R7F0C80212ESP

Watchdog 示例程序

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介绍

示例程序包括以下函数和功能:

- 微控制器的初始化
  a. I/O断口初始化
  b. 设置选项字节(Option Byte), Watchdog功能设置
- 主应用循环
  a. 清除看门狗定时器(Watchdog Timer)

目标器件

RL78 / R7F0C80212ESP

当应用此示例程序于其他微控制器时，请根据目标微控制器规格修改程序，并对修改的程序充分进行评估。

目录

1. 执行示例程序

示例按以下顺序执行：

(1) 打开工程” watchdog.mtpj”

(2) 连接CS+内设GUI软件仿真;

(3) 下载程序;

(4) 从新执行(Restart)程序;

(5) 用户可以在软仿真视窗里的”TimingChart1”, 监察I/O口状态.

- 软件仿真具有一定的局限性。用户程序发布前，请使用仿真器进行测试确认。
- 在使用仿真器仿真前，请先明确E1/EZ-CUBE硬件设置和与目标连接是否正确。
- 具体细节请参见E1/EZ-CUBE用户手册。并请检查E1/EZ-CUBE是否使用了最新固件。

2. 操作环境

工作频率	内部时钟
综合开发环境	瑞萨电子综合开发环境 CubeSuite+ V1.02.01
示例工程	watchdog.mtpj

3. 函数说明

此节描述示例程序中的各个函数。

[函数名称] IO_Init	
概要	I/O断口初始化
头文件	无
声明	void IO_init(void)
说明	
返回值	无
备注	无

[函数名称] Main	
概要	主应用循环
头文件	无
声明	void main(void)
说明	- I/O断口初始化 - 清除看门狗定时器 - 循环改变I/O状态
返回值	无
备注	无

4. 设置选项字节 (Option Byte)

R7F0C80212ESP 闪存的00C0H、00C1H、00C2H 和00C3H 为选项字节区域。打开电源或从复位状态重启器件时，器件将自动参考选项字节设置指定功能。使用本产品时，必须使用选项字节设置下列功能。

选项字节以汇编码格式保全在”optionbyte.asm”汇编文档, 用户可按需求自行更改设置.以下是本示例使用的设置.

```
OPT     CSEG    OPT_BYTE
        DB      0FEH        ; 看门狗定时器设定
                            ; 使用看门狗,
                            ; 看门狗定时器的溢出时间：3.799秒,
                            ; 禁止使用软件停止内部振荡电路不能通过软件。
        DB      0EBH        ; P125/RESET脚为端口功能
                            ; 上电复位,上升电压值2.55V, 下降电压值2.50V
        DB      0FBH        ; 内部高速振荡时钟频率 5 MHz
        DB      85H         ; On-chip 调试允许操作。 On-chip 调试安全ID 认证失败
                            ; 时，禁止清除闪存数据。
```

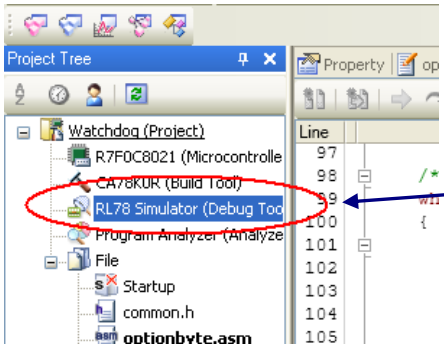
备注:

有关选项字节详情, 请参考微控制器的使用手册, 第十六章 选项字节

5. 使用 CS+内设 GUI 软件仿真器

5.1 启动 CS+内设 GUI 软件仿真

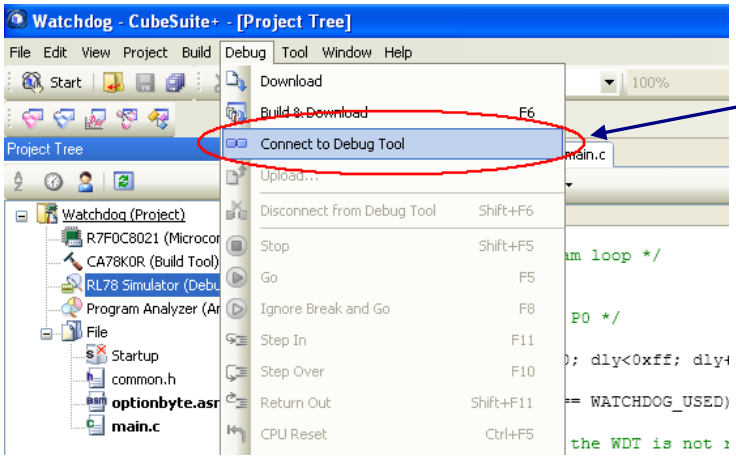
1. 打开工程后, 在'Project Tree'视窗里的'(Debug Tool), 按鼠标右键, 选择'RL78 Simulator' (RL78 软件仿真).



选择'RL78 Simulator'

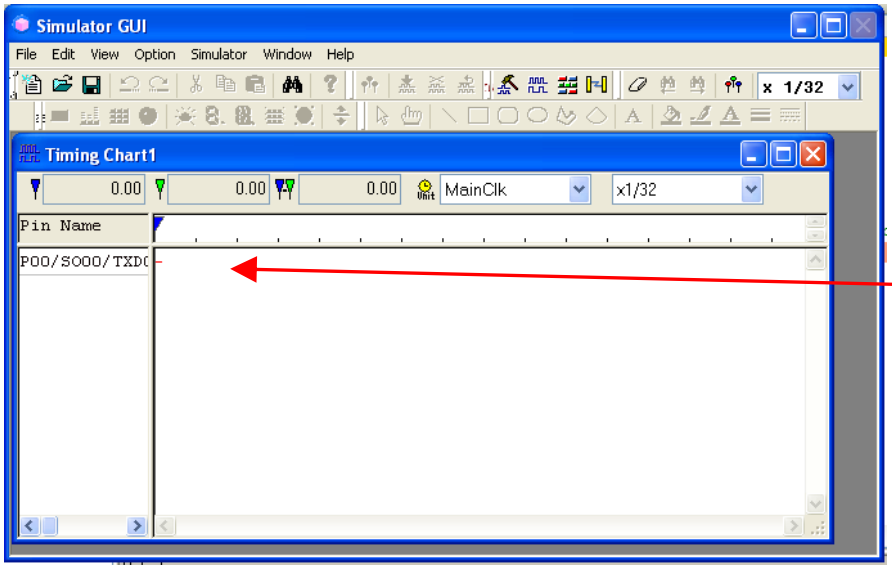
(RL78 软件仿真)

2. 选择'Debug'内的选项'Connect to Debug Tool' RL78 软件仿真.



选择'Connect to Debug Tool'连接软件仿真

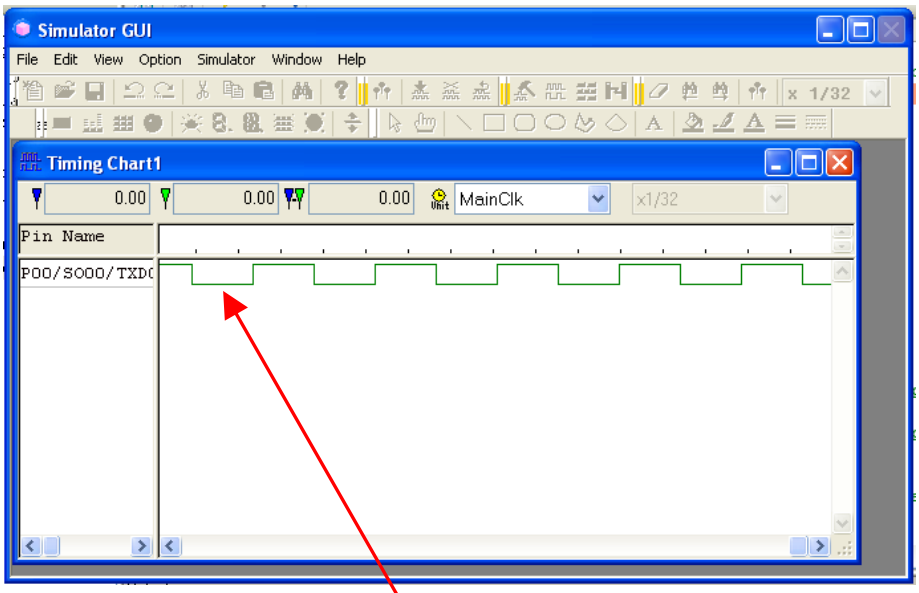
3. 连接成功后,软件仿真GUI视窗启动操作界面



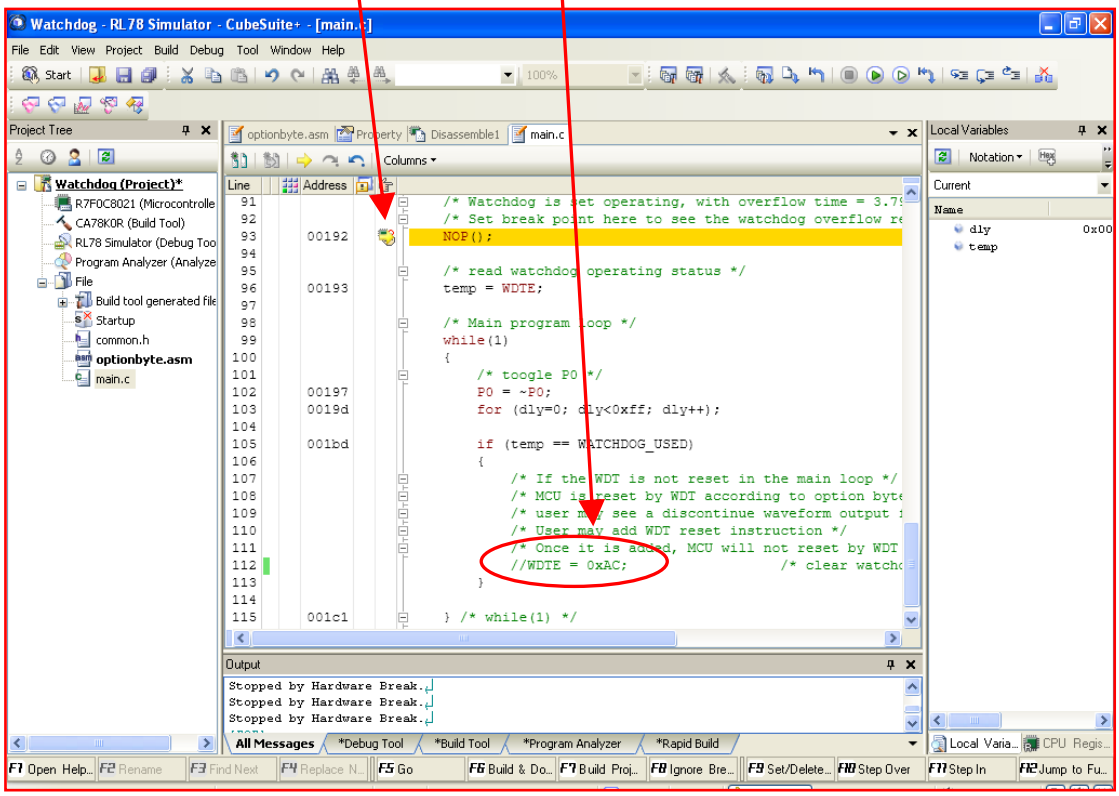
时序界面

程序开始后, I/O 状态会不停地改变.

5.2 Watchdog 示例程序操作



程序开始后, I/O 状态会不停地改变. 程序默认没有清除看门狗, 因此,当看门狗溢出复位后(3.77s),程序会再次停在断点上. 红圈指令可以用作清除看门狗, 把指令打开后, 看门狗便不会再溢出复.



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修订记录

		描述	
版本	**日期**	**页**	**概要**
1.00	Oct 22, 2012	—	第一版发行

产品使用时的注意事项

本文对适用于单片机所有产品的“使用时的注意事项”进行说明。有关个别的使用时的注意事项请参照正文。此外，如果在记载上有与本手册的正文有差异之处，请以正文为准。

1. 未使用的引脚的处理

【注意】将未使用的引脚按照正文的“未使用引脚的处理”进行处理。

CMOS产品的输入引脚的阻抗一般为高阻抗。如果在开路的状态下运行未使用的引脚，由于感应现象，外加LSI周围的噪声，在LSI内部产生穿透电流，有可能被误认为是输入信号而引起误动作。

未使用的引脚，请按照正文的“未使用引脚的处理”中的指示进行处理。

2. 通电时的处理

【注意】通电时产品处于不定状态。

通电时， LSI内部电路处于不确定状态，寄存器的设定和各引脚的状态不定。通过外部复位引脚对产品进行复位时，从通电到复位有效之前的期间，不能保证引脚的状态。

同样，使用内部上电复位功能对产品进行复位时，从通电到达到复位产生的一定电压的期间，不能保证引脚的状态。

3. 禁止存取保留地址（保留区）

【注意】禁止存取保留地址（保留区）

在地址区域中，有被分配将来用作功能扩展的保留地址（保留区）。因为无法保证存取这些地址时的运行，所以不能对保留地址（保留区）进行存取。

4. 关于时钟

【注意】复位时，请在时钟稳定后解除复位。

在程序运行中切换时钟时，请在要切换成的时钟稳定之后进行。复位时，在通过使用外部振荡器（或者外部振荡电路）的时钟开始运行的系统中，必须在时钟充分稳定后解除复位。另外，在程序运行中，切换成使用外部振荡器（或者外部振荡电路）的时钟时，在要切换成的时钟充分稳定后再进行切换。

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