ScanWorks®
Platform for Embedded Instruments

PRODUCT BRIEF

ScanWorks® Processor-based Functional Test for NXP - i.MX Application Processors

Key Benefits:

- Firmware IP ready to run on custom circuit boards with no modifications
- Utilizes an existing on-board SoC ARM processor core as an embedded test engine
- Supports testing of GPIO, I2C, SPI, UART, PCI/PCIe, Ethernet, Flash Memory, SD/MMC, Ethernet, SATA, MMC, NAND, NOR, CAN, Bluetooth, and USB
- Quick Scan and operational verification of each component tested
- Excellent solution for new boards with no software, or boards that will not boot

Key Features:

- Testing a SoC device speeds. Captures escapes missed by static testing
- ScanWorks test action compliant
- Supplied Configuration files for popular development platforms
- Bare-metal application that requires no other software, operating system, or boot loader

Overview

ASSET's ScanWorks® Processor-based Functional Test (PFT) product supports the NXP i.MX6 Application Processor family. The i.MX 6 series of applications processors combines scalable platforms with broad levels of integration and power-efficient processing capabilities particularly suited to multimedia applications.

The ASSET ScanWorks PFT provides functional board testing of buses and devices, other than DDR, to identify at-speed faults not found in structural test. This new functional test IP is integrated with the best-in-class ScanWorks test platform. PFT provides high test coverage for all devices with at-speed functionality. Combining PFT with ScanWorks PFTDDR delivers greater test coverage to meet design quality requirements of today's high speed designs. ScanWorks tools are designed to maximize production efficiency and simplify the test development life-cycle.

PFT (Figure 1) uses a target agent to configure the interface between SoC embedded controller the and the bus endpoints. The agents are installed in internal RAM within the SoC and provide task specific actions: testing for device existence and device verification. The in-target agent tasks ensure maximum testing speeds and accurate device control.

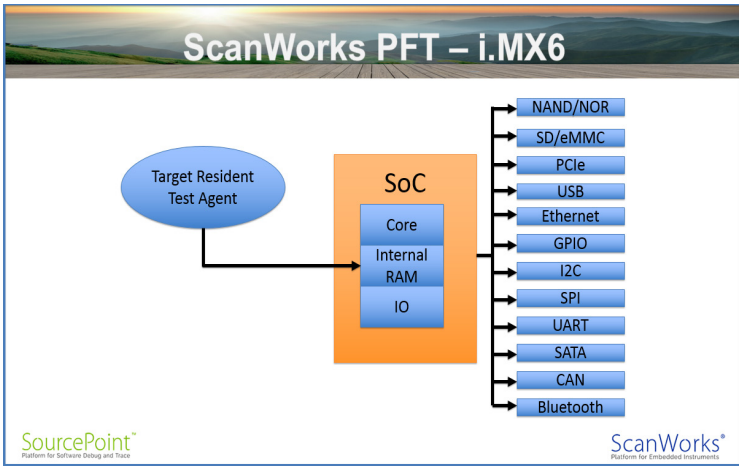

Figure 1. PFT Target Agent with SoC Block Diagram

The ScanWorks design environment provides for the control and management of test project resources. Once the resources are configured, (eg. TCK setting correct, JTAG controller selection, etc.) the action development is intuitive to create a test action. After all test actions are interactively verified, ScanWorks supports rapid transition from development to deployment ensuring consistency regardless of where the project is deployed. This reuse of ScanWorks projects eliminates costly communications mistakes.

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PFT Development Tool

ScanWorks PFT (Figure 2) is the user access point to configure the desired tests and sequence. A test task library is automatically loaded with a layout of possible tests to conduct and provides for parameter input for test customization.

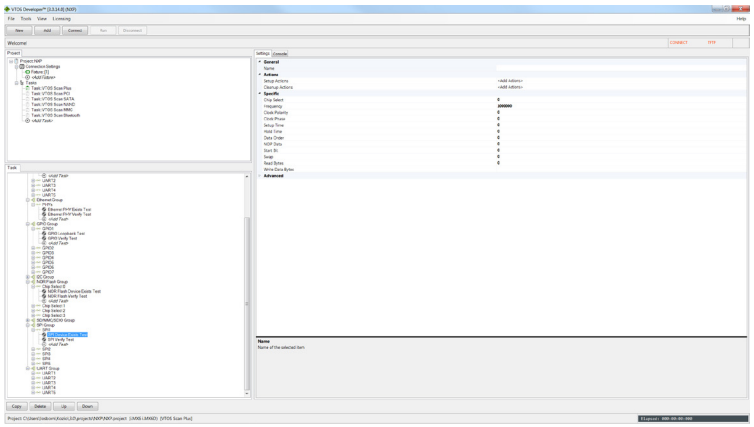

Figure 2. PFT Task Development

PFT provides fast testing of all bus devices supported by the NXP i.MX6 family of Application Processors. At-speed testing catches problems with cross talk or injected noise that escape other forms of structural testing.

Testing Tasks are bus specific and by merely selecting a bus type, test configuration can begin. The bus types supported within the NXP i.MX6 are: PCI/PCIe, CAN, SATA, GPIO, USB, Bluetooth, and Ethernet.

The SoC IO setup is a necessary step for programming embedded controller access. The programming setup is aided by the ability to import the IO configuration files (pin_mux.c) provided by Pins Tool from NXP.

Also, shipped with the product are example board configuration files that support the most popular development platforms from NXP and their third party partners.

It then becomes a simple matter of connecting the ScanWorks hardware controller to the UUT and launch the ScanWorks application.

ScanWorks Platform for Embedded Instruments

ScanWorks Platform for Embedded Instruments is a seamless software environment to access, run and collect data from any instrument in your chips, circuit boards or systems. The ScanWorks Platform includes products for Boundary-Scan Test (BST), Processor-based Fast Programming (PFP), Processor-based Functional Test (PFT), Processor-based Functional Test for DDR (PFTDDR), Processor-Controlled Test (PCT), FPGA-based Fast Programming (FFP), FPGA-Controlled Test (FCT) and IJTAG test.

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