Release Note for DA9063 AD BB CA Linux Device Driver

Device	DA9063
Device Type	PMIC
Device Revisions	AD BB CA
Release	2r3
Release ID	DA9063_Linux_Mainline_2r3
Release Date	2022-03-02
Release Type	DRIVER
Operating System	Linux
OS Version	linux-mainline v4.2 (or later)
Architecture	ARM

Summary

This is the release of the Linux Device Driver for the Dialog DA9063 Power Management IC.

This document covers the purpose of this release, changes since the previous release and known limitations for the DA9063 Power Management IC. It will cover these topics in relation to the device driver content and device tree descriptions where appropriate.

The exact list of features contained in the DA9063 device driver is described in the associated Application Note that comes with this release.

Summary of this Release 2r3

Rebrand of documentation.

Deliverable Details

The complete list of delivered files is:

- Release_Notes.pdf
- Application_Notes.pdf
- README.txt

Kernel Versions Supported

The DA9063 driver is fully supported in Linux kernel linux-mainline tree from tag v4.2 (or later). The source code can be found at the following location:

https://git.kernel.org

An example of how to download and access the kernel source code is provided below:

```
git clone git://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git mainline
```

```
cd mainline
git checkout v4.2 (or later)
```

Kernel Submission History

The following list describes the files available in each kernel version. Not all files are available in earlier kernels, but from kernel linux-mainline/v4.2 the driver has core functions supported.

- **OnKey support**:Linux kernel linux-mainline/v4.2 (1 new file and 2 changes accepted)
  - o drivers/input/misc/da9063_onkey.c
  - o Documentation/devicetree/bindings/mfd/da9063.txt
  - o drivers/mfd/da9063-core.c
- **Device tree and CA support**: Linux kernel linux-mainline/v4.0 (1 new file and 3 changes accepted)
  - o Documentation/devicetree/bindings/mfd/da9063.txt
  - o drivers/mfd/da9063-core.c
  - o drivers/mfd/da9063-i2c.c
  - o include/linux/mfd/da9063/core.h
- **Watchdog support**: Linux kernel linux-mainline/v3.18 (1 file accepted)
  - o drivers/watchdog/da9063_wdt.c
- **Add RTC support**: Linux kernel linux-mainline/v3.16 (1 file accepted)
  - o drivers/rtc/rtc-da9063.c
- **Add BB silicon support**: Linux kernel linux-mainline/v3.15 (3 files modified)
  - o include/linux/mfd/da9063/registers.h
  - o drivers/mfd/da9063-core.c
  - o include/linux/mfd/da9063/core.h
- **Register definitions, MFD, IRQ, I2C and regulator support**: Linux kernel linux-mainline/v3.12 (7 files accepted)
  - o drivers/regulator/da9063-regulator.c
  - o drivers/mfd/da9063-irq.c
  - o drivers/mfd/da9063-core.c
  - o drivers/mfd/da9063-i2c.c
  - o include/linux/mfd/da9063/core.h
  - o include/linux/mfd/da9063/pdata.h
  - o include/linux/mfd/da9063/registers.h

Search strings can found by reading the section "DIALOG SEMICONDUCTOR DRIVERS" inside the MAINTAINERS file in the Linux kernel. This will provide an indication of the files supported by Dialog Semiconductor Ltd. A search command can also be used to identify DA9063 device driver files with in the kernel. An example command would be:

```
find . -name "*" -type f -print | grep -i da9063
```

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Searching for Kernel Updates

Future updates and bug fixes applied to the DA9063 device driver files can be found in the Linux kernel logs and in the Linux kernel mailing list. The full list of alterations to a file is available through the Linux kernel commit logs. An example command to list the commits for the full change history of a file would be:

```
git log --tags --source --oneline [filename]
```

System Requirements

- A Dialog Semiconductor DA9063 device with one of the following silicon revisions are supported: AD BB CA.
- The device should be connected through I2C on the evaluation or target board
- A board support package for the evaluation or target board
- Linux kernel linux-mainline/v4.2 (or later)

Known Limitations

Device Driver Limitations

SPI is not supported by this driver. Only I2C is supported with this driver version.

The device driver code has access to the lower address range of the DA9063 addressable registers during normal operation of the driver. Higher addresses are only accessible using the software driver during the probe function of the device driver. This is a deliberate restriction during the normal run-time of the driver and improves on the earlier disassociations of high register address accesses in the 0rx versions of the driver.

This Linux device driver will only use the DA9063 page mechanism during the probe function of the device driver (during driver setup) for safety reasons. All information from the high address range will be accessed during that portion of the driver start-up and no further page modifications will be done during the life-time of the driver.

The RTC driver component that supports the DA9063-AD silicon revision does not support alarms to the second resolution. In earlier 0rx releases of this driver this was possible but was only possible by simulating alarm seconds. It did this by counting-down from the nearest minute using the tick IRQ. However this simulation cannot be used in practical applications of the driver: simulating alarm seconds using the tick interrupt produces incorrect behaviour for DA9063-AD chips -- especially when the device is asleep or off and needs to wake-up on an alarm. Therefore this feature has not been continued in later versions of the driver. This driver only supports alarms with a minute resolution when using DA9063-AD hardware.

Platform Limitations

N/A

Release History

| 2r2 | 2015-09-24 | Linux Kernel linux-mainline v4.2 and onwards |
| 2r3 | 2022-03-02 | Rebranded file with new logo, copyright and disclaimer |

Status Definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.

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