in mv6270-toc-revb.dts

```
    pxai2c4: i2c@d4033000 {

        pinctrl-0 = <&i2c1_pins>;

        pinctrl-names = "default";

        status = "okay";

        polytouch: edt-ft5x06@38 {

            compatible = "edt,edt-ft5x06";

            reg = <0x38>;

            pinctrl-names = "default";

            interrupt-parent = <&gpio0>;

            interrupts = <92 0>;

            num-x = <1024>;

            num-y = <600>;

            invert-y = <1>;

            invert-x = <0>;

            reset-gpios = <&gpio0 93 0>;

        };

    };

};


&pinmux1 {

    i2c1_pins: pinmux_i2c1_pins {

        pinctrl-single,pins = <
```

```
            0x168 0x4  /* i2c4_sda */

            0x16C 0x4  /* i2c4_sclk */

        >;

        pinctrl-single,bias-pulldown = <PD_OFF>;

        pinctrl-single,bias-pullup = <PU_OFF>;

    };
```

in pegmatitle.dtsi

```
    pinmux1: pinmux@d401e000 {

        compatible = "pinconf-single";

        reg = <0 0xd401e000 0 0x03d0>;

        #address-cells = <1>;

        #size-cells = <0>;

        pinctrl-single,register-width = <32>;

        pinctrl-single,function-mask = <0x7>;

    };
```

经过合并以后
```
    i2c@d4033000 {

        compatible = "mrvl,pxa-i2c";

        reg = <0x0 0xd4033000 0x0 0x64>;

        interrupts = <0x0 0x38 0x4>;

        #address-cells = <0x1>;

        #size-cells = <0x0>;
```

```
        clocks = <0x29>;

        status = "okay";

        pinctrl-0 = <0x2a>;

        pinctrl-names = "default";



        edt-ft5x06@38 {

                compatible = "edt,edt-ft5x06";

                reg = <0x38>;

                pinctrl-names = "default";

                interrupt-parent = <0x13>;

                interrupts = <0x5c 0x0>;

                num-x = <0x400>;

                num-y = <0x258>;

                invert-y = <0x1>;

                invert-x = <0x0>;

                reset-gpios = <0x13 0x5d 0x0>;

        };

};



pinmux@d401e000 {

        compatible = "pinconf-single";

        reg = <0x0 0xd401e000 0x0 0x3d0>;

        #address-cells = <0x1>;

        #size-cells = <0x0>;

        pinctrl-single,register-width = <0x20>;
```

```
            pinctrl-single,function-mask = <0x7>;


    ......


            pinmux_i2c1_pins {

                    pinctrl-single,pins = <0x168 0x4 0x16c 0x4>;

                    pinctrl-single,bias-pulldown = <0x8000 0x8000 0x0 0xa000>;

                    pinctrl-single,bias-pullup = <0x8000 0x8000 0x0 0xc000>;

                    linux,phandle = <0x2a>;

                    phandle = <0x2a>;

            };

}
```

The I2C device (i2c@d4033000) use pinmux_i2c1_pins的pin configuration.

pinctrl-single,pins = <0x168 0x4 0x16c 0x4>;

means

The I2C device use the 2 pins.

One pin's configuration register is 0xd401e168 (32-bit), its FUNC_SEL value is 0x4.

32-bit is defined by pinctrl-single,register-width = <0x20>。

pinctrl-single,function-mask = <0x7>，0x7 is 111, mask the lowest 3 bits in pin's configuration register,

The lowest 3 bits is for FUNC_SEL.

The other is 0xd401e16c(32-bit), its FUNC_SEL value is 0x4.

Please refer to 88PA6270-Registers-RevA.pdf

IO_PAD90 Configuration Register

Note: 90 * 4 = 360 = 0x168

2:0   FUNC_SEL   R/W   0x0   Alternate Function Selection

These bits select which alternate function is active for this

pin. See the pinmux sheet for details.

000 - GPIOC[26](reserved for GPIO)

001 - LD_Ctrl[8]

010 - DCMTR3_P[0]

011 - UPC_PEN[22]

100 - I2C4_SDA

101 - N.A.

110 - SCCP1_D[3]

111 - SCCP0_D[3]

100 = 4, select I2C4 SDA pin.

The other pin (0xd401e16c) is for selecting I2C4_SCLK function.

100 - I2C4_SCLK

pinctrl-single,bias-pulldown = <0x8000 0x8000 0x0 0xa000>;

pinctrl-single,bias-pullup = <0x8000 0x8000 0x0 0xc000>;

According to the description in Documentation/devicetree/bindings/pinctrl/pinctrl-single.txt file

pinctrl-single,bias-pulldown = <0x8000 0x8000 0x0 0xa000>;

0x8000 0x8000 0x0 0xa000 means input, enabled pulldown bits, disabled pulldown bits, mask.

0x8000 is "input"

0x8000 is "enabled pulldown bits"

0x0 is "disabled pulldown bits"

0xa000 is "mask"

We only need to review the description of IO_PAD90 Configuration Register, we will realize the meaning of these values.

0xa000 = 1010,0000,0000,0000

The bit 13 and 15 are "pulldown" mask

In 6270 programmer guide, bit 13 is for Pull down Enable, bit 15 is for PULL UP/DOWN control selection

0x0, bit 15 (PULL UP/DOWN control selection bit) is 0, bit 13 (Pull down Enable bit) is also 0.

When PULL UP/DOWN control selection bit is 0, the Pull up or Pull down is determined by Pull down Enable bit.

Because Pull down Enable bit is 0, so disbale PULL down.

0x8000 = 1000,0000,0000,0000

The bit 15 is 1, bit 13 is 0.

The PULL UP/DOWN control selection bit (bit 15) is 1, means use PUEN and PDEN to control PULL up / down