



MICROCHIP PIC16F785-ICD

PIC16F785-ICD Rev. A Silicon Errata

The parts you have received conform functionally to the Device Data Sheet (DS41249B), except for the anomalies described below.

Note: The anomalies are independent from those listed for the PIC16F785 A1 device.

All of the issues listed here will be addressed in future revisions of the silicon.

1. Module: Two-Phase PWM: (Complementary Mode)

- Maximum phase switching dead time is limited by the PWM clock frequency (`pwm_clock`). At a `pwm_clock` frequency of 20 MHz, the maximum dead time is 35 ns. At a `pwm_clock` frequency of 10 MHz, the maximum dead time is 80 ns. The relationship between maximum dead time and `pwm_clock` frequency is approximately linear.
- In normal two-phase operation when the output is inverted, the leading edge is delayed by about 10 ns and the trailing edge occurs about 7 ns early. When the phase delay is set to maximum, the leading edge is delayed about 8 ns. The net result of these two phenomena is that at 20 MHz `FOSC`, a blanked inverted output at maximum phase delay, will not be generated.

- Duty cycle by comparator feedback (COMOD = X1) is not supported.
- If the dead time is not zero and PWMPH1<4:0> = PWMPH2<4:0> then both phase outputs will be driven false (PH1 and PH2 low before inverting XOR gate). If the dead time is zero and PWMPH1<4:0> = PWMPH2<4:0> then phase 1 will be driven false (PH1 low) and phase 2 will be driven true (PH2 high) for all but one pwm_clock cycles every PWM period.

2. Module: Two-Phase PWM: (Two-Phase Mode)

When starting the Two-Phase PWM peripheral from reset or auto-shutdown, the PH2 output does not hold off until PWMPH2<4:0> matches the pwm_count as it should. Instead, PH2 starts immediately when all selected comparator outputs are false. Comparators are selected with the PWMPH2<6:5> bits. PH2 correctly stops when any selected comparator output goes true. This anomalous behavior can be avoided by starting the Two-Phase PWM in Complementary mode. When Complementary mode is disabled (PWMCON1<6:5> = 00) without disabling the Two-Phase peripheral (PWMCON0<1:0> = 11), both PH1 and PH2 outputs operate as specified.

Work around

Starting in Complementary mode:

1. Set RC1/PH1, RC4/PH2 and RB7/SYNC output latches to “safe” levels.
2. Set PWMCON1<5> and/or PWMCON1<6> to ‘1’.

3. Set PWMPH1, PWMPH2, PWMCLK registers for desired two-phase operation.
4. Start complementary PWM operation by setting PWMCON0<1:0> to '11'.
5. Clear PWMCON1<6:5> (transition from Complementary mode to Two-Phase mode).
6. Clear bits TRISC<1>, TRISC<4> and TRISB<7> to set PH1, PH2 and SYNC as outputs.

Auto-restart cannot be used because auto-shutdown has the effect of resetting the Two-Phase PWM peripheral and requires the suggested work around initialization to restart.

REVISION HISTORY

Rev A Document (5/2005)

First revision of document.

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