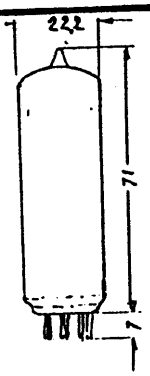
# Chelmer Valve

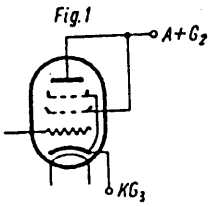
738-177 electronic tube

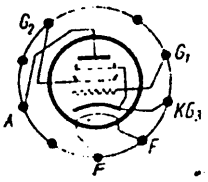
## EL84

BRIEF DESCRIPTION: This is a miniature 9-pin(B9A) power pentode used typically in the output stage of audio frequency amplifiers. Maximum anode dissipation is 12 watts & with 2 tubes, push-pull (class AB1) maximum-signal power output is 17 watts.

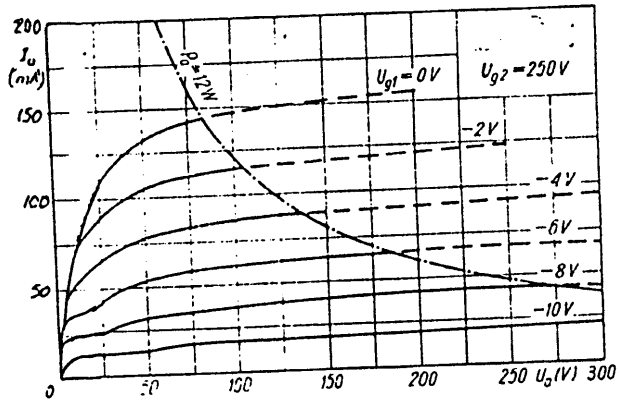
| $U_f$ | $I_f$ | Cl. | $U_a$ | $U_{g2}$ | $U_{g1}$ | $I_a$ | $I_{g2}$ | $S$ | $R_i$ | $R_k$ | $R_o(R_{a/a})$ | $P_o$ | $U_{g1\sim}$ | $h$ | $P_{g2}$ | $P_a$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | A | | V | V | V | mA | mA | mA/V | kΩ | Ω | kΩ | W | V | % | W | W |
| 6,3 | 0,76 | stat | 250 | 250 | −7,3 | 48 | 5,5 | 11,3 | 38 | | | | | | | |
| | | A | 250 | 250 | −7,3 | 48÷49,2 | 5,5÷11,6 | 11,3 | 38 | 135 | 5,2 | 6 | 4,7 | 10 | | |
| | | | 250 | 250 | −7,3 | 48÷50,5 | 5,5÷11 | 11,3 | 38 | 135 | 4,5 | 6 | 4,8 | 10 | | |
| | | | 250 | 250 | −8,4 | 36÷36,8 | 4,1÷14,6 | 10 | 40 | 200 | 7 | 5,6 | 5,5 | 10 | | |
| | | | 250 | 210 | −6,4 | 36÷36,5 | 3,9÷8 | 10,4 | 40 | 160 | 7 | 4,7 | 3,8 | 10 | | |
| | | AB | 250 | 250 | | 62÷75 | 7÷15 | | | 130 | (8) | 11 | 8 | 3 | | |
| | | | 300 | 300 | | 72÷92 | 8÷22 | | | 130 | (8) | 17 | 10 | 4 | | |
| | | B | 250 | 250 | −11,6 | 20÷75 | 2,2÷15 | | | | (8) | 11 | 8 | 3 | | |
| | | | 300 | 300 | −14,7 | 15÷92 | 1,6÷22 | | | | (8) | 17 | 10 | 4 | | |
| | | A Fig. 1 | 250 | — | −9 | 34÷36 | — | | | 270 | 3,5 | 1,95 | 6,7 | 9 | | |
| | | AB Fig. 1 | 250 | — | | 40÷43,4 | — | | | 270 | (10) | 3,4 | 8,3 | 2,5 | | |
| | | | 300 | — | | 48÷52 | — | | | 270 | (10) | 5,2 | 10 | 2,5 | | |
| | | | 300 | 300 | −100 | maximum $I_k$ = 65 mA; $U_{f;k}$ = 100 V; $\mu_{(g2/g1)}$ = 19 | | | | | | | | | 2 | 12 |

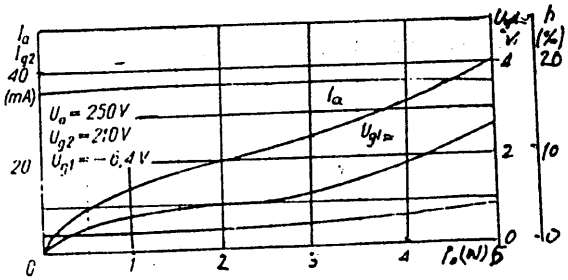


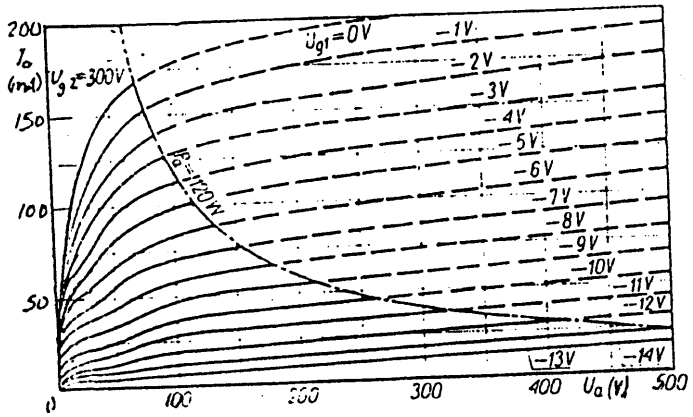



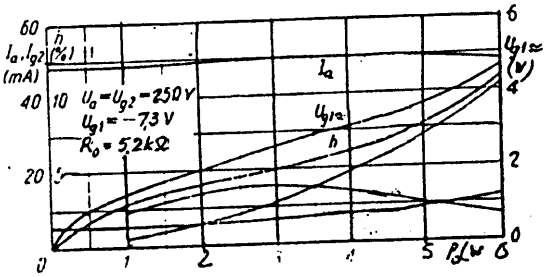



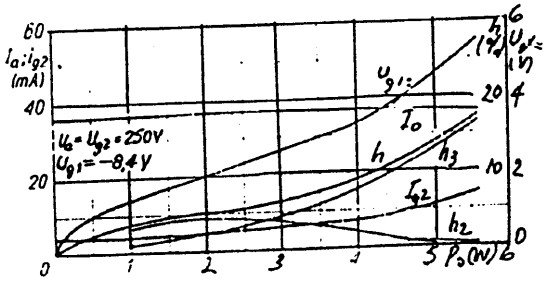

| $C_{g1}$ | $C_a$ | $C_{g1/a}$ | $C_{g1/f}$ |
|---|---|---|---|
| pF | pF | pF | pF |
| 10,8 | 6,5 | 0,5 | 0,25 |



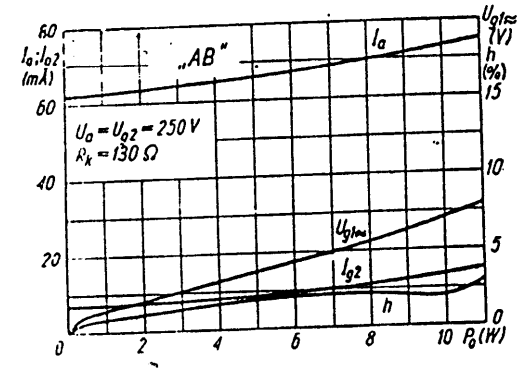



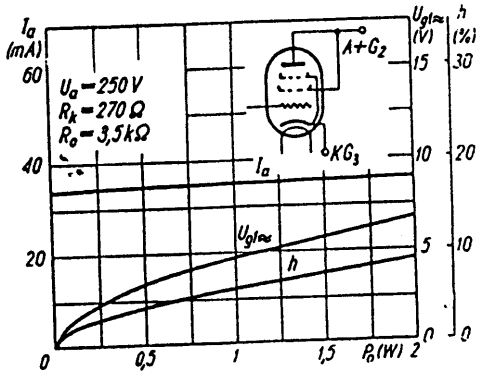



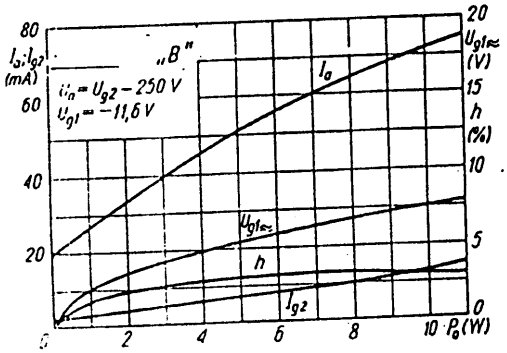



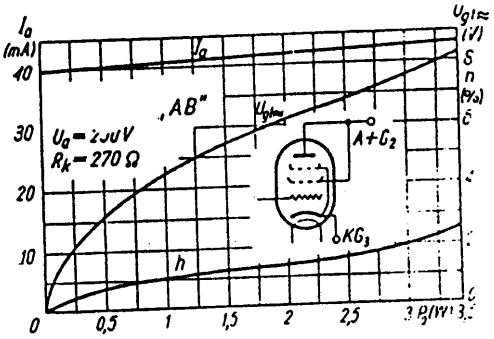



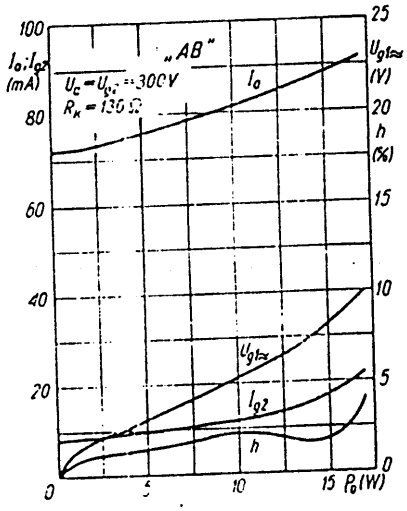
# EL84 ( E84L)

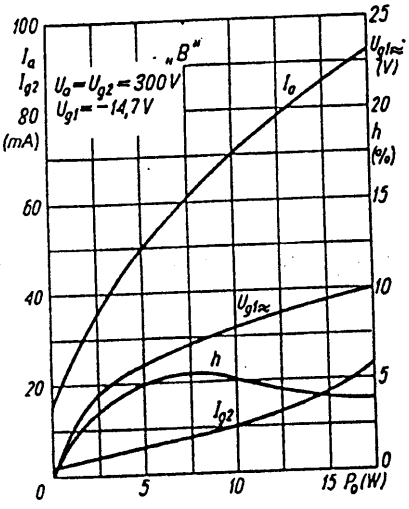

„AB"
$I_a$
$U_{g1\sim}$
$I_{g2}$
h
$U_a = U_{g2} = 250\,V$
$R_k = 130\,\Omega$
$I_a; I_{g2}$ (mA)
$U_{g1\sim}$ (V)
h (%)
$P_a$ (W)

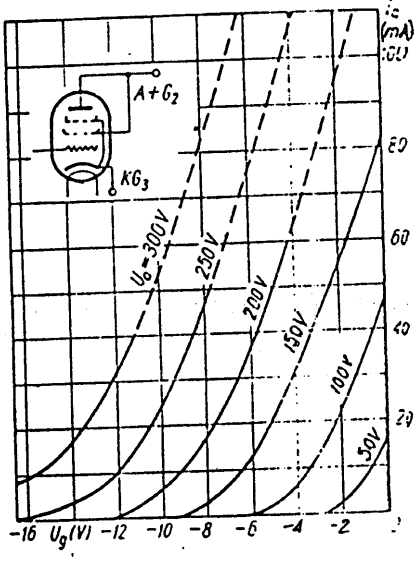

$I_a$ (mA)
$U_{g1\sim}$ (V)
h (%)
$U_a = 250\,V$
$R_k = 270\,\Omega$
$R_a = 3{,}5\,k\Omega$
A+G2
KG3
$I_a$
$U_{g1\sim}$
h
$P_a$ (W)

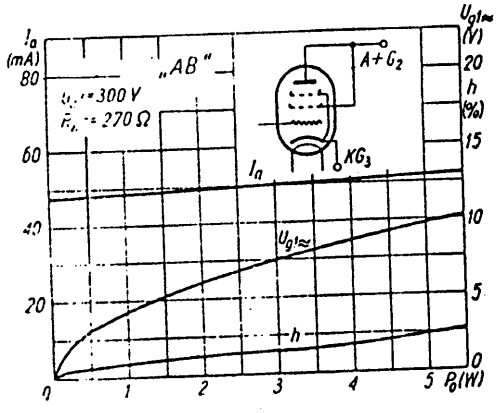

„B"
$I_a; I_{g2}$ (mA)
$U_a = U_{g2} = 250\,V$
$U_{g1} = -11{,}6\,V$
$I_a$
$U_{g1\sim}$
h
$I_{g2}$
$U_{g1\sim}$ (V)
h (%)
$P_a$ (W)

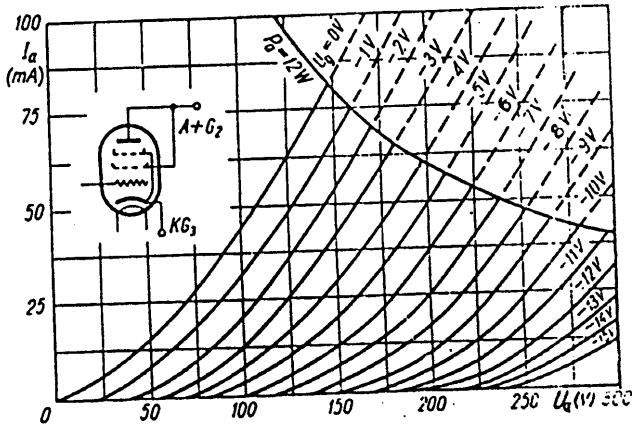

$I_a$ (mA)
$U_{g1\sim}$ (V)
δ
η (%)
„AB"
$U_a = 200\,V$
$R_k = 270\,\Omega$
$U_{g1\sim}$
A+G2
KG3
h
$P_a$ (W)


„AB"
$I_a; I_{g2}$ (mA)
$U_a = U_{g2} = 300\,V$
$R_k = 130\,\Omega$
$I_a$
$U_{g1\sim}$
$I_{g2}$
h
$U_{g1\sim}$ (V)
h (%)
$P_a$ (W)


„B"
$I_a$
$I_{g2}$ (mA)
$U_a = U_{g2} = 300\,V$
$U_{g1} = -14{,}7\,V$
$I_a$
$U_{g1\sim}$
h
$I_{g2}$
$U_{g1\sim}$ (V)
h (%)
$P_a$ (W)


A+G2
KG3
$U_a$ = 300V
250V
200V
150V
100V
50V
$U_g$ (V)

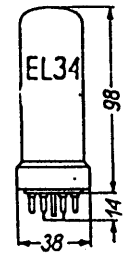

„AB"
$I_a$ (mA)
$U_{g1\sim}$ (V)
h (%)
A+G2
KG3
$I_a$
$U_{g1\sim}$
h
$P_a$ (W)

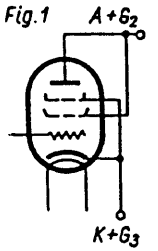

$P_a$ = 12W
$U_g$ = 0V
-1V
-2V
-3V
-4V
-5V
-6V
-7V
-8V
-9V
-10V
-11V
-12V
-13V
-14V
A+G2
KG3
$I_a$ (mA)
$U_a$ (V)

## TYPICAL CHARACTERISTICS

7388-189

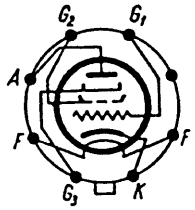
| $U_f$ V | $I_f$ A | Cl. | $U_{b/a}$ V | $U_a$ V | $U_{b/g2}$ V | $R_{g2}$ Ω | $U_{g2}$ V | $U_{g1}$ V | $I_a$ mA | $I_{g2}$ mA | S mA/V | $R_i$ kΩ | $R_k$ Ω | $R_o$ kΩ | $P_o$ W | $U_{g1\approx}$ V | h % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6,3 | 1,5 | A | 265 | 250 | 265 | 2000 | 235 | −14,5 | 70÷73 | 10÷15 | 9 | 18 | | 3 | 8 | 9,3 | 10 |
| | | A | 265 | 250 | 265 | 0 | 265 | −13,5 | 100÷105 | 14,9÷29 | 11 | 15 | | 2 | 11 | 8,7 | 10 |
| | | AB | | 430 | | 1000 | 425 | | 125÷130 | 10÷10,2 | Fig. 2 | | 470 | 6,6 | 20 | 16 | 0,8 |
| | | AB | | 430 | | 1000 | 425 | | 125÷140 | 10÷15 | Fig. 2 | | 470 | 6,6 | 37 | 26 | 1,3 |
| | | AB | 375 | 315 | 375 | 470 | 324 | | 150÷190 | 23÷45 | Fig. 3 | | 130 | 3,4 | 35 | 21 | 5 |
| | | B | 350 | 325 | 350 | 470 | 327 | −32 | 70÷190 | 9,5÷50 | | | | 3,8 | 36 | 22,7 | 6 |
| | | B | 375 | 350 | 375 | 470 | 352 | −32 | 70÷240 | 9,5÷50 | Fig. 4 | | | 2,8 | 44 | 22,7 | 5 |
| | | B | 400 | 375 | 400 | 1000 | 350 | −38 | 60÷200 | 8,8÷50 | Fig. 4 | | | 4 | 45 | 27 | 6 |
| | | B | 425 | 400 | 425 | 1000 | 375 | −38 | 60÷240 | 8,8÷50 | Fig. 4 | | | 3,4 | 55 | 27 | 5 |
| | | B | 475 | 450 | 375 | 750 | 338 | −36 | 60÷204 | 8÷50 | | | | 5 | 58 | 25,8 | 6 |
| | | B | 500 | 475 | 400 | 750 | 363 | −36 | 60÷250 | 8÷50 | Fig. 5 | | | 4 | 70 | 25,8 | 5 |
| | | B | 750 | 725 | 375 | 750 | 347 | −39 | 50÷168 | 6÷38 | Fig. 5 | | | 11 | 90 | 23,4 | 6 |
| | | B | 800 | 775 | 400 | 750 | 372 | −39 | 50÷182 | 6÷38 | Fig. 5 | | | 11 | 100 | 24,4 | 5 |
| | | A | 375 | 348 | — | — | — | — | 70÷73,5 | — | Fig. 1 | | 370 | 3 | 6 | 18,9 | 8 |
| | | AB | 400 | 370 | — | — | — | | 130÷142 | — | Fig. 1 | | 220 | 5 | 16,5 | 22 | 3 |
| | | | | 800 | | | 425 | | maximum ($I_k$ = 150 mA; $P_a$ = 25 W; $P_{g2}$ = 8 W; $\mu_{(g2/g1)}$ = 11; $R_{g1}$ = 0,7 MΩ; $U_{f/k}$ = 100 V | | | | | | | | |




| $C_{g1}$ pF | $C_a$ pF | $C_{g1/a}$ pF | $C_{g1/f}$ pF | $C_{k/f}$ pF |
|---|---|---|---|---|
| 15,4 | 8,4 | 1,1 | 1 | 10 |

CAPACITANCES




EL34