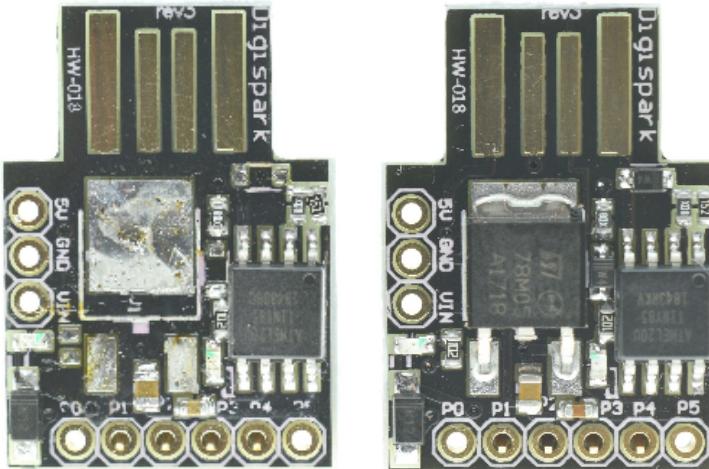


Low power projects digispark ATtiny85 modification

Hardware Modification



Stage	idle Power	Feature lost by modification
Initial	0.120W	-
w/o 78M05	0.096W	Option to use 6v-12v external power
w/o Power LED	0.081W	Power indicator
w/o diods	0.072W	Extra protection from mess with -/+
software sleep	0.002W	Simple code

Software optimization

	A photograph of the Digispark board with a standard ATtiny85 chip. This represents the baseline performance with the 'delay()' function.	A photograph of the Digispark board with an ATtiny85 chip that has been modified to use the 'cpu_sleep()' function for low-power operation.
Code with delay()	0.072W	0.120W
Code with cpu_sleep()	0.002W	0.041W

Blinking Led

```
void setup()
{
    pinMode(1, OUTPUT);
}
void loop()
{
    digitalWrite(1, HIGH);
    delay(1000);
    digitalWrite(1, LOW);
    delay(1000);
}
```

Low Power Blinking LED Example

```
#include <avr/wdt.h>
#include <avr/sleep.h>
#include <avr/interrupt.h>

#define adc_disable() (ADCSRA &= ~(1<<ADEN)) // disable ADC (before power-off)
#define adc_enable() (ADCSRA |= (1<<ADEN)) // re-enable ADC

void setup()
{
    // Power Saving setup
    for (byte i = 0; i < 6; i++) {
        pinMode(i, INPUT);      // Set all ports as INPUT to save energy
        digitalWrite (i, LOW);  //
    }
    adc_disable();           // Disable Analog-to-Digital Converter

    wdt_reset();            // Watchdog reset
    wdt_enable(WDTO_1S);    // Watchdog enable Options: 15MS, 30MS, 60MS, 120MS, 250MS, 500MS, 1S, 2S, 4S, 8S
    WDTCSR |= _BV(WDIE);   // Interrupts watchdog enable
    sei();                  // enable interrupts
    set_sleep_mode(SLEEP_MODE_PWR_DOWN); // Sleep Mode: max
}

void loop()
{
    pinMode(1, OUTPUT);
    digitalWrite(1, HIGH);

    sleep_enable();
    sleep_cpu();

    //Set the LED pins to LOW. This turns it off
    pinMode(1, OUTPUT);
    digitalWrite(1, LOW);

    sleep_enable();
    sleep_cpu();
}

ISR (WDT_vect) {
    WDTCSR |= _BV(WDIE);
}
```

Source: <http://www.gammon.com.au/power>