURRENT mA
10
7·5
5
2·5
0
100
200
300
Vg = 400
CV452
-1
-2
-3
-4
-5
-6
-7
GRID VOLTAGE


DIODE ANODE CURRENT mA.
4
3
2
1
0
CV452
EACH DIODE
0
2
4
6
8
10
12
14
15
DIODE ANODE VOLTS.

DATA SHEET


CV452
R.C. COUPLING
CURVES.
1x Ra 100ka.
2x Ra 220ka.
3x Ra 470ka.
Va(b) = 250
ra1 ra2 ra3
gm1
gm2
gm3
Ia1
Ia2
Ia3
μ1
μ2
μ3
IMPEDANCE (ra) ka
AMP. FACTOR μ
MUTUAL CONDUCTANCE (gm) mA/V
ANODE CURRENT mA
GRID VOLTAGE


CV452
Va = 250
μ
ra
gm
IMPEDANCE (ra) ka
MUTUAL CONDUCTANCE (gm) mA/V
μ
ANODE CURRENT mA