Part 4

TMP68303F-16

1. Introduction

TMP68303 is a high-speed, high-function 16-bit microprocessor developed for applications in control devices.

TMP68303 uses the 68HC000, the CMOS version of the 68000, as its core processor. It also includes peripheral circuits such as a serial interface, parallel interface, timer, interrupt controller, DMA controller, DRAM controller, stepping motor controller, and address decoder.

In addition, TMP68303 can directly use 68000 development environments and software resources.

- Core processor 68HC000
- Minimum instruction execution time : 240 ns (with 16.67 MHz-system clock)
- 17 32-bit registers
- 16M-byte direct addressing
- 56 powerful basic instructions
- 14 addressing modes

- 2-channel asynchronous serial interface
- 10-bit parallel I/O interface
- 3-channel, 16-bit timer/counter (with built-in watchdog timer)
- 2-channel, 8-bit timer/counter
- 12-channel interrupt controller (3 external channels, 9 internal channels)
- 3-channel DMA controller (max. 8 MB/s)
- DRAM controller (RAS/CAS, multiplexed address output)
- 2-channel stepping motor controller (4-phase output)
- 2-channel chip-select signal output (CS0, CS1)
- Automatic wait insertion
- Bus monitor function
- Low power consumption (CMOS)

TMP68303 has two operating modes: normal operating mode, and emulation mode that enables use of an in-circuit emulator (ICE), a 68000 development tool. In emulation mode, the 68HC000 core built into TMP68303 is disconnected from the bus, and the internal peripheral circuits are controlled by address, data, and control signals from the development tool.

Figure 1.1 is the TMP68303 block diagram.

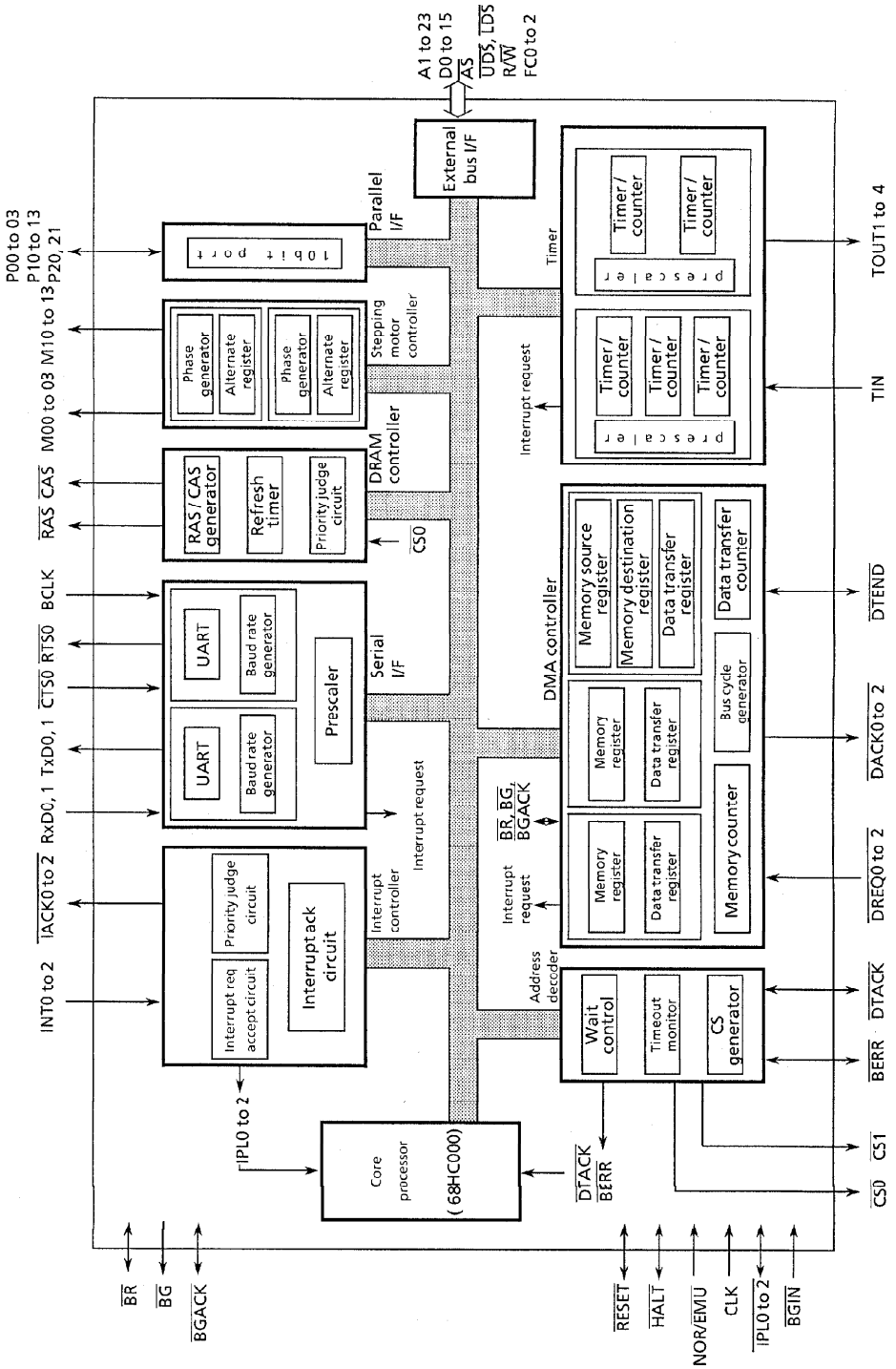

Figure 1.1 TMP68303 Block Diagram