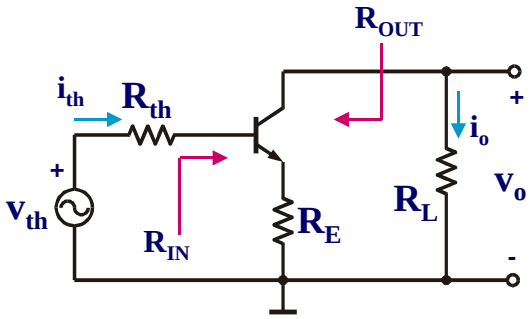
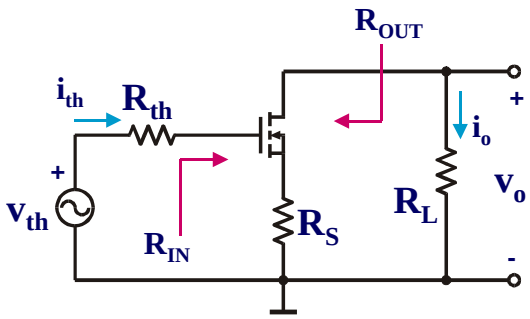
AMPLIFICATORI AD EMETTITORE COMUNE (C-E) E A SOURCE COMUNE (C-S)

	BJT	FET
$A_{Vth} = \frac{V_o}{V_{th}}$	$-\frac{\beta_0 R_L}{R_{th} + r_\pi + (\beta_0 + 1)R_E} \approx -\frac{g_m R_L}{1 + g_m R_E}$	$-\frac{g_m R_L}{1 + g_m R_S}$
A_{Vth_MAX} (R_E, R_S = 0)	$-g_m R_L = -\alpha \frac{V_{CC}}{V_T}$	$-g_m R_L = -\alpha \frac{2V_{CC}}{V_{GS} - V_{TN}}$
$A_{Ith} = \frac{I_o}{I_{th}}$	$-\beta_0$	∞
R_{IN}	$r_\pi + (\beta_0 + 1)R_E \approx r_\pi(1 + g_m R_E)$	∞
R_{OUT}	$\approx r_o\left(1 + \frac{g_m R_E}{1 + \frac{R_{th} + R_E}{r_\pi}}\right) \approx r_o(1 + g_m R_E)$	$\approx r_o(1 + g_m R_S)$
ΔV_{th}	$<< 2V_T\left(1 + g_m R_E + \frac{R_{th} + R_E}{r_\pi}\right)$	$<< 2(V_{GS} - V_{TN})(1 + g_m R_S)$

CIRCUITI DINAMICI EQUIVALENTI



C-E

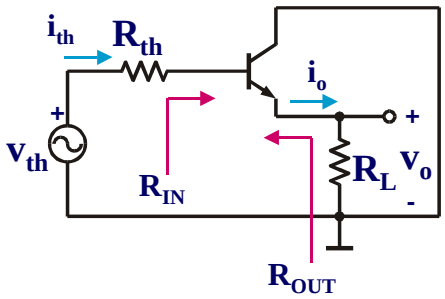


C-S

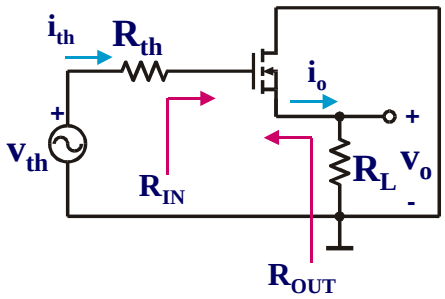
AMPLIFICATORI A COLLETTORE COMUNE (C-C) E A DRAIN COMUNE (C-D)

	BJT	FET
$A_{Vth} = \frac{V_o}{V_{th}}$	$\frac{(\beta_0+1)R_L}{R_{th}+r_\pi+(\beta_0+1)R_L} \approx \frac{g_m R_L}{1+g_m R_L}$	$\frac{g_m R_L}{1+g_m R_L}$
A_{Vth_MAX}	1	1
$A_{Ith} = \frac{I_o}{I_{th}}$	β_0+1	∞
R_{IN}	$r_\pi+(\beta_0+1)R_L \approx r_\pi(1+g_m R_L)$	∞
R_{OUT}	$\frac{R_{th}+r_\pi}{\beta_0+1} \approx \frac{1}{g_m}$	$\frac{1}{g_m}$
ΔV_{th}	$<< 2V_T\left(1+g_m R_L+\frac{R_{th}+R_L}{r_\pi}\right)$	$<< 2(V_{GS}-V_{TN})(1+g_m R_L)$

CIRCUITI DINAMICI EQUIVALENTI



C-C

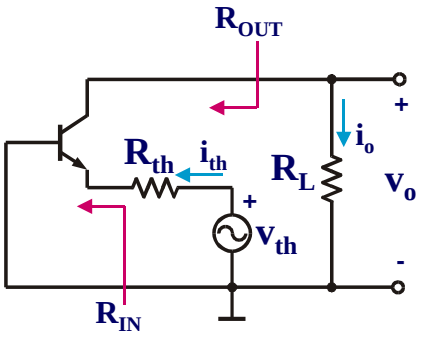


C-D

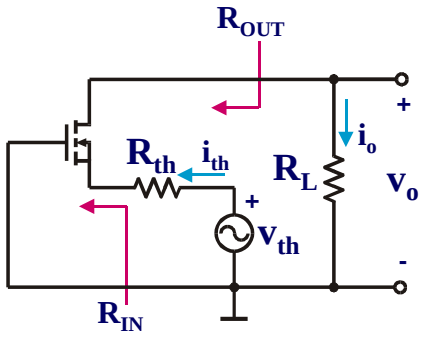
AMPLIFICATORI A BASE COMUNE (C-B) E A GATE COMUNE (C-G)

	BJT	FET
$A_{Vth} = \frac{V_o}{V_{th}}$	$\frac{\beta_0 R_L}{r_\pi + (\beta_0 + 1) R_{th}} \approx \frac{g_m R_L}{1 + g_m R_{th}}$	$\frac{g_m R_L}{1 + g_m R_{th}}$
A_{Vth_MAX} (R_E, R_S = 0)	$g_m R_L = \alpha \frac{V_{CC}}{V_T}$	$g_m R_L = \alpha \frac{2V_{CC}}{V_{GS} - V_{TN}}$
$A_{Ith} = \frac{I_o}{I_{th}}$	$\alpha_0 \approx +1$	$+1$
R_{IN}	$\frac{r_\pi}{\beta_0 + 1} \approx \frac{1}{g_m}$	$\frac{1}{g_m}$
R_{OUT}	$\approx r_o \left(1 + \frac{g_m R_{th}}{1 + \frac{R_{th}}{r_\pi}} \right) \approx r_o (1 + g_m R_{th})$	$\approx r_o (1 + g_m R_{th})$
ΔV_{th}	$<< 2V_T \left(1 + g_m R_{th} + \frac{R_{th}}{r_\pi} \right)$	$<< 2(V_{GS} - V_{TN})(1 + g_m R_{th})$

CIRCUITI DINAMICI EQUIVALENTI



C-B



C-G