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M16C/65 群

SI/O3、SI/O4 的操作

1. 要点

SI/O3、SI/O4 的操作，可选择如表 1 中所列的各种功能。在表 1 中用符号“○”表示本篇资料所选的项目，图 1 是 SI/O3、SI/O4 发送数据的工作时序图。

2. 说明

本篇资料，适用于 M16C/65 群单片机。

本篇应用说明也适用于 M16C 族中与上面所述的群具有相同 SFR（特殊功能寄存器）定义的产品。关于产品功能的改进，请参看手册中的相关信息。在使用本篇应用说明的程序前，需进行详细的评价。

3. 选定功能

表 1. 选定功能

设定项目	设定内容		设定项目	设定内容	
传送时钟源	<input type="radio"/>	内部时钟 (f1SIO/f2SIO/f8SIO/f32SIO)	SOUTi 初始值设定功能	<input type="radio"/>	不使用
		外部时钟 (CLKi 引脚)			使用
传送格式	<input type="radio"/>	LSB 先	SOUTi 输出控制功能 (传送后 SOUTi 的状态)		高阻抗
		MSB 先		<input type="radio"/>	保持最后一位的电平

4. 串行 I/O 的操作

(1) 写入发送数据，即标志着发送开始。此数据将随着传送时钟的下降沿，通过 SOUTi 引脚同步输出。

(2) SOUT 发送完一位数据后，中断请求位将会变为“1”。

(3) 当 S34C2 寄存器的 SM26 位、SM27 位设定为“1”（保持最后一位的电平）时，全部传输结束后，SOUT 引脚将保持最后一个传输数据。

注：

- 请在发送和接收停止时，写 SI/Oi 发送/接收寄存器（i = 3、4，地址分别为 0270h 和 0274h）。

使用 SI/O3、SI/O4 发送数据的工作时序图如下所示：

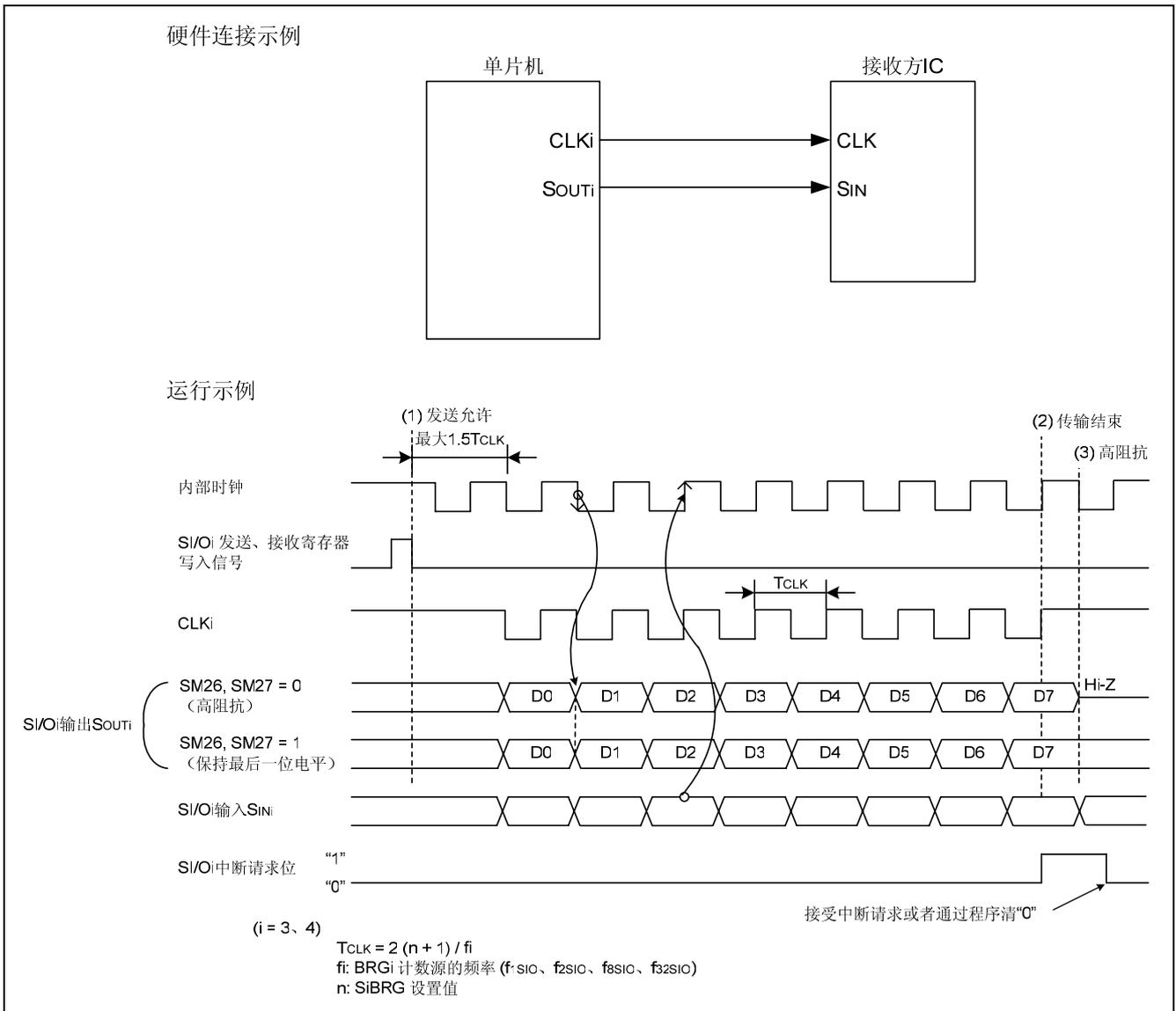


图 1. SI/O3、SI/O4 发送数据的工作时序

5. 寄存器设置

为了能够实现定义在“4. 串行 I/O 的操作”的功能，下列寄存器必须按步骤顺序进行设置。对于每个寄存器的具体结构，请参考 M16C/65 群的硬件手册。

清除保护（设置为写入允许状态）

保护寄存器【地址 000Ah】
PRCR

允许对端口P9方向寄存器（地址 03F3h）和 SI/Oi控制寄存器 (i = 3、4)（地址 0272h, 0276h）写入操作
1：写入允许

设置SI/Oi发送、接收控制寄存器 (i = 3、4) (注 1)

SI/Oi 发送、接收控制寄存器 (i = 3、4) 【地址 0272h, 0276h】
SiC (i = 3, 4)

- 内部同步时钟选择位
b1 b0
0 0 : f1sio或f2sio
0 1 : f8sio
1 0 : f32sio
1 1 : 不能设定
- SOUTi 输出禁止位
0 : SOUTi 输出
- SI/Oi 端口选择位
1 : SOUTi 输出、CLKi 功能
- CLK极性选择位
0 : 在传送时钟的下降沿输出发送数据，在上升沿输入接收数据
1 : 在传送时钟的上升沿输出发送数据，在下降沿输入接收数据
- 传送格式选择位
0 : LSB先发送
- 同步时钟选择位
1 : 内部时钟
- SOUTi 初始值设定位（当bit 6=“0”时有效）
0 : 输出“L”电平
1 : 输出“H”电平

注1：请在设置保护寄存器后连续设置SI/Oi控制寄存器。

设置SI/Oi波特率寄存器 (i = 3、4)

SI/Oi 波特率寄存器 (i = 3、4) 【地址 0273h, 0277h】
SiBRG (i = 3, 4)

设定为00h ~ FFh (注 1)

注1：当数据发送、接收停止后再设置SI/Oi 波特率寄存器。
请使用MOV指令设置SI/Oi 波特率寄存器。

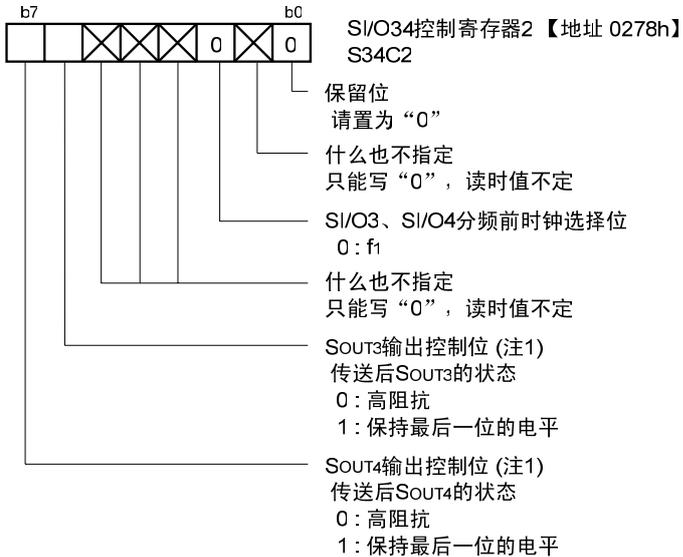
写入发送数据

SI/Oi 发送接收寄存器 (i = 3、4) 【地址 0270h, 0274h】
SiTRR (i = 3, 4)

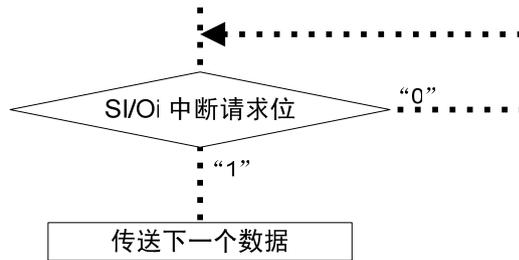
设置传送的数据 (注1)

注1：当数据发送、接收停止后再设置SI/Oi 发送接收寄存器。
即使是在接收时，也需要在每次接收时设置SI/Oi 发送接收寄存器。

设置SI/O34寄存器2



注1: 当S3C、S4C寄存器的SMI3位设置为“1” (SOUT、CLK) 时, SM26位和SM27位有效。



6. 参考文献

数据手册

M16C/65 群硬件手册

(最新版本请从瑞萨科技网页上取得)

技术信息/技术更新

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修订记录

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