

# OUTPUT PENTODE

# EL37

25-watt pentode, particularly suitable for use in push-pull combination for outputs up to 69W, or as drivers for large power triode push-pull output stage.

## HEATER

|       |     |   |
|-------|-----|---|
| $V_h$ | 6.3 | V |
| $I_h$ | 1.4 | A |

## CAPACITANCES

|            |      |    |
|------------|------|----|
| $C_{out}$  | 9.0  | pF |
| $C_{in}$   | 17.5 | pF |
| $C_{a-g1}$ | 1.0  | pF |

## OPERATING CONDITIONS AS PENTODE

|  |       |            |
|--|-------|------------|
| $V_a$                                  | 250   | V          |
| $V_{g2}$                               | 250   | V          |
| $V_{g1}$                               | -13.5 | V          |
| $I_a$                                  | 100   | mA         |
| $I_{g2}$                               | 13.5  | mA         |
| $R_k$                                  | 120   | $\Omega$   |
| $g_m$                                  | 11    | mA/V       |
| $r_a$                                  | 13.5  | k $\Omega$ |
| $\mu_{g1-g2}$                          | 10    |            |
| $R_a$                                  | 2.5   | k $\Omega$ |
| $V_{in}$ (r.m.s.) ( $P_{out}=50mW$ )   | 0.45  | V          |
| $P_{out}$ ( $D_{tot} = 10\%$ )         | 10.5  | W          |
| $V_{in}$ (r.m.s.) (start of $I_{g1}$ ) | 10.8  | V          |
| $D_{tot}$ (start of $I_{g1}$ )         | 13.5  | %          |
| $P_{out}$ (start of $I_{g1}$ )         | 11.5  | W          |

## OPERATING CONDITIONS — TWO VALVES IN PUSH-PULL (Self Bias)

|                               |                |                 |            |
|-------------------------------|----------------|-----------------|------------|
| $V_a$                         | 250            | 325             | V          |
| $V_{g2}$                      | 250            | 325             | V          |
| $I_{a(0)}$                    | $2 \times 59$  | $2 \times 77$   | mA         |
| $I_a$ (max. sig.)             | $2 \times 68$  | $2 \times 90$   | mA         |
| $I_{g2(0)}$                   | $2 \times 7.5$ | $2 \times 9.75$ | mA         |
| $I_{g2}$ (max. sig.)          | $2 \times 18$  | $2 \times 30$   | mA         |
| $R_k$                         | 130            | 130             | $\Omega$   |
| $R_{a-a}$                     | 4.0            | 4.0             | k $\Omega$ |
| $P_{out}$                     | 20             | 35              | W          |
| $V_{in}$ ( $g1-g1$ ) (r.m.s.) | 29             | 43              | V          |
| $D_{tot}$                     | 2.25           | 4.4             | %          |



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### OPERATING CONDITIONS — TWO VALVES IN PUSH-PULL (Fixed Bias)

|                           |                |                |            |
|---------------------------|----------------|----------------|------------|
| $V_a$                     | 350            | 400            | V          |
| $V_{g2}$                  | 350            | 400            | V          |
| $I_{a(0)}$                | $2 \times 40$  | $2 \times 50$  | mA         |
| $I_a$ (max. sig.)         | $2 \times 118$ | $2 \times 138$ | mA         |
| $I_{g2(0)}$               | $2 \times 5$   | $2 \times 6$   | mA         |
| $I_{g2}$ (max. sig.)      | $2 \times 29$  | $2 \times 36$  | mA         |
| $V_{g1}$                  | -31            | -36            | V          |
| $R_{a-a}$                 | 3.25           | 3.25           | k $\Omega$ |
| $P_{out}$                 | 46             | 69             | W          |
| $V_{in (g1-g1)}$ (r.m.s.) | 43.4           | 49             | W          |
| $D_{tot}$                 | 2.8            | 2.5            | %          |

### OPERATING CONDITIONS AS SINGLE VALVE, TRIODE CONNECTED

(Grid 2 connected to anode by 100  $\Omega$  resistor)

|          |     |      |            |
|----------|-----|------|------------|
| $V_a$    | 300 | 400  | V          |
| $I_a$    | 50  | 37.5 | mA         |
| $V_{g1}$ | -26 | -39  | V          |
| $g_m$    | 6.5 | 4.5  | mA/V       |
| $\mu$    | 9.0 | 9.0  |            |
| $r_a$    | 1.4 | 2.0  | k $\Omega$ |

### OPERATING CONDITIONS AS PUSH-PULL PAIR, TRIODE CONNECTED (Self Bias)

|                        |                 |                 |            |
|------------------------|-----------------|-----------------|------------|
| $V_b$                  | 350             | 435             | V          |
| $V_a$                  | 320             | 400             | V          |
| $I_{a+g2(0)}$          | $2 \times 56$   | $2 \times 70$   | mA         |
| $I_{a+g2}$ (max. sig.) | $2 \times 64$   | $2 \times 80$   | mA         |
| $P_{a+g2}$             | $2 \times 18$   | $2 \times 28$   | W          |
| $R_k$                  | 245             | 245             | $\Omega$   |
| $R_{a-a}$              | 4.0             | 4.0             | k $\Omega$ |
| $V_{in}$ (r.m.s.)      | $2 \times 21.5$ | $2 \times 27.2$ | V          |
| $P_{out}$              | 12.5            | 20.6            | W          |
| $D_{tot}$              | 4.1             | 4.3             | %          |

### LIMITING VALUES — PENTODE CONNECTED

|   |      |            |
|---|------|------------|
| $V_{a(b)}$ max.                         | 800  | V          |
| $V_a$ max.                              | 400  | V          |
| $V_{g2(b)}$ max.                        | 800  | V          |
| $V_{g2}$ max.                           | 400  | V          |
| $V_{g1}$ max. ( $I_{g1} = +0.3 \mu A$ ) | -1.3 | V          |
| $V_{h-k}$ max.                          | 75   | V          |
| $R_{h-k}$ max.                          | 5.0  | k $\Omega$ |

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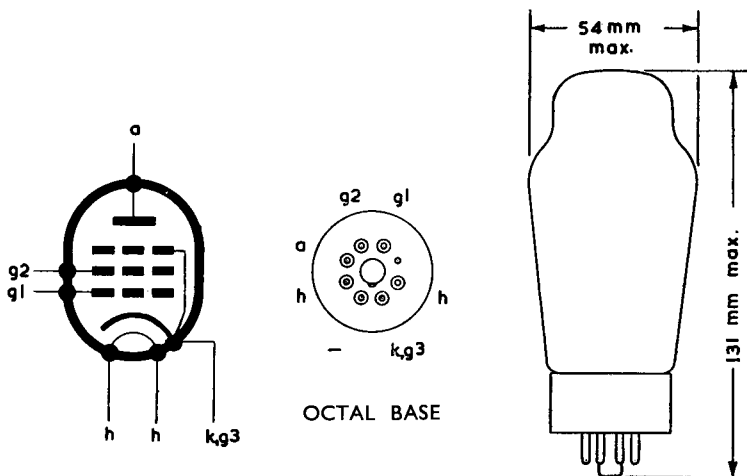
|                                   |     |            |
|-----------------------------------|-----|------------|
| $R_{g1-k}$ max.<br>(cathode bias) | 500 | k $\Omega$ |
| $R_{g1-k}$ max.<br>(fixed bias)   | 100 | k $\Omega$ |
| $p_a$ max.                        | 25  | W          |
| $p_{g2}$ max.                     | 6.0 | W          |
| $I_k$ max.                        | 200 | mA         |

## LIMITING VALUES — TRIODE CONNECTED (NORMAL APPLICATIONS)

|                 |     |   |
|-----------------|-----|---|
| $V_{a+g2}$ max. | 400 | V |
| $p_{a+g2}$ max. | 28  | W |

## LIMITING VALUES — TRIODE CONNECTED (IN CATHODE- COUPLED PUSH-PULL DRIVER STAGE FOR LARGE POWER TRIODES)

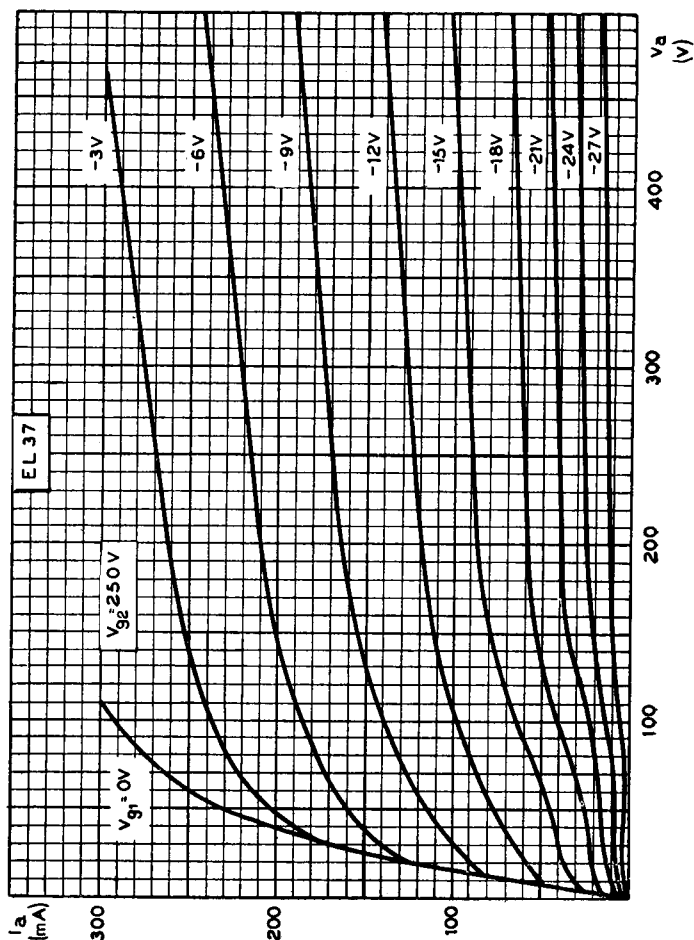
|                 |      |   |
|-----------------|------|---|
| $V_{a+g2}$ max. | 500  | V |
| $p_{a+g2}$ max. | 12.5 | W |



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ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE OF 250 V