

DHCOM Standard

Form, Fit & Function compatible COMs

Services



Software



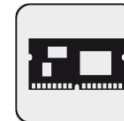
Embedded
Computing



Control Panel



Computer On Module



Touch Solutions



Automation Networks



ARM based Embedded Computing
boards & solutions conference,
July 4, 2012 in Munich

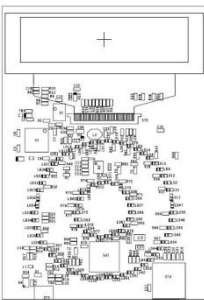
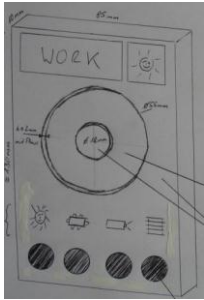
THE ART OF INNOVATION

Presentation Themes

- Company profile
- DHCOS Standard
 - Form, Fit & Function compatible COMs
 - Made for industrial conditions
 - Bootloader UBoot
 - UBoot introduction & special features
 - Special settings block and generator tool
- Linux support
 - Kernel
 - Root Filesystem
 - Integrated Developer Environment
- Microsoft Windows CE/EC support
 - Platform support
 - Integrated Developer Environment
- DHCOS Standard – quick summary
 - Performance overview
 - Product roadmap
- DHCOS – Overview
- Premium Developer Kit DHCOS-D2

COMPANY PROFILE

Company profile



- Innovativ, German high-tech company – established in 1991
- We create innovative hard- and software solutions for industrial and building automation
- We offer our worldwide customers standard and customized solutions
- Our technical personnel consists of a group of project managers, engineers, IT specialists and technicians and offers many years of experience and comprehensive specialist knowledge
- From concept to finished product →
we offer a one-stop solution



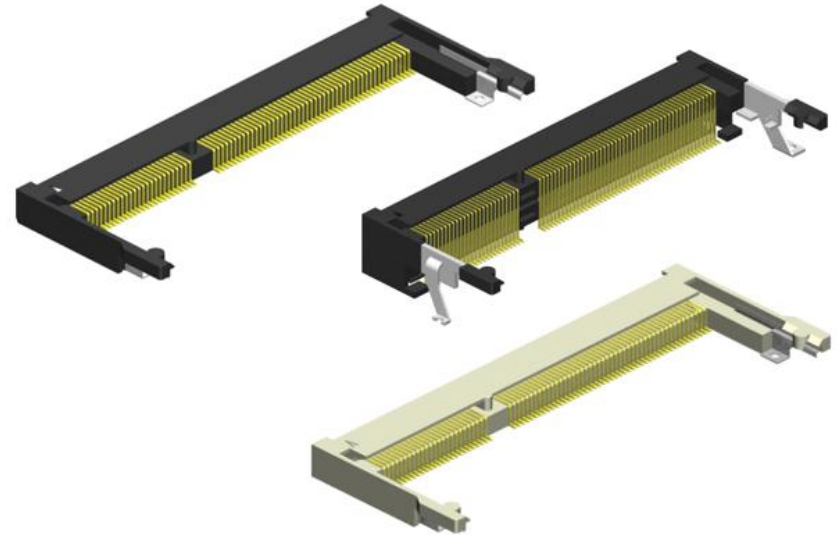
DHCOM - COMPUTER ON MODULE



DHCOM Standard – Form, Fit & Function compatible COMs (1)

■ Standardized board connector

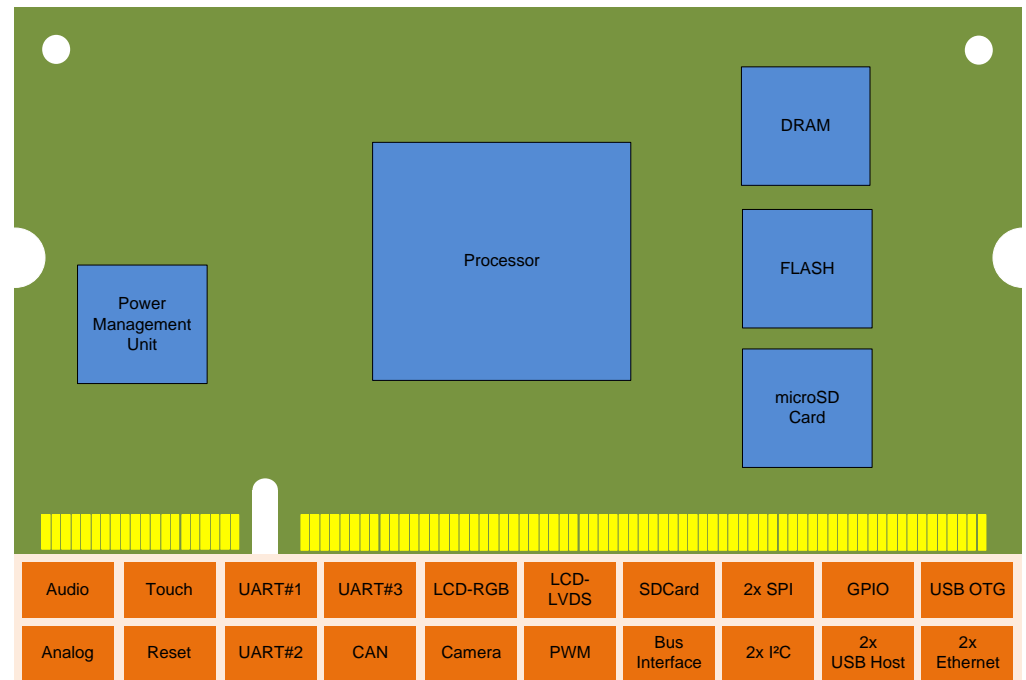
- SODIMM-200 card connector
- Flexible design-in
 - Various stack heights
 - Horizontal and vertical mounting
- Polarity protection by center key
- Cost-efficient
 - Only 1 connector on carrier board
 - Quick and simple assembly
 - Many suppliers available





DHCOM Standard – Form, Fit & Function compatible COMs (2)

- Standardized pin & function assignment
 - Guaranteed number of interfaces and IOs
 - Dedicated functions always at the same pin

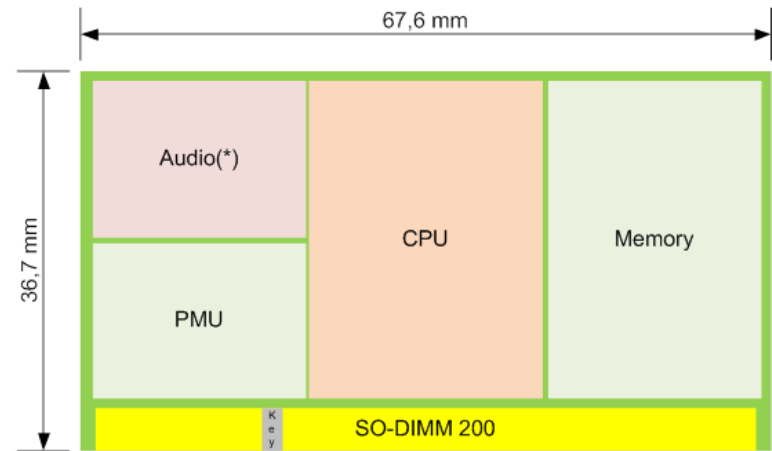




DHCOM Standard – Form, Fit & Function compatible COMs (3)

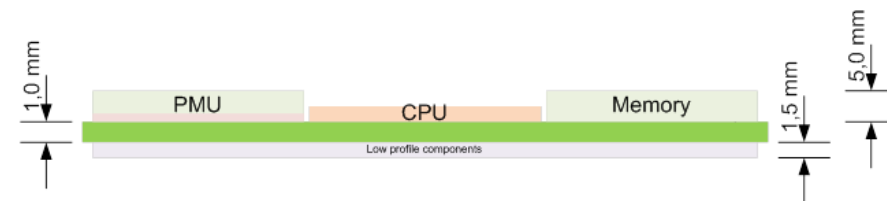
■ Standardized dimensions

- Defined dimensions for length, width and height
- Additional mounting options
 - 2 mounting holes are available



■ Uniform board concept

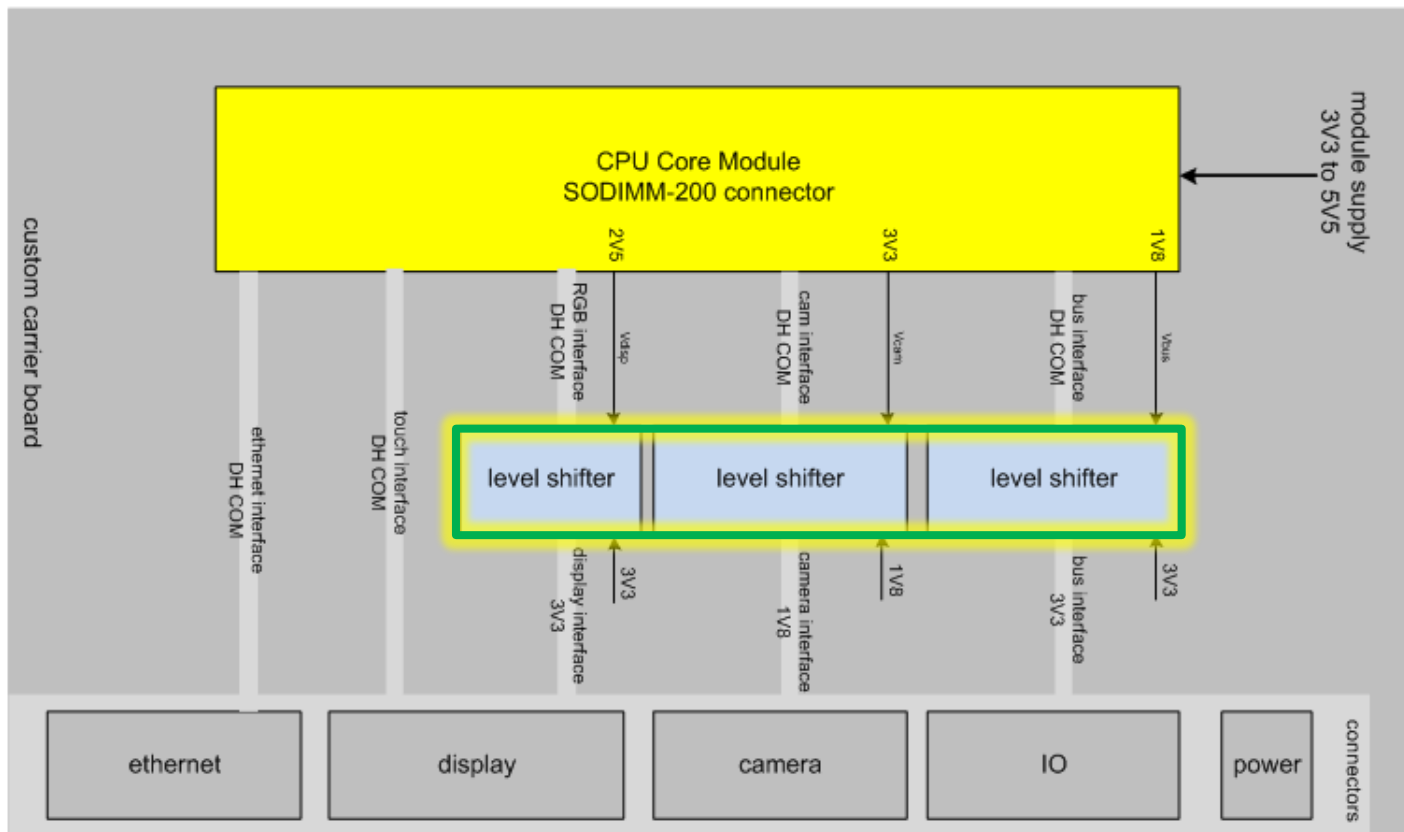
- Defined function areas
- Simple mechanical design-in





DHCOM Standard – Form, Fit & Function compatible COMs (4)

- If required by customer module interoperability is achieved at different core and IO voltages by using level shifters on the carrier board





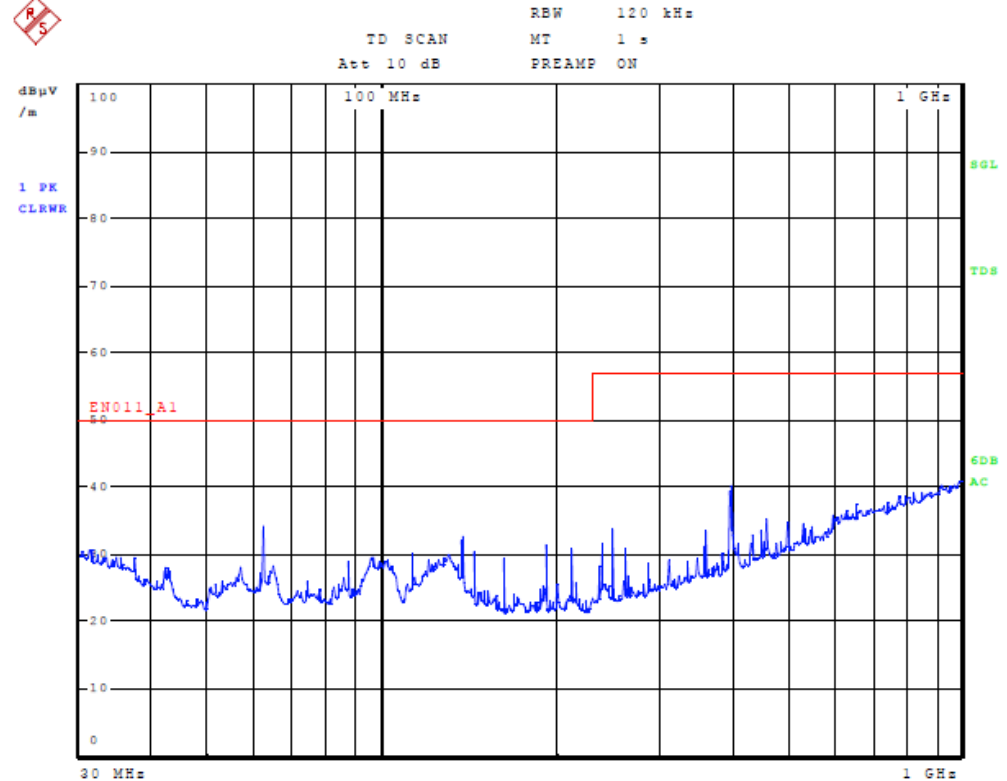
DHCOM Standard – Made for industrial conditions

■ EMC optimized board design

- Defined function areas
 - Analogue and digital function blocks
- Excellent hardware design
 - Optimized signal routing and PCB layer stack
 - Golden contact plating for SODIMM-200

■ Extended temperature range

- -40 to + 85 °C

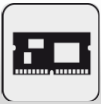


EN55011, Class A
DHCOM Premium Developer Kit with iMX25-D2
and 7" touch panel, without housing



DHCOM Standard - UBoot bootloader introduction

- Free bootloader software
 - Full source code under GPL
- Many supported architectures
 - ARM, MIPS, x86, M68k, NIOS, PPC, Microblaze
- Many supported interfaces
 - Ethernet, USB, MMC/SD, ...
 - NAND-Flash, ...
- Many Features
 - Booting Linux
 - Splash Screen Support



DHCOM Standard - UBoot special features

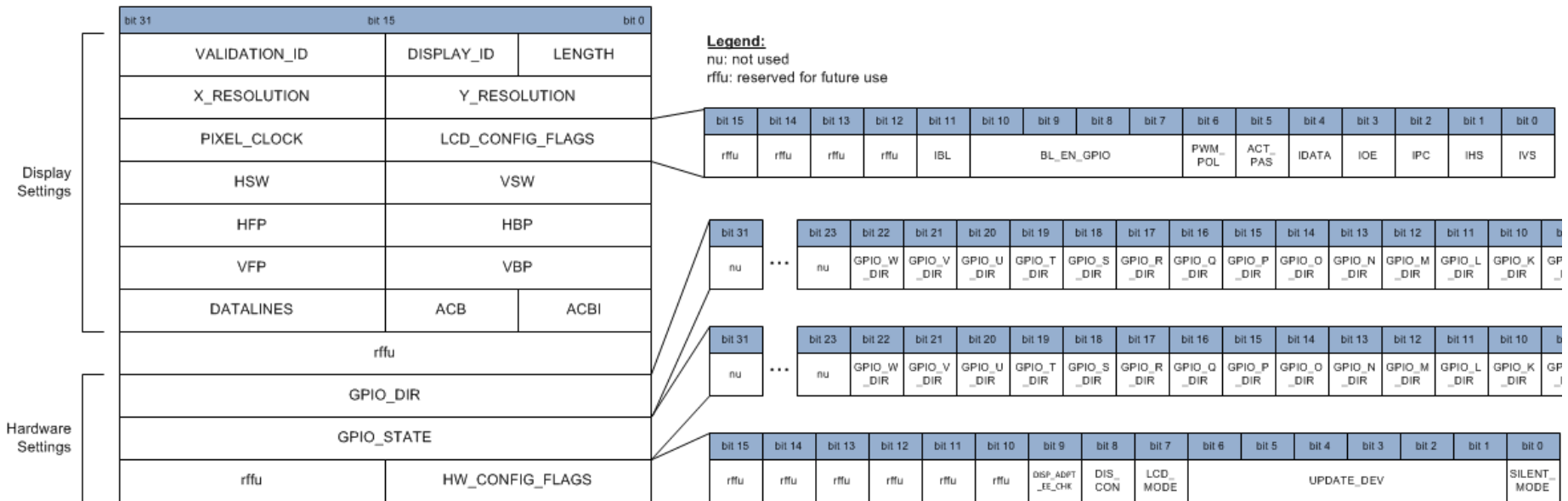
- Customized for DHCOM hardware support
- Easy configuration of the board using a special settings block
- Microsoft Windows CE boot support
- Supported Update Media
 - USB memory stick
 - microSD/SD/MMC memory card
 - Ethernet
- Run a full system update without user interaction
 - UBoot
 - Splash image
 - Board settings (display parameters, GPIO default states, ...)
 - UBoot environment (variables, scripts)
 - Linux (Kernel and Root file system)
 - Windows CE (nk.bin and nk.gz image files)

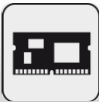


DHCOM Standard - Special settings block

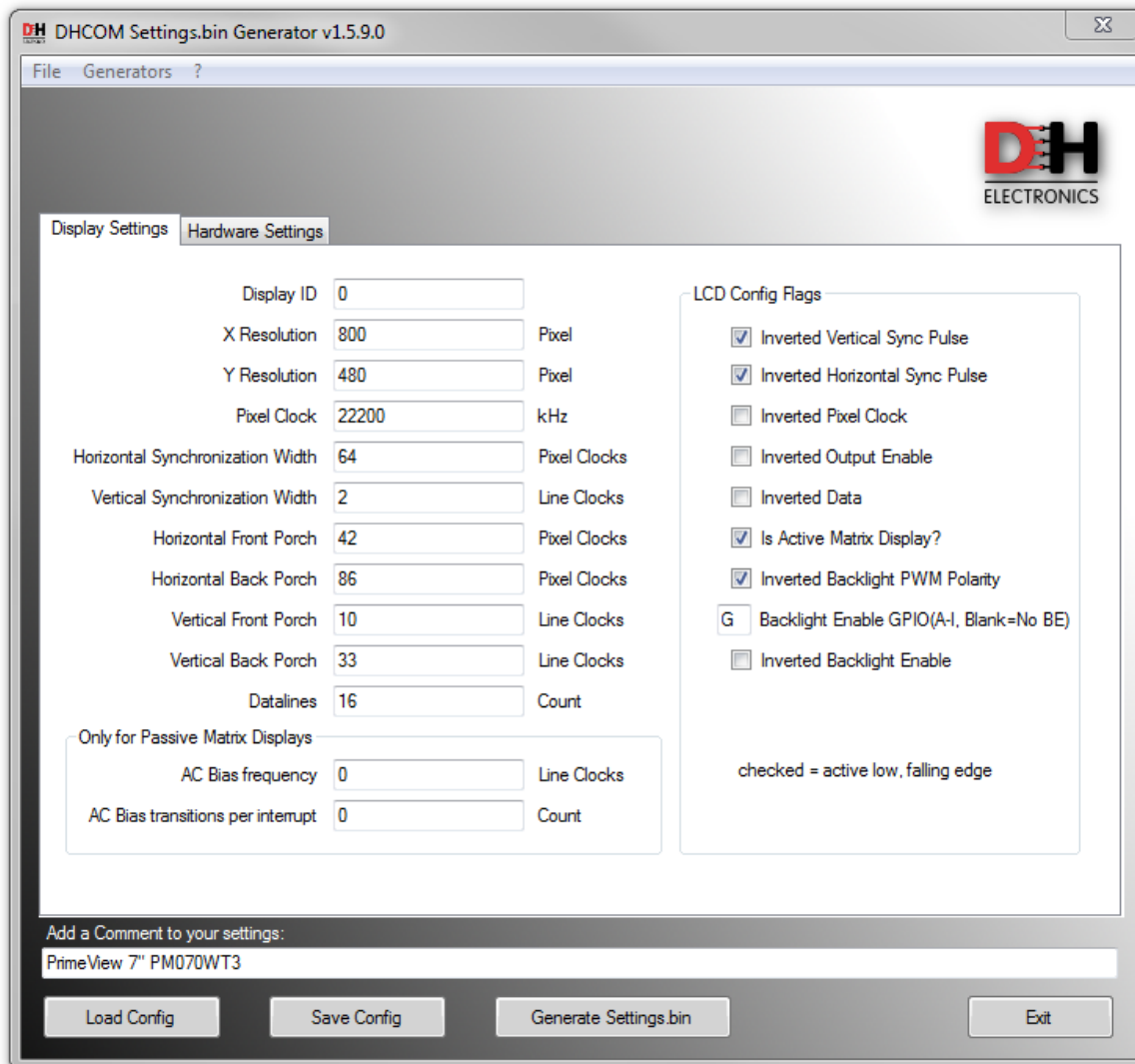
■ Standardized register set to easily initialize system settings

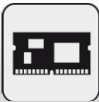
■ Available for all DHCOM modules



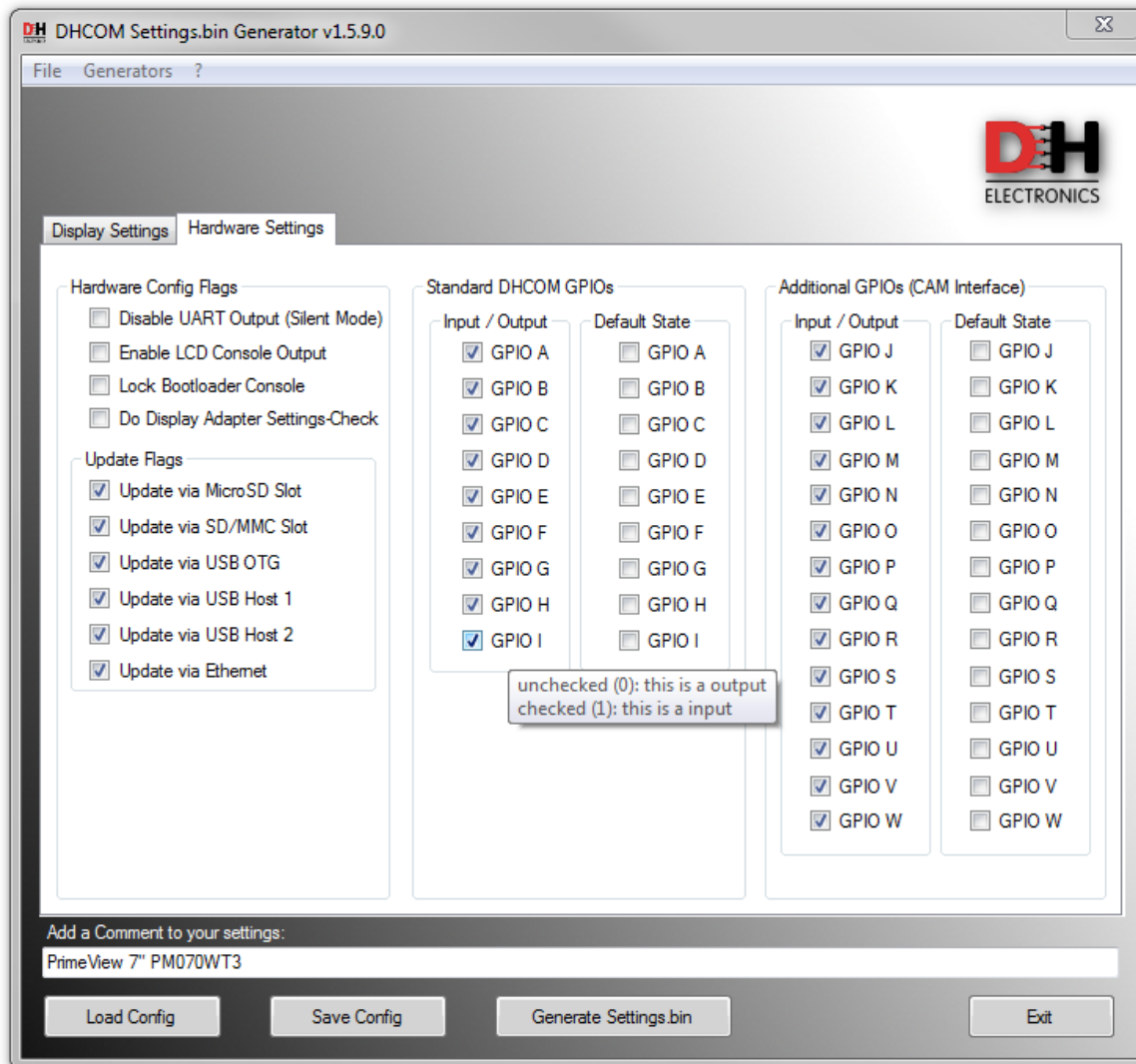


DHCOM Standard - Special settings block generator tool





DHCOM Standard - Special settings block generator tool





DHCOM Standard – Linux Kernel support

- Based on mainline (vanilla) kernel
 - Up-to-date kernel version 3.2
 - Longterm support
 - Open source
- DHCOM support comes as kernel patch
 - Easy and save upgrade path
- Special kernel features included
 - Fast context switching for ARM9
 - Real-Time patch
- License free, no additional costs





DHCOM Standard – Linux Root Filesystem (RootFS)

- Based on 100% license free software
- More than 29,000 precompiled and community tested software packages
- One RootFS for all DHCOMs
- Scaleable
 - From minimized BusyBox to fully blown Debian RootFS
- Qt or GTK+ toolkits for GUI
- Very short boot time possible
- Updatable from bootloader or Linux
- Various update media
 - SDcard, USB, Ethernet
- License free, no additional costs





DHCOM Standard – Linux IDE

- Debian virtual machine with development tools for workstations
 - Jump start your software development
- Different Cross-Toolchains
- ARM emulator (QEMU) enables native build and execution
- State of the art development tools
 - From the open source community

- DHCOM Wiki available
- License free, no additional costs





DHCOM Standard – Windows CE/Compact platform support

■ Supported Windows CE versions

- Windows Embedded CE 6.0
 - DHCOM PXA270 & iMX25
- Windows Embedded Compact 7
 - DHCOM AM35 (Q4/12)
- Longterm support by Microsoft

■ Hard real-time embedded OS

■ Microsoft shared source code

■ Binary BSP available

■ Windows Embedded CE Licenses

- CE6: Core & Professional
- EC7: Embedded & Professional





DHCOM Standard – Windows CE/Compact IDE

■ Platform development tools

- Visual Studio 2005 with Platform Builder for CE6
- Visual Studio 2008 with Platform Builder for EC7
- Longterm support by Microsoft

■ Application development only with VS2005 and 2008

- .NET Compact Framework 3.5, Silverlight, Flash, Visual C++, C#, ...
- DHCOM Hardware abstraction library
- Direct hardware access, no drivers

■ Debugging Tools

- User Mode with ActiveSync or Mobile Device Manager
- Remote tools
- Kernel Mode with KITL or separate JTAG debugger





DHCOM Standard – Quick summary

■ Industrial operation

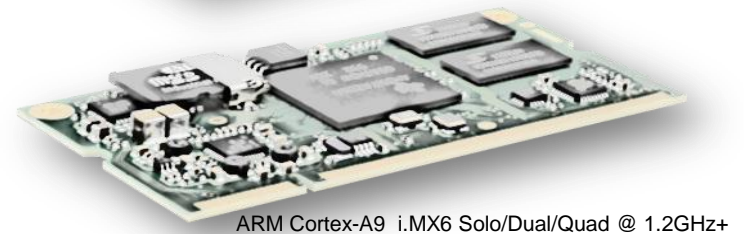
- Extended operating temperature range
-40 to +85 °C
- Resistant to vibration and shock

■ 3.3V to 5V power supply

■ microSD socket on-board

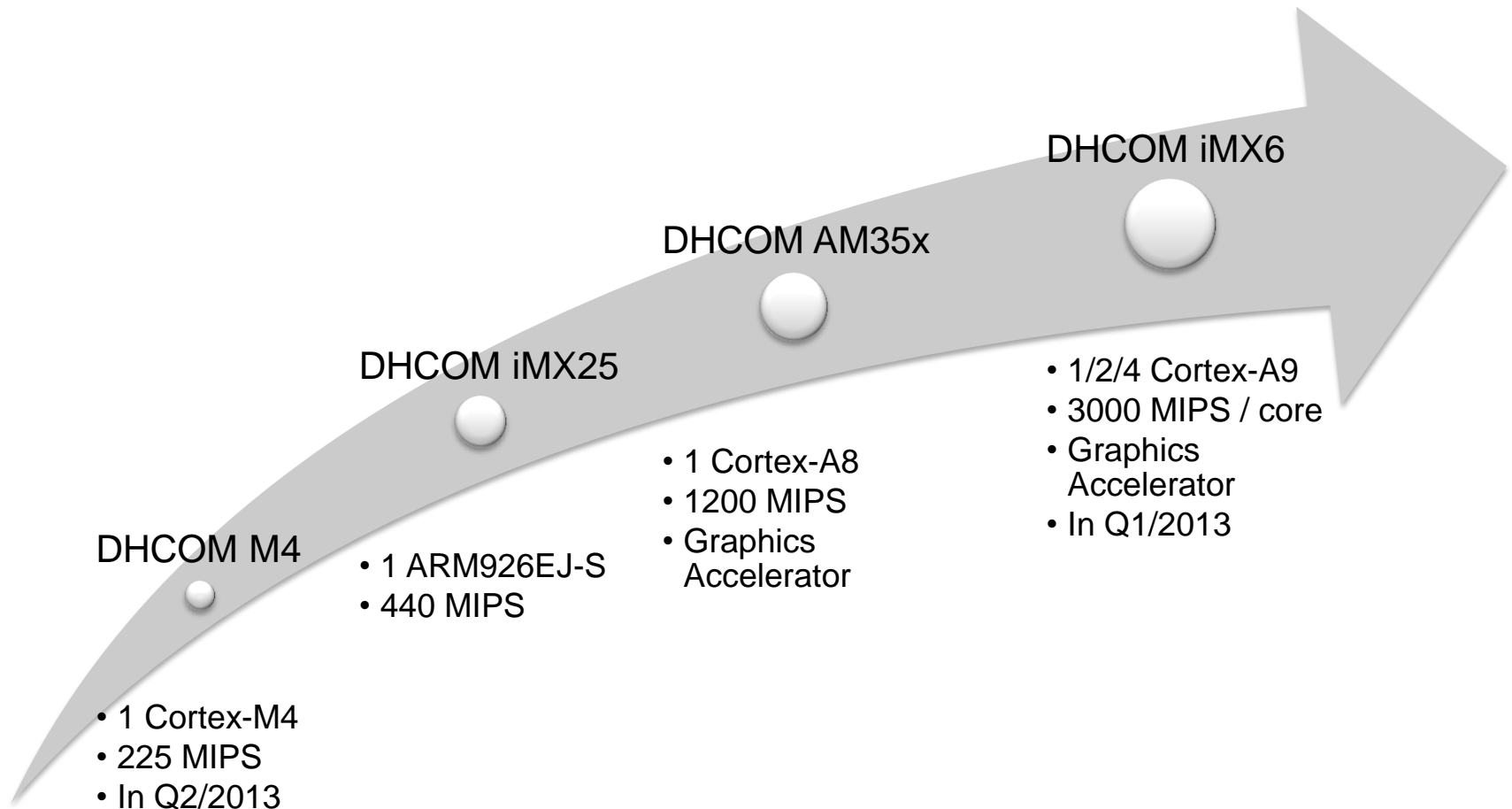
■ Long term availability, 10 years +

■ Board Support Package for





DHCOM Standard – performance overview and product roadmap





DHCOM – Overview

■ DHCOM Standard - Form, Fit & Function compatible

- ARM9 Freescale i.MX25 (SODIMM-200)
- Cortex-A8 TI AM3505 & AM3517 (SODIMM-200)

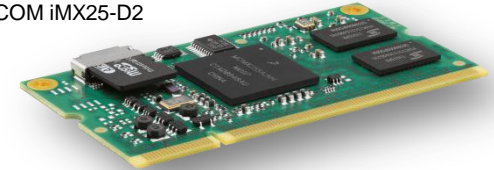
■ DHCOM D2

- Xscale Marvell PXA270 (SODIMM-200)
 - compatible with Keith&Koep and Toradex PXA modules

■ DHCOM Q4

- Cortex-M3 TI LM3S9 in 4x4 cm format
- Solderable on carrier board
- Only for key customers yet

DHCOM iMX25-D2



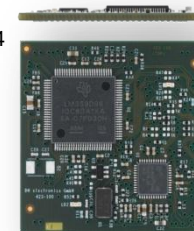
DHCOM AM35-D2



DHCOM PXA270-D2



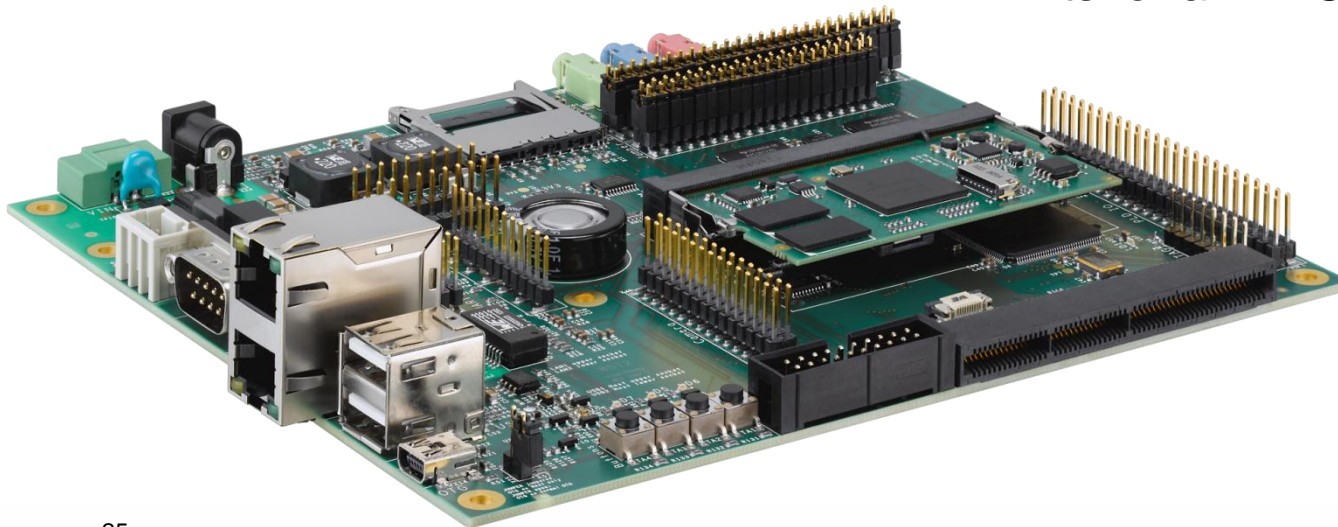
DHCOM LM3S9-Q4





DHCOM-D2 Premium Developer Kit – Your project jump start

- HMI interface
 - Attach your display and touch system easily and quick
- Interfaces for industrial applications
 - CAN, Ethernet, USB, UART, I2C, SPI, PWM
- Interfaces for multimedia applications
 - Audio, Camera, Display, Touch
- SD/MMC card slot
- Debugging via JTAG port
- Fits for all DHCOM-D2 modules



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End of the presentation

„Thank you for your attention!“