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2010年4月1日
瑞萨电子公司

【发行】瑞萨电子公司（http://www.renesas.com）

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7548/49 群与 7546/47 群

7548/49 群与 7546/47 群的区别

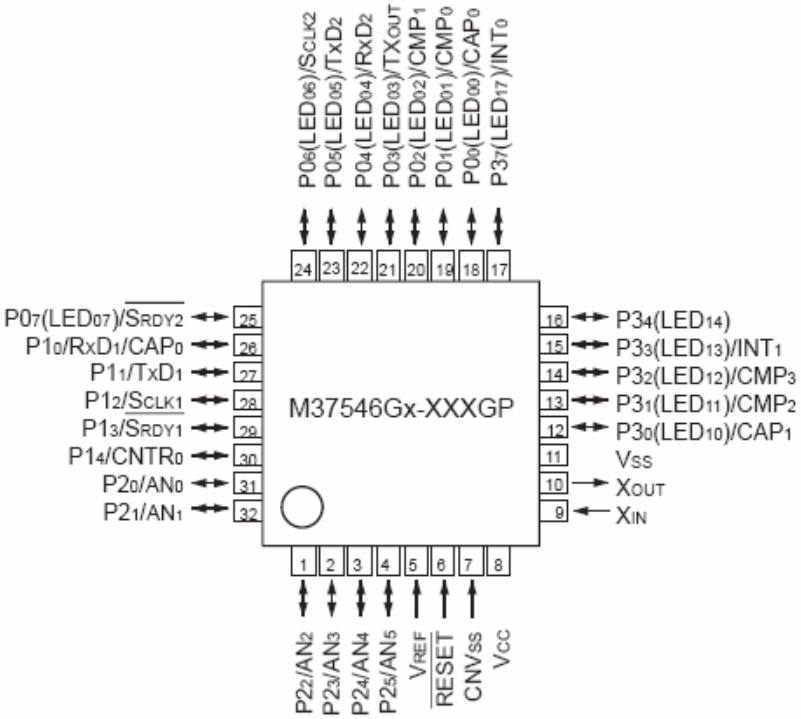
1. 功能上的主要区别

	7546/47群		7548/49 群	
	7546	7547	7548	7549
产品名	M37546G2-XXXGP/HP/SP M37546G2GP/HP/SP M37546G4-XXXGP/HP/SP M37546G4GP/HP/SP	M37547G2-XXXFP M37547G2FP M37547G4-XXXFP M37547G4FP	M37548G3-XXXFP M37548G3FP M37548G2-XXXFP M37548G2FP M37548G1-XXXFP M37548G1FP	M37549G3-XXXFP M37549G3FP M37549G2-XXXFP M37549G2FP M37549G1-XXXFP M37549G1FP
封装	PLQP0032GB-A(32P6U-A) PWQN0036KA-A(36PJW-A) PRDP0032BA-A(32P4B)	PRSP0036GA-A (36P2R-A)	PLSP0020JB-A (20P2F-A)	PRSP0024GA-A (24P2Q-A)
ROM类型 ROM/RAM容量 (字节)	QzROM型: 8K/384 (G2) QzROM型:16K/512 (G4)		QzROM型:2K/192 (G1) QzROM型:4K/256 (G2) QzROM型:6K/256 (G3)	
可编程I/O端口	25个	29个	15个	19个
LED驱动端口	16个 (输出总峰值电流80mA)		8个	
中断	18个源, 16个向量 (外部中断源6个)		12个源, 12个向量 (外部中断源4个)	
定时器	8位 x 2 (定时器1, X)		8位 x 2 (定时器1, 2)	
	16位 x 2 (Timer A, B)		16位 x 1 (定时器A)	
输出比较功能	4通道		3通道	
输入捕捉功能	2通道		1通道	
串行接口	8位 x 2 (UART或者时钟同步)		8位 x 1 (UART或者时钟同步)	
A/D转换器	10位分辨率 x 6个通道	10位分辨率 x 8个通道	10位分辨率 x 6个通道	
内部振荡器	2MHz(标准)		内部高速: 4MHz(标准) 内部低速: 250kHz(标准)	

2. 管脚配置的区别

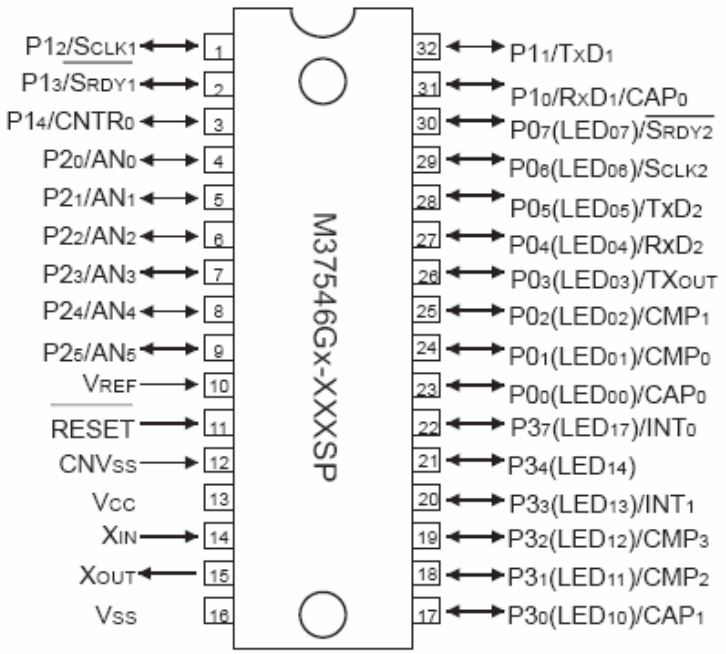
7548/49 群与 7546/47 群的管脚配置和封装类型完全不同，使用中请注意，二者的区别如下：

7546 群管脚连接图（俯视图）



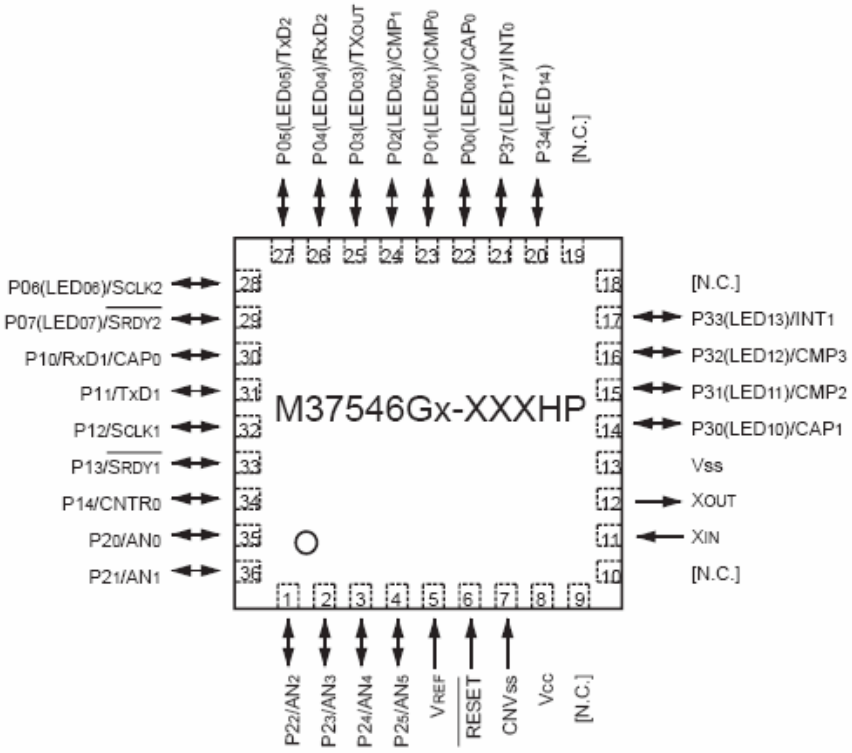
封装：PLQP0032GB-A (32P6U-A)

7546 群管脚连接图（俯视图）



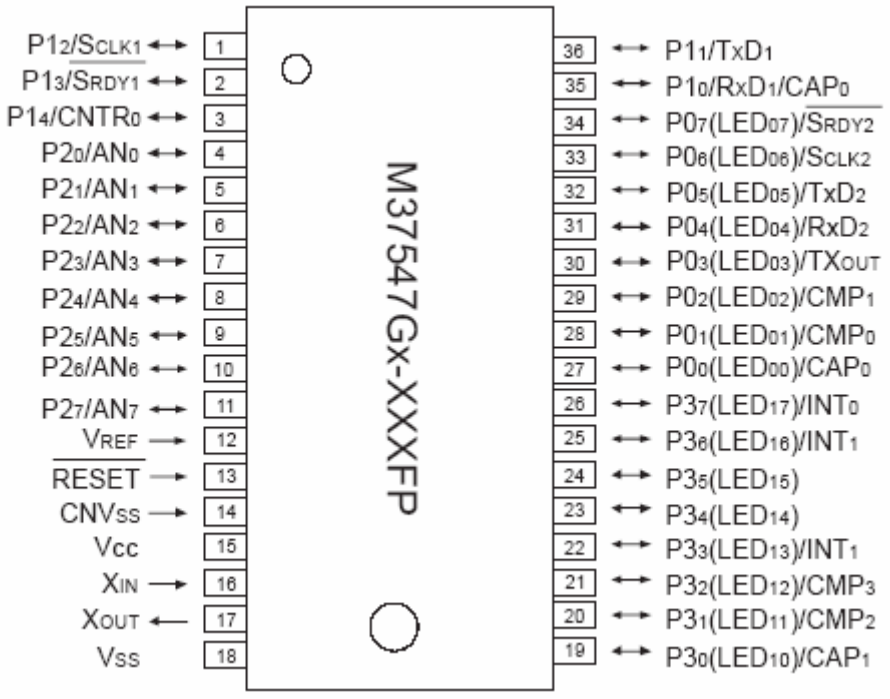
封装：PRDP0032BA-A (32P4B)

7546 群管脚连接图（俯视图）



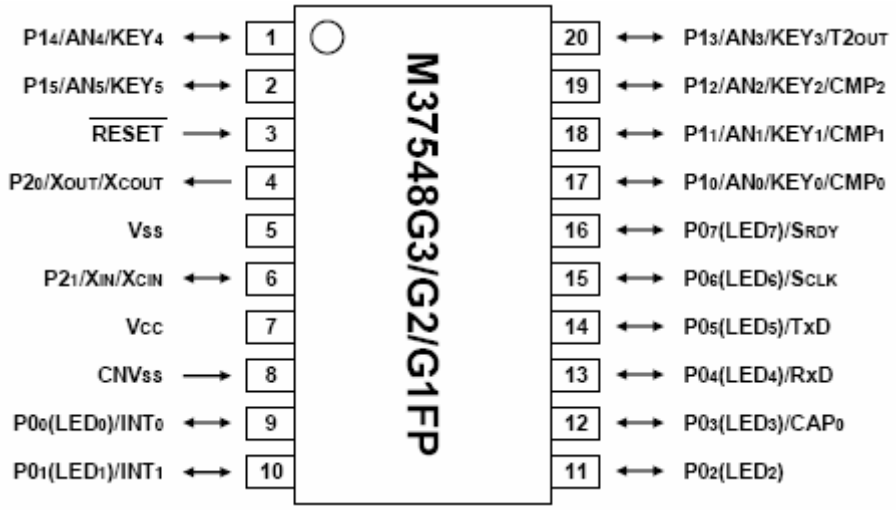
封装：PWQN0036KA-A (36PJW-A)

7547 群管脚连接图（俯视图）



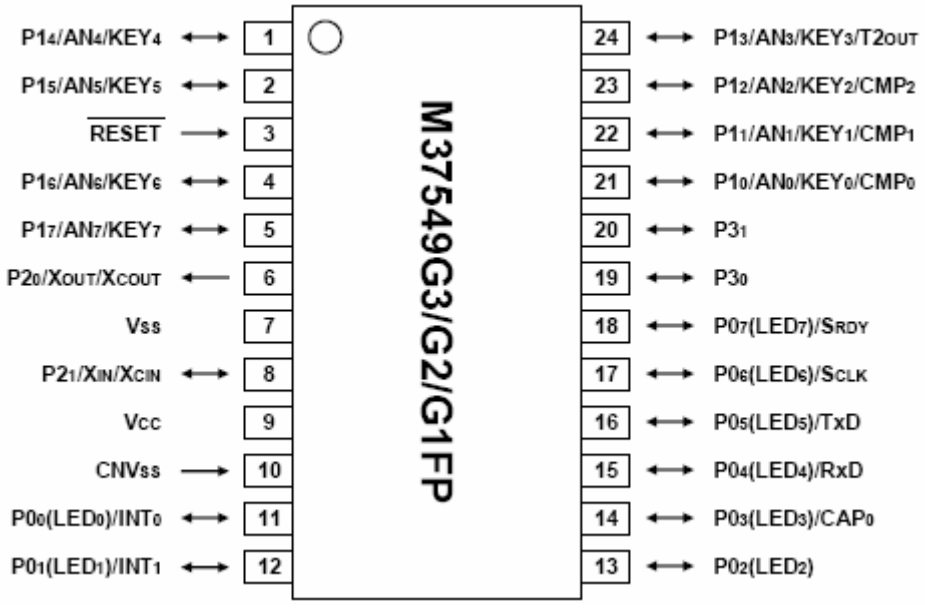
封装：PRSP0036GA-A (36P2R-A)

7548 群管脚连接图（俯视图）



封装：PLSP0020JB-A (20P2F-A)

7549 群管脚连接图（俯视图）



封装：PRSP0024GA-A (24P2Q-A)

3. 控制寄存器的区别

7548/49 群与 7546/47 群的控制寄存器的区别如下：

	7546/47群	7548/49群
0000_{16}	端口P0 (P0)	端口P0 (P0)
0001_{16}	端口P0方向寄存器 (P0D)	端口P0方向寄存器 (P0D)
0002_{16}	端口P1 (P1)	端口P1 (P1)
0003_{16}	端口P1方向寄存器 (P1D)	端口P1方向寄存器 (P1D)
0004_{16}	端口P2 (P2)	端口P2 (P2)
0005_{16}	端口P2方向寄存器 (P2D)	端口P2方向寄存器 (P2D)
0006_{16}	端口P3 (P3)	端口P3 (P3) *仅7549
0007_{16}	端口P3方向寄存器 (P3D)	端口P3方向寄存器 (P3D)*仅7549
0008_{16}	保留区	保留区
0009_{16}	保留区	保留区
$000A_{16}$	中断源设定寄存器 (INTSET)	保留区
$000B_{16}$	中断源识别寄存器 (INTDIS)	保留区
$000C_{16}$	捕捉寄存器0 (低位) (CAP0L)	端口P0驱动能力控制寄存器 (DCCR)
$000D_{16}$	捕捉寄存器0 (高位) (CAP0H)	端口P0上拉控制寄存器 (PULL0)
$000E_{16}$	捕捉寄存器1 (低位) (CAP1L)	端口P1上拉控制寄存器 (PULL1)
$000F_{16}$	捕捉寄存器1 (高位) (CAP1H)	键输入选择寄存器(KEYS)
0010_{16}	比较寄存器 (低位) (CMPL)	捕捉/比较寄存器 (低位) (CRAL)
0011_{16}	比较寄存器 (高位) (CMPH)	捕捉/比较寄存器 (高位) (CRAH)
0012_{16}	捕捉/比较寄存器R/W指针 (CCRP)	捕捉/比较寄存器R/W指针 (CCRP)
0013_{16}	捕捉软件触发寄存器 (CSTR)	比较输出模式寄存器 (CMOM)
0014_{16}	比较设定值再装入寄存器 (CMPR)	定时器A (低位) (TAL)
0015_{16}	端口P0P3驱动能力控制寄存器 (DCCR)	定时器A (高位) (TAH)
0016_{16}	上拉控制寄存器 (PULL)	保留区
0017_{16}	端口P1P3控制寄存器 (P1P3C)	保留区
0018_{16}	发送1/接收1缓冲寄存器1 (TB1/RB1)	发送/接收缓冲寄存器 (TB/RB)
0019_{16}	串行I/O1状态寄存器 (SIO1STS)	串行I/O状态寄存器 (SIOSTS)
$001A_{16}$	串行I/O1控制寄存器 (SIO1CON)	串行I/O控制寄存器 (SIOCON)
$001B_{16}$	UART1控制寄存器 (UART1CON)	UART控制寄存器 (UARTCON)
$001C_{16}$	波特率发生器1 (BRG1)	波特率发生器 (BRG)
$001D_{16}$	定时器A, B模式寄存器 (TABM)	保留区
$001E_{16}$	捕捉/比较端口寄存器 (CCPR)	保留区
$001F_{16}$	捕捉/比较定时器源选择寄存器 (TMSR)	保留区
0020_{16}	捕捉模式寄存器 (CAPM)	保留区
0021_{16}	比较输出模式寄存器 (CMOM)	保留区
0022_{16}	捕捉/比较状态寄存器 (CCSR)	保留区
0023_{16}	比较中断源设定寄存器 (CISR)	保留区
0024_{16}	定时器A (低位) (TAL)	保留区
0025_{16}	定时器A (高位) (TAH)	保留区
0026_{16}	定时器B (低位) (TBL)	保留区
0027_{16}	定时器B (高位) (TBH)	保留区
0028_{16}	预定标器1 (PRE1)	预定标器12 (PRE12)
0029_{16}	定时器1 (T1)	定时器1 (T1)
$002A_{16}$	定时器计数源设定寄存器 (TCSS)	定时器2 (T2)

$002B_{16}$	定时器X模式寄存器 (TXM)	定时器模式寄存器 (TM)
$002C_{16}$	预定标器X (PREX)	定时器计数源设定寄存器 (TCSS)
$002D_{16}$	定时器X (TX)	比较设定值再装入寄存器 (CMPR)
$002E_{16}$	发送2/接收2缓冲寄存器2 (TB2/RB2)	捕捉/比较端口寄存器 (CCPR)
$002F_{16}$	串行I/O2状态寄存器 (SIO2STS)	捕捉/比较状态寄存器 (CCSR)
0030_{16}	串行I/O2控制寄存器 (SIO2CON)	比较中断源设定寄存器 (CISR)
0031_{16}	UART2控制寄存器 (UART2CON)	捕捉软件触发寄存器 (CSTR)
0032_{16}	波特率发生器2 (BRG2)	捕捉模式寄存器 (CAPM)
0033_{16}	保留区	保留区
0034_{16}	A/D控制寄存器 (ADCON)	A/D控制寄存器 (ADCON)
0035_{16}	A/D转换寄存器(低位) (ADL)	A/D转换寄存器(低位) (ADL)
0036_{16}	A/D转换寄存器(高位) (ADH)	A/D转换寄存器(高位) (ADH)
0037_{16}	内部振荡器分频比选择寄存器 (RODR)	时钟模式寄存器 (CLKM)
0038_{16}	MISRG	振荡器停止检测寄存器 (CLKSTP)
0039_{16}	监视定时器控制寄存器 (WDTCON)	监视定时器控制寄存器 (WDTCON)
$003A_{16}$	中断边沿选择寄存器 (INTEDGE)	中断边沿选择寄存器 (INTEDGE)
$003B_{16}$	CPU模式寄存器 (CPUM)	CPU模式寄存器 (CPUM)
$003C_{16}$	中断请求寄存器1 (IREQ1)	中断请求寄存器1 (IREQ1)
$003D_{16}$	中断请求寄存器2 (IREQ2)	中断请求寄存器2 (IREQ2)
$003E_{16}$	中断控制寄存器1 (ICON1)	中断控制寄存器1 (ICON1)
$003F_{16}$	中断控制寄存器2 (ICON2)	中断控制寄存器2 (ICON2)

注: 不要对SFR保留区进行存取.

: 7548/49群增加的SFR

: 7548/49群有改变的SFR

: 仅7546/47群有

4. 中断向量表的区别

7548/49 群与 7546/47 群在中断源与向量地址上有较大不同，与此相关的中断请求寄存器和中断控制控制寄存器也有相应变化，使用时请参考相关寄存器结构说明。

7548/49群与7546/47群中断向量的不同处 =

向量地址		优先级	7546/47群中断源	7548/49群中断源
高位	低位			
$FFFD_{16}$	$FFFC_{16}$	1	复位	复位
$FFFB_{16}$	$FFFA_{16}$	2	串行I/O1接收	串行I/O接收
$FFF9_{16}$	$FFF8_{16}$	3	串行I/O1发送	串行I/O发送
$FFF7_{16}$	$FFF6_{16}$	4	串行I/O2接收	INT_0
$FFF5_{16}$	$FFF4_{16}$	5	串行I/O2发送	INT_1
$FFF3_{16}$	$FFF2_{16}$	6	INT_0	键唤醒
$FFF1_{16}$	$FFF0_{16}$	7	INT_1	捕捉
$FFEF_{16}$	$FFEE_{16}$	8	键唤醒 / UART1 总线冲突检测	比较
$FFED_{16}$	$FFEC_{16}$	9	$CNTR_0$	定时器A
$FFEB_{16}$	$FFEA_{16}$	10	捕捉0	定时器2
$FFE9_{16}$	$FFE8_{16}$	11	捕捉1	A/D转换

(接上表)

$FFE7_{16}$	$FFE6_{16}$	12	比较	定时器1
$FFE5_{16}$	$FFE4_{16}$	13	定时器X	保留区
$FFE3_{16}$	$FFE2_{16}$	14	定时器A	保留区
$FFE1_{16}$	$FFE0_{16}$	15	定时器B	保留区
$FFDF_{16}$	$FFDE_{16}$	16	A/D转换 / 定时器1	保留区
$FFDD_{16}$	$FFDC_{16}$	17	BRK指令	BRK指令

5. 时钟发生电路的区别

7548/49 群与 7546/47 群的时钟产生电路的不同如下图所示。

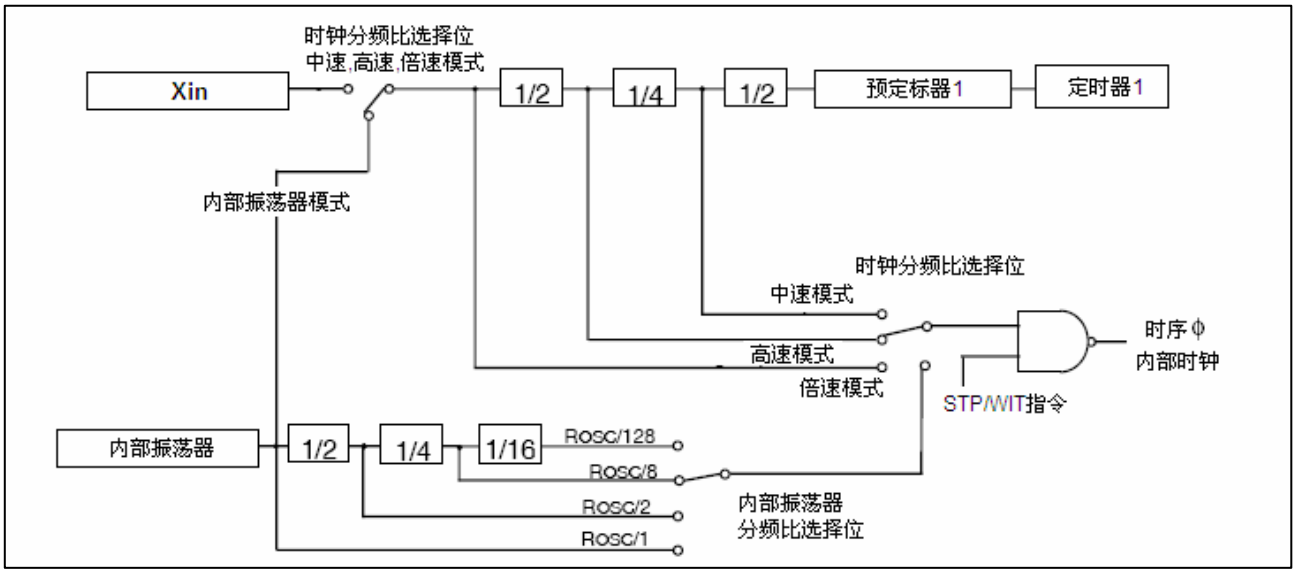


图 1. 7546/47 群时钟发生电路框图

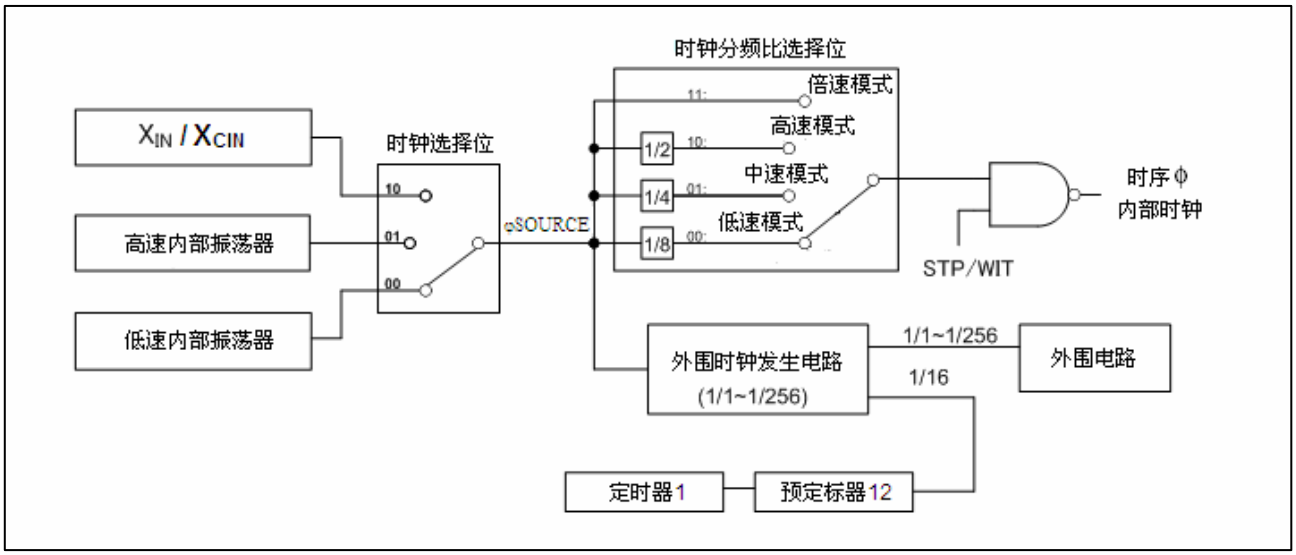


图 2. 7548/49 群时钟发生电路框图

6. 定时器功能的区别

7548/49 群与 7546/47 群相比，在定时器功能上有较大变化，简化了定时器 2 的部分功能，二者区别见下表：

	7546/47 群定时器功能		**7548/49 群定时器功能**
8位定时器1 （预定标器1）	计数源：f(XIN)/16, 或内部振荡器16分频输出 （由CPUM寄存器设定）	8位定时器1 （预定标器12）	计数源：f(φSOURCE)/16, 或f(XCIN):32kHz晶振 （由CLKM和TCSS寄存器设定）
8位定时器X （预定标器X）	计数源：f(XIN)/16, f(XIN)/2, f(XIN) （由TCSS寄存器设定）	8位定时器2 （预定标器12）	计数源：f(φSOURCE)/16, f(φSOURCE)/256, 预定标器12输出, 定时器A下溢 （由CLKM和TCSS寄存器设定）
	定时器X有以下4种模式: （由TXM寄存器设定） (1) 定时器模式 (2) 脉冲输出模式 (3) 事件计数器模式 (4) 脉冲宽度测定模式		定时器2有以下2种模式: （由TM寄存器设定） (1) 定时器模式 (2) 脉冲输出模式
16位定时器A/B	计数源：f(XIN)/16, f(XIN)/2, f(XIN)/32, f(XIN)/64, f(XIN)/128, f(XIN)/256 或者 内部振荡器输出（仅定时器A）， 定时器A下溢（仅定时器B） （由TCSS寄存器设定）	16位定时器A	计数源：f(φSOURCE)/16, f(φSOURCE)/2, f(φSOURCE)/32, f(φSOURCE)/64, f(φSOURCE)/128, f(φSOURCE)/256, f(LSOCO), f(XCIN) （由CLKM和TCSS寄存器设定）
	定时器A/B有以下3种模式: (1) 定时器模式 (2) 输出比较 （有正常输出和调制输出两种模式） (3) 输入捕捉模式		定时器A有3种模式: (1) 定时器模式 (2) 输出比较 （仅有正常输出模式） (3) 输入捕捉模式

7. 参考文献

硬件手册:

7546 群数据手册
7547 群数据手册
7548 群数据手册
7549 群数据手册
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修订记录

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2.00	2008.03.17	1	修改页眉 修改表中 7548/49 群中断内容
		7	修改图 2 内容（增加 XCIN 时钟源；系统时钟 → Φsource；删去文字“系统” 和 “CPU”）
		8	修改表中 7548/49 群时钟源内容
		9	更新咨询邮箱地址

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