MINIATURE
PLANAR TRIODE
6·3V INDIRECTLY HEATED

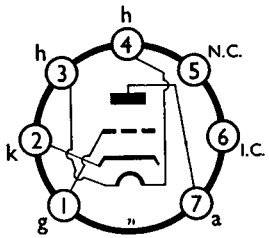
A1714

APRIL, 1954

A low noise triode with planar electrodes for use as an R.F. oscillator or amplifier at frequencies up to 1000 Mc/s.

A1714 is the commercial equivalent of CV408.

BASE CONNECTIONS AND VALVE DIMENSIONS



View from underside of base.

Base : B7G

Overall length :	54	max.	mm.
Seated length :	47·5	max.	mm.
Diameter :	19	max.	mm.

HEATER

V_h	6·3	V
I_h	0·49 approx.	A

MAXIMUM RATINGS (design centre)

V_a	250	V
I_g	15	mA
p_a	2·5	W

CHARACTERISTICS

V_a	150	V
I_a	10	mA
μ	42·5	—
r_a	5	kΩ
g_m	8·5	mA/V
r_{in}*	20	kΩ
c_{in}*	5	pF
Noise factor*	2	db
$r_{eq\ noise\ ref\ g1}$	500	Ω

*Taken at 45 Mc/s.

CAPACITANCES (of unscreened valve)

		Cold	*Hot* (I_a = 10 mA)	
$c_{g\text{-}k}$	(heater earthed)	2·2	3·6	pF
$c_{g\text{-}all}$	(less anode)	2·25	4·0	pF
$c_{a\text{-}g}$		0·95	—	pF
$c_{a\text{-}all}$	(less g)	0·7	—	pF
$c_{a\text{-}k}$	(heater earthed)	0·065	—	pF

TYPICAL OPERATION

Neutralised R.F. amplifier (circuit : Fig. 1).

V_a	150		V
V_g	−2·2	approx.	V
I_a	10	approx.	mA
R_k	220		Ω

The circuit of fig. 1 will give good signal-to-noise ratio at frequencies of the order of 45 Mc/s. Inductances L1, L2 and L3 are wound on formers with variable dust-iron cores, L2 being the neutralising coil. The coils should be tuned to the centre of the pass band, the band-width being of the order of 10-15 Mc/s.

R.F. oscillator using lumped circuit (Fig. 2).

V_a	100		V
I_a	30		mA
I_g	14	max.	mA
P_{out}	1		W
η	33		%
f	500		Mc/s.

The circuit layout is important. " E " is an earthed copper plate placed vertically across the valve holder and soldered to tags 1 and 5 and to the centre spigot. The capacitors " C " are of the feed-through type. For a frequency of 500 Mc/s the inductance " L" is a coil $\frac{1}{2}$ in. diameter wound with approximately two turns of 16 or 18 s.w.g. copper wire. The R.F. choke is made from 20 s.w.g. enamelled wire, $\frac{1}{8}\lambda$ long, (where λ is the wavelength in use), close wound on a $\frac{1}{4}$ in. diameter former. R_k should be adjusted for optimum conditions.

Used with suitably designed distributed circuits, the A1714 will give appreciable outputs at frequencies up to 1,000 Mc/s.

MOUNTING

Any position.

SCREENING

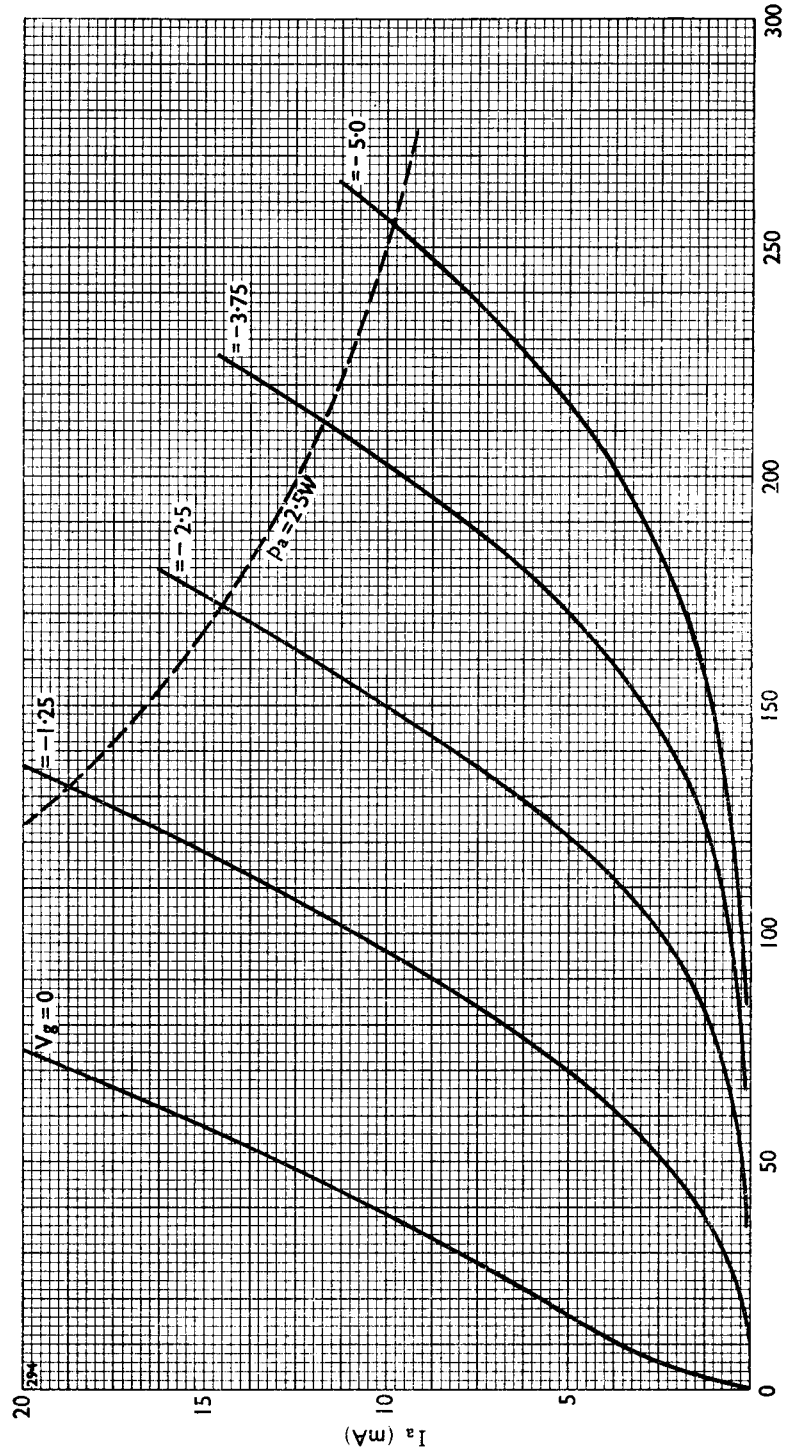
A separate screening canister should be used when application demands.

RETAINING

In equipments subject to vibration or shock, the use of a retaining device is recommended.

MICROPHONY

The valve is free from microphony in normal receiver applications.


I_a (mA)
V_a
$V_g = 0$
$= -1{\cdot}25$
$= -2{\cdot}5$
$= -3{\cdot}75$
$= -5{\cdot}0$
$p_a = 2{\cdot}5W$
0
50
100
150
200
250
300
5
10
15
20
294

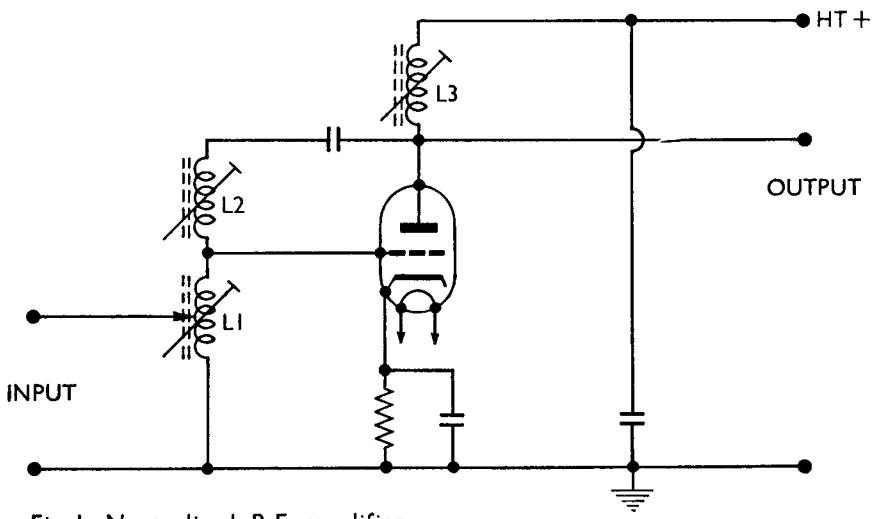


Fig. 1. Neutralised R.F. amplifier.

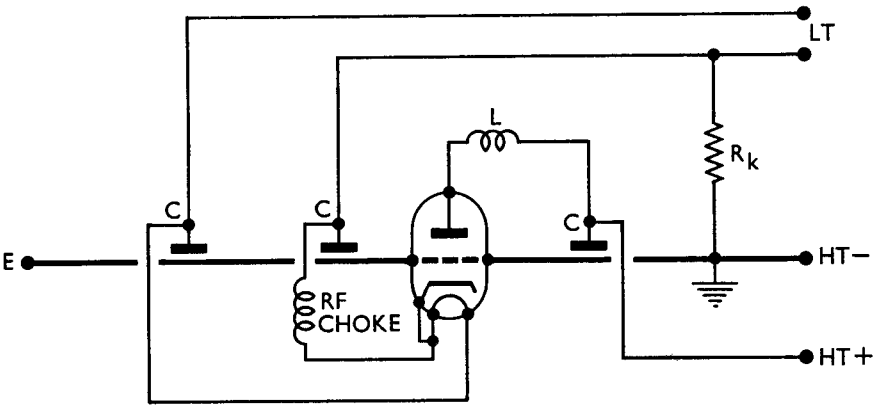


Fig. 2. R.F. oscillator using lumped circuit.