Tabla 1: Formulas basicas

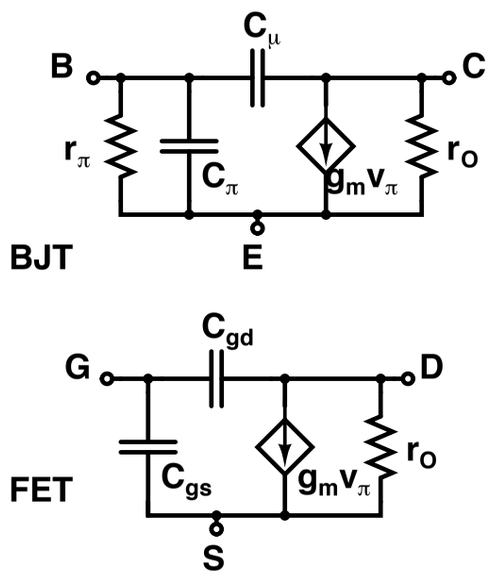
BJT	FET
$g_m = \frac{I_{CQ}}{V_T}$	$g_m = \frac{\mu_n C_{ox}}{2}\left(\frac{W}{L}\right)\left(V_{GS_Q} - V_{th}\right) = 2\sqrt{\frac{\mu_n C_{ox}}{2}\frac{W}{L} I_{DQ}}$
$r_O = {}^{V_A}\!/_{I_{CQ}}$	$r_O = {}^{1}\!/_{\lambda I_Q}$
$r_\pi = {}^{\beta V_T}\!/_{I_{CQ}}$	$i_{DQ,sat} = \frac{\mu_n C_{ox}}{2}\left(\frac{W}{L}\right)\left(v_{GS} - V_{th}\right)^2$

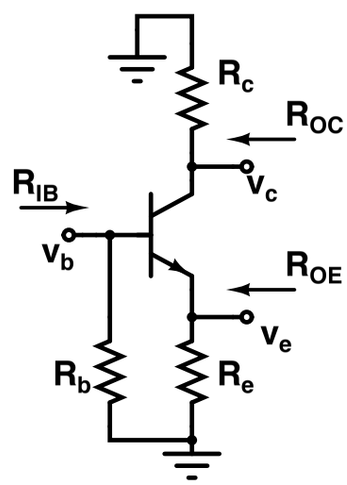
Tabla 2: Ganancias. R_c, R_e, R_d y R_s representan las resistencias externas conectada al colector, emisor, drain y source, respectivamente. Si mas de una resistencia externa esta conectada al terminal, debe usar la resistencia equivalente.

Configuración	BJT	FET
CE/CS	$\frac{v_c}{v_b} = \frac{-g_m(R_c \| (r_O(1+g_m R_e))}{1+g_m R_e}$	$\frac{v_d}{v_g} = \frac{-g_m(R_d \| (r_O(1+g_m R_s)))}{1+g_m R_s}$
CB/CG	$\frac{v_c}{v_e} = +g_m R_c$	$\frac{v_d}{v_s} = +g_m R_d$
CC/CD	$\frac{v_e}{v_b} = \frac{+g_m R_e}{1+g_m R_e}$	$\frac{v_s}{v_g} = \frac{g_m R_s}{1+g_m R_s}$

Tabla 3: Resistencias equivalentes, vistas mirando al terminal según indican las dos figuras de la derecha. No todas las resistencias externas tienen que estar presentes.

Terminal	expresión
Colector	$R_{OC} = R_c \| \left(r_O(1 + g_m R_e)\right)$
Emisor	$R_{OE} = R_e \| \frac{r_\pi + R_b}{\beta+1} \| r_O$
Base	$R_{IB} = R_b \| \left(r_\pi + (\beta+1)R_e\right)$
Drain	$R_{OD} = R_D \| \left(r_O(1 + g_m R_S)\right)$
Source	$R_{OS} = R_s \| {}^{1}\!/_{g_m}$
Gate	$R_{IG} = R_g$





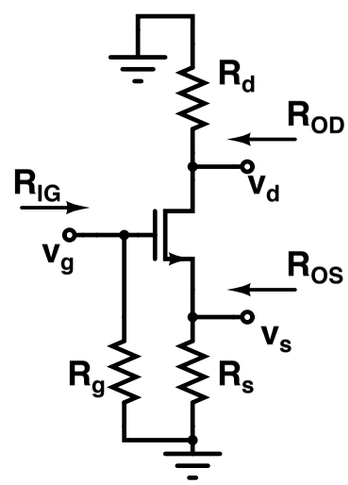


TABLE 8.1 Summary of Relationships for the Four Feedback Amplifier Topologies

Feedback Amplifier	x_i	x_o	x_f	x_s	A	β	A_f	Source Form	Loading of Feedback Network Is Obtained: At Input	Loading of Feedback Network Is Obtained: At Output	To Find β, Apply to Port 2 of Feedback Network	Z_{if}	Z_{of}	Refer to Figs.
Series–shunt (voltage amplifier)	V_i	V_o	V_f	V_s	$\frac{V_o}{V_i}$	$\frac{V_f}{V_o}$	$\frac{V_o}{V_s}$	Thévenin	By short-circuiting port 2 of feedback network	By open-circuiting port 1 of feedback network	a voltage, and find the open-circuit voltage at port 1	$Z_i(1+A\beta)$	$\frac{Z_o}{1+A\beta}$	8.4(a) 8.8 8.10 8.11
Shunt–series (current amplifier)	I_i	I_o	I_f	I_s	$\frac{I_o}{I_i}$	$\frac{I_f}{I_o}$	$\frac{I_o}{I_s}$	Norton	By open-circuiting port 2 of feedback network	By short-circuiting port 1 of feedback network	a current, and find the short-circuit current at port 1	$\frac{Z_i}{1+A\beta}$	$Z_o(1+A\beta)$	8.4(b) 8.22 8.23 8.24
Series–series (transconductance amplifier)	V_i	I_o	V_f	V_s	$\frac{I_o}{V_i}$	$\frac{V_f}{I_o}$	$\frac{I_o}{V_s}$	Thévenin	By open-circuiting port 2 of feedback network	By open-circuiting port 1 of feedback network	a current, and find the open-circuit voltage at port 1	$Z_i(1+A\beta)$	$Z_o(1+A\beta)$	8.4(c) 8.13 8.15 8.16
Shunt–shunt (transresistance amplifier)	I_i	V_o	I_f	I_s	$\frac{V_o}{I_i}$	$\frac{I_f}{V_o}$	$\frac{V_o}{I_s}$	Norton	By short-circuiting port 2 of feedback network	By short-circuiting port 1 of feedback network	a voltage, and find the short-circuit current at port 1	$\frac{Z_i}{1+A\beta}$	$\frac{Z_o}{1+A\beta}$	8.4(d) 8.18 8.19 8.20