MSP430 PWM
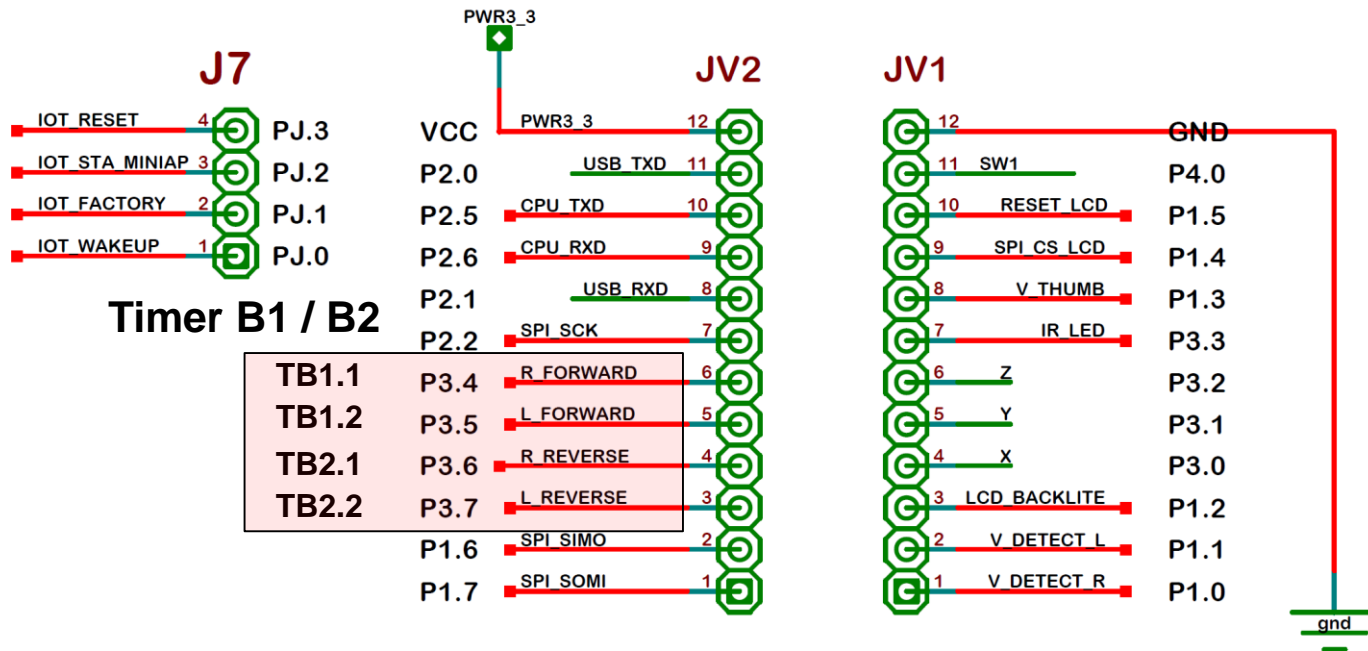
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Schematic to Code

From MSP430FR5739_DataSheet pg 80

Table 51. Port P3 (P3.4 to P3.6) Pin Functions

PIN NAME (P3.x)	x	FUNCTION	CONTROL BITS/SIGNALS		
			P3DIR.x	P3SEL1.x	P3SEL0.x
P3.4/TB1.1/TB2CLK/SMCLK	4	P3.4 (I/O) [1]	I: 0; O: 1	0	0
		TB1.CCI1B [1]	0	0	1
		TB1.1 [1]	1		
		TB2CLK [1]	0	1	1
		SMCLK [1]	1		
P3.5/TB1.2/CDOUT	5	P3.5 (I/O) [1]	I: 0; O: 1	0	0
		TB1.CCI2B [1]	0	0	1
		TB1.2 [1]	1		
		CDOUT [1]	1	1	1
P3.6/TB2.1/TB1CLK	6	P3.6 (I/O) [1]	I: 0; O: 1	0	0
		TB2.CCI1B [1]	0	0	1
		TB2.1 [1]	1		
		TB1CLK [1]	0	1	1

(1) Not available on all devices and package types.

Table 52. Port P3 (P3.7) Pin Functions

PIN NAME (P3.x)	x	FUNCTION	CONTROL BITS/SIGNALS		
			P3DIR.x	P3SEL1.x	P3SEL0.x
P3.7/TB2.2	7	P3.7 (I/O) [1]	I: 0; O: 1	0	0
		TB2.CCI2B [1]	0	0	1
		TB2.2 [1]	1		

(1) Not available on all devices and package types.

Change ports.c

```
P3SEL0 &= ~R_FORWARD;          // R_FORWARD GPI/O selected
P3SEL1 &= ~R_FORWARD;          // R_FORWARD GPI/O selected
P3DIR |= R_FORWARD;            // R_FORWARD set to Output
P3OUT &= ~R_FORWARD;           // R_FORWARD Port Pin set low


P3SEL0 &= ~R_REVERSE;          // R_REVERSE GPI/O selected
P3SEL1 &= ~R_REVERSE;          // R_REVERSE GPI/O selected
P3DIR |= R_REVERSE;            // R_REVERSE set to Output
P3OUT &= ~R_REVERSE;           // R_REVERSE Port Pin set low


P3SEL0 &= ~L_FORWARD;          // L_FORWARD GPI/O selected
P3SEL1 &= ~L_FORWARD;          // L_FORWARD GPI/O selected
P3DIR |= L_FORWARD;            // L_FORWARD set to Output
P3OUT &= ~L_FORWARD;           // L_FORWARD Port Pin set low


P3SEL0 &= ~L_REVERSE;          // L_REVERSE GPI/O selected
P3SEL1 &= ~L_REVERSE;          // L_REVERSE GPI/O selected
P3DIR |= L_REVERSE;            // L_REVERSE set to Output
P3OUT &= ~L_REVERSE;           // L_REVERSE Port Pin set low
```

Need to reconfigure

Timer B1 configuration

```c
void Init_Timer_B1(void) {
//-----------------------------------------------------------------
// SMCLK source, up count mode, PWM Right Side
//-----------------------------------------------------------------
  TB1CTL = TBSSEL__SMCLK;              // SMCLK
  TB1CTL |= MC_1;                      // Up Mode
  TB1CTL |= TBCLR;                     // Clear TAR

  right_forward_rate = OFF;            // Set Right Forward Off
  left_forward_rate = OFF;            // Set Left Forward Off

  TB1CCR0 = WHEEL_PERIOD;             // PWM Period
  TB1CCTL1 = OUTMOD_7;                // CCR1 reset/set
  TB1CCR1 = right_forward_rate;       // P3.4 Right Forward PWM duty cycle
  TB1CCTL2 = OUTMOD_7;                // CCR2 reset/set
  TB1CCR2 = left_forward_rate;        // P3.5 Left Forward PWM duty cycle
//-----------------------------------------------------------------
}
```

Now create the same for Timer B2
for the Reverse Direction

Use of PWM

```
TB1CCR1 = 0;                         // P3.4 Right Forward OFF
TB1CCR2 = 0;                         // P3.5 Left Forward OFF
TB1CCR1 = [DESIRED ON AMOUNT];       // P3.4 Right Forward PWM duty cycle
TB1CCR2 = [DESIRED ON AMOUNT];       // P3.5 Left Forward PWM duty cycle
```

DESIRED ON AMOUNT must be a value less than WHEEL_PERIOD
If WHEEL_PERIOD is 8000 then
DESIRED ON AMOUNT of 4000 would be 50% on time