



The textbook Grounded Cathode Amplifier. The most common and tube circuits. The triode is cathode biased. The output is phase inverted. gain never exceeds the  $\mu$  of the triode. Still, a very good line stage made from this circuit.

## Tube

Tube = 6SN7  
 Number = 2  
 $\mu = 20$   
 $g_m = 5.2 \text{ ma/v}$   
 $r_p = 3850 \text{ ohm}$   
 $I_{max} = 40 \text{ ma}$   
 $V_{max} = 450 \text{ v}$   
 $W_{max} = 7.5 \text{ w}$   
 $C_{gp} = 8 \text{ pf}$

## Circuit Setup

$R_k = 500 \text{ ohm}$   
 $R_k$  bypassed  
 $R_{in} = 1 \text{ k}$   
 $R_L = 100 \text{ k}$   
 $R_a = 13.5 \text{ k}$   
 $Cap = 0.47 \mu\text{f}$   
 $I = 10.4 \text{ ma}$   
 $V_{B+} = 310 \text{ v}$

## AC Results

Gain = 15.11	Gain dB = 23.6 dB
Phase = inverts	PSRR = -13.3 dB
Z input = 61.8 k	Z output = 2.91 k
F -3dB low = 3.29 hz	F -3dB high = > 1 mhz

## DC Results

V tube = 164 v	$V_{Ra} = 140 \text{ v}$
$V_{bias} = -5.22 \text{ v}$	$V_g \text{ DC} = 0 \text{ v}$
$V_{th} = 8.19 \text{ v}$	$V_{max \text{ out}} = -79/+124 \text{ v}$
Plate Dis. = 855 mw	Total Dis. = 3.22 w
$R_a \text{ Dis.} = 1.46 \text{ w}$	$W_{Rk} = 54 \text{ mw}$

## Calculated Part Values

$R_k = 499 \text{ ohm}$	$Cap_{Rk} = 57 \mu\text{f}$
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