5. Electrical & Process Measurements

This section provides the results of electrical measurements made at the Hewlett-Packard Integrated Circuit Processing Laboratory using the MPC580 starting frame test structures. Included are the ring oscillator frequency, the various threshold voltages, certain electrical parameters, and basic information about the process, such as oxide thicknesses.

The transit time, τ, of minimum-sized transistors can be derived from this information, and then used by designers to estimate the maximum clock frequencies for their projects. The nineteen-stage ring oscillator "rings" at ~ ? MHz (at VDD = 5v). Thus the inverter-pair-delay in the oscillator equals ? ns (see Section 4, Starting Frame Documentation). Let's assume that the effective fanout, f, including parasitics is approximately equal to 2. The inverter-pair-delay = $f(k+1)\tau$ = ? ns. Therefore, we find that the transit time τ is approximately ? ns.