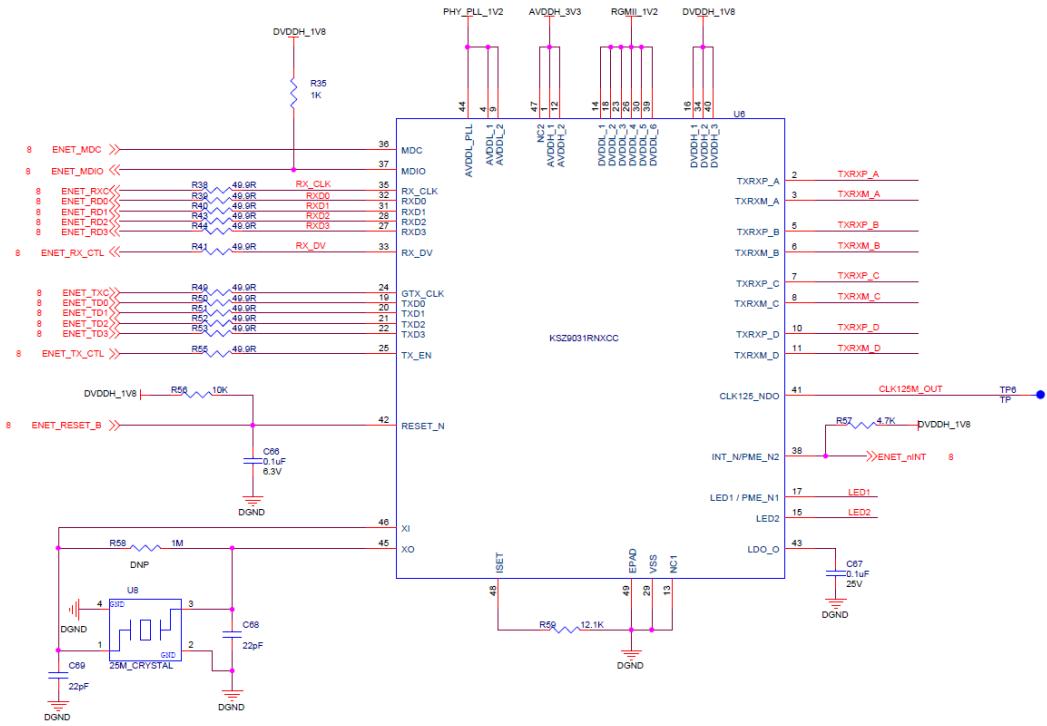


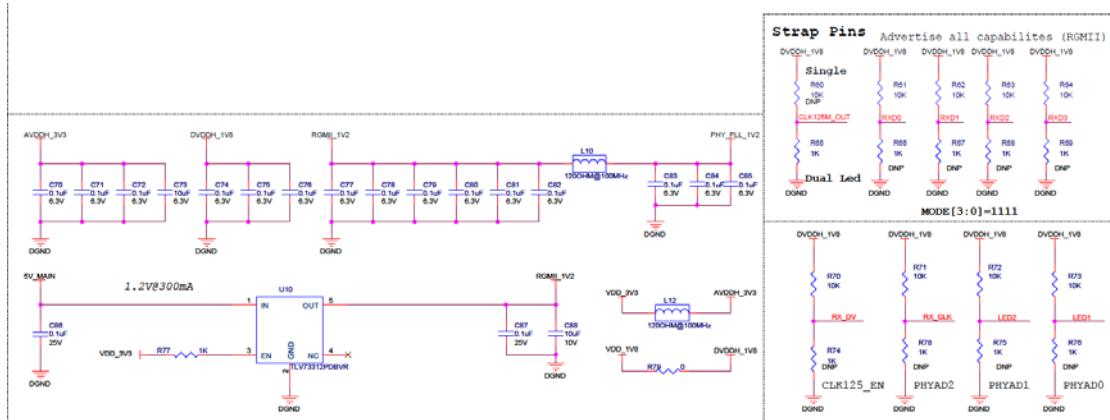
Using KSZ9031 PHY On i.MX8MM and L5.4.24_2.1.0

1. Hardware design

10M/100M/1000M Ethernet



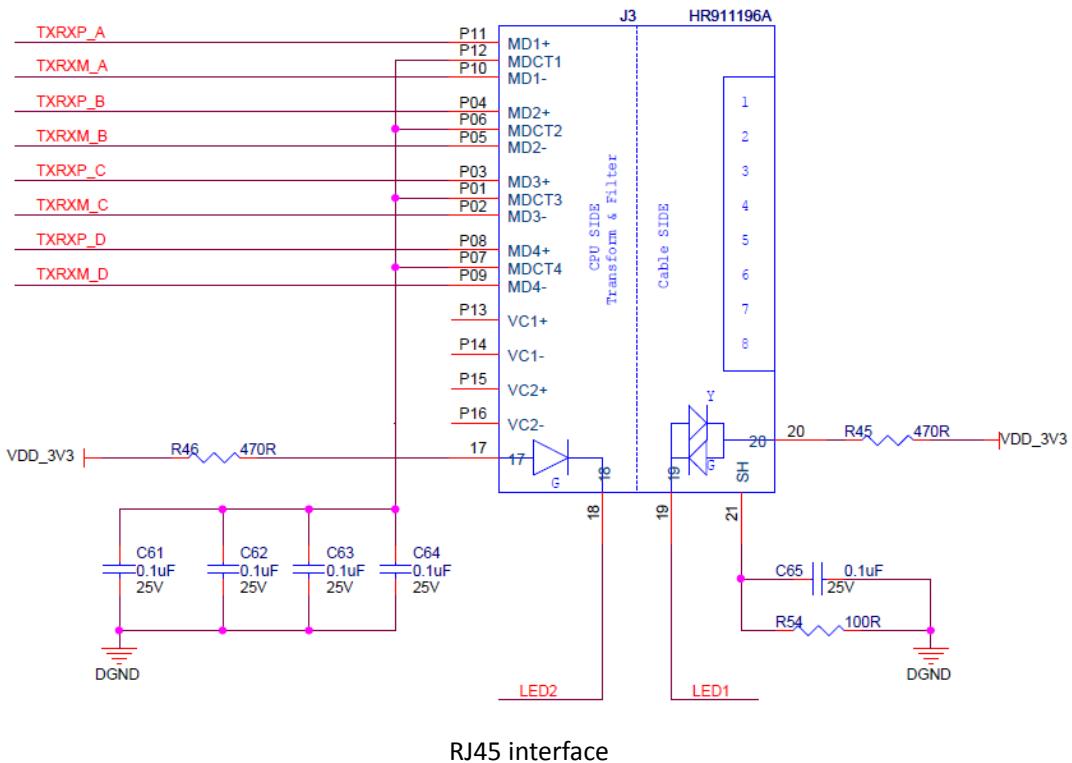
KSZ9031



Power Rail of KSZ9031

[Comment]

1. VDDIO: KSZ9031 supports 1.8V or 3.3V IO, here we use 1.8V
2. Phy address: 0x07
3. Reset Pin: Using GPIO1_IO07 Pad of CPU
4. 125MHz OUTPUT: not used, left unconnected.



RJ45 interface

2. Software

--In device tree of u-boot

```
&fec1 {
    pinctrl-names = "default";
    pinctrl-0 = <&pinctrl_fec1>;
    phy-mode = "rgmii-id";
    phy-handle = <&ethphy0>;
    fsl,magic-packet;
    status = "okay";

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

        ethphy0: ethernet-phy@7 {
            compatible = "ethernet-phy-ieee802.3-c22";
            reg = <7>;
        };
    };
}
```

[comment]

After u-boot booting is done, don't forget to set MAC address on u-boot command line.

U-Boot > setenv ethaddr 00:01:02:03:04:05

U-Boot > save

--In device tree of linux kernel

```
pinctrl_fec1: fec1grp {
    fsl,pins = <
        MX8MM_IOMUXC_ENET_MDC_ENET1_MDC          0x3
        MX8MM_IOMUXC_ENET_MDIO_ENET1_MDIO        0x3
        MX8MM_IOMUXC_ENET_TD3_ENET1_RGMII_TD3    0x1f
        MX8MM_IOMUXC_ENET_TD2_ENET1_RGMII_TD2    0x1f
        MX8MM_IOMUXC_ENET_TD1_ENET1_RGMII_TD1    0x1f
        MX8MM_IOMUXC_ENET_TD0_ENET1_RGMII_TD0    0x1f
        MX8MM_IOMUXC_ENET_RD3_ENET1_RGMII_RD3    0x91
        MX8MM_IOMUXC_ENET_RD2_ENET1_RGMII_RD2    0x91
        MX8MM_IOMUXC_ENET_RD1_ENET1_RGMII_RD1    0x91
        MX8MM_IOMUXC_ENET_RD0_ENET1_RGMII_RD0    0x91
        MX8MM_IOMUXC_ENET_TXC_ENET1_RGMII_TXC    0x1f
        MX8MM_IOMUXC_ENET_RXC_ENET1_RGMII_RXC    0x91
        MX8MM_IOMUXC_ENET_RX_CTL_ENET1_RGMII_RX_CTL 0x91
        MX8MM_IOMUXC_ENET_TX_CTL_ENET1_RGMII_TX_CTL 0x1f
        MX8MM_IOMUXC_GPIO1_IO07_GPIO1_IO7         0x19
    >;
};

&fec1 {
    pinctrl-names = "default";
    pinctrl-0 = <&pinctrl_fec1>;
    phy-mode = "rgmii-id";
    phy-handle = <&ethphy0>;
    phy-reset-gpios = <&gpio1 7 GPIO_ACTIVE_LOW>;
    phy-reset-post-delay = <150>;
    phy-reset-duration = <10>;
    fsl,magic-packet;
    status = "okay";

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

        ethphy0: ethernet-phy@7 {
            compatible = "ethernet-phy-ieee802.3-c22";
            reg = <7>;
        }
    }
}
```

```
    rxc-skew-ps = <1860>;  
    txc-skew-ps = <1860>;  
};  
};  
};
```

3. About PHY driver

Drivers/net/phy/micrel.c supports following PHYs:

* Support : Micrel Phys:

- * Giga phys: ksz9021, ksz9031, ksz9131
- * 100/10 Phys : ksz8001, ksz8721, ksz8737, ksz8041
- * ksz8021, ksz8031, ksz8051,
- * ksz8081, ksz8091,
- * ksz8061,
- * Switch : ksz8873, ksz886x
- * ksz9477

*/

In Linux kernel configuration, the item should be selected:

CONFIG_MICREL_PHY=y

[comment]

If the phy driver is not loaded in u-boot, which mean there is no MAC address for ethernet, linux will automatically assign a random MAC address for it.

NXP TIC team
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11/18/2020