

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.

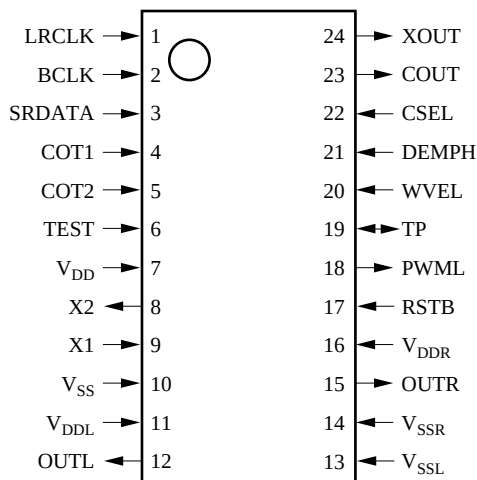
■ Features

- Built-in 4 times oversampling digital filter
(Bandwidth ripple of $\pm 0.051\text{dB}$ and attenuation of 47.99dB)
- Built-in second order analog post filter with a cutoff frequency of 100 kHz
- Built-in digital de-emphasis circuit with a deviation between $+0.47\text{ dB}$ 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

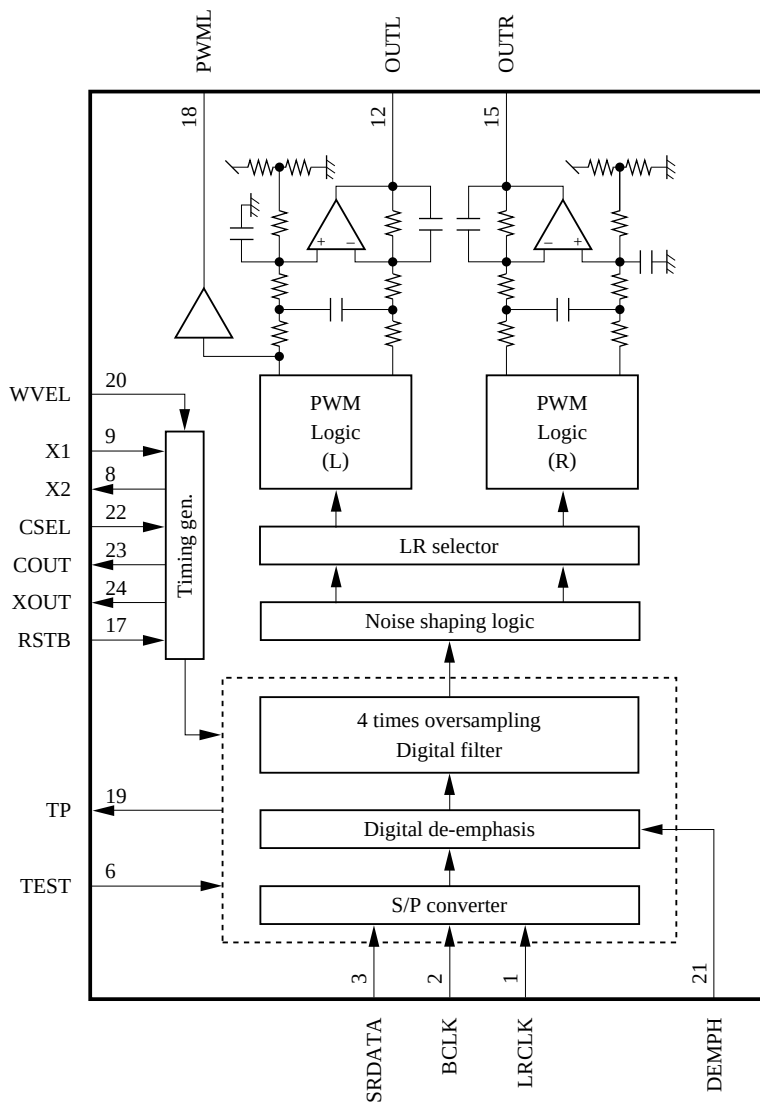
■ Pin Assignment



(TOP VIEW)

SOP024-P-0375

■ 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 output only	H	Right channel output only	H	Output with channels reversed
5	COT2	L		H		L		H	
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	Internal operation mode selection pin							
21	DEMPH	Digital De-emphasis 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

$V_{DD}=5.0V$, $V_{SS}=0V$, $f=33.8688MHz$, $T_a=25^{\circ}C$

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}

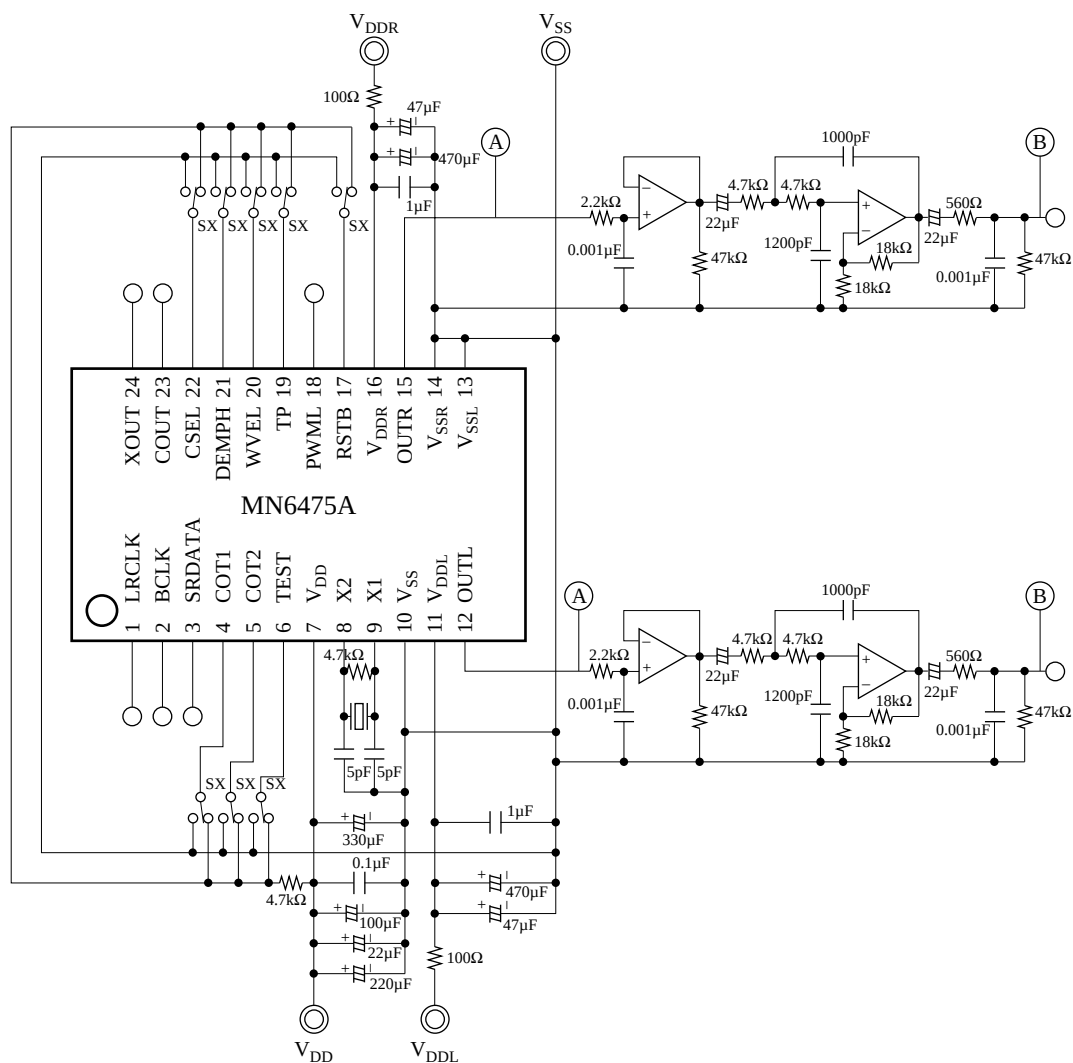
Notes

*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)

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