

Design Recommendations to Implement Compatibility Between the MC13783VK and the MC13783VK5

by: Power Management and Audio Applications Team

1 Introduction

The MC13783VK and the MC13783VK5 are a power management and user interface (PMUI) integrated circuit that can be used in Freescale's 3G cellular platforms or other portable handheld applications such as non-3G protocol cellular, gaming devices, personal media players, remote controlled toys, etc.

The purpose of this application note is to provide the proper connections to ensure compatibility of the board between the MC13783VK and the MC13783VK5 parts.

2 Description

The differences between these two extensions is the manner of how the switcher parallel/single detection mechanism is realized. In the MC13783VK part, the mechanism is based on detection at power-up. The detection is based on the voltage level seen on the SWxBFB pin (x can be 1 or 2 symbolizing buck switcher1 or buck switcher2).

- If the level is 0 V, then single mode is detected.

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- If the level is VATLAS, then the parallel mode is detected.

Where as in the MC13783VK5 part, the mechanism is based on continuous detection. The detection is based on the voltage level seen on different pins:

- Pin P11 named "RSVRD2 or SW1ABSPB" for buck switcher 1.
 - If the level is 0 V, then the parallel mode is detected.
 - If the level is 2.775 V, then the single mode is detected.
- Pin R12 named "RSVRD3 or SW2ABSPB" for buck switcher 2.
 - If the level is 0 V, then the parallel mode is detected.
 - If the level is 2.775 V, then the single mode is detected.

3 Implementation of MC13783VK and MC13783VK5 Compatibility

To ensure compatibility of the board between the MC13783VK and the MC13783VK5 parts, follow these steps:

1. If the buck switchers are used in a single configuration, then follow the schematic in [Figure 1](#).
 - a) When SW1 is used in single mode, connect the RSVRD2-SW1ABSPB to VATLAS.
 - b) Connect the SW1AFB on the feedback point at the output capacitor if SW1A is used.
 - c) Connect the SW1BFB on the feedback point at the output capacitor if SW1B is used.
 - d) Perform the same steps for SW2 as performed with SW1.

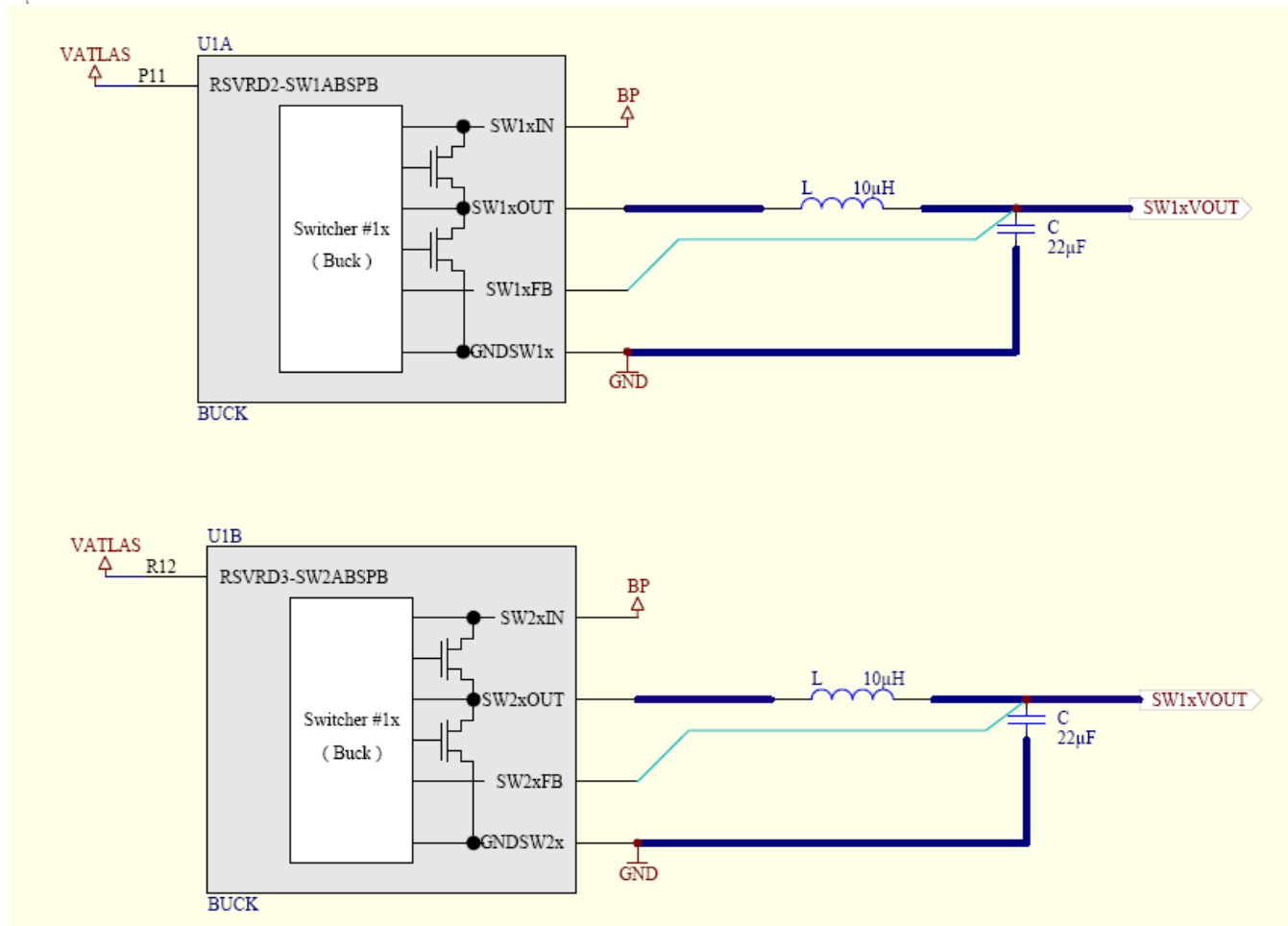


Figure 1. Buck Switchers Used in a Single Configuration

NOTE

On MC13783VK part, the connection of P11 and/or R12 is not mandatory.

2. If the buck switchers are used in a parallel configuration, then follow the schematic in [Figure 2](#).
 - a) The connection to GND of the RSVRDx pin is optional.
 - b) Connect the SWxBFB pin to VATLAS to ensure proper detection for the MC13783VK part. This connection has no effect for the MC13783VK5 part.

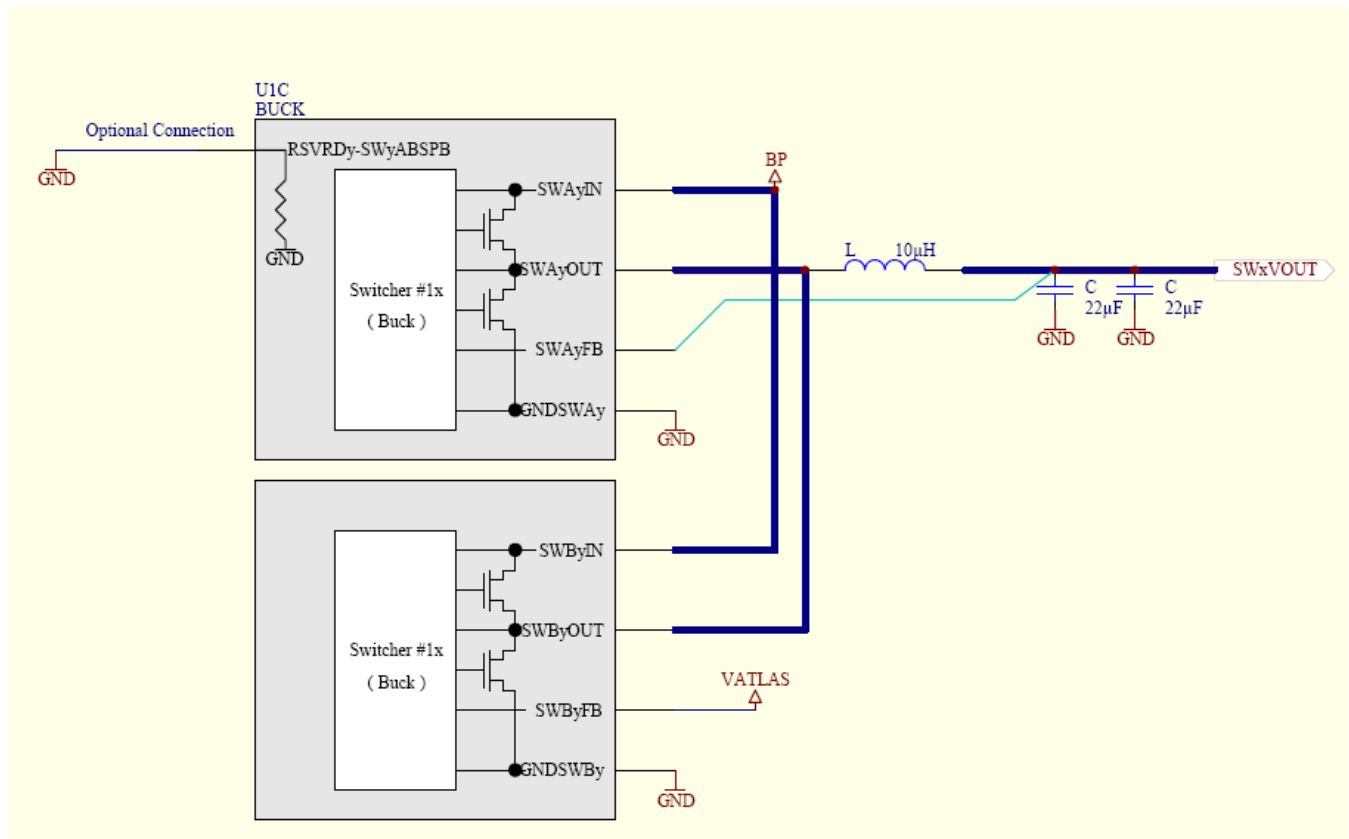


Figure 2. Buck Switchers Used in a Parallel Configuration

NOTE

On P11 and or R12 pin, the GND connection is not mandatory since there is an internal pulldown.

When following these recommended schematic connections, the application is compatible to either the MC13783VK or the MC13783VK5 parts.

NOTES

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