

Motorola Turns Page With MMC2080

Latest M•Core Chip Includes Integrated Logic for Deluxe Pagers

by Jim Turley

“Making technology inescapable for everyone” could be Motorola’s new motto. From wireless police radios, to analog cell phones, to inexpensive hip-borne pagers, Motorola guarantees that nobody is ever more than a telephone call away from their responsibilities. Now that company is pushing ubiquitous, effortless, thoughtless communication a little bit further with the M•Core MMC2080 (see Figure 1), a processor designed for high-end pagers.

The 2080 is the fourth M•Core processor, following the debut MMC2001 (see MPR 3/30/98, p. 13) and the DSP-equipped 56651 and '652 (see MPR 4/20/98, p. 9). The 2080 follows the integration trend that is developing for M•Core parts; the chip is less than 25% processor by area. The rest is dedicated to over 100K of memory and a surprisingly complex paging interface. Production is slated for March.

Flex Paging Protocol in Hardware

The bulk, if not the heart, of the 2080 is its paging-protocol handler. The Messaging Systems Paging Group, responsible for paging products in Motorola’s byzantine organization, developed the “Flex” protocol. Flex has been licensed to paging providers around the world and is widely available in most markets. The standard includes capabilities for text paging, roaming, delivery confirmation, broadcasting, and other relatively advanced paging concepts.

High-end pagers supporting these features exist, but the Flex protocol stack is fairly complex and requires a considerable amount of software as well as specialized hardware that must be licensed from Motorola. The 2080 combines these features into a single integrated device, based on M•Core, that can act as the engine for a number of consumer systems that use wireless paging as their communication medium.

Small CPU, Big Memory, No LCD Controller

To minimize power, the M•Core processor runs at a glacial 10 MHz, executing code directly from 96K of on-chip ROM

and using 6K of SRAM as scratch space. The chip has general-purpose I/O pins, which can optionally be configured to work as an external address/data bus for large applications. Of the 96K of ROM, Motorola says 30K is used to implement the Flex software stack; Far Eastern languages need additional space for font compression. The rest of the ROM is free for application-specific code.

A simple system based on the 2080 might consist of little more than the processor, an RF front end, a 76-kHz crystal, and some sort of user interface (buttons, etc.). Surprisingly, the 2080 does not include an LCD controller—a seemingly necessary feature for any normal pager. The company defends its decision, saying its customers prefer to select their own LCD controller on the basis of desired display size, number of colors, pixel count, and so forth, and thus no single LCD controller could satisfy everyone.

A Natural Evolution of Pagers

There’s no question that a processor-powered paging chip serves Motorola’s corporate strategy on multiple fronts. There’s also little point in arguing whether a market for such a device exists; Motorola alone employs enough pager-bearers to make the chip moderately successful. Pagers haven’t disappeared with the advent of cellular telephones; they’ve just metamorphosed into something more functional, complex, and intrusive. In the struggle to stay ahead of the rat race, Motorola is gaining ground. ■

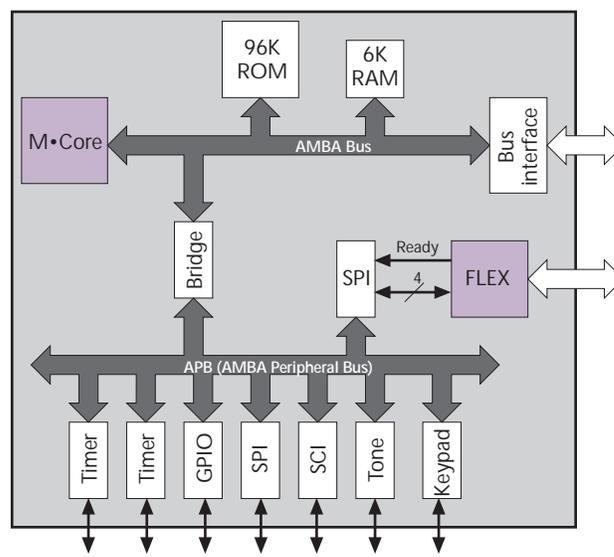


Figure 1. The MMC2080 combines a 10-MHz M•Core processor with assorted peripherals and a complete Flex paging-protocol decoder, for a self-contained 32-bit paging controller.

Price & Availability

Motorola’s MMC2080 will be priced at \$9.60 in 25,000-unit quantities when the part begins sampling in December. Production is scheduled for March 1999.

For more information, call Motorola at 800.521.6274 or visit motorola.com/wireless-semi/MMC2080pr.html.