Simulation Support for Philips' Advanced BiCMOS Products

AN2301

Philips' Standard Products Group leads the industry by providing SPICE support for our popular BiCMOS products such as ABT and MULTIBYTE.

System engineers around the world have found that as system operating frequencies go higher, checking digital signal integrity is an essential design criterion. At higher frequencies, signals usually thought to be simply digital contain analog affects that impact system design. Further, system engineers are combining diverse logic products such as discrete logic, PLDs, ASICs, gate arrays and FPGAs, complicating their design process.

Philips Standard Product Group is addressing these problems by providing SPICE models of our devices that simulate input/output characteristics. These models will help designers combat such problems as:

- Timing Control
- Interface Skew
- Ground Bounce
- Cross-Talk
- Transmission Line/Interconnection Effects
- Loading Constraints

SPICE (Simulation Program with Integrated Circuit Emphasis) is an analog simulation program using numerical analysis, thereby requiring much computing power and memory. SPICE, therefore, is inappropriate for full-system simulation. With this in mind, we designed the models to simulate only their interfaces. A system engineer should therefore use a much faster digital simulator for the overall design, and use our SPICE models to investigate critical nodes or loading options. Customers using these models have said that both time and money may be saved by using our models.

Philips Standard Products Group manufacturers product families in a number of different processes covering bipolar, CMOS and BiCMOS devices. Philips has provided customers worldwide with SPICE models for many of these products including the following product families:

- 74F
- 74LS/S
- ECL
- 74AC11K
- 74ABTXXX
- 74ABTA
- MB2XXX
- MB4XXX
- 74ABT16XXX
- 74HL33
- 74LVC
- 74LVT

Many system and inspection engineers have grown accustomed to Philips' excellent customer simulation support program. We encourage all system designers to simulate critical areas of their prototype designs. System engineers may obtain copies of the models, contained in Device Modeling and Simulation Guides, by contacting Philips' SPG marketing in either Sunnyvale, California, USA or Nijmegen, The Netherlands.