

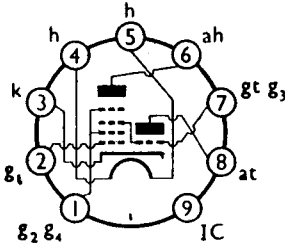


**MINIATURE  
TRIODE-HEXODE  
0·1A INDIRECTLY HEATED**

**X109**  
**OCTOBER, 1952**

A frequency changer for operation up to 100 Mc/s.

**BASE CONNECTIONS AND VALVE DIMENSIONS**



View from underside  
of base.

Base : B9A  
Bulb : Tubular.

Overall length : 49—55 mm.  
Seated length : 43—49 mm.  
Max. diameter : 22 mm.

**RATING**

|                       |            |    |
|-----------------------|------------|----|
| $I_h$                 | 0·1        | A  |
| $V_h$                 | 19 approx. | V  |
| $V_{ah}$              | 250 max.   | V  |
| $V_{g2, g4}$          | 100 max.   | V  |
| $V_{at}$              | 100 max.   | V  |
| $v_{gt} \text{ (pk)}$ | 10 opt.    | V  |
| $I_k$                 | 20 max.    | mA |

**TRIODE SECTION ONLY**

At  $V_a = 100$ ,  $V_g = 0$

|       |     |      |
|-------|-----|------|
| $I_a$ | 10  | mA   |
| $\mu$ | 22  |      |
| $g_m$ | 2·8 | mA/V |

**CAPACITANCES** (of unscreened valve)

|             |      |    |
|-------------|------|----|
| $C_{g1-ah}$ | 0·11 | pF |
| $C_{g1-at}$ | 0·08 | pF |
| $C_{g1-gt}$ | 0·22 | pF |
| $C_{gt-at}$ | 1·48 | pF |

|                                   |      |    |
|-----------------------------------|------|----|
| $C_{g1-all}$                      | 4·1  | pF |
| $C_{at-all} \text{ (gt earthed)}$ | 1·5  | pF |
| $C_{gt-all} \text{ (at earthed)}$ | 5·47 | pF |
| $C_{ah-all}$                      | 4·34 | pF |

**TYPICAL OPERATION**

|                                                                                               |                         |                                                                                                                 |
|-----------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------|
| $V_a$                                                                                         | 175                     | V                                                                                                               |
| $V_{g2, g4}$                                                                                  | 75                      | V                                                                                                               |
| $V_{at}$                                                                                      | 100                     | V                                                                                                               |
| $v_{gt} \text{ (pk)}$                                                                         | 10                      | V                                                                                                               |
| $V_{g1}$                                                                                      | 0                       | V                                                                                                               |
| $I_a$                                                                                         | 4·3                     | mA                                                                                                              |
| $I_{g2, g4}$                                                                                  | 3·6                     | mA                                                                                                              |
| $I_{at}$                                                                                      | 4·5                     | mA                                                                                                              |
| $g_c$                                                                                         | 710 at $V_{g1}=0$       | $v_{gt} \text{ (pk)} = 0 \left\{ \begin{array}{l} \mu A/V \\ \mu A/V \\ M\Omega \\ M\Omega \end{array} \right.$ |
| $g_c$                                                                                         | 7·1 at $V_{g1} = -20·5$ |                                                                                                                 |
| $Z_c$                                                                                         | 0·25 at $V_{g1}=0$      |                                                                                                                 |
| $R_{gt-k}$                                                                                    | 0·05                    | $M\Omega$                                                                                                       |
| $r_{g1-k}^*$                                                                                  | 3·6                     | $k\Omega$                                                                                                       |
| $C_{g1-k}^*$                                                                                  | 6                       | pF                                                                                                              |
| req noise ref $g1\uparrow$                                                                    | 150                     | $k\Omega$                                                                                                       |
| * at : $V_{ah}=175$ , $V_{g2, g4}=75$ , $V_{g1h}=0$ , $f=45 \text{ Mc/s.}$                    |                         |                                                                                                                 |
| $\uparrow$ at : $V_{ah}=175$ , $V_{g2, g4}=75$ , $V_{g1h}=0$ , $v_{gt, g3} \text{ (pk)} = 10$ |                         |                                                                                                                 |

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# X109

## SCREENING

No internal or external screening is fitted to the valve. A separate screening can should be used.

## MICROPHONY

Although this is of a very low order, equipment should be designed to minimise microphony.

## RETAINING

A retaining device should be used.

## VENTILATION

No special precautions.

## MOUNTING

Any position.

