

TRITON-TX51 miniature modular computer based on Freescale i.MX51

TRITON-TX51 is a self-contained production-quality module, based on Freescale's low-power high performance multimedia-optimized i.MX515 microcontroller with ARM-Cortex-A8 core, NEON VFP, OpenGL graphics core and hardware video codec. The module features support for Windows CE 6.0, Compact 7 and Linux.. TRITON-TX51 is a complete solution, with full software support, and ready to be designed into an embedded system.

For development the TRITON-TX51 is plugged into the StarterKit-5 development baseboard, and then in production the StarterKit is replaced by a project-specific baseboard, based on the supplied StarterKit design. We can provide rapid development and manufacture of baseboards as a service.

Because the TRITON system includes a production quality Board



TRITON Starter Kit and optional touch-screen

Support Package (BSP) and production quality module, project times are cut dramatically.

TRITON-TX51 includes an 800MHz Freescale i.MX515 processor, 128MB ultra-low power 1.8v, 400MHz, 32-bit mobile DDR-SDRAM and 128MB NAND Flash.

The iMX51's integrated display controller permits direct connection of an LCD screen of up to 1280 x 768 resolution. A directly connected 640 x 480 touch screen is optionally supplied as part of the development kit. The i.MX51 also provides an

integral Ethernet 10/100 MAC, with the PHY implemented on the TRITON module.. The processor's I/O is accessible via a standard DIMM200 socket, which in turn is all available via connectors and headers on the StarterKit-5. The overall size of TRITON-TX51 is 67.6mm x 26mm x 4.2mm.

The module operates from either a single 3.1 - 5.5V supply, and



TRITON-TX51 i.MX51 Module Shown Actual Size

may also be powered via USB, or a Li-Ion/Polymer cell. In addition, on-module 1.8v and 3.3v 1A supplies are available to power the baseboard.

Why i.MX51?

The Freescale i.MX51 features low power operation with a broad set of interfaces including Ethernet, USB 2.0 Host and OTG (see table overleaf), as well as on-chip video subsystem capable of D1 encode and 720p decode at 30fps, camera input, display controller, including PAL/NTSC TV-out, as well as a graphics engine with OpenGL ES 2.0. Based on an ARM Cortex-A8 with NEON vector Floating Point Unit (FPU), the i.MX51 is a versatile device particularly well suited to multimedia applications.

i.MX515 Multimedia Applications Processor		
System Control	CPU Platform	Connectivity
Secure JTAG	Cortex A8	Fast IrDA
Power Mgmt	32 KB I-Cache	HS MMC/SDIO x 4
PLL x 3	32 KB D-Cache	CSP/HS x 2/LS x 1
Clock Reset	256 KB L2-Cache	UART x 3
	Neon	HS I ² C x 1
	ETM	I ² C x 2
Timers	Vector Floating Point Unit	SSI/PS x 3
Timer x 3		1-Wire
PWM x 2	Multimedia	ATA-6
Watch Dog x 2	OpenGL ES 2.0 + OpenVG 1.1	USB OTG
	Hardware Video Codecs	HS+PHY
Memory	HD720 TV-Out	USB HS x 3
ROM 32 KB		SPDIF Tx
RAM 96 KB	Image Processing Unit	GPIO
	Image Signal Processor	Keypad
Security	Resizing and Blending	Ethernet
Sahara v4	Inversion and Rotation	Ext Memory I/F
Trust Zone	Image Enhancement	mDDR 200 MHz
RTC	Camera	DDR2 200 MHz
SCC V2		
SRTC		
	eFUSES	Smart DMA

StarterKit-5 Baseboard

For development purposes, the TRITON-TX51 plugs into the StarterKit-5 baseboard via its DIMM200 connector. This combination, with optional touch-screen display is supplied as a complete development kit running Linux, Windows CE 6.0 or Windows Embedded Compact 7. Linux source code and toolchain are supplied, along with a configured virtual machine for development. Windows CE source code is available for a modest fee.

The StarterKit-5 includes connectors for the I/O provided by the iMX51 processor and TRITON-TX51, including 2x SD/MMC card sockets, 2x RS232, USB-OTG and USB-Host connectors, a D-SUB15 VGA connector for the external video DAC and an Ethernet

connector. In addition, there is an audio codec and touchscreen controller with 3.5mm headphone jack connector.

The board is powered via USB, an external supply source, or from a 3.0 to 4.2v Li-Ion /Polymer cell.

To facilitate creation of a production baseboard, full schematics are provided for the StarterKit-5. We offer a custom baseboard design and production service for customers with tight time-to-market constraints who wish to focus their efforts on application development.

There is also a JTAG interface, which can be used for the connection of a debug probe.

TRITON-TX51 Feature / Option Summary

The table shows features and connectivity of the TRITON-TX51 and StarterKit-5.. Where more than one value is listed, the underlined value represents the standard configuration.

The complete list of connectors on StarterKit-5 is:

- 200-pin TX-DIMM socket
- 4x50pin cable headers
- 2x SD card socket
- RS232 on10pin header
- RS232 on D-SUB connector
- USB Host
- USB OTG/Power
- 40-pin LCD header with touch screen connected
- Video output to D-SUB 15
- 3.5mm headphone
- JTAG
- daughter board slot
- 10/100 Mbit Ethernet
- Power (or via USB OTG)

TRITON Starter-Kit systems are sold and supported worldwide by Microsoft Windows Embedded Gold Partner Direct Insight, who also offer a broad range of complementary solutions including compilers, debuggers, JTAG interfaces, graphics software, driver development tools, device programming solutions, JTAG test systems, emulators and more. We also offer a custom baseboard design and manufacture service.

Visit our regularly updated website at www.directinsight.co.uk or call +44 1295 768800 for further information.

TRITON-TX51 Feature:	Support	Details
Microcontroller	<u>i.MX51</u>	Freescale i.MX515
CPU	<u>ARM Cortex-A8</u>	
Processor clock max (MHz)	<u>800</u> / 600	Extended temp version is 600MHz
SDRAM(MB),mDDR400	<u>128</u>	
NAND Flash (MB)	<u>128</u>	
Coprocessor	<u>Graphics, Video</u>	OpenGL ES 2.0, hard codec 720p/D1
Floating Point	<u>y</u>	NEON Vector Floating Point
UART (RS-232)	<u>3(2*)</u>	
Ethernet 10/100 BaseT	<u>1</u>	PHY on module
I2C Interface	<u>1</u>	
LCD controller	<u>1280x768</u>	24bpp
Supplied touch screen	<u>640x480**</u>	
SSP (I2S, AC'97)	<u>2</u>	
IrDA	<u>1</u>	IrDA UART supporting SIR
SD card / SDIO (4-bit)	<u>2</u>	
1-wire interface	<u>1</u>	
USB 2.0 Host	<u>1</u>	
USB 2.0 OTG	<u>1</u>	
SPI	<u>1</u>	
PWM controller	<u>1</u>	
Keypad	<u>5x5</u>	
JTAG	<u>1</u>	
Audio	<u>1*</u>	controller on baseboard
Touch screen interface	<u>1*</u>	controller on baseboard
RTC	<u>1</u>	DS1339 on module
PAL / NTSC out	<u>1</u>	
Temp Range	<u>2</u>	-20/+70C or -40/+85C
Dimensions	<u>26mm x 68mm</u>	SODIMM200
* on baseboard		



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