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2010年4月1日
瑞萨电子公司

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7542 群

定时器 X 运行（脉冲宽度测定模式）

要点

本资料说明 7542 群的定时器 X 脉冲宽度测定模式功能的设定方法例子和应用例子。

动作确认器件

本资料说明的应用例子适合下列单片机：

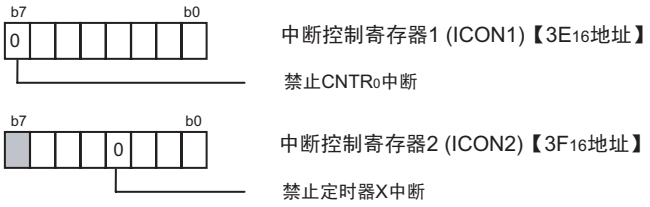
- 单片机：7542 群

目录

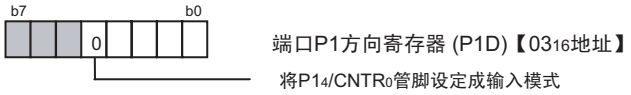
1. 设定方法

定时器X（脉冲宽度测定模式）的设定方法如图1和图2所示。

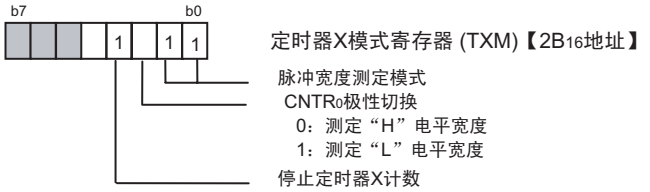
步骤1：禁止定时器X中断和CNTR0中断



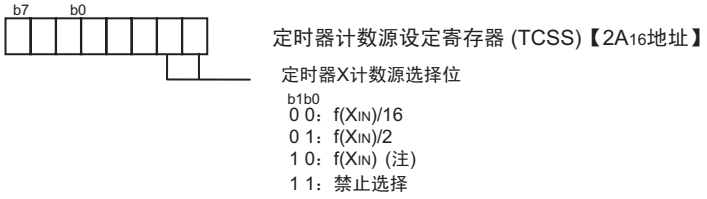
步骤2：将CNTR0管脚设定成输入模式



步骤3：设定定时器X模式寄存器



步骤4：设定定时器X计数源

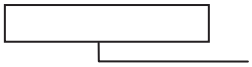


注．f(XIN)只能在陶瓷振荡或者内部振荡器时使用。
在RC振荡时不能使用。

图 1　定时器 X 脉冲宽度测定模式的设定方法（1）

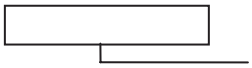
步骤5：设定定时器X的计数值

• 给预定标器X和定时器X设定初始值。



预定标器X (PREX)【2C16地址】

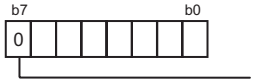
初始值



定时器X (TX)【2D16地址】

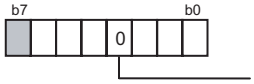
初始值

步骤6：为了不执行不必要的中断处理，必须将定时器X中断请求位和CNTR0中断请求位置“0”(无请求)



中断请求寄存器1 (IREQ1)【3C16地址】

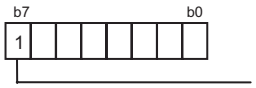
无CNTR0中断请求



中断请求寄存器2 (IREQ2)【3D16地址】

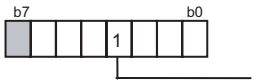
无定时器X中断请求

步骤7：在使用中断时，必须将使用中断的中断允许位置“1”(允许中断)



中断控制寄存器1 (ICON1)【3E16地址】

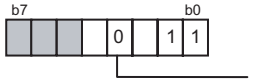
允许CNTR0中断



中断控制寄存器2 (ICON2)【3F16地址】

允许定时器X中断

步骤8：开始定时器X的计数



定时器X模式寄存器 (TXM)【2B16地址】

开始定时器X计数

图 2　定时器 X 脉冲宽度测定模式的设定方法（2）

2. 应用例子的说明

■要点

对输入到P14/CNTR0管脚的脉冲的“H”电平宽度进行计数。

■说明

对输入到P14/CNTR0管脚的FG脉冲的“H”电平宽度进行计数。由定时器X中断检测下溢，由CNTR0中断检测输入脉冲的“H”电平的结束。

运行时钟使用f(XIN)=4.19MHz高速模式。

■例

当f(XIN)=4.19MHz时，以16分频后的3.8μs为计数源。在FFFF16～000016的范围内可测定到250ms。

2.1 定时器的连接和分频比的设定

定时器的连接和分频比的设定如图3所示。

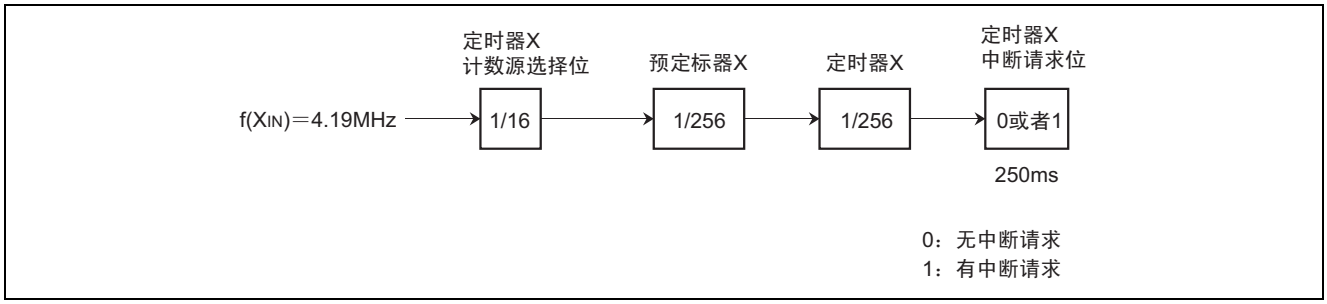
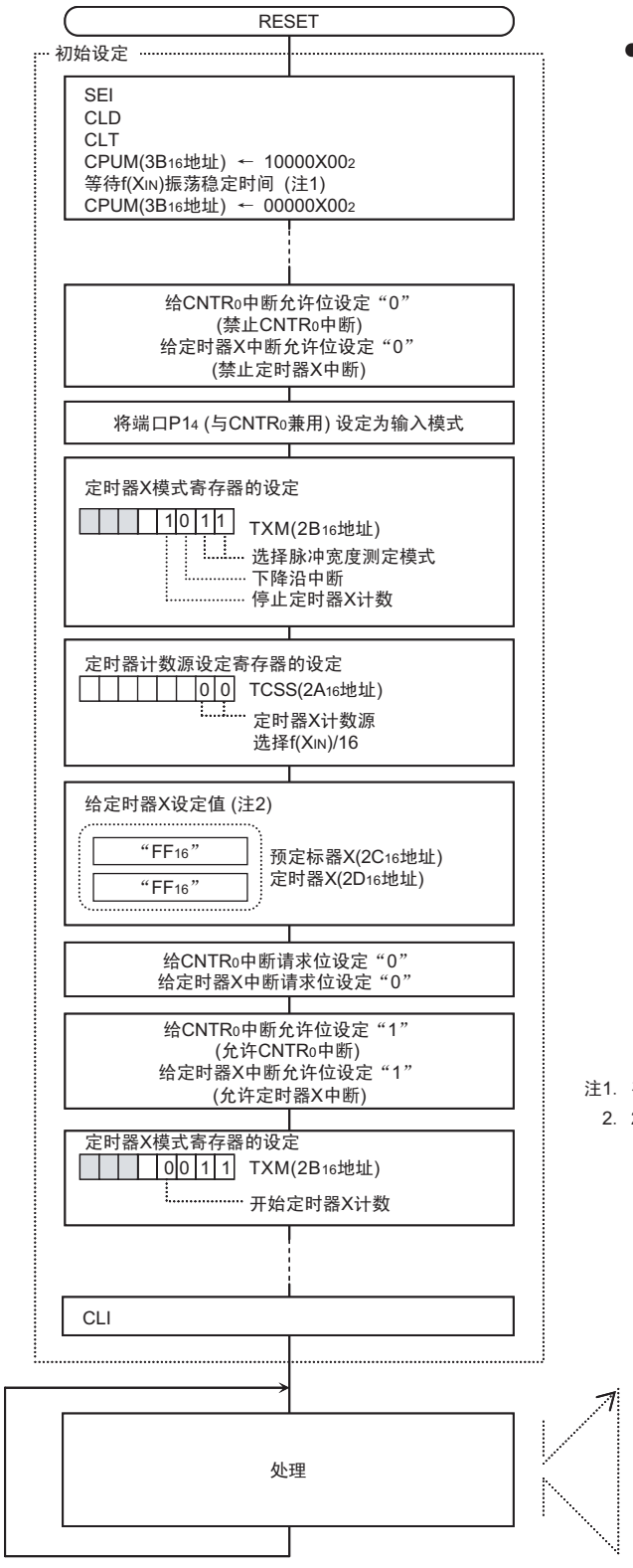


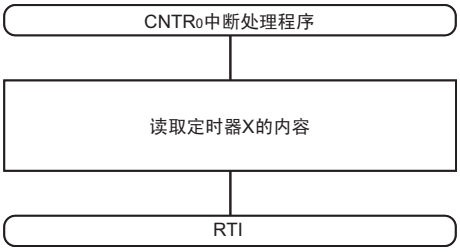
图 3 定时器的连接和分频比的设定

2.2 控制步骤例子

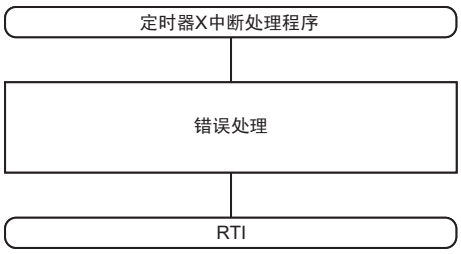
控制步骤例子如图4所示。



●X：在此应用例中，为不使用的位。
请按用法将它设定成“0”或者“1”。



不正确周期输入时的错误处理



注1. 有关具体的时间，请向谐振器厂家查询。

2. $250\text{ms} \approx 1/4.19\text{MHz} \times \underbrace{16}_{\text{定时器X分频比}} \times \underbrace{(FF16 + 1)}_{\text{预定标器X设定值}} \times \underbrace{(FF16 + 1)}_{\text{定时器X设定值}}$

图 4　控制步骤例子

3. 参考文献

数据表

7542群数据表（最新版本请从瑞萨科技网页取得）

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修订记录

Rev.	发行日	修订内容	
		页	修订处
1.00	2004.09.15	—	初版发行

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