

OUTPUT PENTODE

PL509

Output pentode for colour television line deflection circuits

HEATER

Suitable for series operation, a.c. or d.c.

I_h	300	mA
V_h	40	V

CAPACITANCES

c_{a-g1}	2.5	pF
$c_{a-g1} \text{ max.}$	3.0	pF ←
$c_{g1-h} \text{ max.}$	0.2	pF

DYNAMIC CHARACTERISTICS

V_a	160	50	V
V_{g3}	0	0	V
V_{g2}	160	175	V
V_{g1}	0	-10	V
I_a	1.4	0.8	A
I_{g2}	45	70	mA

OPERATING CONDITIONS

Stabilised circuits (d.c. feedback)

The minimum required cut-off voltage ($-V_{g1}$) during flyback at $V_a=7.0kV$ and $Z_{g1}=1.0k\Omega$ at line frequency is:-

$$V_{g2} = 150V: V_{g1} = -175V$$

$$V_{g2} = 200V: V_{g1} = -195V$$

$$V_{g2} = 250V: V_{g1} = -215V$$

Design chart for stabilised timebases

See page 4

In order to prevent Barkhausen interference and loss of stabilisation, care should be taken to ensure that the anode voltage never drops below the specified minimum value during the scanning period.

When optimum suppression of Barkhausen oscillations is required, $g3$ may be connected to a positive voltage of approximately 20V.

Hum

At $Z_{g1}=200k\Omega$ ($f=50Hz$), $V_{h-k}=220Vr.m.s.$ and without wiring and socket capacitances, the equivalent grid hum voltage is less than 5.0mV.

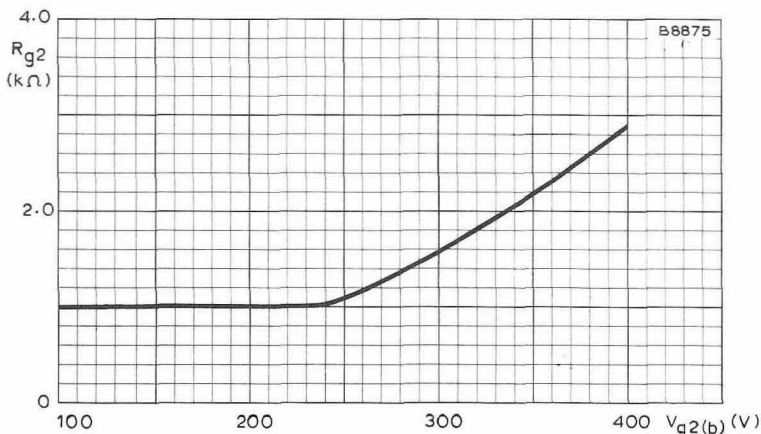


RATINGS (DESIGN CENTRE SYSTEM)

$V_{a(b)}$ max.	700	V
$v_{a(pk)}$ max. (see note 1)	7.0	kV
V_{g3} max.	50	V
$V_{g2(b)}$ max.	700	V
V_{g2} max.	275	V
$-v_{g1(pk)}$ max. (design maximum system) (see note 1)	550	V
p_a max.	30	W
p_{a+g2} max. (triode connected)	31	W
p_{g2} max. (see note 2)	7.0	W
I_k max.	500	mA
R_{g1} max. (fixed bias) (see note 3)	0.5	M Ω
R_{g1} max. (stabilised line timebases) (see note 3)	2.2	M Ω
R_{g3} max. (see note 4)	10	k Ω
V_{h-k} max.	250	V
T_{bulb} max. (absolute maximum-rating)	300	$^{\circ}$ C

NOTES

- Maximum pulse duration 22% of one cycle with a maximum of 18 μ s.
- To prevent an excessive value of p_{g2} the minimum values of series resistance are given below.

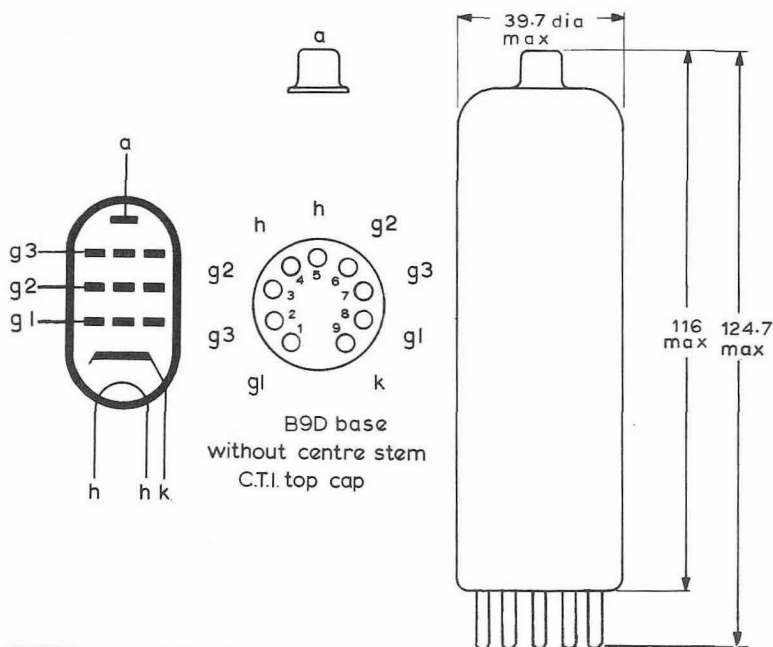


- The circuit design must be such that negative control grid currents up to 5 μ A do not have any detrimental effect upon performance. Care should be taken that with 5 μ A grid current the limiting values for I_k , p_a and p_{g2} are not exceeded.
- With $R_{g3} \leq 10$ k Ω capacitive decoupling of $g3$ is not required.



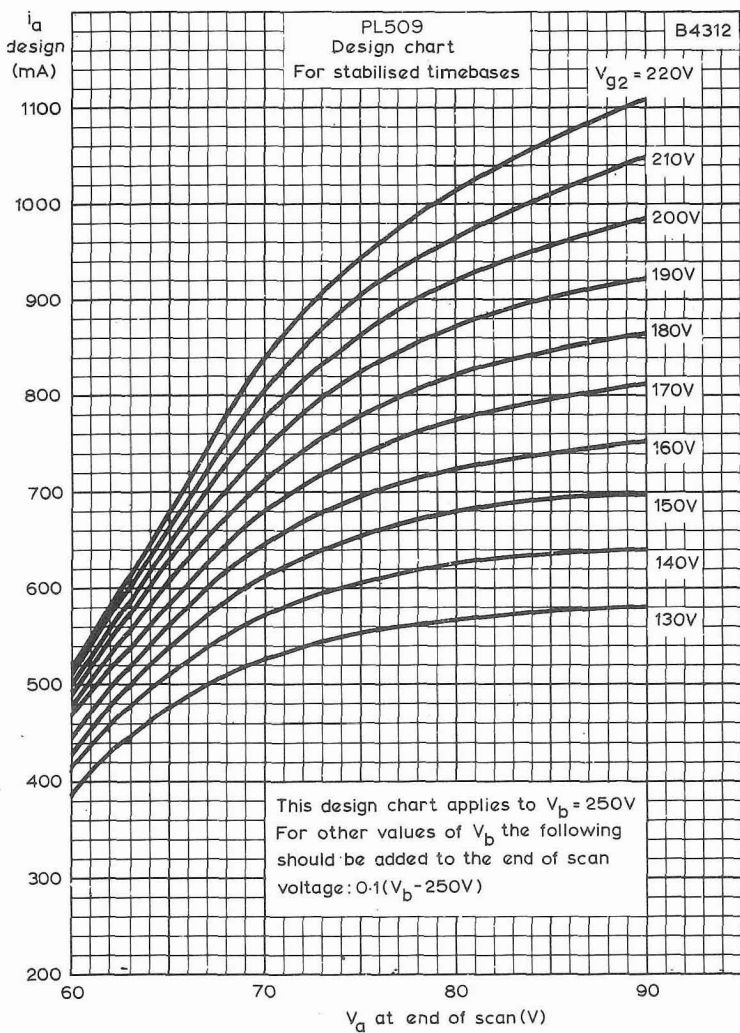
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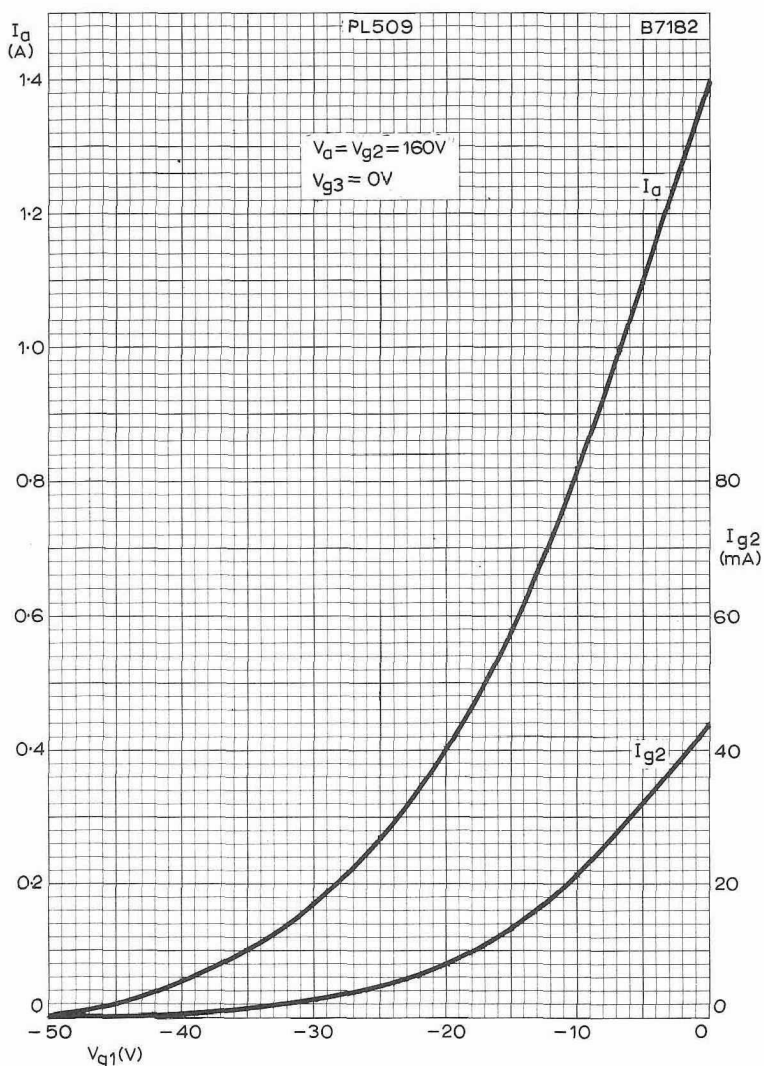
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All dimensions in mm

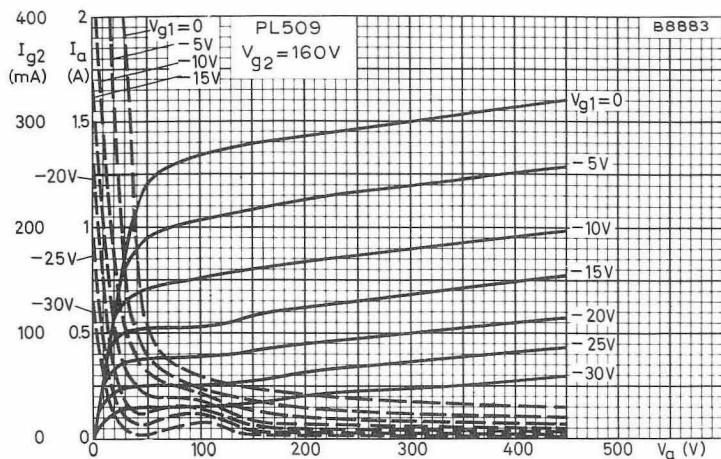


DESIGN CHART FOR STABILISED TIMEBASES

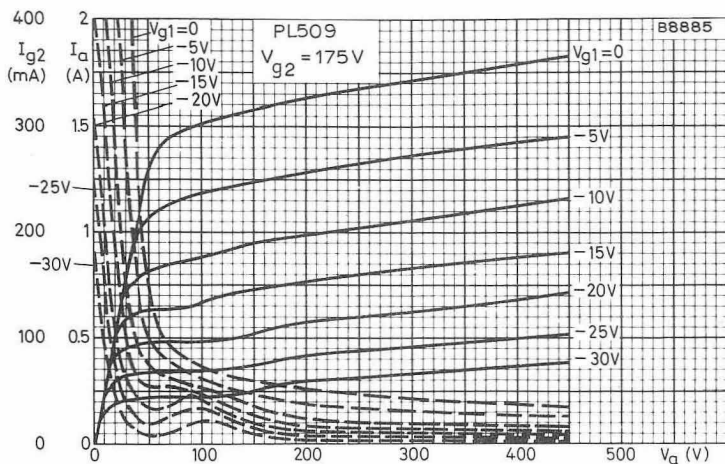




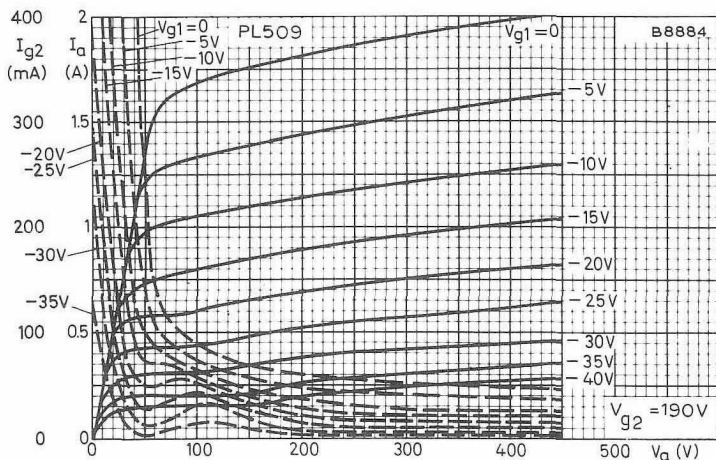
ANODE AND SCREEN CURRENTS PLOTTED AGAINST
CONTROL GRID VOLTAGE



ANODE AND SCREEN GRID CURRENTS PLOTTED AGAINST
ANODE VOLTAGE: $V_{g2} = 160V$



ANODE AND SCREEN GRID CURRENTS PLOTTED AGAINST
ANODE VOLTAGE: $V_{g2} = 175V$



ANODE AND SCREEN GRID CURRENTS PLOTTED AGAINST
ANODE VOLTAGE: $V_{g2} = 190V$



