

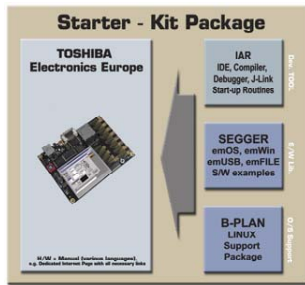
TOSHIBA

Leading Innovation >>>

TMPA910 series

> Starter Kit

- > Compact size (11cm x 15cm)
- > Supported MCU
 - > Toshiba TMPA910CRAXBG (ARM9)
- > Features
 - > Includes a 3.5" Display with Touch Screen
 - > J-Link Interface
 - > Ethernet Connection
 - > USB 2.0 (480MBps), RS232
 - > Excellent Sound (Audio DAC via I²S)
 - > SD-Card Socket
 - > JTAG Interface
 - > Memory:
 - > 512 MBit SDRAM
 - > 256 MBit NOR Flash
 - > 2 GBit NAND Flash
 - > Single Power Supply
 - > Extensive Software Support
 - > E.g. Segger for emWin, emOS etc.
 - > Many Software examples available
 - > Plug & Play! Excellent Tool for fast Prototyping
 - > Schematics and Layout Data provided by Toshiba



Visit us: <http://www.toshiba-components.com/microcontroller/>

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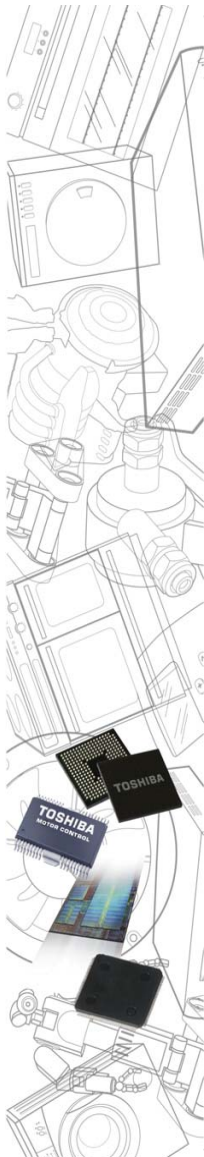
TOSHIBA

Leading Innovation >>>

Microcontroller

> TMPA910 series

- > ARM® ARM926EJ-S based 32-bit MCU
- > 7-Layer Multi BUS
- > Graphic Controller and Accelerator
- > SD Host Controller
- > USB 2.0 High Speed Interface



High-End Graphic Microcontrollers

ARM9 based 32 bit MCU • Graphic Controller • 7-Layer Bus ...

> **Introduction**

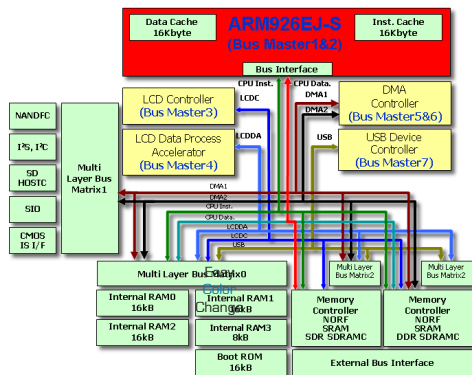
Based on the ARM926EJ-S™ CPU core operating at up to 200MHz, the new TMPA910CRAXBG uses a seven layer multibus architecture. This architecture significantly improves performance compared to other devices operating at similar processor speeds. The built-in LCD controller offers support for TFT and STN display sizes up to 1024 x 1024 pixels. An LCD data process accelerator delivers image scaling, filtering and blending functions and offers real time processing for movies at speeds up to 30 frames per second.

The new TMPA910CRAXBG has a CMOS image sensor interface that simplifies the implementation of applications requiring image capture. A touchscreen interface further reduces the need for external components in man machine interface (MMI) designs. Additional connectivity includes SPI, UART, I2C, I2S, and high-speed USB Device (480Mbps) functionality. Toshiba has incorporated 56Kbytes of built-in embedded RAM for program, data and display memory, Boot Rom, and a memory controller that supports SDR and DDR SDRAM. Up to 2.5Gbytes of linear access space can be addressed. An SD host controller supports high-speed mode SD cards with capacities up to 32GB.

The new microprocessor is supplied in a 361-pin FPGA package. Additional built-in peripherals include a 10-bit ADC, a six-channel, 16-bit timer, a watchdog timer, real time clock and alarm functionality.

The ARM926EJ-S 32-bit RISC CPU core deployed in the TMPA910CRAXBG offers flexible size instruction and data caches and a memory management unit (MMU).

- Multi Layer BUS:
- 1.CPU Data
 - 2.CPU Instruction
 - 3.LCD Controller
 - 4.LCD Accelerator
 - 5.DMA Ctrl. 1
 - 6.DMA Ctrl. 2
 - 7.USB



> **Features**

CPU Core

- > ARM926EJ-S I\$16kB/D\$16kB
- > Multi-Layer (7 Layer)
- > Operating Frequency 200MHz
- > Operating Voltage
 - > Internal Circuit 1.5V +/- 0.1V
 - > External I/O 1.7V to 1.9V
 - > External I/O 3.0V to 3.6V

Features

- > STN/TFT color LCD controller
 - > Supports 800x480
 - > 16-/24-bit color
- > LCD Data Process Accelerator
 - > Scaling function (expansion/reduction)
 - > Filter function (bi-cubic convolution)
 - > Image blending function (font blending)
- > DMA Controller
- > CMOS Image Sensor I/F
- > Memory Controller:
 - LVCMOS SDR/DDR-SDRAM/NORFLASH/ NANDFLASH
- > SD Host Controller 50MHz, 32GB
- > USB Device (High Speed 480Mbps)
- > 2 ch. of: SPI / UART / I2C / I2S
- > RTC
- > 16-bit Timer (6x)
- > Touch screen I/F
- > 6 ch. 10bit A/D converter (3.0V to 3.6V)

Package

- > BGA361 (16mm x 16mm) 0.8mm pitch ball

