PRODUCT INFORMATION

Vol. 80

Microcontroller with On-Chip LCD Dot Matrix Function Developed

Low current drain achieved despite inclusion of the largest (64KB) on-chip ROM in the industry

LC868364A

Overview

Portable battery-operated electronic products are now available in a wide range of variations and the demand for these products continues to grow. Since even longer battery operating times are now a major market trend, there are now even stronger desires for reduced current drain devices for these products. To extend battery life, LCDs are now used almost exclusively as the display device in these products. One trend in this market has been the increasing use of products that provide character display. When character display is provided, graphics display becomes necessary to move from the earlier segment displays to dot matrix displays. Although graphics display allows systems to display arbitrary images, it also increases system memory requirements. Thus there are now strong desires for increased capacities in graphics storage memory.

To respond to these market needs, Sanyo has developed the LC868364A 8-bit microcontroller with an on-chip LCD dot matrix function. (Such devices are referred to in the remainder of this document as a "dot matrix microcontrollers.")

To achieve the low current drain required in portable applications, the LC868364A allows LCD operation with only the 32-kHz LCD oscillator operating. This reduces the current drain when the LCD is operated continuously to 1/7 that of earlier Sanyo products. This low current drain operation makes it possible for portable equipment to provide a wider range of functions.

The LC868364A's LCD dot matrix display function supports both 32 × 32 dot displays and 16 × 48 dot displays. Furthermore, this capability can be expanded in 80-segment units when used in combination with the LC868920A LCD driver, which was developed at the same time.

The LC868364A includes an on-chip 64KB mask ROM for character and other display data, and allows applications to provide a wide variety of display data. By using this data, and combinations of different data items, applications can provide far more diverse display variations than was possible previously. Thus the LC868364A is the optimal microcontroller for portable products that handle large amounts of display data and other information, particularly products that provide rich and complex character displays.

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Sanyo is committed to providing an extensive product line of dot matrix microcontrollers designed for applications that can take advantage of dot matrix microcontrollers, such as games and PDAs. The recently developed dot matrix microcontroller described here was developed and is now being released as part of this product line expansion. Sanyo will continue to respond to the needs of the expanding portable equipment market and will be aggressively developing new products that take advantage of the low current drain system technology used in this product.

Features

- Low current drain operation: 1/7 that of earlier Sanyo products when the LCD is operating
- 64KB mask ROM on chip
- Implements a 32×32 (or 16×48) dot display in a single chip
- Supports expansion of the display area in 80-segment units by use of one or more external LC868920A chips.

Specifications

- Sanyo 8-bit CPU core (Minimum bus cycle: 0.5 µs, minimum instruction cycle: 1 µs)
- 64KB mask ROM, 640-byte RAM on chip
- On-chip LCD dot matrix controller/driver
- External memory access function
- Delivery form: bare chip

Sample Availability

Sample of the LC868364A will be available in June 1999; production quantities will be anticipated in the end of 1999.

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