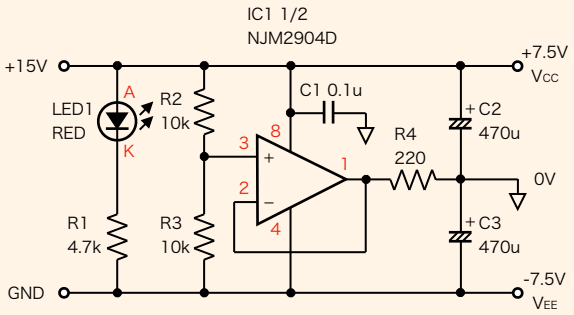
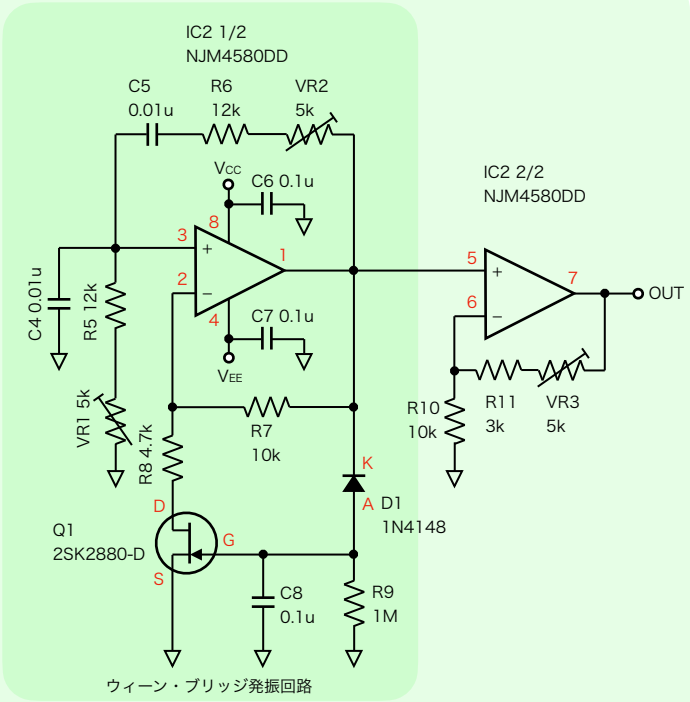
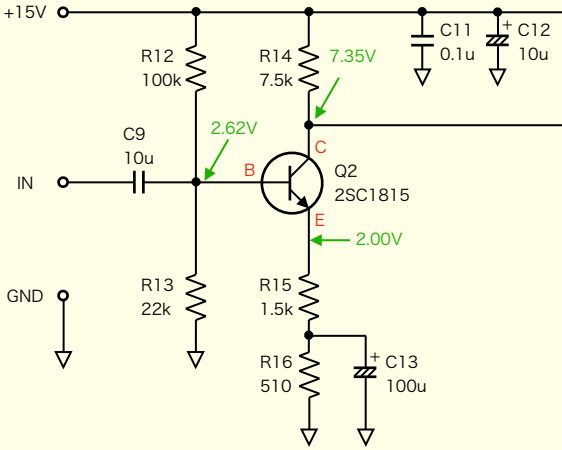
AB級アンプ（その４.２）



正弦波発生回路用電源回路



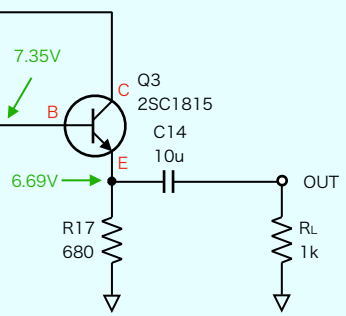
正弦波発生回路



電源電圧 V_{CC} = 15V
電圧利得 Av = 5
エミッタ電流 I_E = 1mA = I_C
エミッタ電圧 V_E = 2V
コレクタ電圧 V_C = 7.5V
V_{BE} = 0.6V
R12とR13に流す電流 I = 0.1mA

R_C(R14) = (V_{CC}-V_C)/I_C = (15-7.5)/0.001 = 7,500 = 7.5kΩ
V_C = V_{CC}-I_C·R_C = 15-0.001×7,500 = 7.5V
R_E = V_E/I_E = 2/0.001 = 2,000 = 2kΩ
R_{E1}(R15) = R_C/Av = 7,500/5 = 1,500 = 1.5kΩ
R_{E2}(R16) = R_E-R_{E1} = 2,000-1,500 = 500 = 510Ω
V_{CE} = V_C-V_E = 7.5-2 = 5.5V
コレクタ損失 P_C = V_{CE}·I_C = 5.5×0.001 = 0.0055 = 5.5mW
V_B = V_E+V_{BE} = 2+0.6 = 2.6V
R12 = (V_{CC}-V_B)/I = (15-2.6)/0.0001 = 124,000 ≒ 100kΩ
R13 = V_B/I = 2.6/0.0001 = 26,000 ≒ 22kΩ

エミッタ接地増幅回路



最大出力電圧 5V_{P-P}
最大出力電流 ±2.5mA（1kΩ負荷）
エミッタ電流 I_E = 10mA = I_C
h_{FE} = 200

V_E = V_B-V_{BE} = 7.35-0.6 = 6.75V
V_{CE} = V_{CC}-V_E = 15-6.75 = 8.25V
コレクタ損失 P_C = V_{CE}·I_C = 8.25×0.01 = 0.0825 = 82.5mW
R_E(R17) = V_E/I_E = 6.75/0.01 = 675 = 680Ω
I_B = I_E/h_{FE} = 0.01/200 = 0.00005 = 0.05mA

エミッタ・フォロワ回路