Rohm,bd71847 driver Porting on imx8mm platform of Linux 5.10.72 (NXP release)

- Linux Support Version compare
- Porting Step of u-boot
  (Linux version 5.10.72)
- Porting Step of Linux kernel
  (Linux version 5.10.72)
- Booting Log
- Verify and testing
- Note

Linux Support Version compare

https://www.nxp.com/design/software/embedded-software/i-mx-software/embedded-linux-for-i-mx-applications-processors:IMXLINUX

Release	Build Sources and Documentation	Supported Platforms/Demo Images	Incremental Releases
Linux 5.10.72_2.2.2 Default is not “bd71847”	• Release Notes • See README on instructions for each release. • SCFW Porting Kit 1.11.2 • Verisilicon IDE	• i.MX 8DXL EVK • i.MX 8M Plus EVK • i.MX 8M Nano DDR3L EVK • i.MX 8M Nano EVK • i.MX 8M Mini EVK • i.MX 8M Quad EVK • i.MX 8QuadXPlus(C0) MEK • i.MX 8QuadMax MEK • i.MX 7ULP EVK • i.MX 6UltraLite, i.MX 6ULL, i.MX 6ULZ, i.MX 7Dual • i.MX 6SLL EVK • i.MX 6QuadPlus, i.MX 6Quad, i.MX 6DualPlus, i.MX 6Dual, i.MX 6DualLite, i.MX 6Solo, i.MX 6SoloX • i.MX 8M EVKs boot image(SystemReady-IR certified)	
Linux 5.4.47_2.2.0 Default is “bd71847”	• Documentation • See README on instructions for each release. • SCFW Porting Kit • AACPlus Codec • Verisilicon IDE	• i.MX 8M Nano EVK • i.MX 8M Mini EVK • i.MX 8M Quad EVK • i.MX 8QuadXPlus(C0) MEK, i.MX 8DualX MEK • i.MX 8QuadMax MEK • i.MX 7ULP EVK • i.MX 7Dual SABRESD • i.MX 6UltraLite, i.MX 6ULL, i.MX 6ULZ, i.MX 7Dual • i.MX 6SLL EVK • i.MX 6QuadPlus, i.MX 6Quad, i.MX 6DualPlus, i.MX 6Dual, i.MX 6DualLite, i.MX 6Solo, i.MX 6SoloX	

Porting Step of u-boot (Linux version 5.10.72)

```
                                                    sources/u-boot-imx$ git status
On branch A100_develop
Your branch is up to date with 'origin/A100_develop'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   arch/arm/dts/imx8mm-ab2-u-boot.dtsi
        modified:   arch/arm/dts/imx8mm-evk-u-boot.dtsi
        modified:   arch/arm/dts/imx8mm-evk.dtsi
        modified:   board/freescale/imx8mm_evk/spl.c
        modified:   configs/imx8mm_evk_defconfig
        modified:   include/configs/imx8mm_evk.h
```

```
/u-boot-imx$ git diff arch/arm/dts/imx8mm-ab2-u-boot.dtsi
diff --git a/arch/arm/dts/imx8mm-ab2-u-boot.dtsi b/arch/arm/dts/imx8mm-ab2-u-boot.dtsi
index 7180e9691c..013226394d 100644
--- a/arch/arm/dts/imx8mm-ab2-u-boot.dtsi
+++ b/arch/arm/dts/imx8mm-ab2-u-boot.dtsi
@@ -143,11 +143,11 @@
        u-boot,dm-spl;
 };

-&{/soc@0/bus@30800000/i2c@30a20000/pca9450@25} {
+&{/soc@0/bus@30800000/i2c@30a20000/pmic@4b} {
        u-boot,dm-spl;
 };

-&{/soc@0/bus@30800000/i2c@30a20000/pca9450@25/regulators} {
+&{/soc@0/bus@30800000/i2c@30a20000/pmic@4b} {
        u-boot,dm-spl;
 };
```

Modify Compiler error

```
/u-boot-imx$ git diff arch/arm/dts/imx8mm-evk-u-boot.dtsi
diff --git a/arch/arm/dts/imx8mm-evk-u-boot.dtsi b/arch/arm/dts/imx8mm-evk-u-boot.dtsi
index 6f7b37cba2..c3b75892f4 100644
--- a/arch/arm/dts/imx8mm-evk-u-boot.dtsi
+++ b/arch/arm/dts/imx8mm-evk-u-boot.dtsi
@@ -151,11 +151,11 @@
        u-boot,dm-spl;
 };

-&{/soc@0/bus@30800000/i2c@30a20000/pca9450@25} {
+&{/soc@0/bus@30800000/i2c@30a20000/pmic@4b} {
        u-boot,dm-spl;
 };

-&{/soc@0/bus@30800000/i2c@30a20000/pca9450@25/regulators} {
+&{/soc@0/bus@30800000/i2c@30a20000/pmic@4b/regulators} {
        u-boot,dm-spl;
 };
```

Modify Compiler error

```
u-boot-imx$ git diff arch/arm/dts/imx8mm-evk.dtsi
diff --git a/arch/arm/dts/imx8mm-evk.dtsi b/arch/arm/dts/imx8mm-evk.dtsi
index 9d8f07cfa9..e6a92083d5 100644
--- a/arch/arm/dts/imx8mm-evk.dtsi
+++ b/arch/arm/dts/imx8mm-evk.dtsi
@@ -165,127 +165,120 @@

 &i2c1 {
        clock-frequency = <400000>;
-       pinctrl-names = "default", "gpio";
+       pinctrl-names = "default";
        pinctrl-0 = <&pinctrl_i2c1>;
-       pinctrl-1 = <&pinctrl_i2c1_gpio>;
-       scl-gpios = <&gpio5 14 GPIO_ACTIVE_HIGH>;
-       sda-gpios = <&gpio5 15 GPIO_ACTIVE_HIGH>;
        status = "okay";

-       pmic: pca9450@25 {
-               reg = <0x25>;
-               compatible = "nxp,pca9450a";
-               /* PMIC PCA9450 PMIC_nINT GPIO1_IO3 */
+       pmic: pmic@4b {
+               compatible = "rohm,bd71847";
+               reg = <0x4b>;
+               pinctrl-names = "default";
                pinctrl-0 = <&pinctrl_pmic>;
-               gpio_intr = <&gpio1 3 GPIO_ACTIVE_LOW>;
+               interrupt-parent = <&gpio1>;
+               interrupts = <3 IRQ_TYPE_LEVEL_LOW>;
+               rohm,reset-snvs-powered;
+
+               #clock-cells = <0>;
+               #clocks = <&osc_32k 0>;
+               #clock-output-names = "clk-32k-out";
+

                regulators {
-                       #address-cells = <1>;
-                       #size-cells = <0>;
-
-                       pca9450,pmic-buck2-uses-i2c-dvs;
-                       /* Run/Standby voltage */
-                       pca9450,pmic-buck2-dvs-voltage = <950000>, <850000>;
-
-                       buck1_reg: regulator@0 {
-                               reg = <0>;
-                               regulator-compatible = "buck1";
-                               regulator-min-microvolt = <600000>;
```

Check the last item → Note 1

It has mask .

```
regulators {
        #address-cells = <1>;
        #size-cells = <0>;

        pca9450,pmic-buck2-uses-i2c-dvs;
        /* Run/Standby voltage */
        pca9450,pmic-buck2-dvs-voltage = <950000>, <850000>;

        buck1_reg: regulator@0 {
                reg = <0>;
                regulator-compatible = "buck1";
                regulator-min-microvolt = <600000>;
                regulator-max-microvolt = <2187500>;
        buck1_reg: BUCK1 {
                regulator-name = "BUCK1";
                regulator-min-microvolt = <700000>;
                regulator-max-microvolt = <1300000>;
                regulator-boot-on;
                regulator-always-on;
                regulator-ramp-delay = <3125>;
                regulator-ramp-delay = <1250>;
        };

        buck2_reg: regulator@1 {
                reg = <1>;
                regulator-compatible = "buck2";
                regulator-min-microvolt = <600000>;
                regulator-max-microvolt = <2187500>;
        buck2_reg: BUCK2 {
                regulator-name = "BUCK2";
                regulator-min-microvolt = <700000>;
                regulator-max-microvolt = <1300000>;
                regulator-boot-on;
                regulator-always-on;
                regulator-ramp-delay = <3125>;
                regulator-ramp-delay = <1250>;
                rohm,dvs-run-voltage = <1000000>;
                rohm,dvs-idle-voltage = <900000>;
        };

        buck3_reg: regulator@2 {
                reg = <2>;
                regulator-compatible = "buck3";
                regulator-min-microvolt = <600000>;
                regulator-max-microvolt = <2187500>;
        buck3_reg: BUCK3 {
                // BUCK5 in datasheet
                regulator-name = "BUCK3";
                regulator-min-microvolt = <700000>;
```

```
        buck3_reg: BUCK3 {
                // BUCK5 in datasheet
                regulator-name = "BUCK3";
                regulator-min-microvolt = <700000>;
                regulator-max-microvolt = <1350000>;
                regulator-boot-on;
                regulator-always-on;
        };

        buck4_reg: regulator@3 {
                reg = <3>;
                regulator-compatible = "buck4";
                regulator-min-microvolt = <600000>;
                regulator-max-microvolt = <3400000>;
        buck4_reg: BUCK4 {
                // BUCK6 in datasheet
                regulator-name = "BUCK4";
                regulator-min-microvolt = <3000000>;
                regulator-max-microvolt = <3300000>;
                regulator-boot-on;
                regulator-always-on;
        };

        buck5_reg: regulator@4 {
                reg = <4>;
                regulator-compatible = "buck5";
                regulator-min-microvolt = <600000>;
                regulator-max-microvolt = <3400000>;
        buck5_reg: BUCK5 {
                // BUCK7 in datasheet
                regulator-name = "BUCK5";
                regulator-min-microvolt = <1605000>;
                regulator-max-microvolt = <1995000>;
                regulator-boot-on;
                regulator-always-on;
        };

        buck6_reg: regulator@5 {
                reg = <5>;
                regulator-compatible = "buck6";
                regulator-min-microvolt = <600000>;
                regulator-max-microvolt = <3400000>;
        buck6_reg: BUCK6 {
                // BUCK8 in datasheet
                regulator-name = "BUCK6";
                regulator-min-microvolt = <800000>;
                regulator-max-microvolt = <1400000>;
                regulator-boot-on;
                regulator-always-on;
```

```
    };

    ldo1_reg: regulator@6 {
            reg = <6>;
            regulator-compatible = "ldo1";
            regulator-min-microvolt = <1600000>;
    ldo1_reg: LDO1 {
            regulator-name = "LDO1";
            regulator-min-microvolt = <3000000>;
            regulator-max-microvolt = <3300000>;
            regulator-boot-on;
            regulator-always-on;
    };

    ldo2_reg: regulator@7 {
            reg = <7>;
            regulator-compatible = "ldo2";
            regulator-min-microvolt = <800000>;
            regulator-max-microvolt = <1150000>;
    ldo2_reg: LDO2 {
            regulator-name = "LDO2";
            regulator-min-microvolt = <900000>;
            regulator-max-microvolt = <900000>;
            regulator-boot-on;
            regulator-always-on;
    };

    ldo3_reg: regulator@8 {
            reg = <8>;
            regulator-compatible = "ldo3";
            regulator-min-microvolt = <800000>;
    ldo3_reg: LDO3 {
            regulator-name = "LDO3";
            regulator-min-microvolt = <1800000>;
            regulator-max-microvolt = <3300000>;
            regulator-boot-on;
            regulator-always-on;
    };

    ldo4_reg: regulator@9 {
            reg = <9>;
            regulator-compatible = "ldo4";
            regulator-min-microvolt = <800000>;
            regulator-max-microvolt = <3300000>;
    ldo4_reg: LDO4 {
            regulator-name = "LDO4";
            regulator-min-microvolt = <900000>;
            regulator-max-microvolt = <1800000>;
```

```
        };

        ldo5_reg: regulator@10 {
                reg = <10>;
                regulator-compatible = "ldo5";
                regulator-min-microvolt = <1800000>;
                regulator-max-microvolt = <3300000>;
        ldo6_reg: LDO6 {
                regulator-name = "LDO6";
                regulator-min-microvolt = <900000>;
                regulator-max-microvolt = <1800000>;
                regulator-boot-on;
                regulator-always-on;
        };

};
```

https://source.codeaurora.org/external/imx/linux-imx/tree/arch/arm64/boot/dts/freescale/imx8mm-evk.dts?h=imx_5.4.47_2.2.0 DST reference here

```
&i2c1 {
        clock-frequency = <400000>;
        pinctrl-names = "default";
        pinctrl-0 = <&pinctrl_i2c1>;
        status = "okay";

        pmic@4b {
                compatible = "rohm,bd71847";
                reg = <0x4b>;
                pinctrl-0 = <&pinctrl_pmic>;
                interrupt-parent = <&gpio1>;
                interrupts = <3 GPIO_ACTIVE_LOW>;
                rohm,reset-snvs-powered;

                regulators {
                        buck1_reg: BUCK1 {
                                regulator-name = "BUCK1";
                                regulator-min-microvolt = <700000>;
                                regulator-max-microvolt = <1300000>;
                                regulator-boot-on;
                                regulator-always-on;
                                regulator-ramp-delay = <1250>;
                        };

                        buck2_reg: BUCK2 {
                                regulator-name = "BUCK2";
                                regulator-min-microvolt = <700000>;
                                regulator-max-microvolt = <1300000>;
                                regulator-boot-on;
                                regulator-always-on;
                                regulator-ramp-delay = <1250>;
                                rohm,dvs-run-voltage = <1000000>;
                                rohm,dvs-idle-voltage = <900000>;
                        };

                        buck3_reg: BUCK3 {
                                // BUCK5 in datasheet
                                regulator-name = "BUCK3";
                                regulator-min-microvolt = <700000>;
                                regulator-max-microvolt = <1350000>;
                                regulator-boot-on;
                                regulator-always-on;
                        };

                        buck4_reg: BUCK4 {
                                // BUCK6 in datasheet
                                regulator-name = "BUCK4";
                                regulator-min-microvolt = <3000000>;
                                regulator-max-microvolt = <3300000>;
                                regulator-boot-on;
```

Check the last item → Note 1

```
u-boot-imx$ git diff board/freescale/imx8mm_evk/spl.c
diff --git a/board/freescale/imx8mm_evk/spl.c b/board/freescale/imx8mm_evk/spl.c
index 4ca63ff1ba..0bb81dd8cb 100644
--- a/board/freescale/imx8mm_evk/spl.c
+++ b/board/freescale/imx8mm_evk/spl.c
@@ -21,9 +21,10 @@
 #include <asm/arch/ddr.h>

 #include <power/pmic.h>
-#ifdef CONFIG_POWER_PCA9450
-#include <power/pca9450.h>
-#else
+//#ifdef CONFIG_POWER_PCA9450
+//#include <power/pca9450.h>
+//#else
+#ifdef CONFIG_POWER_BD71837
 #include <power/bd71837.h>
 #endif
 #include <asm/mach-imx/gpio.h>
@@ -192,8 +193,10 @@ int board_mmc_getcd(struct mmc *mmc)

 #ifdef CONFIG_POWER
 #define I2C_PMIC       0
-#ifdef CONFIG_POWER_PCA9450
-int power_init_board(void)
+//#ifdef CONFIG_POWER_PCA9450
+#ifdef CONFIG_POWER_BD71837
+#if 0
+/*int power_init_board(void)
 {
        struct pmic *p;
        int ret;
@@ -226,13 +229,14 @@ int power_init_board(void)
        pmic_reg_write(p, PCA9450_RESET_CTRL, 0xA1);

        return 0;
-}
-#else
-int power_init_board(void)
+}*/
+#endif
+//#else
+int power_init_board(void)
 {
        struct pmic *p;
        int ret;
-
+
+       printf("power_init_board in coming\r\n");
        ret = power_bd71837_init(I2C_PMIC);
        if (ret)
                printf("power init failed");
(END)
```

```
[redacted]/u-boot-imx$ git diff configs/imx8mm_evk_defconfig
diff --git a/configs/imx8mm_evk_defconfig b/configs/imx8mm_evk_defconfig
index 5a1ba35659..cbc45bd8bb 100644
--- a/configs/imx8mm_evk_defconfig
+++ b/configs/imx8mm_evk_defconfig
@@ -128,6 +128,7 @@ CONFIG_FEC_MXC=y
 CONFIG_MII=y
 CONFIG_PINCTRL=y
 CONFIG_PINCTRL_IMX8M=y
+CONFIG_SPL_DM_PMIC_BD71837=y
 CONFIG_DM_REGULATOR=y
 CONFIG_DM_REGULATOR_FIXED=y
 CONFIG_DM_REGULATOR_GPIO=y
[redacted]/u-boot-imx$ git diff include/configs/imx8mm_evk.h
diff --git a/include/configs/imx8mm_evk.h b/include/configs/imx8mm_evk.h
index 34c37e942e..652f3f4539 100644
--- a/include/configs/imx8mm_evk.h
+++ b/include/configs/imx8mm_evk.h
@@ -34,7 +34,8 @@
 #define CONFIG_POWER
 #define CONFIG_POWER_I2C
 #if defined(CONFIG_IMX8M_LPDDR4) && defined(CONFIG_TARGET_IMX8MM_EVK)
-#define CONFIG_POWER_PCA9450
+// #define CONFIG_POWER_PCA9450
+#define CONFIG_POWER_BD71837
 #else
 #define CONFIG_POWER_BD71837
 #endif
```

Terminal

Porting Step of Linux (Linux version 5.10.72)

```
                                                    sources/linux-imx$ git status
On branch A100_develop
Your branch is up to date with 'origin/A100_develop'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   arch/arm64/boot/dts/freescale/imx8mm-evk.dtsi
        modified:   arch/arm64/configs/imx_v8_defconfig
        modified:   drivers/clk/Makefile
        modified:   drivers/mfd/rohm-bd718x7.c

no changes added to commit (use "git add" and/or "git commit -a")
                                                   /sources/linux-imx$
```

```
sources/linux-imx$ git diff arch/arm64/boot/dts/freescale/imx8mm-evk.dtsi
diff --git a/arch/arm64/boot/dts/freescale/imx8mm-evk.dtsi b/arch/arm64/boot/dts/freescale/imx8mm-evk.dtsi
index 7bb3541a1b41..9668388a3b7e 100755
--- a/arch/arm64/boot/dts/freescale/imx8mm-evk.dtsi
+++ b/arch/arm64/boot/dts/freescale/imx8mm-evk.dtsi
@@ -234,70 +234,82 @@
        status = "okay";

        pmic_nxp: pca9450@25 {
-               compatible = "nxp,pca9450a";
+               compatible = "nxp,pca9450a0819";
                reg = <0x25>;
                pinctrl-0 = <&pinctrl_pmic>;
                pinctrl-names = "default";
                interrupt-parent = <&gpio1>;
                interrupts = <3 IRQ_TYPE_LEVEL_LOW>;

+       };
+       pmic@4b {
+               compatible = "rohm,bd71847";
+               reg = <0x4b>;
+               pinctrl-0 = <&pinctrl_pmic>;
+               interrupt-parent = <&gpio1>;
+               interrupts = <3 GPIO_ACTIVE_LOW>;
+               rohm,reset-snvs-powered;
+
                regulators {
-                       buck1_reg: BUCK1 {
+                       buck1_reg: BUCK1 {
                                regulator-name = "BUCK1";
-                               regulator-min-microvolt = <600000>;
-                               regulator-max-microvolt = <2187500>;
+                               regulator-min-microvolt = <700000>;
+                               regulator-max-microvolt = <1300000>;
                                regulator-boot-on;
                                regulator-always-on;
-                               regulator-ramp-delay = <3125>;
-                               nxp,dvs-run-voltage = <850000>;
-                               nxp,dvs-standby-voltage = <800000>;
+                               regulator-ramp-delay = <1250>;
                        };

                        buck2_reg: BUCK2 {
                                regulator-name = "BUCK2";
-                               regulator-min-microvolt = <600000>;
-                               regulator-max-microvolt = <2187500>;
+                               regulator-min-microvolt = <700000>;
+                               regulator-max-microvolt = <1300000>;
                                regulator-boot-on;
                                regulator-always-on;
```

Check the last item → Note 2

Check the last item → Note 3

Help

```
            regulator-ramp-delay = <3125>;
            regulator-ramp-delay = <1250>;
            rohm,dvs-run-voltage = <1000000>;
            rohm,dvs-idle-voltage = <900000>;
    };

    buck3_reg: BUCK3 {
    buck3_reg: BUCK3 {
            // BUCK5 in datasheet
            regulator-name = "BUCK3";
            regulator-min-microvolt = <600000>;
            regulator-max-microvolt = <2187500>;
            regulator-min-microvolt = <700000>;
            regulator-max-microvolt = <1350000>;
            regulator-boot-on;
            regulator-always-on;
    };

    buck4_reg: BUCK4 {
            // BUCK6 in datasheet
            regulator-name = "BUCK4";
            regulator-min-microvolt = <600000>;
            regulator-max-microvolt = <3400000>;
            regulator-min-microvolt = <3000000>;
            regulator-max-microvolt = <3300000>;
            regulator-boot-on;
            regulator-always-on;
    };

    buck5_reg: BUCK5 {
            // BUCK7 in datasheet
            regulator-name = "BUCK5";
            regulator-min-microvolt = <600000>;
            regulator-max-microvolt = <3400000>;
            regulator-min-microvolt = <1605000>;
            regulator-max-microvolt = <1995000>;
            regulator-boot-on;
            regulator-always-on;
    };

    buck6_reg: BUCK6 {
            // BUCK8 in datasheet
            regulator-name = "BUCK6";
            regulator-min-microvolt = <600000>;
            regulator-max-microvolt = <3400000>;
            regulator-min-microvolt = <800000>;
            regulator-max-microvolt = <1400000>;
            regulator-boot-on;
            regulator-always-on;
```

```
    };

    ldo1_reg: LDO1 {
    ldo1_reg: LDO1 {
            regulator-name = "LDO1";
            regulator-min-microvolt = <1600000>;
            regulator-max-microvolt = <3300000>;
            regulator-max-microvolt = <1900000>;
            regulator-boot-on;
            regulator-always-on;
    };

    ldo2_reg: LDO2 {
            regulator-name = "LDO2";
            regulator-min-microvolt = <800000>;
            regulator-max-microvolt = <1150000>;
            regulator-max-microvolt = <900000>;
            regulator-boot-on;
            regulator-always-on;
    };

    ldo3_reg: LDO3 {
            regulator-name = "LDO3";
            regulator-min-microvolt = <800000>;
            regulator-min-microvolt = <1800000>;
            regulator-max-microvolt = <3300000>;
            regulator-boot-on;
            regulator-always-on;


    ldo4_reg: LDO4 {
            regulator-name = "LDO4";
            regulator-min-microvolt = <800000>;
            regulator-max-microvolt = <3300000>;
            regulator-min-microvolt = <900000>;
            regulator-max-microvolt = <1800000>;
            regulator-boot-on;
            regulator-always-on;
    };

    ldo5_reg: LDO5 {
            regulator-name = "LDO5";
            regulator-min-microvolt = <1800000>;
            regulator-max-microvolt = <3300000>;
    ldo6_reg: LDO6 {
            regulator-name = "LDO6";
            regulator-min-microvolt = <900000>;
            regulator-max-microvolt = <1800000>;
            regulator-boot-on;
```

```
sources/linux-imx$ git diff drivers/clk/Makefile
diff --git a/drivers/clk/Makefile b/drivers/clk/Makefile
old mode 100644
new mode 100755
index 8a52da49c99a..4a1f22c0ce21
--- a/drivers/clk/Makefile
+++ b/drivers/clk/Makefile
@@ -21,7 +21,7 @@ endif
 obj-$(CONFIG_MACH_ASM9260)              += clk-asm9260.o
 obj-$(CONFIG_COMMON_CLK_AXI_CLKGEN)     += clk-axi-clkgen.o
 obj-$(CONFIG_ARCH_AXXIA)                += clk-axm5516.o
-obj-$(CONFIG_COMMON_CLK_BD718XX)        += clk-bd718x7.o
+# obj-$(CONFIG_COMMON_CLK_BD718XX)      += clk-bd718x7.o
 obj-$(CONFIG_COMMON_CLK_BM1880)                 += clk-bm1880.o
 obj-$(CONFIG_COMMON_CLK_CDCE706)        += clk-cdce706.o
 obj-$(CONFIG_COMMON_CLK_CDCE925)        += clk-cdce925.o
sources/linux-imx$
```

```
sources/linux-imx$ git diff drivers/mfd/rohm-bd718x7.c
diff --git a/drivers/mfd/rohm-bd718x7.c b/drivers/mfd/rohm-bd718x7.c
old mode 100644
new mode 100755
index c32c1b6c98fa..d0e581427024
--- a/drivers/mfd/rohm-bd718x7.c
+++ b/drivers/mfd/rohm-bd718x7.c
@@ -136,8 +136,8 @@ static int bd718xx_i2c_probe(struct i2c_client *i2c,
        int ret;
        unsigned int chip_type;
        struct mfd_cell *mfd;
-       int cells;
-
+       int cells;
+       printk("bd718xx_i2c_probe plugin finish xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx 0830 -22222222222222222222 xxxxxxxxxxxxxx\r\n");
        if (!i2c->irq) {
                dev_err(&i2c->dev, "No IRQ configured\n");
                return -EINVAL;
sources/linux-imx$
```

This is check by myself

Booting Log

```
[    2.089823] lib80211_crypt: registered algorithm 'WEP'
[    2.089826] lib80211_crypt: registered algorithm 'CCMP'
[    2.089830] lib80211_crypt: registered algorithm 'TKIP'
[    2.089918] 9pnet: Installing 9P2000 support
[    2.094226] tsn generic netlink module v1 init...
[    2.099009] Key type dns_resolver registered
[    2.104201] registered taskstats version 1
[    2.108312] Loading compiled-in X.509 certificates
[    2.134991] usb_phy_generic usbphynop1: supply vcc not found, using dummy regulator
[    2.142943] usb_phy_generic usbphynop2: supply vcc not found, using dummy regulator
[    2.152838] bd718xx_i2c_probe plugin finish xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx 0830 -2222222222222222222222 xxxxxxxxxxxxxxx
[    2.231255] LDO6: supplied by regulator-dummy
[    2.238559] i2c i2c-0: IMX I2C adapter registered
[    2.245135] adv7511 1-003d: supply avdd not found, using dummy regulator
[    2.251982] adv7511 1-003d: supply dvdd not found, using dummy regulator
[    2.258739] adv7511 1-003d: supply pvdd not found, using dummy regulator
[    2.265503] adv7511 1-003d: supply a2vdd not found, using dummy regulator
[    2.272330] adv7511 1-003d: supply v3p3 not found, using dummy regulator
[    2.279075] adv7511 1-003d: supply v1p2 not found, using dummy regulator
[    2.287485] adv7511 1-003d: Probe failed. Remote port 'mipi_dsi@32e10000' disabled
[    2.299913] i2c i2c-1: IMX I2C adapter registered
[    2.306162] pca953x 2-0020: using no AI
[    2.316374] ak4458 2-0010: Failed to request supplies: -517
[    2.322392] ak4458 2-0012: Failed to request supplies: -517
[    2.332750] ak5558 2-0013: Failed to request supplies: -517
[    2.341587] ak4458 2-0011: Failed to request supplies: -517
[    2.347753] ov5640_mipi 2-003c: No sensor reset pin available
[    2.353553] ov5640_mipi 2-003c: supply DOVDD not found, using dummy regulator
[    2.360802] ov5640_mipi 2-003c: supply DVDD not found, using dummy regulator
[    2.367893] ov5640_mipi 2-003c: supply AVDD not found, using dummy regulator
[    2.383919] ov5640_mipi 2-003c: Read reg error: reg=300a
[    2.389239] ov5640_mipi 2-003c: Camera is not found
[    2.394343] i2c i2c-2: IMX I2C adapter registered
[    2.400778] SoC: i.MX8MM revision 1.0
```

Verify and testing

```
# dmesg
[    0.000000] Booting Linux on physical CPU 0x0000000000 [0x410fd034]
[    0.000000] Linux version 5.10.72-lts-5.10.y+ga68e31b63f86 (oe-user@oe-host) (aarch64-poky-linux-gcc (GCC) 10.2.0, GNU ld (GNU Binutils) 2.36.1
.20210209) #1 SMP PREEMPT Tue Apr 5 23:00:00 UTC 2011
[    0.000000] Machine model: FSL i.MX8MM EVK board
[    0.000000] efi: UEFI not found.
[    0.000000] Reserved memory: created CMA memory pool at 0x0000000096000000, size 640 MiB
[    0.000000] OF: reserved mem: initialized node linux,cma, compatible id shared-dma-pool
[    0.000000] NUMA: No NUMA configuration found
[    0.000000] NUMA: Faking a node at [mem 0x0000000040000000-0x00000000bdffffff]
[    0.000000] NUMA: NODE_DATA [mem 0x95bda700-0x95bdcfff]
[    0.000000] Zone ranges:
[    0.000000]   DMA      [mem 0x0000000040000000-0x00000000bdffffff]
[    0.000000]   DMA32    empty
[    0.000000]   Normal   empty
[    0.000000] Movable zone start for each node
[    0.000000] Early memory node ranges
[    0.000000]   node   0: [mem 0x0000000040000000-0x00000000bdffffff]
[    0.000000] Initmem setup node 0 [mem 0x0000000040000000-0x00000000bdffffff]
```

```
                /# i2cdetect -r -y 0
     0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f
00:                         -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- UU -- -- -- --
50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: -- -- -- -- -- -- -- --
```

```
[redacted]/sys/bus/i2c/devices# ls -al
total 0
drwxr-xr-x 2 root root 0 Mar 24 10:25 .
drwxr-xr-x 4 root root 0 Mar 24 10:25 ..
lrwxrwxrwx 1 root root 0 Mar 24 10:25 0-0025 -> ../../../devices/platform/soc@0/30800000.bus/30a20000.i2c/i2c-0/0-0025
lrwxrwxrwx 1 root root 0 Mar 24 10:25 0-004b -> ../../../devices/platform/soc@0/30800000.bus/30a20000.i2c/i2c-0/0-004b
lrwxrwxrwx 1 root root 0 Mar 24 10:25 1-003d -> ../../../devices/platform/soc@0/30800000.bus/30a30000.i2c/i2c-1/1-003d
lrwxrwxrwx 1 root root 0 Mar 24 10:25 1-0050 -> ../../../devices/platform/soc@0/30800000.bus/30a30000.i2c/i2c-1/1-0050
lrwxrwxrwx 1 root root 0 Mar 24 10:25 2-0010 -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-0010
lrwxrwxrwx 1 root root 0 Mar 24 10:25 2-0011 -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-0011
lrwxrwxrwx 1 root root 0 Mar 24 10:25 2-0012 -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-0012
lrwxrwxrwx 1 root root 0 Mar 24 10:25 2-0013 -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-0013
lrwxrwxrwx 1 root root 0 Mar 24 10:25 2-0020 -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-0020
lrwxrwxrwx 1 root root 0 Mar 24 10:25 2-003c -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-003c
lrwxrwxrwx 1 root root 0 Mar 24 10:25 i2c-0 -> ../../../devices/platform/soc@0/30800000.bus/30a20000.i2c/i2c-0
lrwxrwxrwx 1 root root 0 Mar 24 10:25 i2c-1 -> ../../../devices/platform/soc@0/30800000.bus/30a30000.i2c/i2c-1
lrwxrwxrwx 1 root root 0 Mar 24 10:25 i2c-2 -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2
[redacted]/sys/bus/i2c/devices# cd 0-004b
[redacted]/sys/bus/i2c/devices/0-004b# ls -al
total 0
drwxr-xr-x  7 root root    0 Mar 24 10:25 .
drwxr-xr-x  6 root root    0 Mar 24 10:25 ..
drwxr-xr-x  3 root root    0 Mar 24 10:25 bd71847-clk.2.auto
drwxr-xr-x  3 root root    0 Mar 24 10:25 bd71847-pmic.3.auto
-r--r--r--  1 root root 4096 Mar 24 10:27 consumers
lrwxrwxrwx  1 root root    0 Mar 24 10:27 driver -> ../../../../../../../bus/i2c/drivers/rohm-bd718x7
drwxr-xr-x  3 root root    0 Mar 24 10:25 gpio-keys.1.auto
-r--r--r--  1 root root 4096 Mar 24 10:27 modalias
-r--r--r--  1 root root 4096 Mar 24 10:25 name
lrwxrwxrwx  1 root root    0 Mar 24 10:27 of_node -> ../../../../../../../firmware/devicetree/base/soc@0/bus@30800000/i
drwxr-xr-x  2 root root    0 Mar 24 10:27 power
drwxr-xr-x 14 root root    0 Mar 24 10:25 regulator
lrwxrwxrwx  1 root root    0 Mar 24 10:25 subsystem -> ../../../../../../../bus/i2c
-r--r--r--  1 root root 4096 Mar 24 10:27 suppliers
-rw-r--r--  1 root root 4096 Mar 24 10:25 uevent
[redacted]/sys/bus/i2c/devices/0-004b#
```

```
[redacted]:/sys/bus/i2c/devices/0-004b# cat name
bd71847
[redacted]:/sys/bus/i2c/devices/0-004b# cd regulator/
[redacted]:/sys/bus/i2c/devices/0-004b/regulator# ls -al
total 0
drwxr-xr-x 14 root root 0 Mar 24 10:25 .
drwxr-xr-x  7 root root 0 Mar 24 10:25 ..
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.10
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.11
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.12
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.13
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.14
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.15
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.4
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.5
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.6
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.7
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.8
drwxr-xr-x  3 root root 0 Mar 24 10:25 regulator.9
[redacted]:/sys/bus/i2c/devices/0-004b/regulator#
```

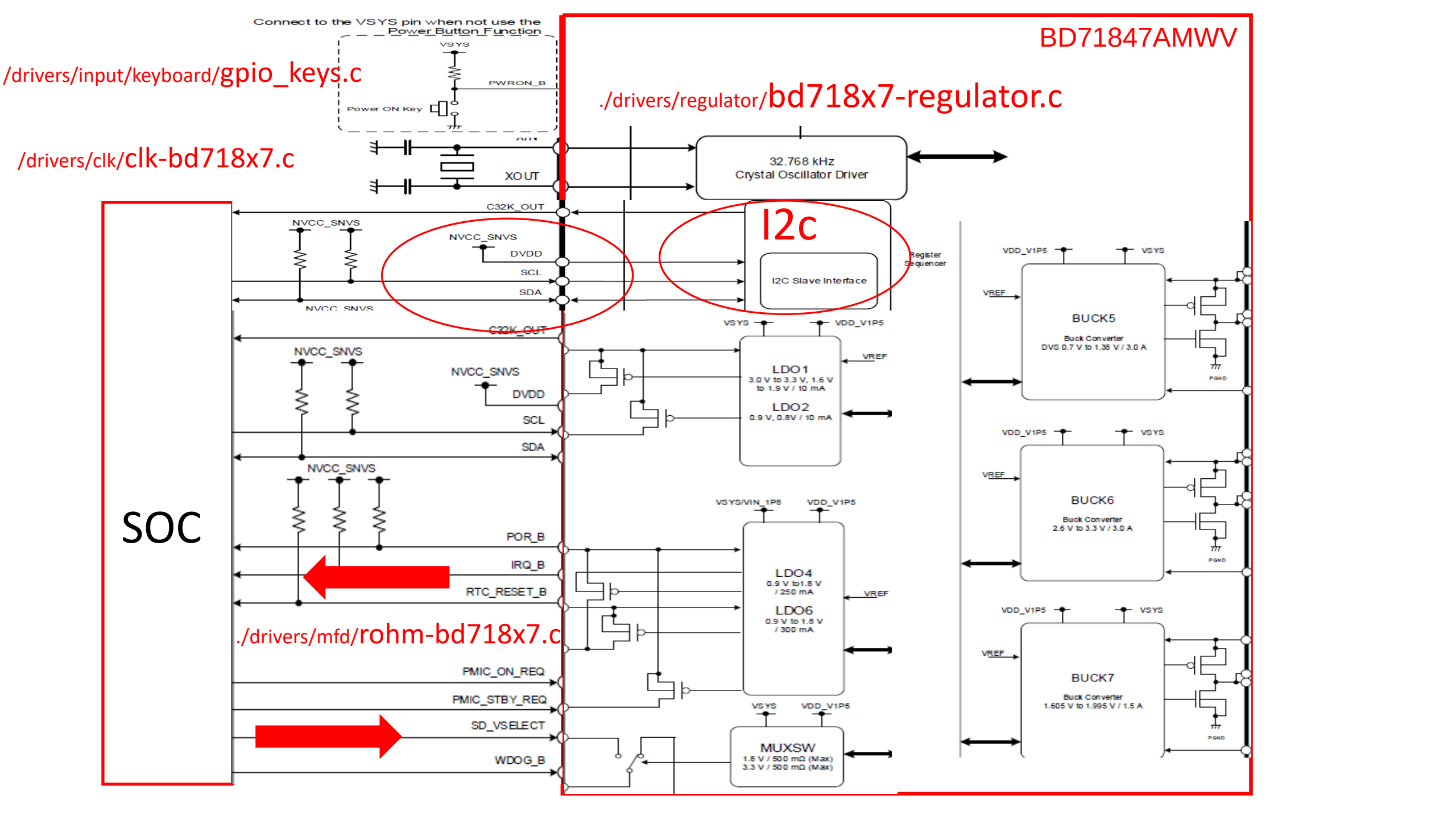
Note

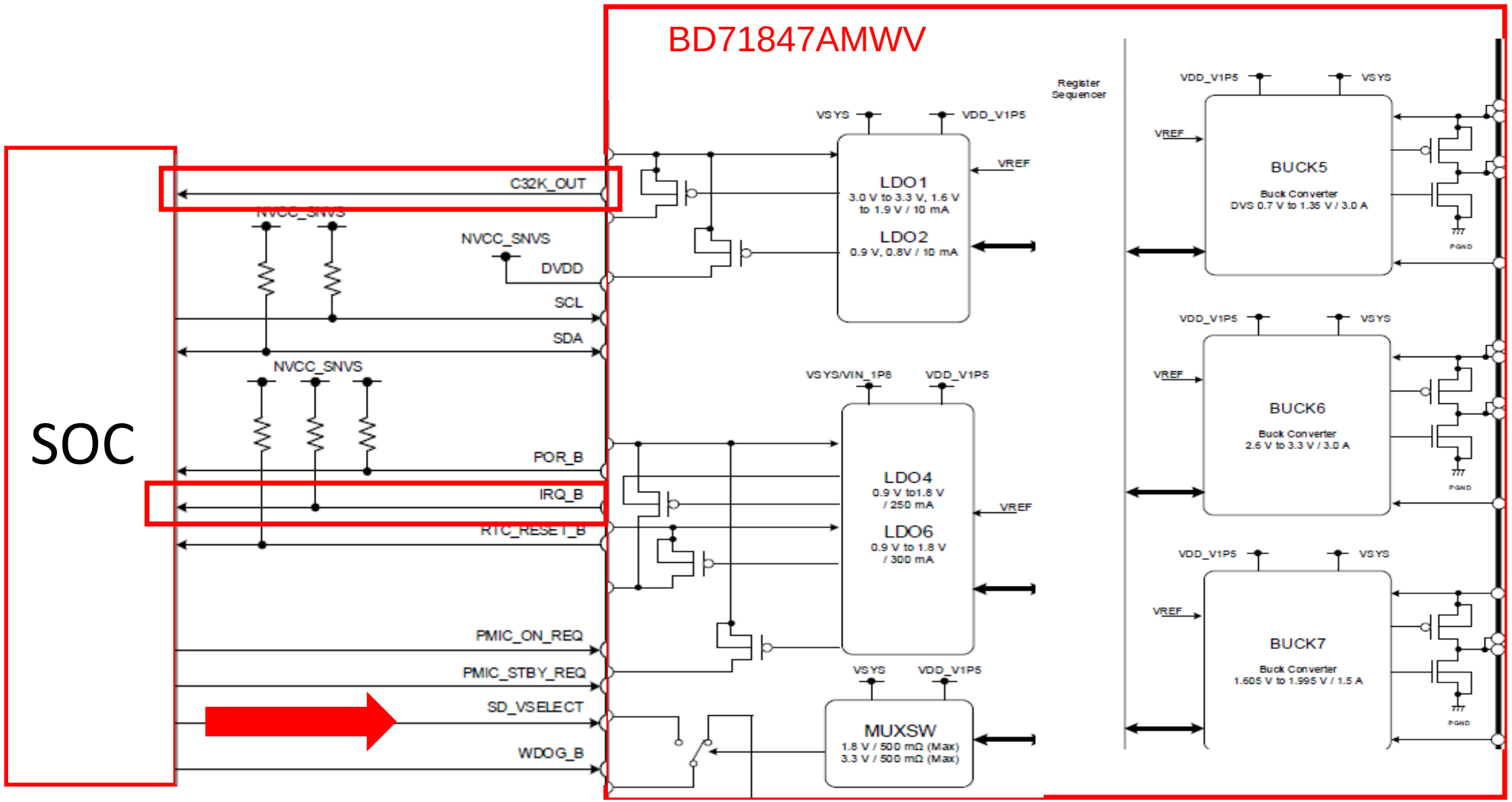
Note 1

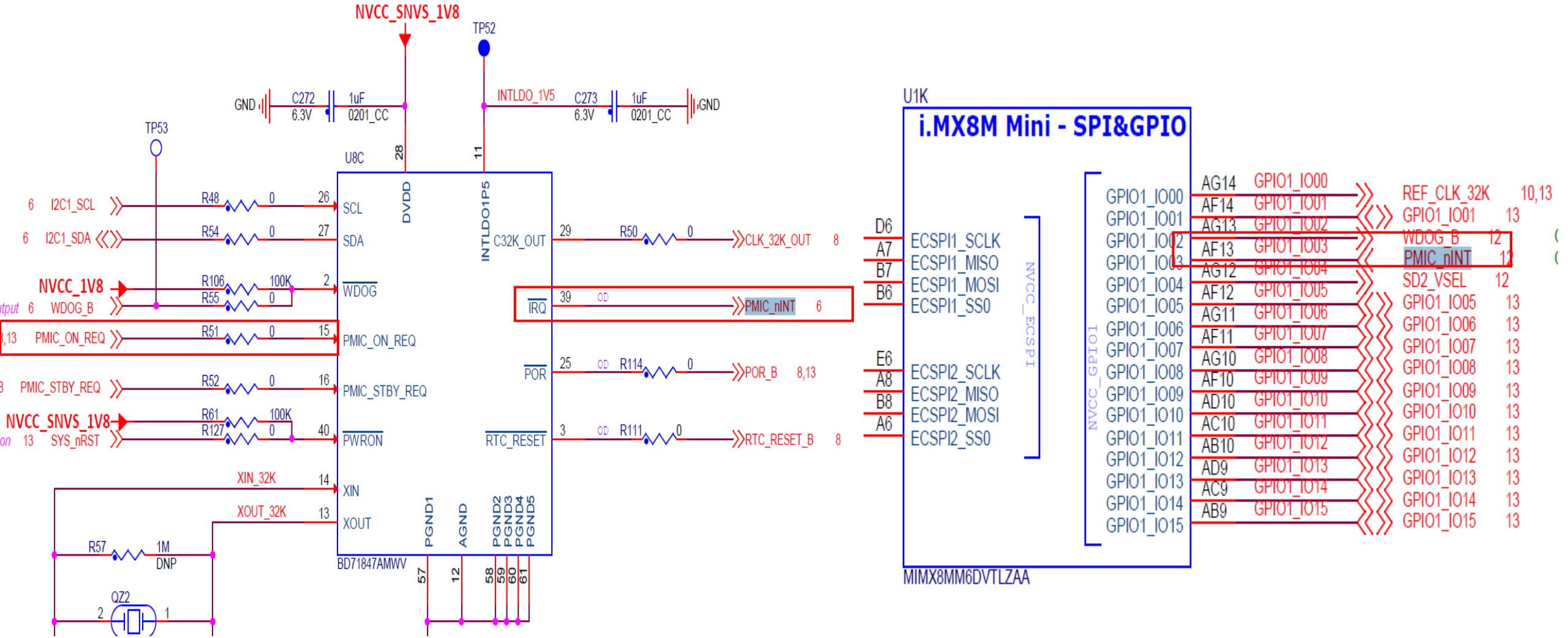
```
pmic: pmic@4b {
        compatible = "rohm,bd71847";
        reg = <0x4b>;
        pinctrl-names = "default";
        pinctrl-0 = <&pinctrl_pmic>;
        gpio_intr = <&gpio1 3 GPIO_ACTIVE_LOW>;
        interrupt-parent = <&gpio1>;
        interrupts = <3 IRQ_TYPE_LEVEL_LOW>;
        rohm,reset-snvs-powered;
```

Check the last item → Note 1

Interrupt 3 of GPIO1 . This is PMIC_n_INT . It shall configured according your board


/drivers/input/keyboard/gpio_keys.c
/drivers/clk/clk-bd718x7.c
./drivers/regulator/bd718x7-regulator.c
./drivers/mfd/rohm-bd718x7.c
BD71847AMWV
SOC
Connect to the VSYS pin when not use the Power Button Function
VSYS
PWRON_B
Power ON Key
XIN
XOUT
32.768 kHz
Crystal Oscillator Driver
C32K_OUT
NVCC_SNVS
DVDD
SCL
SDA
I2C
I2C Slave Interface
Register Sequencer
VSYS
VDD_V1P5
LDO1
3.0 V to 3.3 V, 1.6 V to 1.9 V / 10 mA
LDO2
0.9 V, 0.8V / 10 mA
VREF
VSYS/VIN_1P8
LDO4
0.9 V to1.8 V / 250 mA
LDO6
0.9 V to 1.8 V / 300 mA
MUXSW
1.8 V / 500 mΩ (Max)
3.3 V / 500 mΩ (Max)
POR_B
IRQ_B
RTC_RESET_B
PMIC_ON_REQ
PMIC_STBY_REQ
SD_VSELECT
WDOG_B
BUCK5
Buck Converter
DVS 0.7 V to 1.35 V / 3.0 A
BUCK6
Buck Converter
2.6 V to 3.3 V / 3.0 A
BUCK7
Buck Converter
1.605 V to 1.995 V / 1.5 A
PGND


BD71847AMWV
SOC
C32K_OUT
NVCC_SNVS
NVCC_SNVS
DVDD
SCL
SDA
NVCC_SNVS
POR_B
IRQ_B
RTC_RESET_B
PMIC_ON_REQ
PMIC_STBY_REQ
SD_VSELECT
WDOG_B
Register Sequencer
VSYS
VDD_V1P5
VREF
LDO1
3.0 V to 3.3 V, 1.6 V to 1.9 V / 10 mA
LDO2
0.9 V, 0.8V / 10 mA
VSYS/VIN_1P8
LDO4
0.9 V to1.8 V / 250 mA
LDO6
0.9 V to 1.8 V / 300 mA
MUXSW
1.8 V / 500 mΩ (Max)
3.3 V / 500 mΩ (Max)
BUCK5
Buck Converter
DVS 0.7 V to 1.35 V / 3.0 A
BUCK6
Buck Converter
2.6 V to 3.3 V / 3.0 A
BUCK7
Buck Converter
1.605 V to 1.995 V / 1.5 A
PGND


NVCC_SNVS_1V8
TP52
TP53
GND
C272
6.3V
1uF
0201_CC
INTLDO_1V5
C273
6.3V
1uF
0201_CC
GND
U8C
28
11
DVDD
INTLDO1P5
6 I2C1_SCL
R48
0
26
SCL
6 I2C1_SDA
R54
0
27
SDA
NVCC_1V8
R106
100K
R55
0
2
WDOG
WDOG_B
R51
0
15
PMIC_ON_REQ
PMIC_ON_REQ
PMIC_STBY_REQ
R52
0
16
PMIC_STBY_REQ
NVCC_SNVS_1V8
R61
100K
R127
0
40
PWRON
SYS_nRST
XIN_32K
14
XIN
XOUT_32K
13
XOUT
R57
1M
DNP
QZ2
2
1
C32K_OUT
29
R50
0
CLK_32K_OUT
8
IRQ
39
OD
PMIC_nINT
6
POR
25
OD
R114
0
POR_B
8,13
RTC_RESET
3
OD
R111
0
RTC_RESET_B
8
PGND1
AGND
PGND2
PGND3
PGND4
PGND5
57
12
58
59
60
61
BD71847AMWV
U1K
i.MX8M Mini - SPI&GPIO
D6
A7
B7
B6
ECSPI1_SCLK
ECSPI1_MISO
ECSPI1_MOSI
ECSPI1_SS0
NVCC_ECSPI
E6
A8
B8
A6
ECSPI2_SCLK
ECSPI2_MISO
ECSPI2_MOSI
ECSPI2_SS0
NVCC_GPIO1
GPIO1_IO00
GPIO1_IO01
GPIO1_IO02
GPIO1_IO03
GPIO1_IO04
GPIO1_IO05
GPIO1_IO06
GPIO1_IO07
GPIO1_IO08
GPIO1_IO09
GPIO1_IO10
GPIO1_IO11
GPIO1_IO12
GPIO1_IO13
GPIO1_IO14
GPIO1_IO15
AG14 GPIO1_IO00
AF14 GPIO1_IO01
AG13 GPIO1_IO02
AF13 GPIO1_IO03
AG12 GPIO1_IO04
AF12 GPIO1_IO05
AG11 GPIO1_IO06
AF11 GPIO1_IO07
AG10 GPIO1_IO08
AF10 GPIO1_IO09
AD10 GPIO1_IO10
AC10 GPIO1_IO11
AB10 GPIO1_IO12
AD9 GPIO1_IO13
AC9 GPIO1_IO14
AB9 GPIO1_IO15
REF_CLK_32K 10,13
GPIO1_IO01 13
WDOG_B 12
PMIC_nINT 12
SD2_VSEL 12
GPIO1_IO05 13
GPIO1_IO06 13
GPIO1_IO07 13
GPIO1_IO08 13
GPIO1_IO09 13
GPIO1_IO10 13
GPIO1_IO11 13
GPIO1_IO12 13
GPIO1_IO13 13
GPIO1_IO14 13
GPIO1_IO15 13
MIMX8MM6DVTLZAA

Note 2

```
@@ -234,70 +234,82 @@
        status = "okay";

        pmic_nxp: pca9450@25 {
-               compatible = "nxp,pca9450a";
+               compatible = "nxp,pca9450a0819";
                reg = <0x25>;
                pinctrl-0 = <&pinctrl_pmic>;
                pinctrl-names = "default";
                interrupt-parent = <&gpio1>;
                interrupts = <3 IRQ_TYPE_LEVEL_LOW>;

+       };
```

Check the last item ➔ Note 2

It shall keep it because of compiler error. Other files will delete-note so let we keep there.

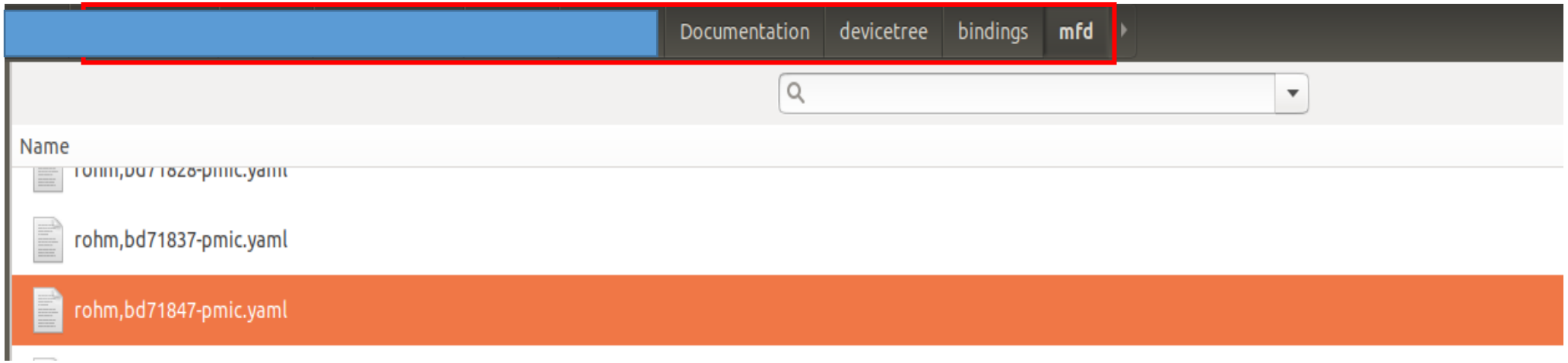
```
/sources/linux-imx$ grep -r -n -P "pmic_nxp" ./
/arch/arm64/boot/dts/freescale/imx8mm-evk.dtsi:236:     pmic_nxp: pca9450@25 {
/arch/arm64/boot/dts/freescale/imx8mm-ddr4-evk.dts:30:/delete-node/&pmic_nxp;
/arch/arm64/boot/dts/freescale/imx8mm-evk-qca-wifi.dts:14:/delete-node/&pmic_nxp;
/sources/linux-imx$
```

Note 3

```
pmic@4b {
        compatible = "rohm,bd71847";
        reg = <0x4b>;
        pinctrl-0 = <&pinctrl_pmic>;
        interrupt-parent = <&gpio1>;
        interrupts = <3 GPIO_ACTIVE_LOW>;
        rohm,reset-snvs-powered;
```

Check the last item ➔ Note 3

Reference the Document inside yocto project



This one is OK

```
pmic@4b {
        compatible = "rohm,bd71847";
        reg = <0x4b>;
        pinctrl-0 = <&pinctrl_pmic>;
        interrupt-parent = <&gpio1>;
        interrupts = <3 GPIO_ACTIVE_LOW>;
        rohm,reset-snvs-powered;
```

(1)

```
i2c {
    #address-cells = <1>;
    #size-cells = <0>;
    pmic: pmic@4b {
        compatible = "rohm,bd71847";
        reg = <0x4b>;
        interrupt-parent = <&gpio1>;
        interrupts = <29 IRQ_TYPE_LEVEL_LOW>;
        #clock-cells = <0>;
        clocks = <&osc 0>;
        rohm,reset-snvs-powered;
        rohm,short-press-ms = <10>;
        rohm,long-press-ms = <2000>;
```

(1)

(2)

(1) It shall configured according you board map to which interrupt

(2) Clocks configured shall mask it and no use or it will hang during booting.

(3) According the Linux 5.4.47, it only use these two items at imx_v8_defconfig

CONFIG_MFD_ROHM_BD718XX ➔ for BD71837/BD71847 core

CONFIG_REGULATOR_BD718XX ➔ for regulator control

~~CONFIG_COMMON_CLK_BD718XX ➔ for clock gate control~~

~~CONFIG_KEYBOARD_GPIO ➔ for reset induced by short press of power button.~~

Note 4

When you put these codes to build in you project you have to clean build kernel / u-boot . Then you can build your image smooth.

```
$ bitbake virtual/kernel -c cleansstate -f
Loading cache: 100% |#################################################################################################
################################| Time: 0:00:00
Loaded 4948 entries from dependency cache.
Parsing recipes: 100% |###############################################################################################
################################| Time: 0:00:01
Parsing of 3342 .bb files complete (3338 cached, 4 parsed). 4952 targets, 283 skipped, 3 masked, 0 errors.
NOTE: Resolving any missing task queue dependencies
```

```
$ bitbake virtual/kernel
Loading cache: 100% |#################################################################################################
################################| Time: 0:00:00
Loaded 4948 entries from dependency cache.
Parsing recipes: 100% |###############################################################################################
################################| Time: 0:00:01
Parsing of 3342 .bb files complete (3338 cached, 4 parsed). 4952 targets, 283 skipped, 3 masked, 0 errors.
NOTE: Resolving any missing task queue dependencies

Build Configuration:
```

```
$ bitbake imx-image-a100 -c cleansstate -f
Loading cache: 100% |################################################################################
################################| Time: 0:00:00
Loaded 4948 entries from dependency cache.
Parsing recipes: 100% |##############################################################################
################################| Time: 0:00:01
Parsing of 3342 .bb files complete (3338 cached, 4 parsed). 4952 targets, 283 skipped, 3 masked, 0 errors.
NOTE: Resolving any missing task queue dependencies
```

```
$ bitbake imx-image-a100
Loading cache: 100% |################################################################################
################################| Time: 0:00:00
Loaded 4948 entries from dependency cache.
Parsing recipes: 100% |##############################################################################
################################| Time: 0:00:01
Parsing of 3342 .bb files complete (3338 cached, 4 parsed). 4952 targets, 283 skipped, 3 masked, 0 errors.
NOTE: Resolving any missing task queue dependencies
NOTE: Multiple providers are available for runtime linux-firmware-bcm4359-pcie (firmware-nxp-wifi, linux-firmware)
Consider defining a PREFERRED_PROVIDER entry to match linux-firmware-bcm4359-pcie
```