MN6475A

D/A Converter for Digital Audio Equipment

Overview

The MN6475A is a CMOS digital-to-analog converter by noise shaping technology and is designed for PCM digital audio equipment. It features a built-in 4 times oversampling and 16-bit input digital filter.

It includes a digital de-emphasis circuit and analog post filter to reduce the parts count and power consumption of the overall D/A conversion system.

And also it includes two noise-shaping 1-bit D/A converters, one each for the left and right channels.

Features

- Built-in 4 times oversampling digital filter
 - (Bandwidth ripple of ± 0.051 dB and attenuation of 47.99dB dB)
- Built-in second order analog post filter with a cutoff frequency of 100 kHz
- Built-in digital de-emphasis circuit with a deviation between +0.47 dB and 0.07 dB
- Choice of normal or double-speed playback
- Built-in overflow limiter
- No zero cross distortion
- Sample-and-hold circuit is unnecessary
- Choice of 768f_s or 384f_s operation
- Single 5V power supply

Applications

• CD players and other digital audio equipment

Pin Assignment



Block Diagram



Pin Descriptions

Pin No.	Symbol	Function Description										
1	LRCLK	LRCLK input pin. "H" level; left channel data input										
		"L" level; right channel data										
2	BCLK	Bit clock input pin for serial data										
3	SRDATA	Serial data input pin										
4	COT 1	L	Stereo output	L	Left channel	Н	Right channel	Н	Output with			
5	COT2	L		Н	output only	L	output only	Н	reversed			
6	TEST	LSI test mode pin. Keep this pin at "L" level.										
7	V _{DD}	Power supply pin for digital circuits (+5V)										
8	X2	Crystal oscillator pin										
9	X1	Crystal oscillator pin (external clock input pin)										
10	V _{SS}	Ground pin for digital circuits (0V)										
11	V _{DDL}	Power supply pin for left channel analog circuits (+5V)										
12	OUTL	Left channel analog signal output pin										
13	V _{SSL}	Ground pin for left channel analog circuits (0V)										
14	V _{SSR}	Ground pin for right channel analog circuits (0V)										
15	OUTR	Right channel analog signal output pin										
16	V _{DDR}	Power supply pin for right channel digital circuits (+5V)										
17	RSTB	Reset pin (Active low).										
		Pull this pin low once after applying the power.										
18	PWML	LSI test output pin.										
		Leave this pin open.										
19	TP	Input/Output pin for LSI test mode. Keep this pin at "L" level.										
20	WVEL	In	ternal operation n	node s	selection pin							
21	DEMPH	Di	gital De-emphasi	s ON/	OFF pin.	ON at	"H" level.					
22	CSEL	Clock frequency selection pin for COUT pin output.										
		"L" level; 1/4 clock frequency from crystal oscillator or external clock signal										
		"H" level; 1/2 clock frequency										
23	COUT	Frequency-divided clock output										
24	XOUT	Output using frequency from crystal oscillator or external clock signal										

Conversion Characteristics

V_{DD}=5.0V, V_{SS}=0V, f=33.8688MHz, Ta=25°C

Parameter	Symbol	Test Conditions	min	typ	max	Unit							
Analog characteristics *1													
Signal-to-noise ratio	S/N	EIAJ	97	104	dB	dB							
Dynamic range	D.R.	EIAJ	90	97		dB							
Total harmonic distortion	THD+N	EIAJ		0.003	0.006	%							
Crosstalk		EIAJ	84	100		dB							
Output level 1 *2		1kHz F.S.	2.0	2.3	2.6	V _{rms}							
Output level 2 *3		1kHz F.S.	1.0	1.2	1.4	V _{rms}							

Notes

*1: These analog characteristics are based on measurements in the application circuit example next page.

*2: This level is measured at point B in that circuit.

*3: This level is measured at point A (LSI output pin) in that circuit.

Application Circuit Example



Package Dimensions (Unit: mm)

SOP024-P-0375



Note) The package of this product will be changed to the following lead-free type (SOP024-P-0375B).

- New Package Dimensions (Unit: mm)
- SOP024-P-0375B (Lead-free package)



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