
Migration from AT89C5131 & AT89C5131A-L to AT89C5131A-M

This application note is a guide to assist current AT89C5131 & AT89C5131A-L users in converting existing designs to the AT89C5131A-M devices. In addition to the functional improvements, the electrical characteristics of the AT89C5131A-M have been improved with an extended power supply range. For detailed information on the product, please refer to the AT89C5131A-M product datasheet, available on the Atmel web site.



**8051
Microcontrollers**

Application Note

Rev. 4371B-USB-11/04



Feature Comparison

The AT89C5131A-M is a new version of the AT89C5131 & AT89C5131A-L Flash USB microcontroller. The AT89C5131A-M is fully software compatible with the AT89C5131 & AT89C5131A-L, but thanks to the new extended power supply range (2.7V to 5.5V), the AT89C5131A-M can be integrated in both 5V or 3V environment without any external voltage adaptation (regulators).

An additional features of the AT89C5131A-M is a power monitor system that supervises the internal power-supply of the CPU core, on-chip memories and peripherals, and if needed, suspends their activity when the internal power supply falls below a safety threshold. The power monitor also generate an external reset out pulse, to warn the environment about power failure on the AT89C5131A-M.

Pinout Comparison

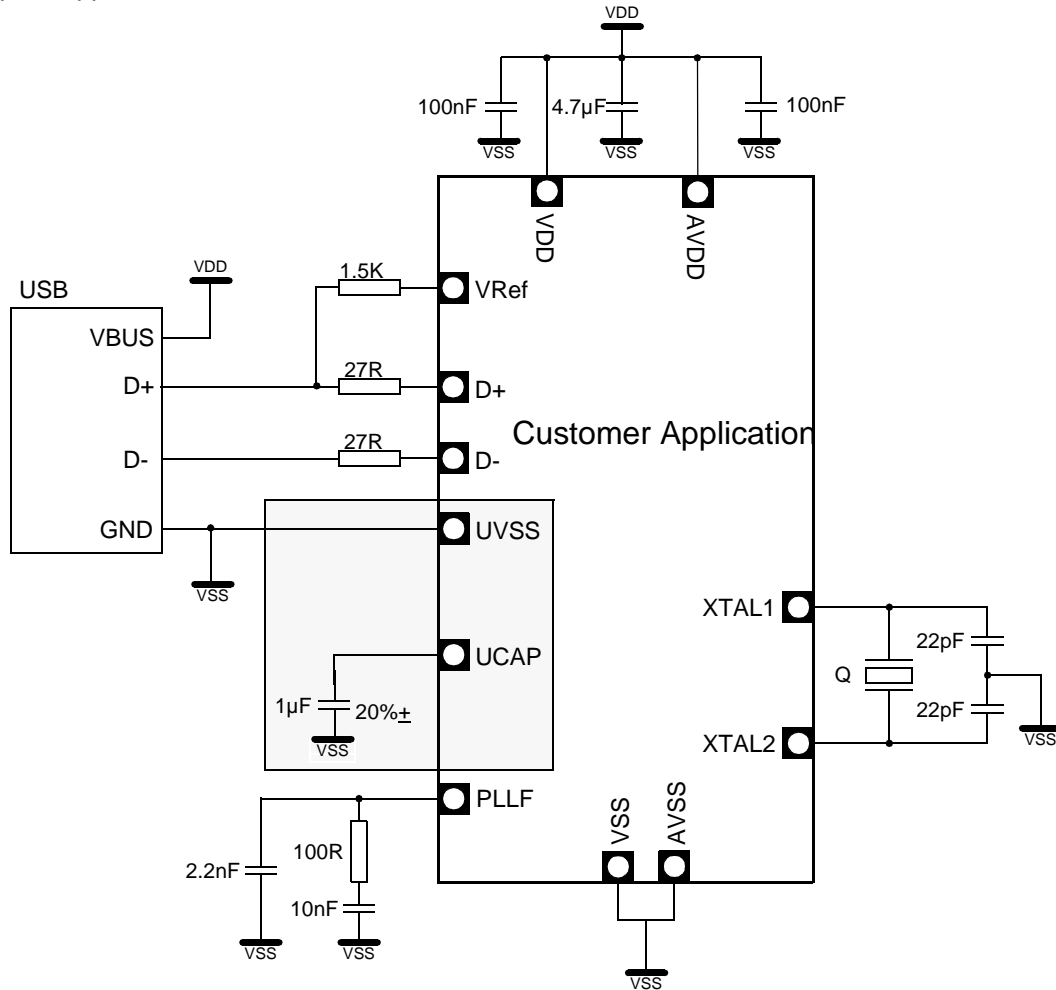
To allow the extended power supply range, the AT89C5131A-M requires two additional power supply pins (previously unconnected on the AT89C5131 & AT89C5131A-L):


- The new UVSS pin (ground signal for USB pads) should be connected to GND.
- The new UCAP pin, should be connected to a external capacitance of 1 μ F.

Figure 1. summarizes the typical application schematic for AT89C5131A-M devices.

Migration from AT89C5131/A-L to AT89C5131A-M

Figure 1. Typical application



 Required modifications from AT89C5131 & AT89C5131A-L-L

Note: Even used within the 3V power supply range, the UCAP and UVSS pins should be correctly connected.

Note: UCAP should be connected as close as possible to the device.

Package Consideration

The following table summarizes the packages available for the two products.

Product	Packages
AT89C5131	SO28, QFN48, PLCC52, VQFP64
AT89C5131A-L	SO28, PLCC52, VQFP64
AT89C5131A-M	QFN32, PLCC52, VQFP64, & Lead Free/Halogen Free VQFP64

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Starter Kit Modification

The new AT89C5131A-M is fully supported with the AT89C5131 Evab 2_0_0, but users with AT89C5131 Evab 1_0_2 must modify their board to support the new AT89C5131A-M device.

The evolution consists in the following modifications:

- Add a capacitance ($1\mu\text{F}$) on UCAP pin connected between UCAP and GMD
- Connect UVSS pin to ground

Figure 1. AT89C5131 Evab 1_0_2 bottom view

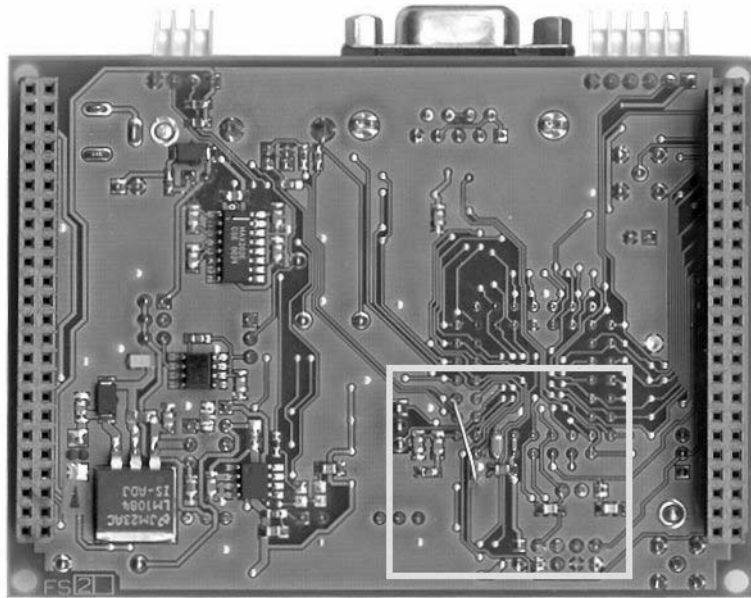
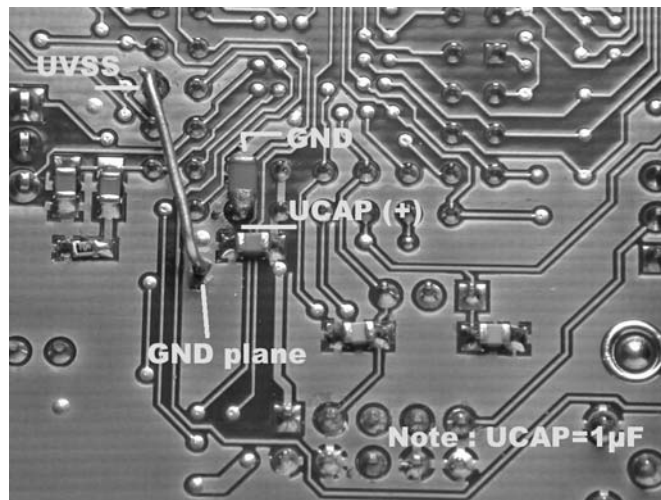


Figure 2. AT89C5131 Evab 1_0_2 detail modification





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