32-BIT MICROCONTROLLERS

The TC10GP is the industry's first single-core 32-bit microcontroller-DSP based around the Infineon TriCore-1 architecture. The TC10GP implements the computational capabilities of DSPs alongside the most optimized price/performance implementation of a RISC load/store architecture. It is well-suited for a wide variety of real-time oriented embedded control systems.

Other on-chip features of the TC10GP include a configurable memory SRAM/cache for both instruction and data, synchronous and asynchronous serial communication interfaces, a Peripheral Control Processor (PCP) for data transfers and peripheral control, general-purpose timers, and sophisticated on-chip debug and emulation capabilities.

KEY FEATURES

- Unified 32-bit MCU-DSP core
  - Load/Store architecture
  - Dual 16 x 16 MACs
  - DSP addressing modes
  - Fast context switching
  - Superscalar design with three pipelines
  - 4-GByte address range
  - 66 MHz (80 MHz planned)
- Memory
  - 8/0-KByte instruction SRAM
  - 8/16-KByte instruction cache
  - 32/16-KByte data SRAM
  - 0/16-KByte data cache
- Serial Interfaces
  - Two asynchronous serial interfaces (UARTs)
  - One synchronous serial interface (SSC)

- On-chip Power Management
- Internal Flexible Peripheral Interconnect (FPI) Bus
- External Bus Interface (EBU)
  - Demultiplexed address and data buses
  - 32-bit data bus
  - 24-bit address bus
  - Little- endian operation
  - Four decoded chip selects
  - Emulation memory support
  - Memory controller (SDRAM, ROM, SRAM)
- Timers
  - Two General-Purpose Timer Units with three configurable 32-bit timers
  - Watchdog Timer
  - System Timer

- Parallel Ports
  - Three 8-bit parallel ports
- Peripheral Control Processor (PCP)
  - programmable for data transfers and peripheral control
  - Includes instructions for DMA control and bit handling
  - 2-KByte parameter SRAM
  - 1-KByte code SRAM
  - 4G Bytes address range
  - Conditional execution of arithmetic, logical, jump
- I/O Supply: $3.3V \pm 10\%$ Core Logic: $2.5V \pm 10\%$
- 208-pin P-FQFP package
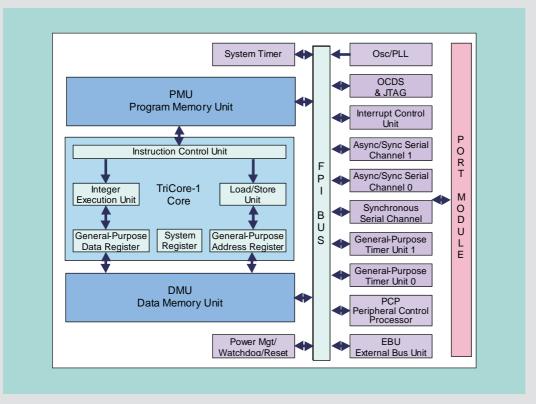- Temperature range: Standard 0°C to 70°C

www.infineon.com/usb

TriCore Unified Processor **– TC10GP**

General-Purpose
Unified 32-bit Microcontroller-DSP

Infineon technologies

Infineon Technologies AG

Never stop thinking.

TC10GP: BLOCK DIAGRAM

System Timer

Osc/PLL

PMU
Program Memory Unit

OCDS & JTAG

Interrupt Control Unit

Instruction Control Unit

Async/Sync Serial Channel 1

Integer Execution Unit

TriCore-1 Core

Load/Store Unit

Async/Sync Serial Channel 0

Synchronous Serial Channel

General-Purpose Data Register

System Register

General-Purpose Address Register

General-Purpose Timer Unit 1

General-Purpose Timer Unit 0

DMU
Data Memory Unit

PCP
Peripheral Control Processor

Power Mgt/ Watchdog/Reset

EBU
External Bus Unit

FPI BUS

PORT MODULE

TC10GP: PIN CONFIGURATION

TC10GP
P-FQFP-208