

# Timbre 1

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// -----
// Created by Tim Eckel - teckel@leethost.com
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//
// See "TimerFreeTone.h" for purpose, syntax, version history, links, and more.
// -----

#include "ABLocks_TimerFreeTone.h"

uint8_t _tft_volume[] = { 255, 200, 150, 125, 100, 87, 50, 33, 22, 2 }; // Duty for
linear volume control.

void TimerFreeTone(uint8_t pin, unsigned long frequency, unsigned int duration,
uint8_t volume) {
    if (frequency == 0 || volume == 0) { // If frequency or volume are zero, just
wait duration and exit.
        delay(duration);
        return;
    }

    frequency = 1000000 / frequency; // Calculate the
square wave length (in microseconds).
    uint32_t duty = frequency / _tft_volume[min(volume, 10) - 1]; // Calculate the
duty cycle (volume).
#ifdef __AVR__
    uint8_t pinBit = digitalPinToBitMask(pin); //
Get the bitmask for the pin.
    volatile uint8_t *pinOutput = (uint8_t *)
portOutputRegister(digitalPinToPort(pin)); // Get the port register for the pin.
    volatile uint8_t *portMode = (uint8_t *)
portModeRegister(digitalPinToPort(pin)); // Get the port mode register for the
pin.
    *portMode |= pinBit; //
Set pin to output mode.
#else
    pinMode(pin, OUTPUT); //
Set pin to output mode.
#endif

    uint32_t startTime = millis(); // Starting time of note.
    while(millis() - startTime < duration) { // Loop for the duration.
#ifdef __AVR__
        *pinOutput |= pinBit; // Set pin high.
        delayMicroseconds(duty); // Square wave duration (how long to leave pin
high).
    }
}
```

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        *pinOutput &= ~pinBit;    // Set pin low.
    #else
        digitalWrite(pin,HIGH);    // Set pin high.
        delayMicroseconds(duty);    // Square wave duration (how long to leave pin
high).
        digitalWrite(pin,LOW);    // Set pin low.
    #endif
        delayMicroseconds(frequency - duty); // Square wave duration (how long to
leave pin low).
    }
}
```