

# BJT Amplifier Equivalent Circuits (H.10)

20170203

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# References

Based

[1] Floyd, Electronic Devices 7th ed

[2] Cook,

[2] [en.wikipedia.org](http://en.wikipedia.org)

$\alpha_{ac}$  ac alpha ( $I_c / I_e$ )

$\beta_{ac}$  ac beta ( $I_c / I_b$ )

$r_e'$  ac emitter resistance

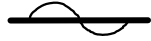
$r_b'$  ac base resistance

$r_c'$  ac collector resistance

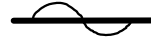
$$I_c = \alpha_{ac} I_e$$

$$I_c = \beta_{ac} I_b$$

$$V_{BQ} + V_b$$



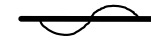
$$I_B + I_b$$



$$I_b$$



$$V_{CEQ} + V_{ce}$$



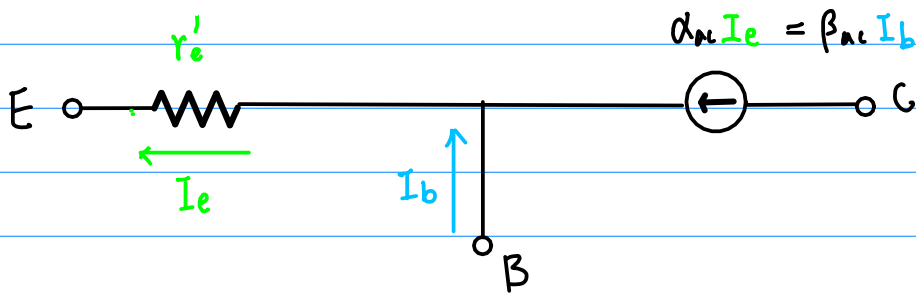
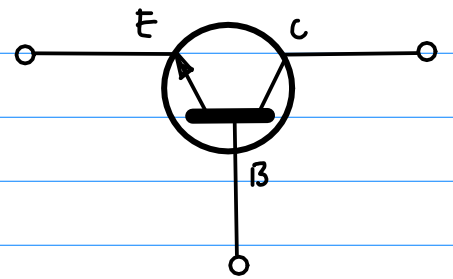
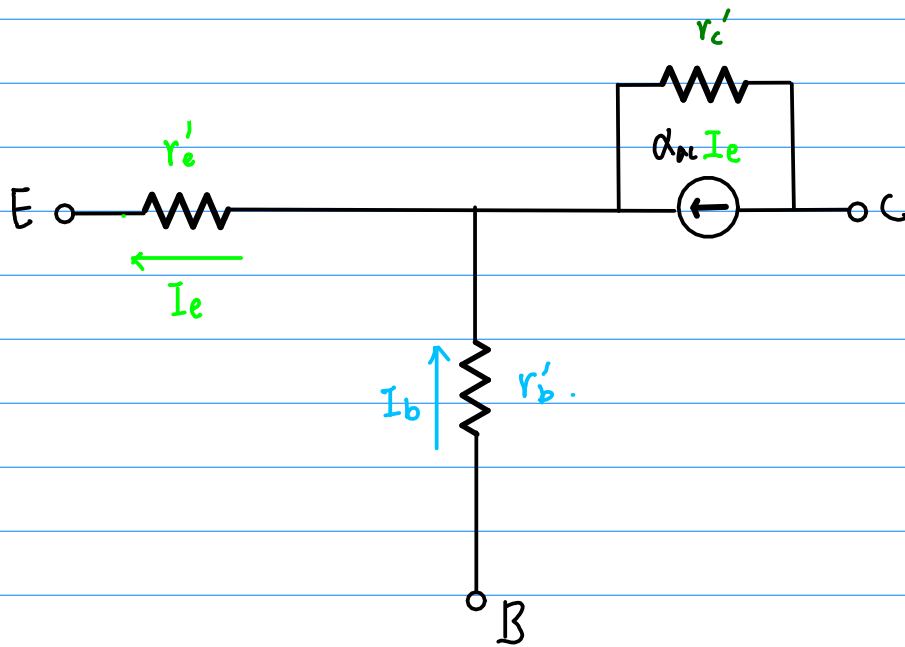
$$\beta_{ac}$$

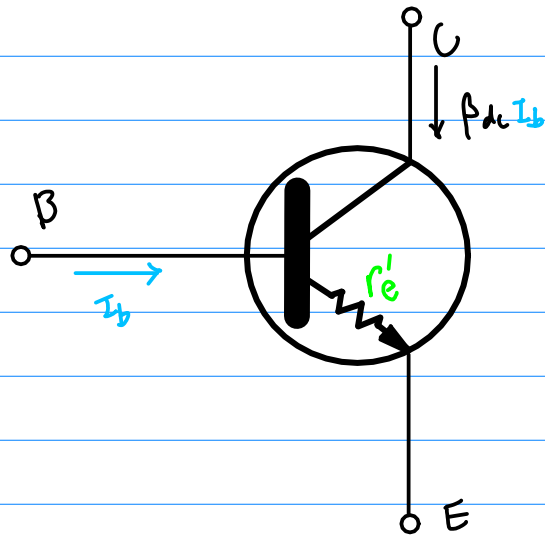
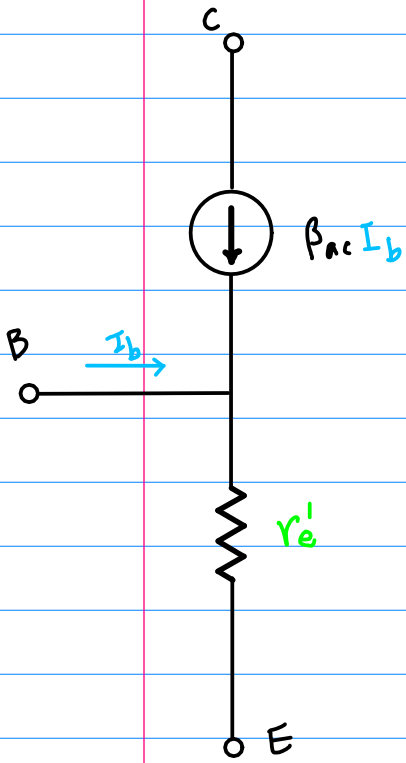
$$I_{CQ} + I_c$$



$$I_c$$







$I_C$	$I_c$	$i_c$
$I_E$	$I_e$	$i_e$
$I_B$	$I_b$	$i_b$
$V_{CE}$	$V_{ce}$	$v_{ce}$

$$\left( \frac{1}{\beta_{DC}} + R_C \right) I_C - V_{CC} - V_{BE}$$

$$I_C = \frac{V_{CC} - V_{BE}}{R_C + R_B / \beta_{DC}}$$









