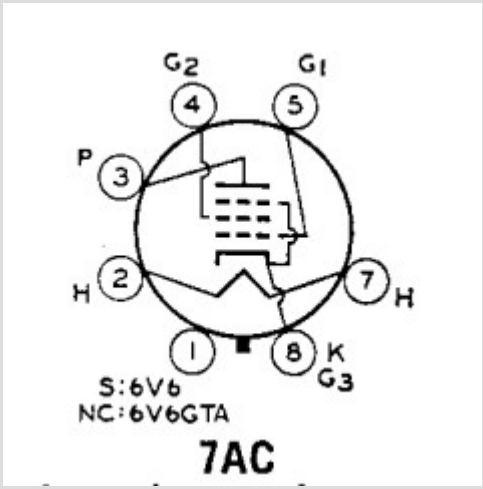
How to design for 6V6 Single Ended Power Stage

6V6 シングル動作回路の設計方法

Junichi Kubota

What is 6V6?

- Midle size Beam Power Pentode
- Hearter 6.3V/0.45A
- Maximum Rating
  Plate 350V
  G2 315V
  Plate Dissipation 14 watts
  G2 input 2.2watts



6V6ってどんな真空管?

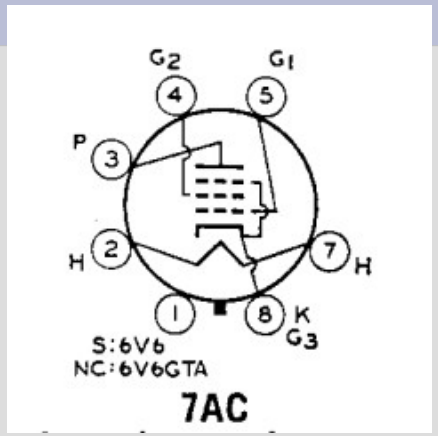
- 中出力のビーム５極管
- ヒーター定格 6.3V/0.45A
- 最大定格

  プレート 350V

  スクリーングリッド 315V

  プレート損失 14 watts

  G2損失 2.2watts



Class A1 Amplifier

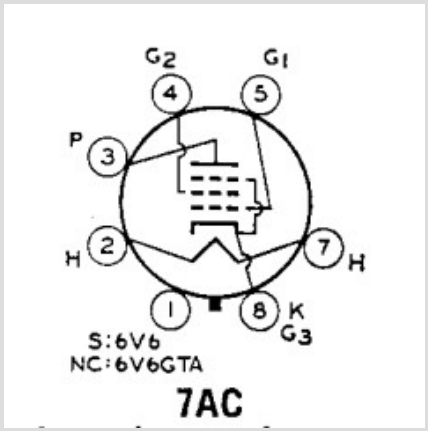
TYPICAL OPERATION

Plate Voltage	180	250	315	volts
Grid-No.2 Voltage	180	250	225	volts
Grid-No.1 (Control-Grid) Voltage	—8.5	—12.5	—13	volts
Peak AF Grid-No.1 Voltage	8.5	12.5	13	volts
Zero-Signal Plate Current	29	45	34	mA
Maximum-Signal Plate Current	30	47	35	mA
Zero-Signal Grid-No.2 Current	3	4.5	2.2	mA
Maximum-Signal Grid-No.2 Current	4	7	6	mA
Plate Resistance (Approx.)	50000	50000	80000	ohms
Transconductance	3700	4100	3750	μmhos
Load Resistance	5500	5000	8500	ohms
Total Harmonic Distortion	8	8	12	per cent
Maximum-Signal Power Output	2	4.5	5.5	watts

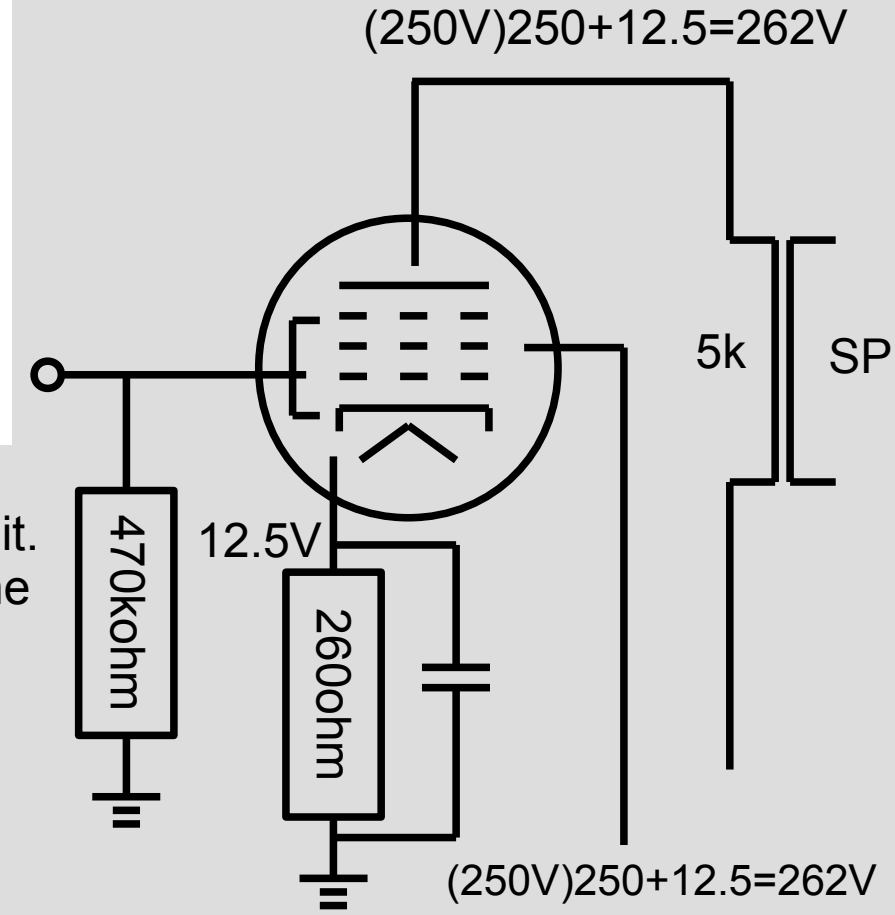
Design for self bias

TYPICAL OPERATION

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	—12.5	volts
Peak AF Grid-No.1 Voltage	12.5	volts
Zero-Signal Plate Current	45	mA
Maximum-Signal Plate Current	47	mA
Zero-Signal Grid-No.2 Current	4.5	mA
Maximum-Signal Grid-No.2 Current	7	mA
Plate Resistance (Approx.)	50000	ohms
Transconductance	4100	μmhos
Load Resistance	5000	ohms
Total Harmonic Distortion	8	per cent
Maximum-Signal Power Output	4.5	watts



Depend on deriver circuit. Usually x2 the load of the previous stage. Max about 500k

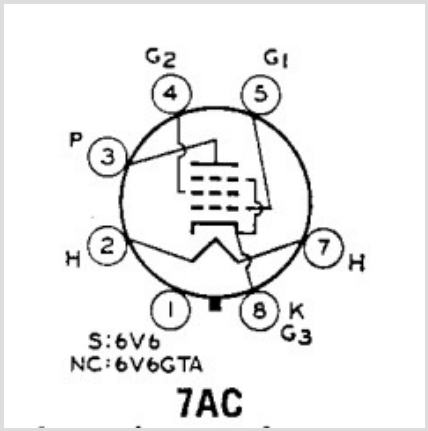


12.5V/45mA=278ohm
≒260ohm

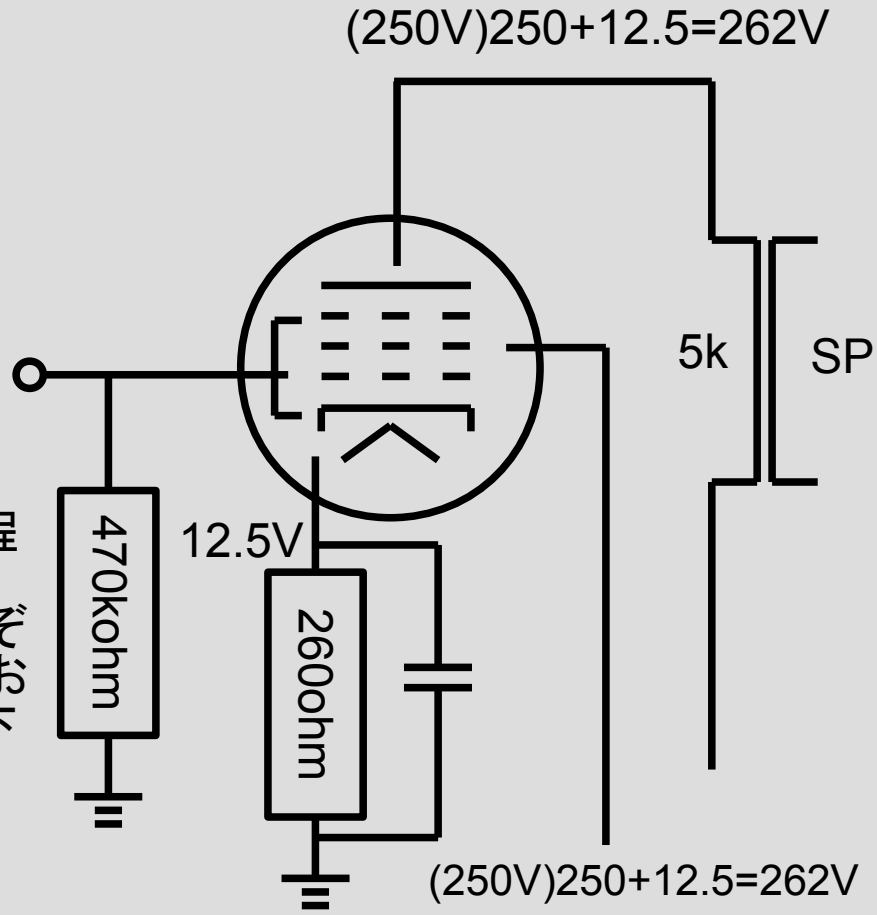
Design for self bias
自己バイアス回路の設計

TYPICAL OPERATION

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	—12.5	volts
Peak AF Grid-No.1 Voltage	12.5	volts
Zero-Signal Plate Current	45	mA
Maximum-Signal Plate Current	47	mA
Zero-Signal Grid-No.2 Current	4.5	mA
Maximum-Signal Grid-No.2 Current	7	mA
Plate Resistance (Approx.)	50000	ohms
Transconductance	4100	μmhos
Load Resistance	5000	ohms
Total Harmonic Distortion	8	per cent
Maximum-Signal Power Output	4.5	watts



前段のプレート抵抗の倍程度の抵抗値を選びます。
グリッドリーク抵抗はそれぞれの真空管で決められており6V6では最大500kΩ以下と指示されている。

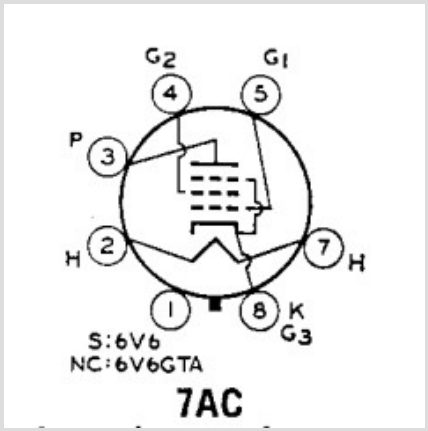


12.5V/45mA=278ohm
≒260ohm

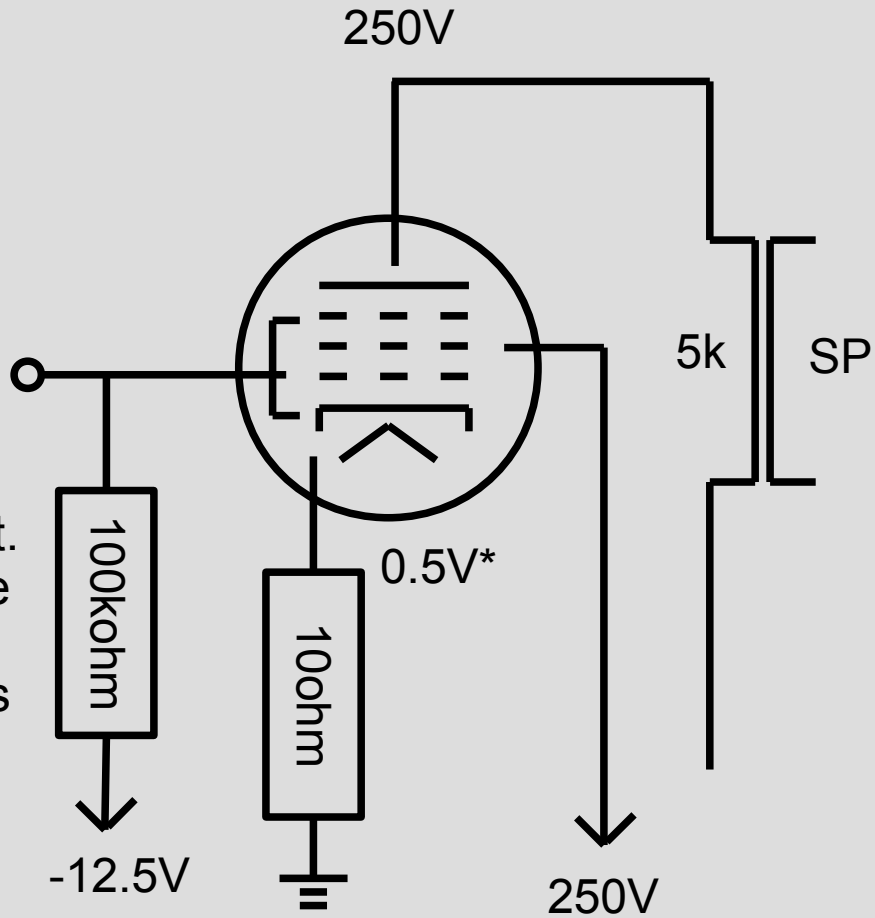
Design for fixed bias

TYPICAL OPERATION

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	—12.5	volts
Peak AF Grid-No.1 Voltage	12.5	volts
Zero-Signal Plate Current	45	mA
Maximum-Signal Plate Current	47	mA
Zero-Signal Grid-No.2 Current	4.5	mA
Maximum-Signal Grid-No.2 Current	7	mA
Plate Resistance (Approx.)	50000	ohms
Transconductance	4100	μmhos
Load Resistance	5000	ohms
Total Harmonic Distortion	8	per cent
Maximum-Signal Power Output	4.5	watts



Depend on deriver circuit. Usually x2 the load of the previous stage. Max about 100k for Fixed bias

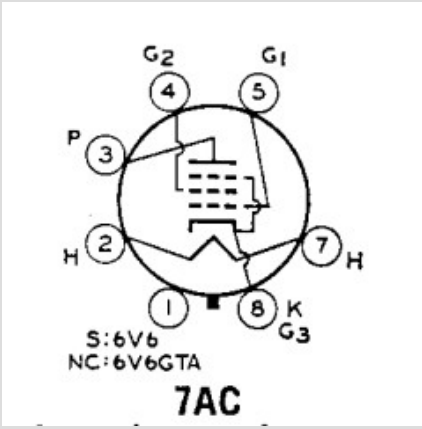


0.5V*=(45mA+4.5mA)x10ohm

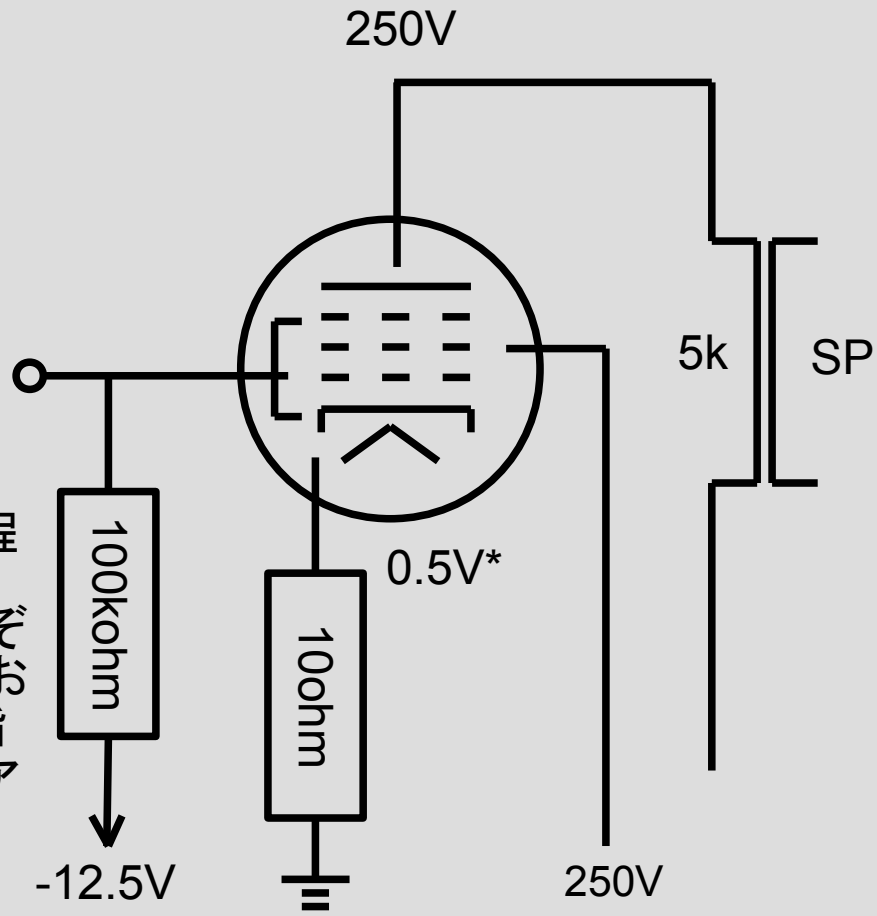
Design for fixed bias
固定バイアス回路の設計

TYPICAL OPERATION

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	—12.5	volts
Peak AF Grid-No.1 Voltage	12.5	volts
Zero-Signal Plate Current	45	mA
Maximum-Signal Plate Current	47	mA
Zero-Signal Grid-No.2 Current	4.5	mA
Maximum-Signal Grid-No.2 Current	7	mA
Plate Resistance (Approx.)	50000	ohms
Transconductance	4100	μmhos
Load Resistance	5000	ohms
Total Harmonic Distortion	8	per cent
Maximum-Signal Power Output	4.5	watts



前段のプレート抵抗の倍程度の抵抗値を選びます。グリッドリーク抵抗はそれぞれの真空管で決められており6V6では最大100kΩと指示されている。（固定バイアス時）



0.5V*=(45mA+4.5mA)x10ohm

Recomend 5k single output trans from Japan
5kシングルトランスの紹介

- ISO
  FC-12S(5k,12W)
  FC-20S(5k,20W)
- General Trans
  ゼネラルトランス
  PMF-10WS(5k,10W)
  PMF-20WS(5k,20W)
- Tamura
  F912(5k,12W)

Thank you show my video
I am very happy. Your it. Channel registration.

ご覧いただきありがとうございます。

感想やご質問はコメント欄まで、また評価と
チャンネル登録お願いします。