

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Department of Electrical Engineering

6.301 Solid State Circuits

Spring Term 2003
 Problem Set 8

Issued : April 25, 2003
 Due : Friday, May 2, 2003

For each of the following circuits use the “Gilbert Principle” to determine I_o as a function of the other circuit variables. Determine the ranges of input over which the circuits operate (i.e. $I_X < 0$ and $-\pi < y < \pi$). All of these circuits simplify to simple expressions even a CS major would understand.

A differential output is denoted by an I_o superimposed on an arrow, and double emitter arrows with $2A_E$ indicate that transistor has double the emitter area of the other transistors, thus its I_S is twice as large.

Finally, use the method of open circuit time constants to estimate the upper 3 dB frequency for the first circuit.



