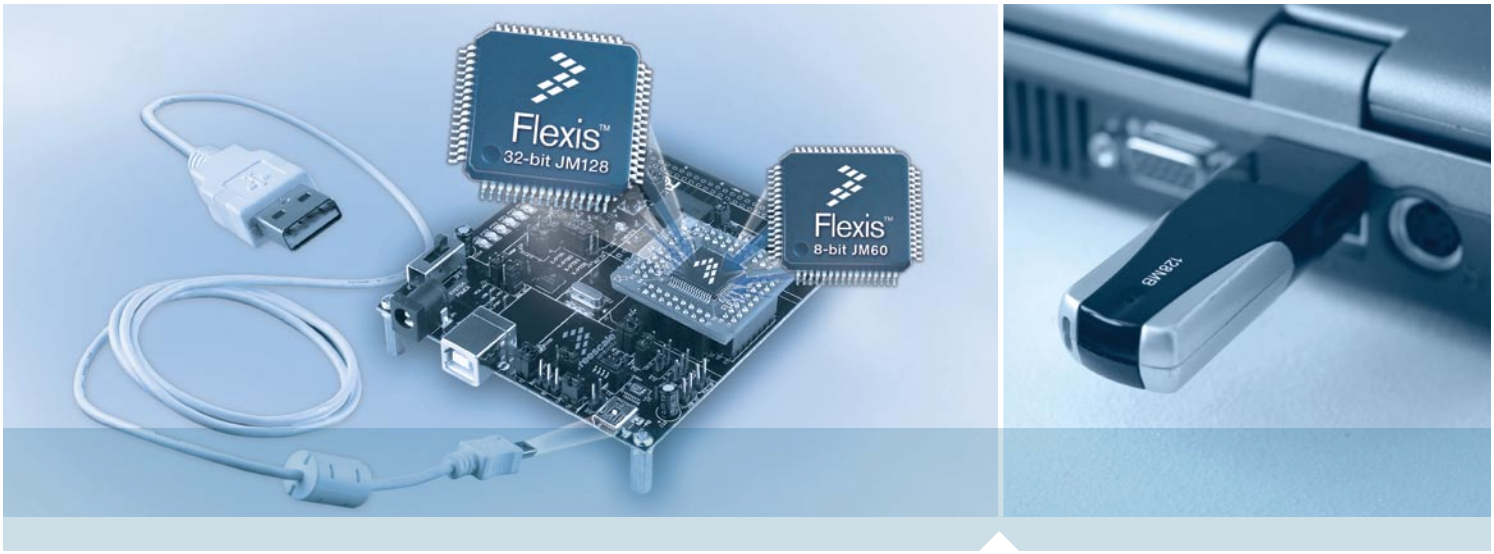

Flexis™ JM Family

USB Stack Solution

Speed and simplify Flexis™ JM microcontroller design

Overview

Freescale is expanding the Flexis™ family with the introduction of the first USB-enabled Flexis devices—the JM family of microcontrollers. These devices combine unprecedented 8- to 32-bit compatibility with a comprehensive USB solution to enable fast and easy development for a range of USB industrial and consumer applications. The JM60 (8-bit) and JM128 (32-bit ColdFire® embedded controller) both feature basic building blocks for controller compatibility.

To complete the software solution, Freescale also offers two complimentary* USB software stacks, helping designers jump start development. The USB-LITE stack by CMX provides USB host and device functionality which supports the 8-bit and 32-bit embedded USB microcontrollers in the Controller Continuum. The USB-MINI stack by Freescale provides USB device functionality which supports the 8-bit embedded USB controllers.

An extensive ecosystem of reference designs, application notes and training for the USB stacks are available to ease development.

USB-LITE Stack by CMX

Freescale and CMX have collaborated to provide a complimentary USB stack for ColdFire and S08 USB microcontrollers in the Controller Continuum. The stack for the 8-bit S08 USB controllers enables USB device modes while the stack for the 32-bit ColdFire USB controllers enables USB device and host modes. The stacks can be accessed at **www.freescale.com/USB**.

Features

- **Extreme portability to support 8-bit and 32-bit embedded USB MCUs**
- **Supports USB device, host and On-The-Go (OTG) functionality to enable USB configuration flexibility that meets various design requirements**
- **Interfaces with CodeWarrior® Development Studio, providing a productive, comprehensive development environment for designing embedded USB applications**
- **Comprehensive documentation gives designers a quick start**
- **Intuitive API design**
- **Small RAM/ROM footprint**
- **Example applications are available to facilitate the use of all class drivers**

Class Driver

USB-LITE comes with high-level class drivers for keyboards, mouses, generic Human Interface Devices (HID), Communication Device Classes (CDC) to universal asynchronous receiver/transmitters (UART) and mass storage demos for host mode.

CMX also provides a variety of professional CMX-USB products including bootloader, embedded pipe, full-function mass storage and file system, reliable file interface and PrinterLite. Please visit **www.cmx.com/** for more information.

** Subject to license agreement.*

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USB-MINI Stack by Freescale

The USB-MINI stack was developed by Freescale with a complimentary* USB device driver for the 8-bit JM family. It's highly optimized for the smallest footprint 8-bit JM devices. The stack includes several function groups:

- USB module initialization
- USB enumeration handler: handles USB standard request to complete USB enumeration
- USB module management: APIs for endpoints management are provided for users to easily manage USB module operation

The Readability and Ease-of-Use of the USB-MINI Stack

- The USB-MINI stack focuses on USB module management. It's concise, easy to read and a good entry-level tool for the user to study the 8-bit JM family USB module.
- The AN3560 application note introduces the 8-bit JM family USB module and features an example HID mouse application based on the USB-MINI stack.

Efficient Code and Small RAM/ROM footprint

- The highly optimized USB-MINI stack is ideal for the limited memory resources of the 8-bit JM family. The HID mouse application example in AN3560 consumes around 3K flash and less than 150 bytes of RAM.

Flexibility and Compatibility

- USB-MINI stack features a high-level USB HID mouse class demonstration. Users can also define their own high-level class protocol (vendor specific protocol) based on application requirements.
- The AN3582 application note shows an example of how to define and develop a vendor-specific protocol for data logger applications using the USB-MINI stack.

Development Tools

- DEMOJM: Flexis JM Family Cost-Effective Demo Board for the JM60 and JM128 MCUs
- EVB51JM128: Flexis JM Full Evaluation System for the JM128 MCUs
- CodeWarrior® Development Studio for Microcontrollers V6.1. JM60 and JM128 Service Pack

Application Notes

The following application notes are helpful to understand the USB-LITE and USB-MINI stacks. These documents can be found on **www.freescale.com**.

- AN3560: The USB Device Development with MC9S08JM60
- AN3561: USB Bootloader for the JM60
- AN3564: Customize the USB Application Using the MC9S08JM
- AN3582: The USB Datalogger Based on MC9S08JM60
- AN3565: USB and Using the CMX USB Stack with 9S08JM Devices
- AN3492: USB and Using the CMX USB Stack

Learn More: For more information about the USB stacks, please visit **www.freescale.com/USB**.

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