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AND9311/D

Power-up Time Acceleration

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APPLICATION NOTE

Overview

ON Semiconductor RF chip have typical start−up times from sleep to oscillator and references running are in the order of 3 ms (this value depends on the specific crystal used). This time can vary with temperature and be in rare cases over 10 ms. The start−up time is not specified and not controlled. For synchronous applications this is not desirable. Therefore we are presenting two easy ways to reduce and control the start−up time to a constant value.

This document applies to the devices AX5051, AX5151, AX5031, AX5131 and AX50424.

Power−up Acceleration

Implementation 1

Connect a digital output pin PIO directly from a micro−controller to the VREG pin of the RF device. The default setting of PIO should be Hi−Z.

After powering up the RF device PIO has to be set from Hi−Z to 1 and back to Hi−Z. This will induce a voltage kick to VREG and helps the device to power up in minimum time.

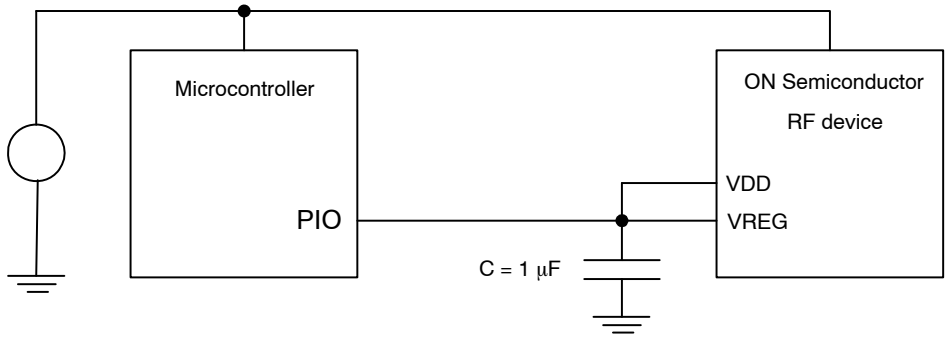

Figure 1. Implementation 1

Powering up references and oscillators should now be done as follows (see Note):

1. Set PWRMODE to STANDBY (register value 0x05)
2. Set PIO to output 1
3. Wait at least 200 μs
4. Set PIO back to Hi−Z

NOTE: Refer to the product specific Programming Manual for details on power up sequences, see http://www.onsemi.com

Implementation 2

This implementation uses a GPIO pin from the RF device itself, so no extra pin from a micro−controller or any other external device is required.

Choose a GPIO pin (SYSCLK or IRQ) and connect it via a capacitor C_2 to the VREG pin. The pin numbers of the GPIO pins that can be used for each of ON Semiconductor RF device are shown in Table 1.

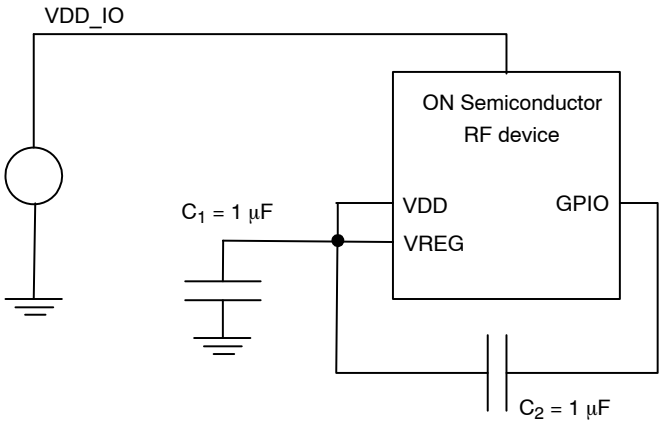

Figure 2. Implementation 2

Powering up references and oscillators should now be done as follows (see Note):

1. Set GPIO pin to output 0 (registers PINCFG1 and PINCFG2)
2. Set PWRMODE register to STANDBY (register value 0x05)
3. Set GPIO pin to output 1
4. Wait at least 30 μs
5. Set GPIO pin back to 0

Note, that C_2 should be approximately the same size as C_1. If the capacitors are chosen greater than 1 μF, the minimum wait time in step 3 will be longer.

NOTE: Refer to the product specific Programming Manual for details on power up sequences and GPIO pin configuration, see http://www.onsemi.com

Table 1. GPIO PIN NUMBERS

Device	IRQ	SYSCLK
AX5051	19	13
AX5151	20	14
AX5031	14	7
AX5131	16	10
AX50424	19	13

PUBLICATION ORDERING INFORMATION

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