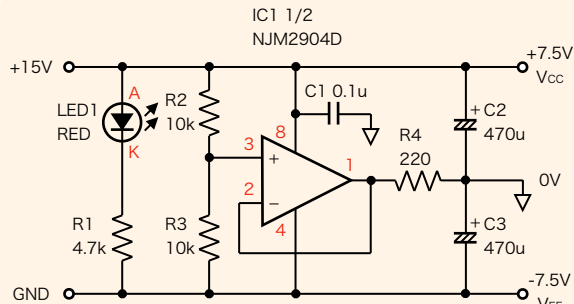
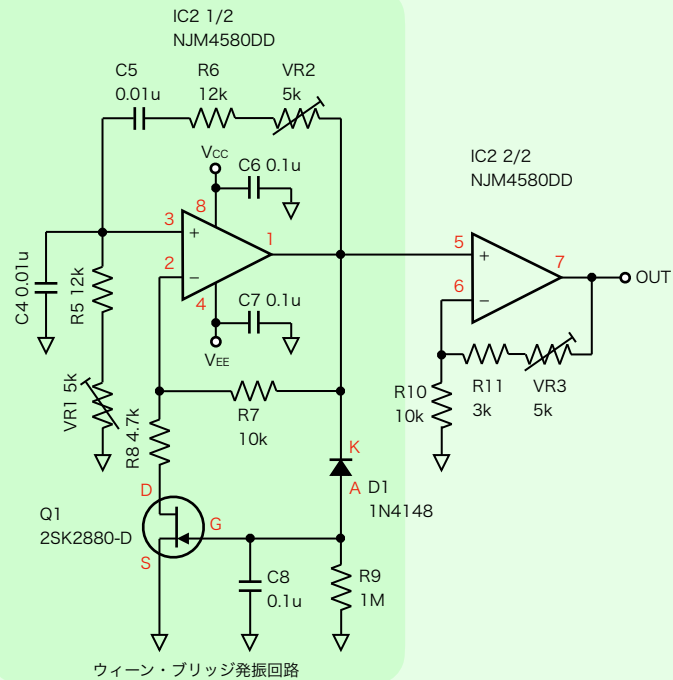


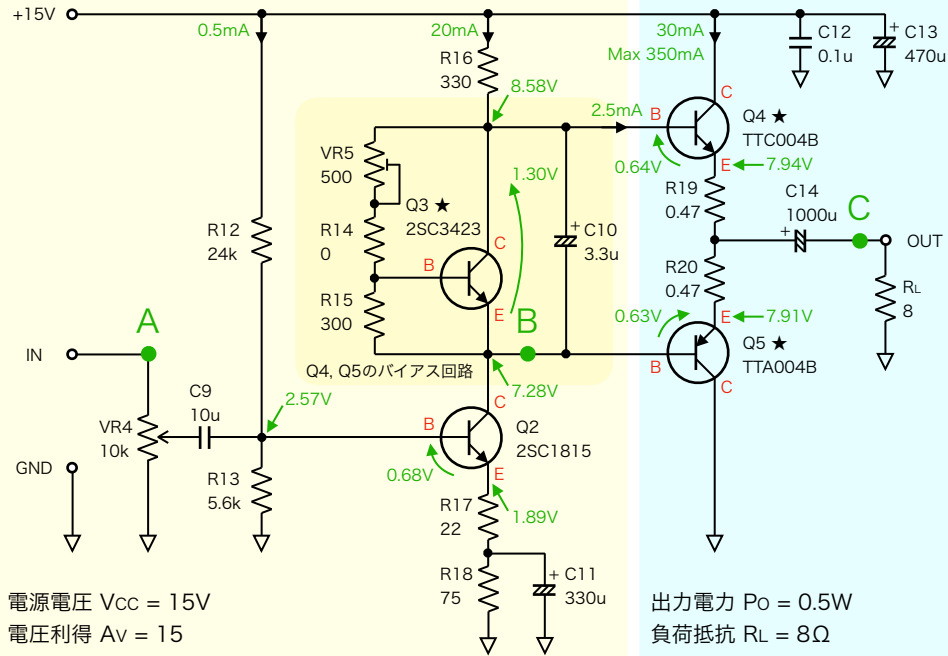
0.5W AB級アンプ (その5)



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 $A_v = 15$
 エミッタ電圧 $Q2_V_E = 2V \cdots Q2_V_B = 2.6V$
 コレクタ電圧 $Q2_V_C = 8.5V$
 $R12$ と $R13$ に流す電流 $I = 0.5mA$

$Q2_R_E(R17+R18) = Q2_V_E/Q2_I_C = 2/0.02 = 100\Omega$
 $R16 = (V_{CC}-Q2_V_C)/Q2_I_C = (15-8.5)/0.02 = 325 = 330\Omega$
 $R17 = R16/A_v = 330/15 = 22\Omega$
 $R18 = Q2_R_E - R17 = 100 - 22 = 78 = 75\Omega$
 $R12 = (V_{CC}-Q2_V_B)/I = (15-2.6)/0.0005 = 24,800 \approx 24k\Omega$
 $R13 = Q2_V_B/I = 2.6/0.0005 = 5,200 \approx 5.6k\Omega$
 入力インピーダンス $R12//R13 = 24k//5.6k = 4.5k\Omega$
 $R15_I = 0.6/300 = 0.002 = 2mA = VR5_I = R14_I$
 $Q3_I_C = Q2_I_C - R15_I = 0.02 - 0.002 = 0.018 = 18mA$

エミッタ接地増幅回路

出力電力 $P_o = 0.5W$
 負荷抵抗 $R_L = 8\Omega$
 $h_{FE} = 140$

出力電圧 $V_o = \sqrt{(P_o \cdot R_L)} = \sqrt{(0.5 \times 8)} = 2V_{rms} \cdots 5.66V_{PP}$
 $I_C = V_{PP}/2/R_L = 5.66/2/8 = 0.354 = 350mA = I_E$
 $I_B = I_C/h_{FE} = 0.35/140 = 0.0025 = 2.5mA \cdots Q2_I_C = 20mA$
 最大出力電圧 $V_{max} = V_{CC} - Q2_V_C = 15 - 8.5 = 6.5V \cdots 4.6V_{rms}$
 コレクタ損失 $P_C = V_{max}^2/2/R_L/5 = 4.6^2/8/5 = 0.53W$
 最大負荷電流 $I_{max} = I_E \times 2 = 0.35 \times 2 = 0.7A$
 $P_{R19} = (I_{max}/\sqrt{2})^2 \times R19 = (0.7/\sqrt{2})^2 \times 0.47 = 0.115W$
 $= P_{R20} < 1/4W$

エミッタ・フォロワ回路

★ 熱結合