Freescale Communicator Introducing Freescale's Vybrid Controller Solutions

Rich Apps in Real Time

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Vybrid Controller Solutions Overview
The Vybrid portfolio brings to market a unique, low-power system solution that provides customers a way to combine rich applications requiring high-resolution graphical displays and connectivity with real-time determinism.
Vybrid devices are ideal for applications including building/home automation and control; industrial automation; point-of-sale systems; medical devices, such as patient monitors; smart energy equipment, and appliances. They are also well-suited for many low-power and timing-critical wired and wireless network interfaces, such as IEEE® 1588, ZigBee® IP, low-power WiFi®, Bluetooth low energy and other proprietary communications protocols.

Total System Solution
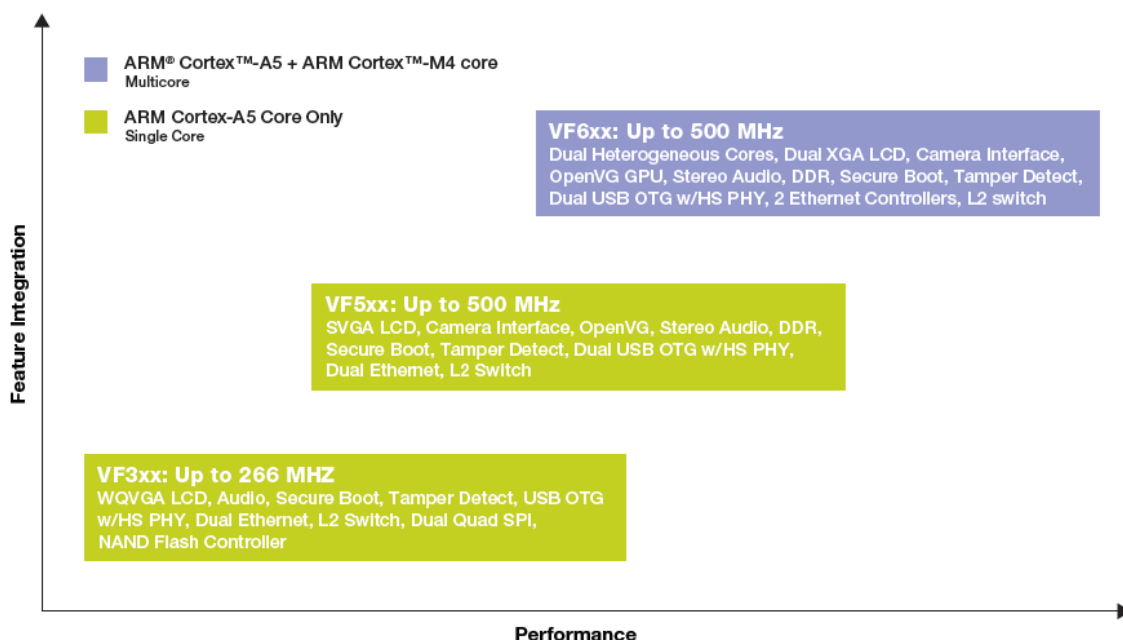Everything you need at your fingertips to go from concept to market faster and easier
Unprecedented System Integration
Ensure peace of mind for applications requiring secure real-time control and rich human-machine interaction
Optimal System Performance
Drive optimal power and performance through a portfolio of products that provide the right levels of applications processing and real-time control for a range of systems
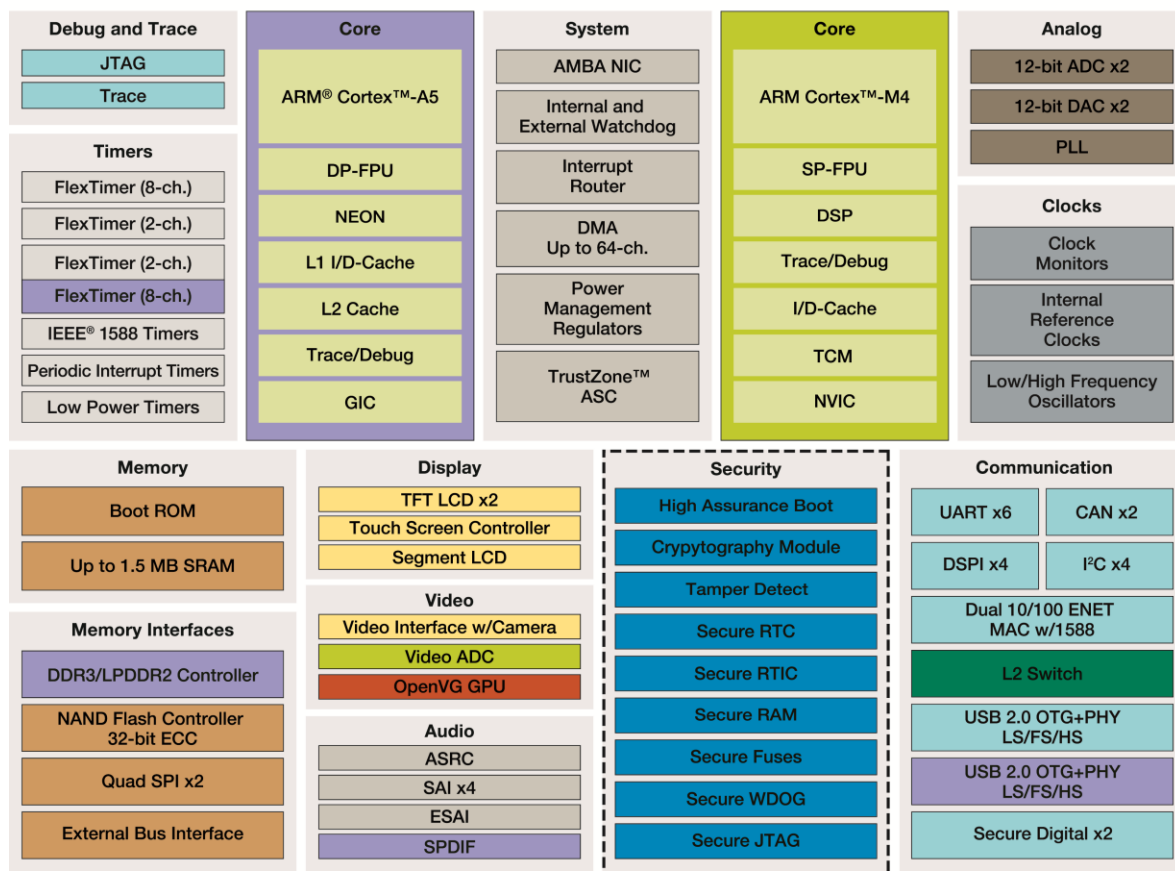
Vybrid Controller Solutions—F Series Portfolio

ARM® Cortex™-A5 + ARM Cortex™-M4 core
Multicore

ARM Cortex-A5 Core Only
Single Core

Feature Integration

VF6xx: Up to 500 MHz
Dual Heterogeneous Cores, Dual XGA LCD, Camera Interface, OpenVG GPU, Stereo Audio, DDR, Secure Boot, Tamper Detect, Dual USB OTG w/HS PHY, 2 Ethernet Controllers, L2 switch

VF5xx: Up to 500 MHz
SVGA LCD, Camera Interface, OpenVG, Stereo Audio, DDR, Secure Boot, Tamper Detect, Dual USB OTG w/HS PHY, Dual Ethernet, L2 Switch

VF3xx: Up to 266 MHZ
WQVGA LCD, Audio, Secure Boot, Tamper Detect, USB OTG w/HS PHY, Dual Ethernet, L2 Switch, Dual Quad SPI, NAND Flash Controller

Performance

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Targeted Applications
- Building/Home Automation
- Industrial Automation
    o Applications requiring displays (HMI) & real time control
- Medical
    o Patient Monitors
    o Portable Medical Devices such as Monitors, Ventilators & Respirators
- Consumer
    o Printers
    o Portable media players
    o Portable Navigation Systems
    o Networked Audio & Video systems
- Metering
    o Data Concentrator
- Appliances
- Point-of-Sale
- IP Cameras
- Digital Signage

Product Platform Block Diagram

Key Features and Benefits of Vybrid Controller Solutions

Feature		Application Benefit
Core and System	ARM Cortex-A5	Power Efficient Applications processor with full Cortex application compatibility
	ARM® Cortex™-M4	High-performance Real time core
	64-bit AXI bus	Increases concurrent data transfer capabilities from several bus masters
	Up to 64-channel DMA	Peripheral and memory servicing with reduced CPU loading
	Address Space Controllers	Provides memory protection for all cross bar switch masters, increasing software reliability
Memory & Memory Interfaces	Up to 1.5 MB of on-chip SRAM with ECC	High reliability, fast access RAM
	FlexBus external bus interface	Enables the connection of external memories and peripherals (e.g., graphics displays)
	NAND flash controller	Supports up to 32-bit ECC current and future NAND types with minimal software overhead
	Secure Digital Controller	for in-application software upgrades, media files or adding Wi-Fi® support
	Dual Quad-SPI with Execute-in-Place (XiP)	Supports up to 80 MHz external SPI flash
	DRAM controller	Support for DDR3 and LPDDR2 memories up to 800MHz data rate. ECC support. DFI interface to PHY
Communications interface	USB On-The-Go (High, Full and Low-Speed)with integrated PHY	Optimized charging current/time for portable USB devices, enabling longer battery life.
	10/100 Ethernet MAC with IEEE 1588 HW time stamping	Precision clock synchronization for real-time, networked industrial automation and control
	Serial interfaces & CAN	Multiple communication interfaces for simple and efficient data exchange. Enable industrial network bridging.
Security	Hardware encryption accelerator	• Secure data transfer and storage. Supports a wide variety of algorithms: DES, 3DES, AES, MD5,SHA-1, SHA-256
	Hardware tamper detection	Secure real-time clock with independent battery supply.
	High assurance boot	Supports encrypted boot with code signing. Peripheral access policy control. Public key infrastructure RSA 2048/ECC-512
	Hardware cyclic redundancy check engine	Validates memory contents and communication data, increasing system reliability
	Independent-clocked COP, external watchdog monitor	Prevents code runaway in fail-safe applications. Drives output pin to safe state external components if watchdog event occurs
HMI	Display Controller	Support for up to XVGA resolution TFT displays or up to WQVGA with no external DRAM
	2D GPU	Enables UI acceleration
	Video Interface Unit	For image and vision capture provides a 24-bit parallel interface
Audio	Synchronous Audio Interface (SAI) & Asynchronous Sample Rate Converter (ASRC)	Supports full-duplex serial interfaces with frame synchronization such as I2S, AC97, and CODEC/DSP interfaces. Sample rate conversion between input and output
	Enhanced Serial Audio Interface (ESAI)	full-duplex serial port for communication with a variety of serial audio devices.
	Sony Philips Digital Interface (SPDIF)	receive and transmit digital audio using the IEC60958 standard consumer format

One-Stop Enablement Offering: MPU + IDE + OS
- Freescale Tower System hardware development environment
  o TWR-VF65GS10
  o TWR-VFGS10-KIT
  o TWR-BG65GS10-DS
- Integrated development environments
  o Reference Linux BSP
  o Reference MQX BSP
  o ARM DS5 MDK
  o IAR Embedded Workbench
  o Runtime software and RTOS
  o Math and encryption libraries
  o Media framework
  o Motor control libraries
  o Complimentary bootloaders (USB, Ethernet, RF, serial)
  o Complimentary Freescale embedded GUI (eGUI) software driver for graphics LCD panels
- CodeWarrior v10.x (Eclipse) IDE with Processor Expert
- Plus full ARM ecosystem

Available Documentation and Collateral	
Vybrid Controller Solutions Beyond Bits	Beyond Bits VII
Vybrid VF3xx Family Fact Sheet	VYBRIDVF3FS
Vybrid VF5xx Family Fact Sheet	VYBRIDVF5FS
Vybrid VF6xx Family Fact Sheet	VYBRIDVF6FS

Key Dates

Public Announcement	Alpha Samples & Tools	Broad Market Launch	Production

Vybrid Controller Solutions Announcement at Design West
  VF3xx
  VF5xx
  VF6xx
 	
March 26th, 2012
	Alpha program tools delivery
	VF3xx & VF6xx tower boards
	Alpha Linux BSP
	Alpha MQX BSP
	Tech documentation
	
	June 15th, 2012
		LQFP/BGA
		  VF3xx
		  VF5xx
		  VF6xx
		Production Linux BSP
		Production MQX BSP
		Tech Documentation
		April, 2013
			BGA production
			  VF3xx
			  VF5xx
			  VF6xx
			
			Production Linux BSP
			Production MQX BSP
			Tech Documentation
			July, 2013

For more information about Vybrid Controller Solutions, visit http://www.freescale.com/vybrid
Please check CIA at https://www.freescale.com/cgi/go/vybridcontrollersolutions
Or contact John Vincent at john.vincent@freescale.com or Yolanda Almada Félix at yolanda.almada@freescale.com   with any questions.