

GISND

1.0

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# Chapter 1

## LICENSE

license: MIT

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## Chapter 2

# YMZ284 Sound IC library

Software Library for Yamaha YMZ284 sound chips.

author: Jay Convertino

data: 2024.05.27

license: MIT

## 2.1 Release Versions

### 2.1.1 Current

- release\_v0.0.1

### 2.1.2 Past

- none

## 2.2 Requirements

- xc8-cc V2.32
- PIC18F45K50 (MCU can be changed in makefile)
- PICerino development board

## 2.3 Building

- make : builds all
- make dox\_gen : doxygen only
- make test : test only
- make libYMZ284.a : static library only
- make clean : remove all build outputs.

## 2.4 Documentation

- See doxygen generated document
- Method for ready check is universal, NOT efficient. Optimize send data for your application!

### 2.4.1 Example Code

```
void main(void)
{
    struct s_ymz284 ymz284;
    /* OSCCON SETUP */
    OSCCONbits.IRCF = 0x7;
    OSCCONbits.OSTS = 0;
    OSCCONbits.SCS = 0x3;
    OSCCON2bits.PLEN = 1;
    /* PORT E SETUP */
    INTCON2bits.nRBPU = 1;
    /* disable analog inputs */
    ANSELA = 0;
    ANSELC = 0;
    ANSELD = 0;
    ANSELE = 0;
    /* wait for chip to be ready */
    __delay_ms(100);
    initYMZ284port(&ymz284, &TRISA, &TRISD, 0, 1);
    initYMZ284(&ymz284, &LATA, &LATD);
    setYMZ284mixer(&ymz284, ~0, ~1);
    setYMZ284channel_attn(&ymz284, 'A', 15, 0);
    setYMZ284channel_freq(&ymz284, 'A', 254);
    /* play this lovely tune forever */
    for(;;);
}
```



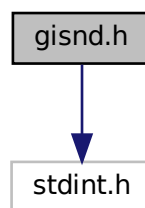
## Chapter 3

# File Documentation

### 3.1 gisnd.h File Reference

```
#include <stdint.h>
```

Include dependency graph for gisnd.h:



### Functions

- void [initGISND](#) ()  
*Initialize gisnd and mute.*
- uint16\_t [getGISND\\_FreqDiv](#) (uint32\_t refClk, uint32\_t channelFreq)  
*Calculate frequency from hertz to binary value.*
- uint16\_t [getGISND\\_EnvFreqDiv](#) (uint32\_t refClk, uint32\_t channelFreq)  
*Calculate envelope frequency from hertz to binary value.*
- void [setGISNDchannel\\_freq](#) (char channel, uint16\_t freqDiv)  
*Set gisnd channel frequency.*
- void [setGISNDchannel\\_attn](#) (char channel, uint8\_t attenuate, uint8\_t select)  
*Set gisnd channel attenuation.*
- void [setGISNDmixer](#) (uint8\_t noise, uint8\_t tone)  
*Set gisnd mixer setting.*
- void [setGISNDnoise\\_freq](#) (uint8\_t freqDiv)  
*Set gisnd noise frequency.*
- void [setGISNDenv\\_freq](#) (uint16\_t freqDiv)  
*Set gisnd envelope frequency.*
- void [setGISNDenv\\_shape](#) (uint8\_t shape)  
*Set gisnd envelope shape.*

### 3.1.1 Function Documentation

#### 3.1.1.1 `getGISND_EnvFreqDiv()`

```
uint16_t getGISND_EnvFreqDiv (
    uint32_t refClk,
    uint32_t channelFreq )
```

Calculate envelope frequency from hertz to binary value.

##### Parameters

<i>refClk</i>	is the reference clock in hertz for the sound chip.
<i>channelFreq</i>	is the target frequency in hertz.

##### Returns

A unsigned 16 bit number that will result in the frequency wanted. (\* 512)

#### 3.1.1.2 `getGISND_FreqDiv()`

```
uint16_t getGISND_FreqDiv (
    uint32_t refClk,
    uint32_t channelFreq )
```

Calculate frequency from hertz to binary value.

##### Parameters

<i>refClk</i>	is the reference clock in hertz for the sound chip.
<i>channelFreq</i>	is the target frequency in hertz.

##### Returns

A unsigned 16 bit number that will result in the frequency wanted. (\* 32)

#### 3.1.1.3 `initGISND()`

```
void initGISND ( )
```

Initialize gisnd and mute.

**3.1.1.4 setGISNDchannel\_attn()**

```
void setGISNDchannel_attn (
    char channel,
    uint8_t attenuate,
    uint8_t select )
```

Set gisnd channel attenuation.

**Parameters**

<i>channel</i>	Select channel A, B, or C (character input, upper case).
<i>attenuate</i>	A 4 bit value (0 to 15)
<i>select</i>	When select is 1, volume control is set by envelope generator, 0 by attenuate.

**3.1.1.5 setGISNDchannel\_freq()**

```
void setGISNDchannel_freq (
    char channel,
    uint16_t freqDiv )
```

Set gisnd channel frequency.

**Parameters**

<i>channel</i>	Select channel A, B, or C (character input, upper case).
<i>freqDiv</i>	is binary number to set the frequency ( $f = \text{refClk}/(32*\text{freqDiv})$ )

**3.1.1.6 setGISNDenv\_freq()**

```
void setGISNDenv_freq (
    uint16_t freqDiv )
```

Set gisnd envelope frequency.

**Parameters**

<i>freqDiv</i>	is binary number to set the frequency ( $f = \text{refClk}/(512*\text{freqDiv})$ )
----------------	--

**3.1.1.7 setGISNDenv\_shape()**

```
void setGISNDenv_shape (
    uint8_t shape )
```

Set gisnd envelope shape.

#### Parameters

<i>shape</i>	A 4 bit value that can change the envelope shape, see datasheet.
--------------	--

### 3.1.1.8 setGISNDmixer()

```
void setGISNDmixer (
    uint8_t noise,
    uint8_t tone )
```

Set gisnd mixer setting.

#### Parameters

<i>noise</i>	0 is enable, 1 is off. bit order C = 2, B = 1, A = 0.
<i>tone</i>	0 is enable, 1 is off. bit order C = 2, B = 1, A = 0.

### 3.1.1.9 setGISNDnoise\_freq()

```
void setGISNDnoise_freq (
    uint8_t freqDiv )
```

Set gisnd noise frequency.

#### Parameters

<i>freqDiv</i>	is binary number to set the frequency ( $f = \text{refClk}/(32*\text{freqDiv})$ )
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## 3.2 LICENSE.md File Reference

## 3.3 README.md File Reference

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