

5.4. (a) 直流负反馈

(b) 直流、交流正反馈

(c) 直流负反馈

(d) 直流、交流负反馈

(e) 直流、交流负反馈

(f) 直流、交流负反馈

(g) 直流、交流负反馈

(h) 直流、交流负反馈

5.5. (a) 直流、交流负反馈

(b) 直流、交流负反馈

(c) 直流、交流负反馈, 交流正反馈

(d) 直流、交流负反馈

(e) 直流、交流负反馈

(f) 直流、交流负反馈

5.6 (d) 电流并联负反馈

(e) 电压串联负反馈

(f) 电压串联负反馈

(g) 电压串联负反馈

(h) 电压串联负反馈

5.7. (a) 交直流电压并联负反馈

(b) 交直流电压串联负反馈

(c) 交流电压串联负反馈, 交流正反馈, 直流负反馈

(d) 交直流电压并联负反馈

(e) 交直流电流并联负反馈

(f) 直流电流并联负反馈, 交流电流串联负反馈

$$5-8.(d) \frac{\dot{U}_o}{\dot{U}_i} = \frac{\dot{I}_o \cdot R_L}{\dot{I}_i \cdot R_1} \quad \because \text{理想运放} \quad \therefore \dot{I}_i = \dot{I}_o$$

$$\therefore \frac{\dot{U}_o}{\dot{U}_i} = \frac{R_L}{R_1}$$

$$(e) U_- = U_+, \quad \dot{U}_i = \dot{I}_o \cdot R_1, \quad \dot{U}_o = \dot{I}_o \cdot (R_1 + R_3)$$

$$\therefore \frac{\dot{U}_o}{\dot{U}_i} = \frac{R_1 + R_3}{R_1}$$

$$(f) \text{交流 } R_2 \text{ 短路, } \dot{U}_o = \dot{U}_i, \quad \frac{\dot{U}_o}{\dot{U}_i} = 1$$

$$(g) \frac{\dot{U}_o}{\dot{U}_i} = \frac{R_1 + R_2}{R_1}$$

$$(h) \frac{\dot{U}_o}{\dot{U}_i} = \frac{R_1 + R_3}{R_1}$$

$$5-9.(a) \dot{F}_{iu} = \frac{\dot{I}_f}{\dot{U}_o} = -\frac{1}{R_f}, \quad \dot{A}_{uif} = \frac{\dot{U}_o}{\dot{I}_i} \approx -R_f$$

$$\therefore \dot{A}_{usf} = -\frac{R_f}{R_s}$$

$$(b) \dot{F}_{uu} = \frac{\dot{U}_f}{\dot{U}_o} = \frac{R_1}{R_1 + R_4}, \quad \dot{A}_{uuf} = \frac{1}{\dot{F}_{uu}} = \frac{R_1 + R_4}{R_1}$$

$$(c) \dot{F}_{ii} = \frac{\dot{I}_f}{\dot{I}_o} = \frac{R_2}{R_1 + R_2}, \quad \dot{A}_{iif} = \frac{1}{\dot{F}_{ii}} = \frac{R_1 + R_2}{R_2}$$

$$\dot{A}_{usf} = \frac{(R_1 \parallel R_4)(R_1 + R_2)}{R_s \cdot R_2}$$

$$(f) \dot{F}_{vi} = \frac{\dot{U}_f}{\dot{I}_o} = \frac{R_2 R_9}{R_2 + R_4 + R_9}$$

$$\dot{A}_{iuf} = \frac{1}{\dot{F}_{vi}} = \frac{R_2 + R_4 + R_9}{R_2 R_9} = \frac{\dot{I}_o}{\dot{U}_i}$$

$$\therefore \dot{A}_{uf} = \frac{R_2 + R_4 + R_9}{R_2 R_9} \cdot (R_7 \parallel R_s \parallel R_L)$$

$$\lg F = -5$$

5-10. 电压串联 ; 无穷 ; $11 ; 11 ; 1 ; 14 ; 14 ; 1$

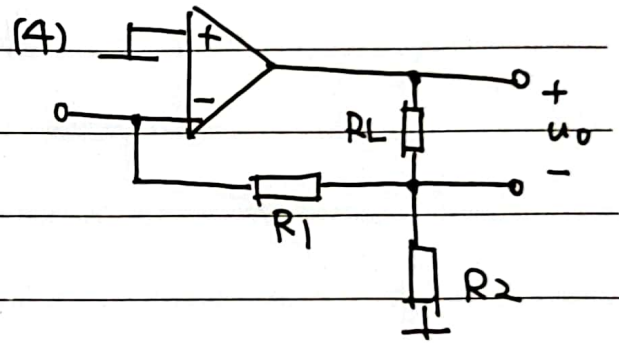
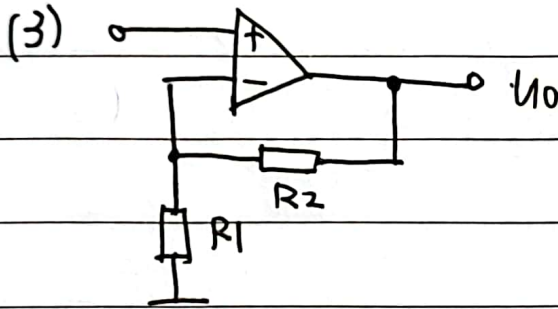
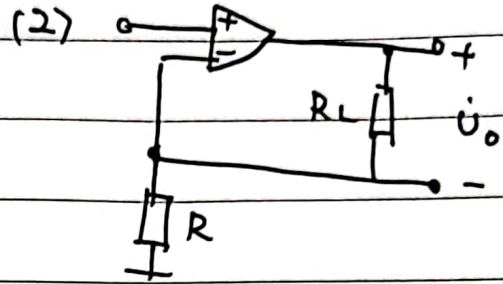
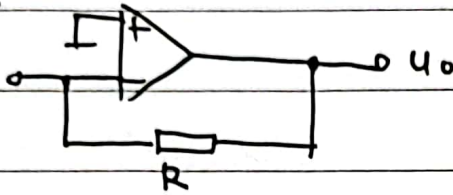
5-12. $f_{H1} = 10^4 \text{ Hz}$, $f_{H2} = f_{H3} = 10^5 \text{ Hz}$

在 $f = f_{H2}$ 时 φ 为 -180°

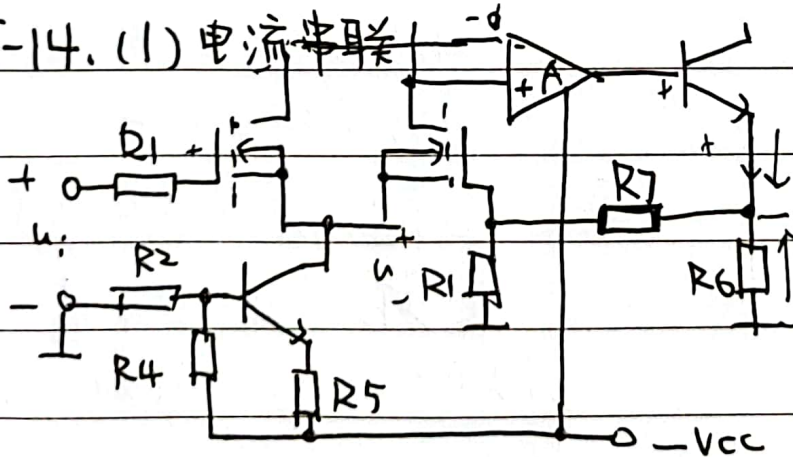
$$\text{此时 } 20 \lg |A| \approx 80 - 20 - 6 = 54 \text{ dB}$$

$$\therefore 20 \lg |F| < -54, \quad F < 0.002$$

5-13. (1).



5-14. (1) 电流串联



$$I \approx \frac{R_1 R_6}{R_1 + R_7 + R_6} \frac{I}{I}$$

$$(2) F_{ui} = \frac{R_1 R_6}{R_1 + R_6 + R_7}, \quad A_{uif} \approx \frac{R_1 + R_6 + R_7}{R_1 R_6}$$

$$\therefore \frac{0.01}{5} = \frac{11.5 + R_7}{15 \times 1000} \Rightarrow R_7 = 30 - 11.5 = 18.5 \text{ k}\Omega$$