freescale™
Vybrid

32-bit Controller Solutions

Vybrid VF3xxR Family

Automotive solutions for connected radio, entry-level infotainment and digital instrument cluster applications

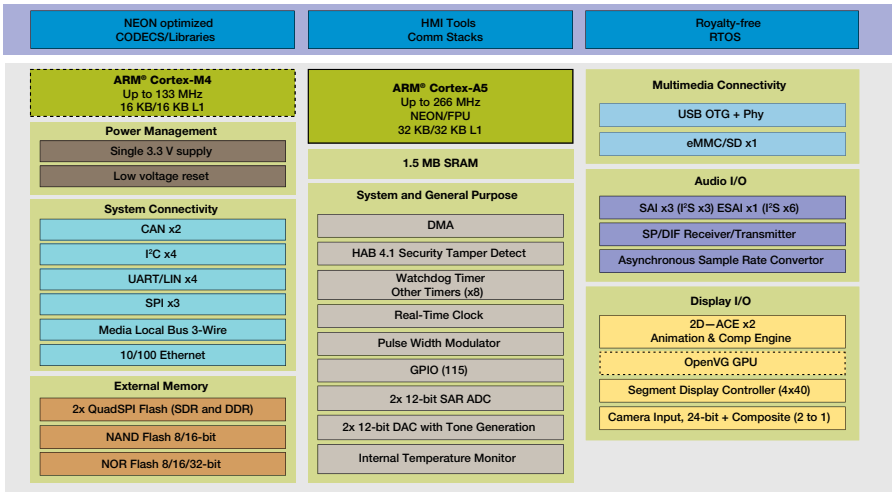
Overview

The Vybrid VF3xxR family is purpose-built and cost-optimized for connected radio, entry-level infotainment and digital instrument cluster applications. The family features generous 1.5 MB on-chip SRAM, dual-core architecture combining the high-performance low-power ARM® Cortex®-A5 application processor with the ultra-low-power Cortex®-M4 MCU, OpenVG graphics accelerator, 2D graphics composition engine and dual Quad SPI interface with DDR support. Standard vehicle connectivity is provided through integrated CAN controllers, MLB, UART/LIN and Ethernet with IEEE® 1588 support. The integrated video ADC allows for direct connection to analog cameras without the need for expensive external circuits. Dual USB 2.0 OTG controllers (with integrated PHY) and a large variety of serial interfaces such as UART, SPI, and I²S provide connectivity to consumer electronic devices such as smartphones, tablets

Target Applications

- Connected radios
- Entry-level infotainment
- Digital instrument clusters

Vybrid VF3xxR Block Diagram



Optional

and Bluetooth® enabled devices. The VF3xxR family is software compatible with the VF5xxR family, providing scalability from low-cost basic connected radios without external DRAM up to entry-level infotainment systems using GPU-accelerated dual displays with compelling user interfaces.

Enablement Software

Vybrid automotive families include software for connected radio and cluster applications. Built upon auto-grade BSPs for MQX™, our software is the ideal starting point for your radio and cluster designs. The enablement components are included with every chip we sell, and provide a full working system complete with BSP, middleware and example applications. Our software solution is highly configurable and architected with Vybrid families in mind, scaling from low-cost solutions that use the internal SRAM only, up to feature-rich, graphics-intensive solutions.

Industry-Leading Partners

In addition to the enablement components, we have teamed up with select industry-leading partners that have rich automotive heritage and embedded systems know-how to provide third-party components for areas like Bluetooth, HMI tools and acoustic echo cancellation/noise suppression. These include:

Altia Design with DeepScreen

Altia's suite of user interface engineering tools offers a concept-to-code solution for getting best-in-class user interfaces for Vybrid product families.

OpenSynergy Blue SDK

Provides an efficient way to add reliable Bluetooth radio communications to any embedded device.

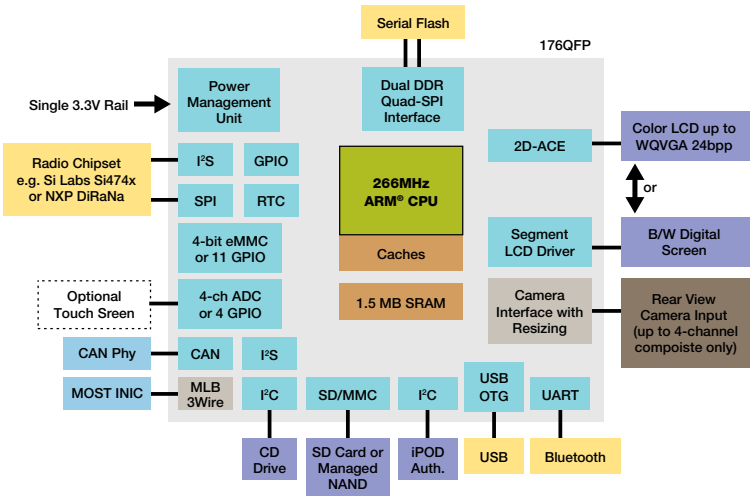
Cybercom blueGO

A robust and portable multi-profile Bluetooth software application framework for advanced hands-free functionality in automotive IVI systems. blueGO minimizes the Bluetooth application development effort and is subject to continuous IOP testing.

Alango Voice Communication Package

A suite of front-end digital signal processing technologies enabling high quality voice communication specifically optimized for small footprint embedded applications such as connected radio hands-free on Vybrid's production software platform.

Advanced Connected Radio System Diagram



Key Features for the VF3xxR

CPU	266 MHz ARM® Cortex®-A5, 133 MHz ARM Cortex®-M4
On-chip memory	1.5 MB (512 KB ECC)
Serial flash interface	2x QuadSPI Flash with DDR support
NAND	Yes (8-bit), Up to 32-bit HW ECC
FlexBus interface (parallel NOR)	Yes (address/data mux'd)
Display interface	TFT and 40 x 4 segmented LCD or 2x TFT up to WQVGA
Video ADC/camera Input	2x composite 24-bit parallel
Ethernet	10/100 Ethernet with IEEE® 1588
Analog-to-Digital Converter	10-channel, 12-bit ADC
USB	1x USB OTG HS
Audio interface	SAI x3 (i²s x3) and ESAI x1 (2 TX, 4 TX or RX)
UART, DSPI, I²C	4, 3, 4
SD/MMC interface	1
CAN	2x FlexCAN
MOST	1x MLB50
GPIO	Up to 115
Package	176-pin LQFP, 24 x 24 mm², 0.5 mm pitch

For more information, visit freescale.com/Vybrid

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