"DISPOSITIVI ELETTRONICI"
FACOLTÀ DI INGEGNERIA – UNIVERSITÀ DI PARMA

ILAB ASSIGNMENT #2
N-P-N BJT CHARACTERIZATION AND MODELING

MAY 23-24, 2006

1. **Measure the BJT's Gummel plots for V_{CE} = 1, 2.5, 4 V.** Extract the ideality factors of I_C and I_B. Can different regimes be identified in the plots? Plot β_F vs. I_C (in both log and linear scale).
2. **Measure the BJT's output characteristics.** Use the information provided by the Gummel plots to choose a suitable range for I_B.
3. **Extract the Early voltage at the threshold of saturation and in the forward active region (V_{CE} = 2.5 V).**
4. **Measure the output characteristics in the reverse-active (V_{EC} = 2.5 V) region**. Always use I_B as VAR1 (suggested range: 1 pA – 100 µA).
5. **Using the forward-active and reverse-active output curves, try to extract the Ebers-Moll model of the BJT under test and compare the modeled and measured output curves.**

E-mail reports in .doc or .pdf, format to roberto.menozzi@unipr.it.