

4. LED

4.1 _LED

```
C      Hello

ARM      LED

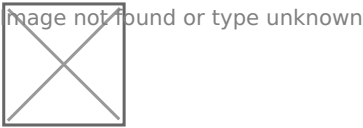
      LED
```

① LED ;

② ;

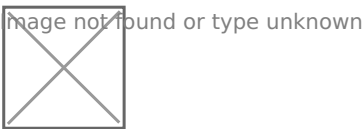
③ ;

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 ()

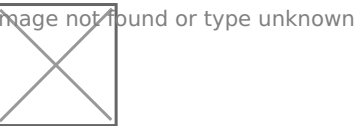
IOMUXC : IOMUX Controller IO

GPIO: General-purpose input/output

4.3.1 IMX6ULL GPIO

Chapter 26: General Purpose Input/Output (GPIO)

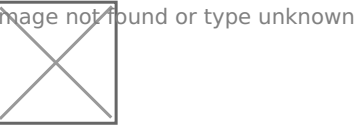
5	GPIO	GPIO1	GPIO5	32
GPIO1	32	GPIO1_IO0~GPIO1_IO31		
GPIO2	22	GPIO2_IO0~GPIO2_IO21		
GPIO3	29	GPIO3_IO0~GPIO3_IO28		
GPIO4	29	GPIO4_IO0~GPIO4_IO28		
GPIO5	12	GPIO5_IO0~GPIO5_IO11		
GPIO	4	CCM	IOMUXC	GPIO



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-