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2010年4月1日
瑞萨电子公司

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7548/49 群与 7544 群（QzROM 版）

7548/49 群与 7544 群（QzROM 版）的区别

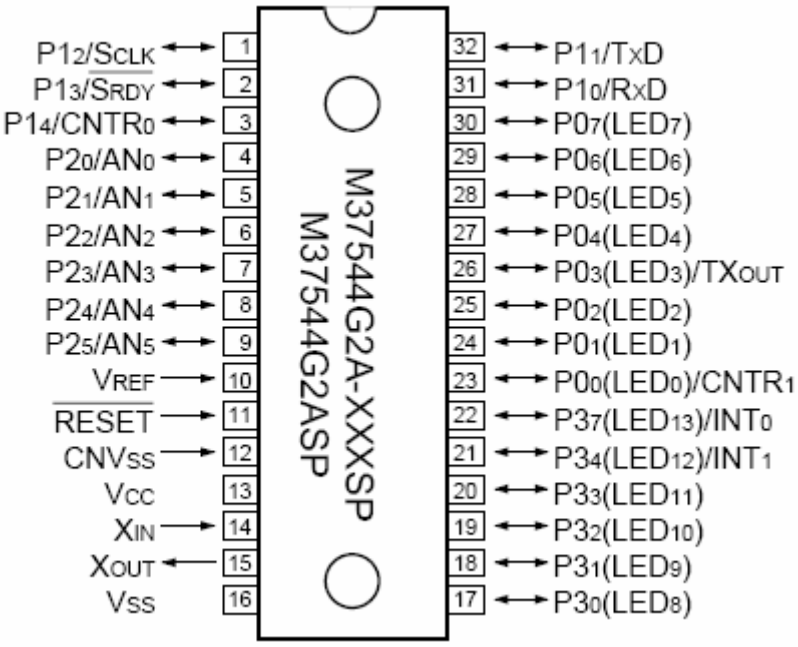
1. 功能上的主要区别

	7544 群(QzROM版)	7548/49 群	
		7548	7549
产品名	M37544G2A-XXXSP/GP M37544G2ASP/GP	M37548G3-XXXFP M37548G3FP M37548G2-XXXFP M37548G2FP M37548G1-XXXFP M37548G1FP	M37549G3-XXXFP M37549G3FP M37549G2-XXXFP M37549G2FP M37549G1-XXXFP M37549G1FP
封装	PRDP0032BA-A (32P4B):32管脚SDIP封装 PLQP0032GB-A (32P6U-A):32管脚LQFP封装	PLSP0020JB-A (20P2F-A):20管脚SSOP封装	PRSP0024GA-A (24P2Q-A):24管脚SSOP封装
ROM类型 ROM/RAM容量 (字节)	QzROM型:8K/256	QzROM型:2K/192 (G1) QzROM型:4K/256 (G2) QzROM型:6K/256 (G3)	
可编程I/O端口	25个	15个	19个
LED驱动端口	14个 (输出总峰值电流60mA)	8个	
中断	12个源, 12个向量 (外部中断源5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) 16位 x 1 (定时器A)	8位 x 2 (定时器1, 2) 16位 x 1 (定时器A)	
输出比较功能	无	3通道	
输入捕捉功能	无	1通道	
A/D转换器	8位 x 6通道	10位 x 6通道	10位 x 8通道
内部振荡器	2MHz(标准)	内部高速: 4MHz(标准)	
		内部低速: 250kHz(标准)	
加电复位电路	无	内置	
低电压检测电路	无	内置	
电源电压 (陶瓷振荡器)	2.2 ～ 5.5 V	1.8 ～ 5.5 V	
电源电压 (内部振荡器)	1.8 ～ 5.5V @2MHz	4.0 ～ 5.5V @4MHz 1.8 ～ 5.5V @250kHz	
功能设定ROM区	地址$FFD4_{16}$	地址 $FFD4_{16}$ 到 $FFDB_{16}$	
功能设定ROM数据	无	内置	
振荡方式选择	无	有	
低速内部振荡器停止控制	无	有	
STP指令功能控制	无	有	
监视定时器H计数源选择	无	有	
监视定时器时钟源选择	无	有	
监视定时器启动控制	无	有	
低电压检测电路使能控制	无	有	
STP模式下低电压检测电路控制	无	有	

2. 管脚配置的区别

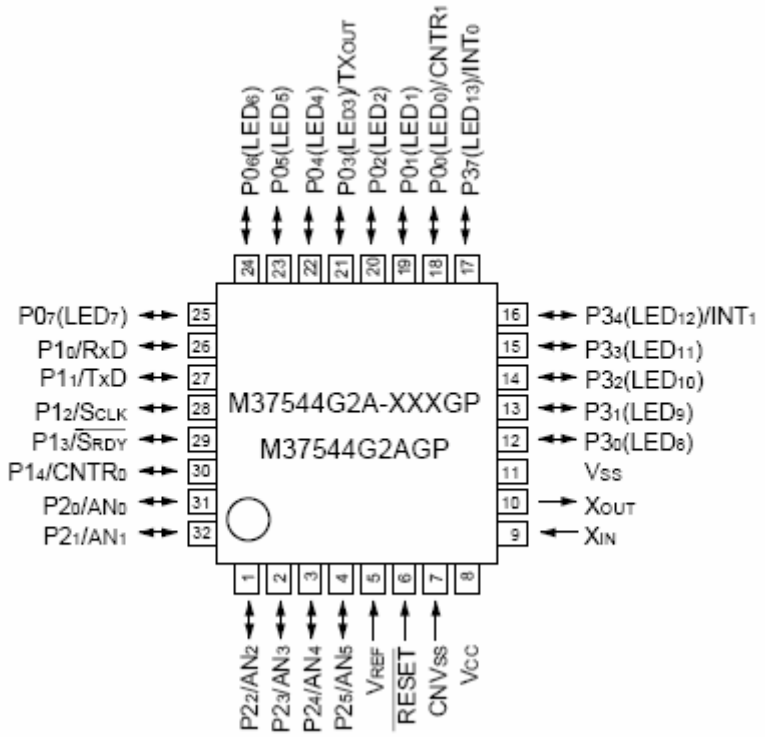
7548/49 群与 7544 群（QzROM 版）的管脚配置和封装类型完全不同，使用中请注意，二者的区别如下：

7544 群（QzROM 版）管脚连接图（俯视图）



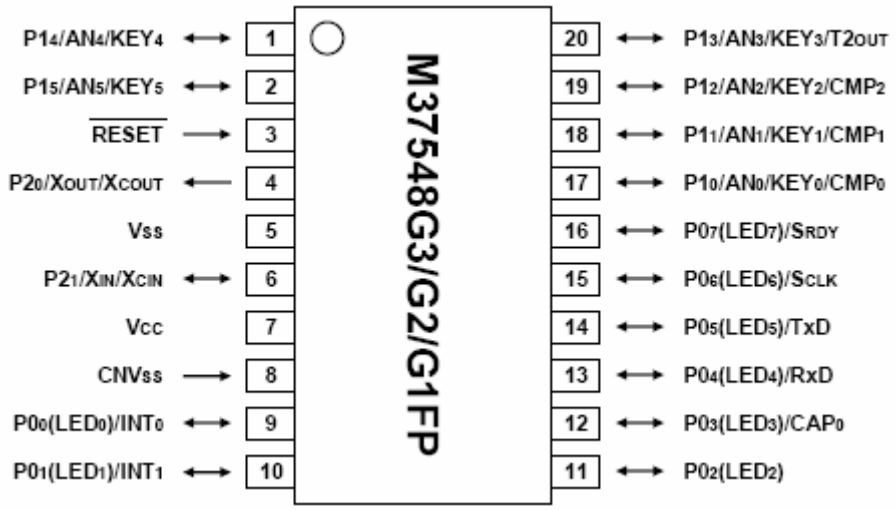
封装：PRDP0032BA-A (32P4B)

7544 群（QzROM 版）管脚连接图（俯视图）



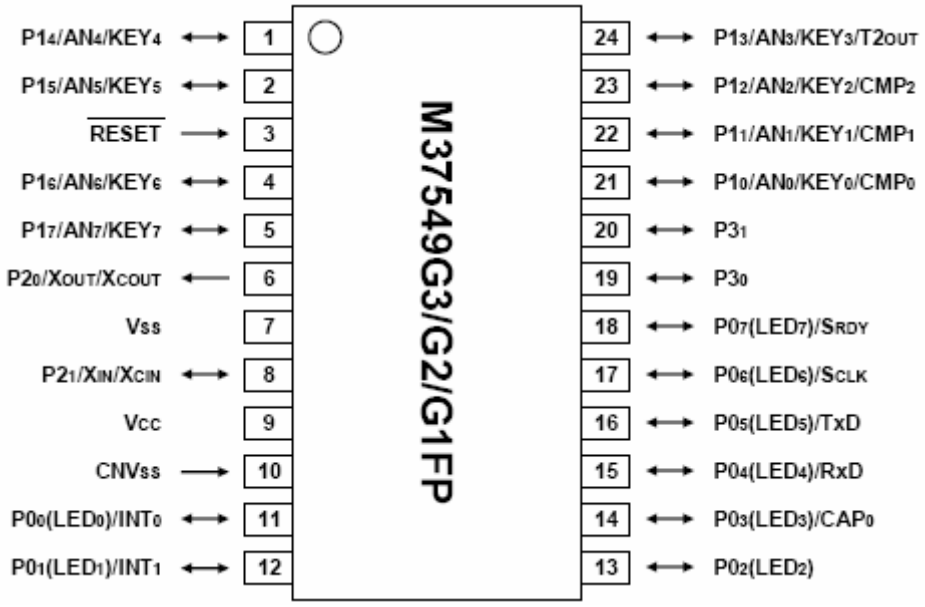
封装：PLQP0032GB-A (32P6U-A)

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 7544 群（QzROM 版）的控制寄存器的区别如下：

	7544群（QzROM版）	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
$000A_{16}$	保留区	保留区
$000B_{16}$	保留区	保留区
$000C_{16}$	保留区	端口P0驱动能力控制寄存器 (DCCR)
$000D_{16}$	保留区	端口P0上拉控制寄存器 (PULL0)
$000E_{16}$	保留区	端口P1上拉控制寄存器 (PULL1)
$000F_{16}$	保留区	键输入选择寄存器(KEYS)
0010_{16}	保留区	捕捉/比较寄存器 (低位) (CRAL)
0011_{16}	保留区	捕捉/比较寄存器 (高位) (CRAH)
0012_{16}	保留区	捕捉/比较寄存器R/W指针 (CCRP)
0013_{16}	保留区	比较输出模式寄存器 (CMOM)
0014_{16}	保留区	定时器A (低位) (TAL)
0015_{16}	保留区	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/接收缓冲寄存器 (TB/RB)	发送/接收缓冲寄存器 (TB/RB)
0019_{16}	串行I/O状态寄存器 (SIOSTS)	串行I/O状态寄存器 (SIOSTS)
$001A_{16}$	串行I/O控制寄存器 (SIOCON)	串行I/O控制寄存器 (SIOCON)
$001B_{16}$	UART控制寄存器 (UARTCON)	UART控制寄存器 (UARTCON)
$001C_{16}$	波特率发生器 (BRG)	波特率发生器 (BRG)
$001D_{16}$	定时器A模式寄存器 (TAM)	保留区
$001E_{16}$	定时器A (低位) (TAL)	保留区
$001F_{16}$	定时器A (高位) (TAH)	保留区
0020_{16}	保留区	保留区
0021_{16}	保留区	保留区
0022_{16}	保留区	保留区
0023_{16}	保留区	保留区
0024_{16}	保留区	保留区
0025_{16}	保留区	保留区
0026_{16}	保留区	保留区
0027_{16}	保留区	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)
$002A_{16}$	保留区	定时器2 (T2)

	7544群（QzROM版）	7548/49群
$002B_{16}$	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)
$002E_{16}$	定时器计数源设定寄存器1 (TCSS1)	捕捉/比较端口寄存器 (CCPR)
$002F_{16}$	定时器计数源设定寄存器2 (TCSS2)	捕捉/比较状态寄存器 (CCSR)
0030_{16}	保留区	比较中断源设定寄存器 (CISR)
0031_{16}	保留区	捕捉软件触发寄存器 (CSTR)
0032_{16}	保留区	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寄存器 (AD)	A/D转换寄存器(低位) (ADL)
0036_{16}	保留区	A/D转换寄存器(高位) (ADH)
0037_{16}	保留区	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

4. 功能设定 ROM 区的区别

功能设定 ROM 数据 0～2（地址 $FFD8_{16}$～$FFDA_{16}$）是设定外围功能模式的区域，如果给此区域设定值，就在单片机复位解除时设定各自的外围功能运行模式。二者的功能设定 ROM 区如下：

	7544 群（QzROM版）	7548/49 群
$FFD4_{16}$	ROM代码保护	瑞萨出货检查区
$FFD5_{16}$	—	瑞萨出货检查区
$FFD6_{16}$	—	瑞萨出货检查区
$FFD7_{16}$	—	瑞萨出货检查区
$FFD8_{16}$	—	功能设定ROM数据0
$FFD9_{16}$	—	功能设定ROM数据1
$FFDA_{16}$	—	功能设定ROM数据2
$FFDB_{16}$	—	ROM代码保护

：不同处

：7548/49中增加的

5. 中断向量表的区别

7548/49 群与 7544 群（QzROM 版）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7544群（QzROM版）中断向量的不同处 =

向量地址		优先级	7544群（QzROM版）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/O接收	串行I/O接收
$FFF9_{16}$	$FFF8_{16}$	3	串行I/O发送	串行I/O发送
$FFF7_{16}$	$FFF6_{16}$	4	INT_0	INT_0
$FFF5_{16}$	$FFF4_{16}$	5	INT_1	INT_1
$FFF3_{16}$	$FFF2_{16}$	6	键唤醒	键唤醒
$FFF1_{16}$	$FFF0_{16}$	7	$CNTR_0$	输入捕捉
$FFEF_{16}$	$FFEE_{16}$	8	$CNTR_1$	输出比较
$FFED_{16}$	$FFEC_{16}$	9	定时器X	定时器A
$FFEB_{16}$	$FFEA_{16}$	10	保留区	定时器2
$FFE9_{16}$	$FFE8_{16}$	11	保留区	A/D转换
$FFE7_{16}$	$FFE6_{16}$	12	定时器A	定时器1
$FFE5_{16}$	$FFE4_{16}$	13	保留区	保留区
$FFE3_{16}$	$FFE2_{16}$	14	A/D转换	保留区
$FFE1_{16}$	$FFE0_{16}$	15	定时器1	保留区
$FFDF_{16}$	$FFDE_{16}$	16	保留区	保留区
$FFDD_{16}$	$FFDC_{16}$	17	BRK指令	BRK指令

6. 时钟发生电路的区别

7548/49 群与 7544 群（QzROM 版）的时钟产生电路的不同如下图所示。

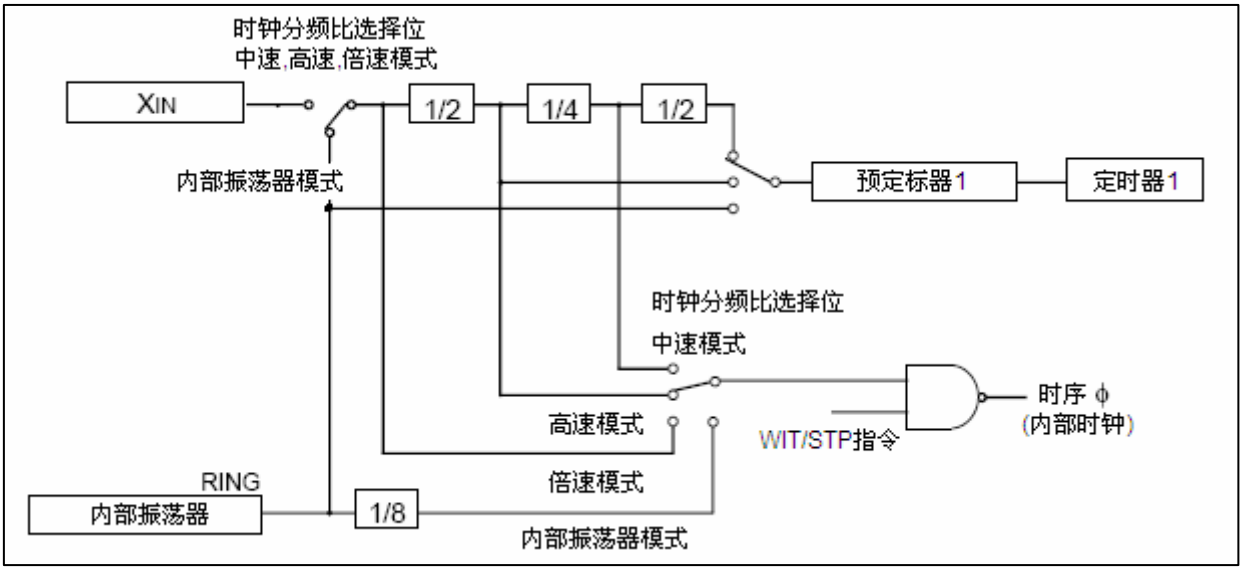


图 1. 7544 群（QzROM 版）时钟发生电路框图

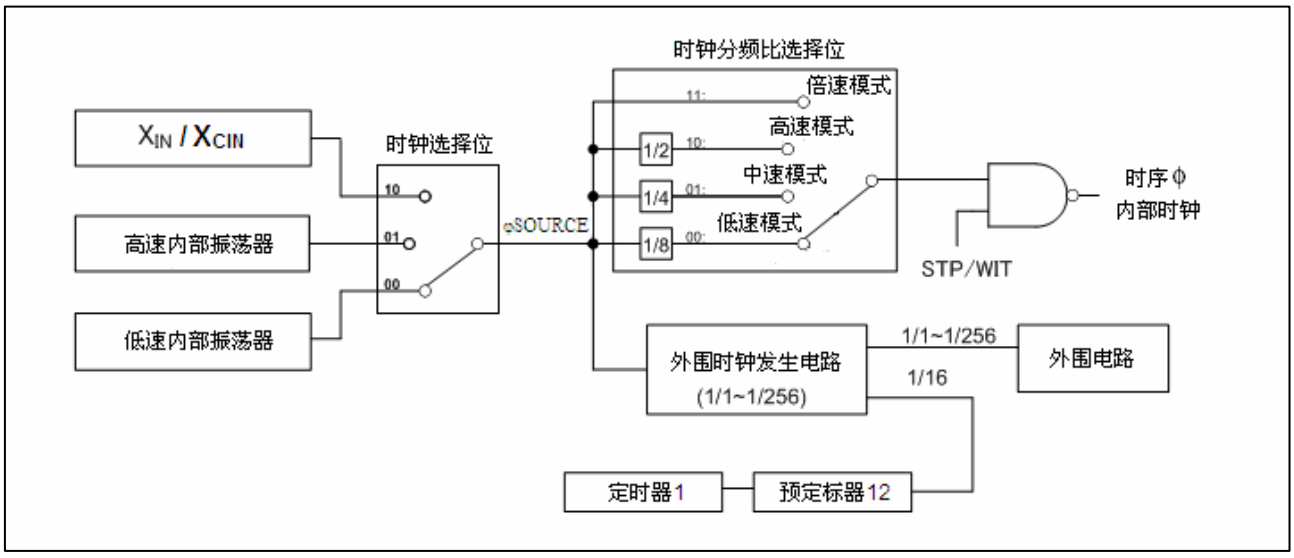


图 2. 7548/49 群时钟发生电路框图

7. 定时器功能的区别

7548/49 群与 7544 群（QzROM 版）相比，在定时器功能上有较大变化，简化了定时器 2 和定时器 A 的部分功能，但是，根据某些特殊应用要求增加了输出比较和输入捕捉功能。二者区别见下表：

7544 群（QzROM版）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, f(XIN)/2, 或内部振荡器分频输出 (由TCSS2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, 或内部振荡器分频输出 (由TCSS1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	计数源: f(XIN)/16, f(XIN)/2, 或内部振荡器分频输出 (由TCSS2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有以下4种模式: (由TAM寄存器) (1) 定时器模式 (2) 脉冲周期测定模式 (3) 事件计数器模式 (4) 脉冲宽度HL连续测定模式		定时器A有3种模式: (1) 定时器模式 (2) 输出比较模式 (3) 输入捕捉模式

8. 参考文献

硬件手册

7544 群（QzROM 版）数据手册

7548 群数据手册

7549 群数据手册

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		页	要点
1.00	2006.08.23	—	初版发行
1.01	2008.03.07	全部 1 7	修改 7544 群→7544 群（QzROM 版） 修改了表中 7544 群（QzROM 版）对应的产品名和 ROM 类型 修改图 2 内容（增加 X_{CIN}；系统时钟→Φsource；删去文字“系统”和“CPU”） 修改表中 7548/49 群时钟源内容

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