

LED

- 4. LED

4. LED

4.1 _LED

```
C      Hello

ARM      LED

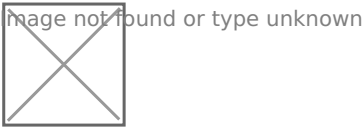
LED
```

① LED ;

② ;

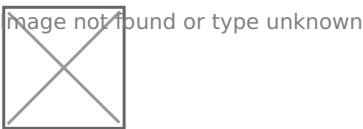
③ ;

LED



LED LED

LED LED



LED

| | | | | |
|---|------|-----|------|-----|
| 1 | 3.3V | LED | 0V | LED |
| 2 | 0V | LED | 3.3V | LED |

3 1.2V LED 0V LED

4 0V LED 1.2V LED

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/ LED GPIO 3.3V 1.2V

1 0

1-->

0-->

4.2 GPIO

GPIO: General-purpose input/output

4.2.1 GPIO

- a. GPIO GPIO
- b. /
- c. (Mode) GPIO
- d. Mode GPIO
- e.

4.2.2 GPIO

- a. power/clock
- GPIO (Module)
- GPIO
- b. GPIO USB

c. GPIO

d. GPIO

GPIO 2

1.

bit n

```
val = data_reg;  
val = val | (1<<n);  
data_reg = val;
```

bit n

```
val = data_reg;  
val = val & ~(1<<n);  
data_reg = val;
```

2. set-and-clear protocol

set_reg, clr_reg, data_reg ,

bit n set_reg = (1<<n);

bit n clr_reg = (1<<n);

4.2.3 GPIO

4.3 IMX6ULL GPIO

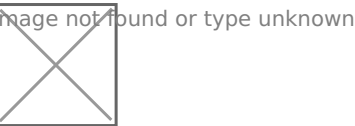
CCM: Clock Controller Module ()

IOMUXC : IOMUX Controller IO

4.3.1 IMX6ULL GPIO

Chapter 26: General Purpose Input/Output (GPIO)

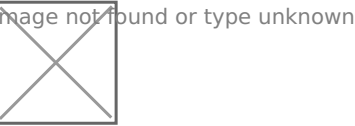
| | | | | |
|-------|------|----------------------|--------|------|
| 5 | GPIO | GPIO1 | GPIO5 | 32 |
| GPIO1 | 32 | GPIO1_IO0~GPIO1_IO31 | | |
| GPIO2 | 22 | GPIO2_IO0~GPIO2_IO21 | | |
| GPIO3 | 29 | GPIO3_IO0~GPIO3_IO28 | | |
| GPIO4 | 29 | GPIO4_IO0~GPIO4_IO28 | | |
| GPIO5 | 12 | GPIO5_IO0~GPIO5_IO11 | | |
| GPIO | 4 | CCM | IOMUXC | GPIO |



4.3.2 CCM GPIO

Chapter 18: Clock Controller Module (CCM)

| | | | | | |
|----------|-----------|---|------|------|----------|
| GPIOx | CCM_CCGRy | 2 | GPIO | GPIO | CCM_CCGR |
| CCM_CCGR | 2 | | | | |



- ① 00 GPIO
 - ② 01 GPIO CPU run mode WAIT STOP
 - ③ 10
 - ④ 11 GPIO
- GPIO2

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GPIO1 GPIO5

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GPIO3

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GPIO4

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4.3.3 IOMUXC (Mode)

Chapter 32: IOMUX Controller (IOMUXC)

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/ IOMUXC 2

①

IOMUXC_SW_MUX_CTL_PAD_< PADNAME > Mux pad xxx pad

IOMUXC_SW_MUX_CTL_GRP_< GROUP NAME > Mux grp xxx

8 (alternate (ALT) MUX_MODE)

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②

IOMUXC_SW_PAD_CTL_PAD_< PAD_NAME > pad pad xxx pad

IOMUXC_SW_PAD_CTL_GRP_< GROUP NAME > pad grp xxx

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4.3.4 GPIO

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3

① GPIOx_GDIR 1-output 0-input

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② GPIOx_GDIR 1- 0-

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③ GPIOx_PSR 1- 0-