

FT60F01X

Application note

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FT60F01x SLEEP 相关寄存器的设置

1 Sleep 睡眠模式功能及注意事项

产品在待机状态时候，要想达到最低功耗，可以选择睡眠模式，既可以随时唤醒，也可以减少损耗。

为了达到最低睡眠功耗($<3\mu\text{A}$)，注意如下：

- 1、当 IO 口悬空时候，软件可以将所悬空的 IO 口 设为输出并置低，若没有悬空，则以外围电路状态为主，避免 IO 口 耗电；
- 2、I/O 作为输入的，外部电路应将其拉高或拉低，避免翻转耗电；
- 3、/MCLR 应该在高电平；
- 4、选择 LVREN 禁止使能。

2 应用范例

```
//*****
/* 文件名: TEST_60F01x_SLEEP.c
* 功能:    FT60F01x-SLEEP 功能演示
* IC:      FT60F011A SOP8
* 晶振:    16M/4T
* 说明:    此程序为 FT60F01x-SLEEP 睡眠演示程序, 上电之后 PA0、PA1 同时置高约 4s,
*          然后置低, 进入睡眠。测试 FT60F01x 的睡眠功耗.
*
*          FT60F011A SOP8
*          -----
* VDD-----|1(VDD) (GND)8|-----GND
* NC-----|2(PA2) (PA4)7|-----NC
* led1-----|3(PA1) (PA5)6|-----NC
* NC-----|4(PA3) (PA0)5|-----led2
*          -----
*/
//*****
#include "SYSCFG.h"
//***** 宏定义 *****
#define uchar      unsigned char

#define led1      PA1
#define led2      PA0

/*-----
* 函数名: POWER_INITIAL
* 功能:    上电系统初始化
* 输入:    无
* 输出:    无
*-----*/
void POWER_INITIAL(void)
{
    OSCCON = 0B01110000;          //IRCF=111=16MHz/4T=4MHz,0.25µs
    INTCON = 0;                  //暂禁止所有中断
    OPTION = 0B00001000;          //Bit3=1,WDT MODE,PS=000=WDT RATE 1:1

    PORTA = 0B00000000;
    TRISA = 0B00000000;          //PA 输入输出 0-输出 1-输入
    WPUA = 0B00000000;          //PA 端口上拉控制 1-开上拉 0-关上拉

    MSCKCON = 0B00000000;
    //Bit4=0,禁止 LVR(60F01x O 版之前)
    //Bit4=0,LVREN 使能时,开启 LVR(60F01x O 版及 O 版之后)
```

//Bit4=1,LVREN 使能时,工作时开启 LVR,睡眠时自动关闭 LVR(60F01x O 版及 O 版后)
}

/*-----*/

* 函数名: DelayUs
* 功能: 短延时函数
* 输入: Time 延时时间长度 延时时长 Time μ s
* 输出: 无

-----*/

void DelayUs(unsigned char Time)

```
{
    unsigned char a;
    for(a=0;a<Time;a++)
    {
        CLRWDT();
    }
}
```

/*-----*/

* 函数名: DelayMs
* 功能: 短延时函数--16M-2T--大概快 1%左右.
* 输入: Time 延时时间长度 延时时长 Time ms
* 输出: 无

-----*/

void DelayMs(unsigned char Time)

```
{
    unsigned char a,b;
    for(a=0;a<Time;a++)
    {
        for(b=0;b<5;b++)
        {
            DelayUs(98);           //快 1%
        }
    }
}
```

/*-----*/

* 函数名: DelayS
* 功能: 短延时函数
* 输入: Time 延时时间长度 延时时长 Time S
* 输出: 无

-----*/

void DelayS(unsigned char Time)

```
{
    unsigned char a,b;
    for(a=0;a<Time;a++)
    {
```

```
        for(b=0;b<10;b++)
        {
            DelayMs(100);
        }
    }
}

/*-----
* 函数名: main
* 功能: 主函数
* 输入: 无
* 输出: 无
-----*/

void main()
{
    POWER_INITIAL();           //系统初始化
    led1 = 1;
    led2 = 1;
    DelayS(4);
    led1 = 0;
    led2 = 0;
    while(1)
    {
        CLRWDT();              //清看门狗
        NOP();
        SLEEP();
        NOP();
    }
}
```

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