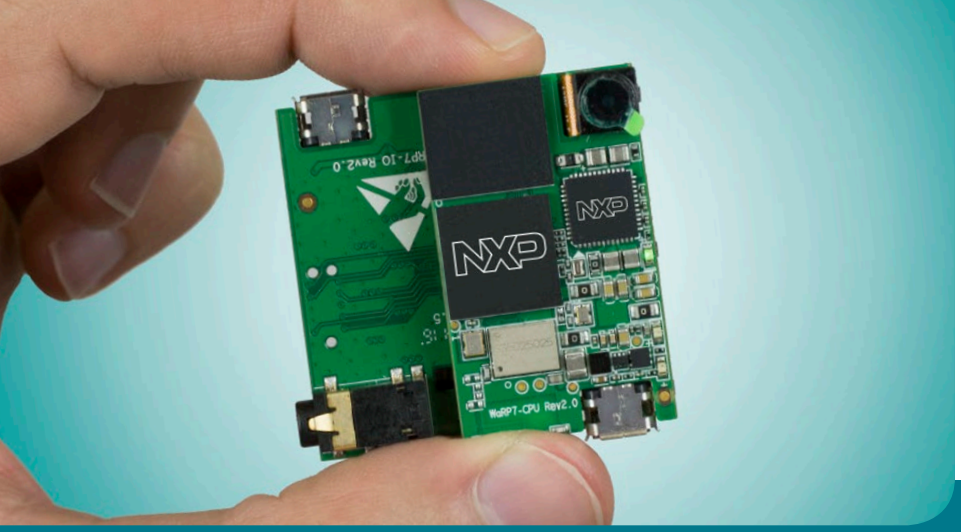


WaRP7 Internet of Things (IoT) and Wearable Development Platform

The WaRP7 development platform provides IoT and wearable device designers the opportunity to innovate and take a differentiated product to market faster.

TARGET APPLICATIONS

- Internet of Things
  - Smart home
  - Smart cities
  - Smart industry
  - Smart appliances
- Wearables
  - Activity tracker
  - Smart health
  - Smart watches
  - Smart clothing

OVERVIEW

The IoT and wearable device market segments are not new, but they are expanding rapidly with growing innovations and new products arriving daily. At this pace, development costs and time-to-market are critical to your success.

The WaRP7 platform enables a shorter time-to-market and addresses key IoT and wearables challenges, including battery life, connectivity, usability (user experience) and miniaturization. Though it has a tiny form factor, the WaRP7 is flexible enough to offer all the advantages of traditional development tools. The open-source design allows developers to take the platform as a starting point and innovate without licensing restrictions.

THE PLATFORM

WaRP7 speeds and eases development of IoT and wearable devices by addressing technology challenges and freeing developers to focus on creating differentiated features. The platform consists of a main board and a daughter card. The main board is based on the NXP® i.MX 7Solo applications processor that features an advanced implementation of the ARM® Cortex®-A7 core, as well as the Cortex-M4 core. This unique heterogeneous multicore architecture enables low-power modes critical for most designs, but also provides the power to drive a higher level operating system and a rich user interface. The daughter card is based on a flexible design with sensors to collect a range of data and the MikroBus™ expansion socket opens over 200 Click Boards™ for users, allowing rapid prototyping across all potential IoT and wearable ideas. All components included in this system were selected based on low power consumption, small form factor and cost.

WaRP7 FEATURES

The i.MX 7Solo applications processor is designed for devices that require high-performance processing with low-power requirements and a high degree of functional integration. It features an advanced implementation of the Cortex-A7 core, which operates at speeds of up to 1 GHz, as well as the Cortex-M4 core. The i.MX 7Solo processor provides up to 32-bit DDR3L/LPDDR2/LPDDR3-1066 memory interface and a number of other interfaces for connecting peripherals, such as WLAN, Bluetooth®, GPS, displays, and camera sensors and all the other sensors—ideal for IoT and wearable devices for today and tomorrow.

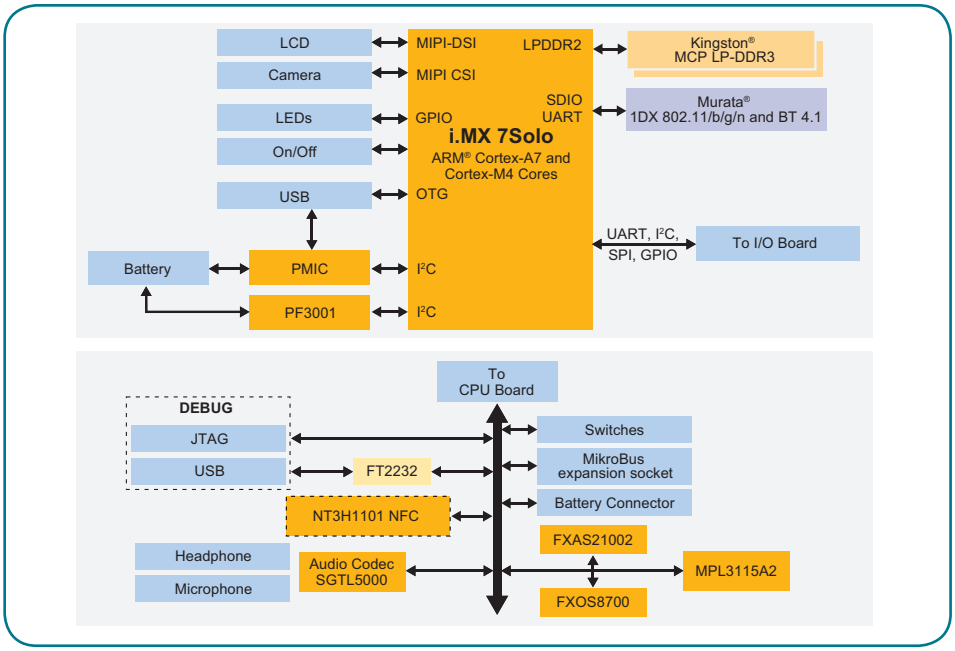
The power management of WaRP7 is also enhanced by the inclusion of the power management IC (PMIC), the PF3001 and the battery charger BC3700. The PF3001 PMIC was designed specifically for use with the i.MX 7Solo processor with up to four buck converters, six linear regulators, RTC supply and a coin-cell charger. In addition to these features, the PF3001 also supports the i.MX 7Solo processor's low-power state retention mode for enhanced power performance.

The BC3770 is a 2 A switching Li-ion battery charger with intelligent power path management and USB OTG boost supply. The intelligent power path management allows the battery to be charged while supplying power to the system load and the OTG boost, switching efficiency to greater than 90% at full load currents.

Sensor technology is a critical component of IoT and wearable devices. WaRP7 incorporates the following NXP sensors: MPL3115A2, a high-precision barometer; FXOS8700, a six-axis sensor combining an industry-leading accelerometer and mangnetometer; and FXAS21002, a three-axis gyroscope with extremely low-power operation and advanced embedded features enabling significant system-level power savings.

WaRP7 offers a variety of connectivity options enabling a wide range of usage models. For near-field communications, the NXP NFC NT3H1101 offers both contactless and contact interfaces. The Murata®-type 1DX multi-radio module offers 802.11b/g/n + Bluetooth 4.1, classic and low energy.

WaRP7 BLOCK DIAGRAM



Another key component in the platform is a multi-chip memory module with 8 GB of managed NAND with eMMc 5.0 interface for storage and 4 GB LP-DDR3 for application code. Its compact size and low power make it ideal for IoT and wearable devices.

WaRP7: ENABLEMENT AND ECOSYSTEM

In addition to the hardware platform, both Linux® and Android™ operating systems will be offered pre-installed or available via download. The implementation on WaRP7 of both Linux and Android will be based on NXP-standard BSPs without modifications to the standard frameworks of both distributions. WaRP7 hardware and software will be open source and support will be primarily community driven via the dedicated website at **www.element14.com/warp7**.

A WaRP7 kit will include the main CPU board, the I/O daughter card and a battery. A touch-screen LCD will be an optional choice.

WaRP7: KEY TECHNOLOGY INSIDE

- NXP i.MX 7Solo applications processor, Cortex-A7 and Cortex-M4 core
- NXP PF3001 power management IC and BC3770 battery charger
- NXP MPL3115A2, FXOS8700, FXAS21002 sensors
- NXP NT3H1101 near-field communication IC
- Murata LBEE5KL1DX-TEMP-DS-SD Wi-Fi® (802.11/b/g/n) and Bluetooth (4.1 Bluetooth Smart + EDR)
- Kingston 08EMCP04-EL3AV100-C50U MCP with 8 GB managed NAND flash and 4 GB LP-DDR3

WaRP7 FEATURES AND BENEFITS

Feature	Benefit
WaRP7 platform consists of a main CPU board and an I/O daughter card	Provides a rapid prototyping vehicle, reducing time-to-market and freeing resources to focus on differentiation
Prevalidated connectivity with USB, NFC, Bluetooth®, Bluetooth Smart and Wi-Fi®	Allows for the IoT and wearable devices to connect to a gateway such as a smartphone or directly to the cloud so that the data collected can provide value to the user
Component selection and board design optimized for low power and reduced form factor	Hardware schematics and bill of materials provided at no additional cost
Full-featured Android™ and Linux® operating systems	Eases development effort for software developers; supports extensive UI capabilities and connectivity stacks

www.element14.com/WaRP7

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