

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(;;);
}
```

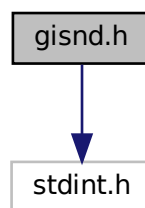

Chapter 3

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.
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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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