

GISND

1.0

Generated by Doxygen 1.9.1

1 LICENSE	1
2 YMZ284 Sound IC library	3
2.1 Release Versions	3
2.1.1 Current	3
2.1.2 Past	3
2.2 Requirements	3
2.3 Building	4
2.4 Documentation	4
2.4.1 Example Code	4
3 File Documentation	5
3.1 gisnd.h File Reference	5
3.1.1 Function Documentation	6
3.1.1.1 getGISND_EnvFreqDiv()	6
3.1.1.2 getGISND_FreqDiv()	6
3.1.1.3 initGISND()	6
3.1.1.4 setGISNDchannel_attn()	7
3.1.1.5 setGISNDchannel_freq()	7
3.1.1.6 setGISNDenv_freq()	7
3.1.1.7 setGISNDenv_shape()	7
3.1.1.8 setGISNDmixer()	8
3.1.1.9 setGISNDnoise_freq()	8
3.2 LICENSE.md File Reference	8
3.3 README.md File Reference	8
Index	9

Chapter 1

LICENSE

license: MIT

Copyright 2022 Johnathan Convertino

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

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(;;);
}
```

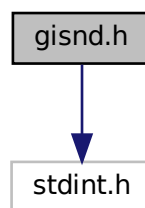

Chapter 3

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 = refClk/(32*freqDiv))
----------------	---

3.2 LICENSE.md File Reference

3.3 README.md File Reference

Index

- getGISND_EnvFreqDiv
 - gisnd.h, [6](#)
- getGISND_FreqDiv
 - gisnd.h, [6](#)
- gisnd.h, [5](#)
 - getGISND_EnvFreqDiv, [6](#)
 - getGISND_FreqDiv, [6](#)
 - initGISND, [6](#)
 - setGISNDchannel_attn, [6](#)
 - setGISNDchannel_freq, [7](#)
 - setGISNDenv_freq, [7](#)
 - setGISNDenv_shape, [7](#)
 - setGISNDmixer, [8](#)
 - setGISNDnoise_freq, [8](#)
- initGISND
 - gisnd.h, [6](#)
- LICENSE.md, [8](#)
- README.md, [8](#)
- setGISNDchannel_attn
 - gisnd.h, [6](#)
- setGISNDchannel_freq
 - gisnd.h, [7](#)
- setGISNDenv_freq
 - gisnd.h, [7](#)
- setGISNDenv_shape
 - gisnd.h, [7](#)
- setGISNDmixer
 - gisnd.h, [8](#)
- setGISNDnoise_freq
 - gisnd.h, [8](#)