

# 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.

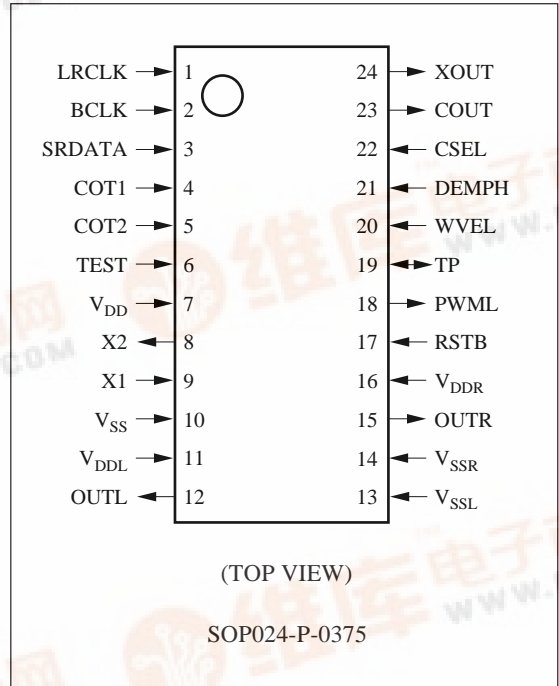
### Features

- Built-in 4 times oversampling digital filter (Bandwidth ripple of  $\pm 0.051\text{dB}$  and attenuation of  $47.99\text{dB}$ )
- Built-in second order analog post filter with a cutoff frequency of  $100\text{kHz}$
- Built-in digital de-emphasis circuit with a deviation between  $+0.47\text{dB}$  and  $-0.07\text{dB}$
- 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  $5\text{V}$  power supply

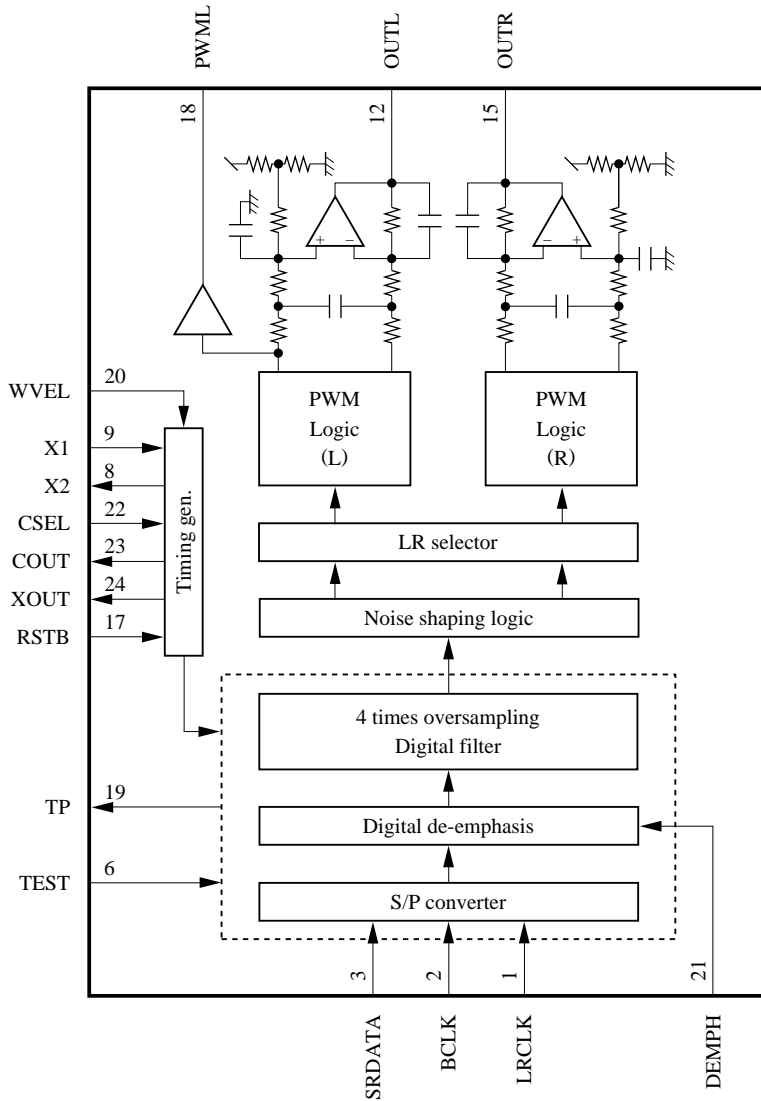
### Applications

- 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 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 <sub>DD</sub>	Power supply pin for digital circuits (+5V)							
8	X2	Crystal oscillator pin							
9	X1	Crystal oscillator pin (external clock input pin)							
10	V <sub>SS</sub>	Ground pin for digital circuits (0V)							
11	V <sub>DDL</sub>	Power supply pin for left channel analog circuits (+5V)							
12	OUTL	Left channel analog signal output pin							
13	V <sub>SSL</sub>	Ground pin for left channel analog circuits (0V)							
14	V <sub>SSR</sub>	Ground pin for right channel analog circuits (0V)							
15	OUTR	Right channel analog signal output pin							
16	V <sub>DDR</sub>	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
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	$V_{rms}$

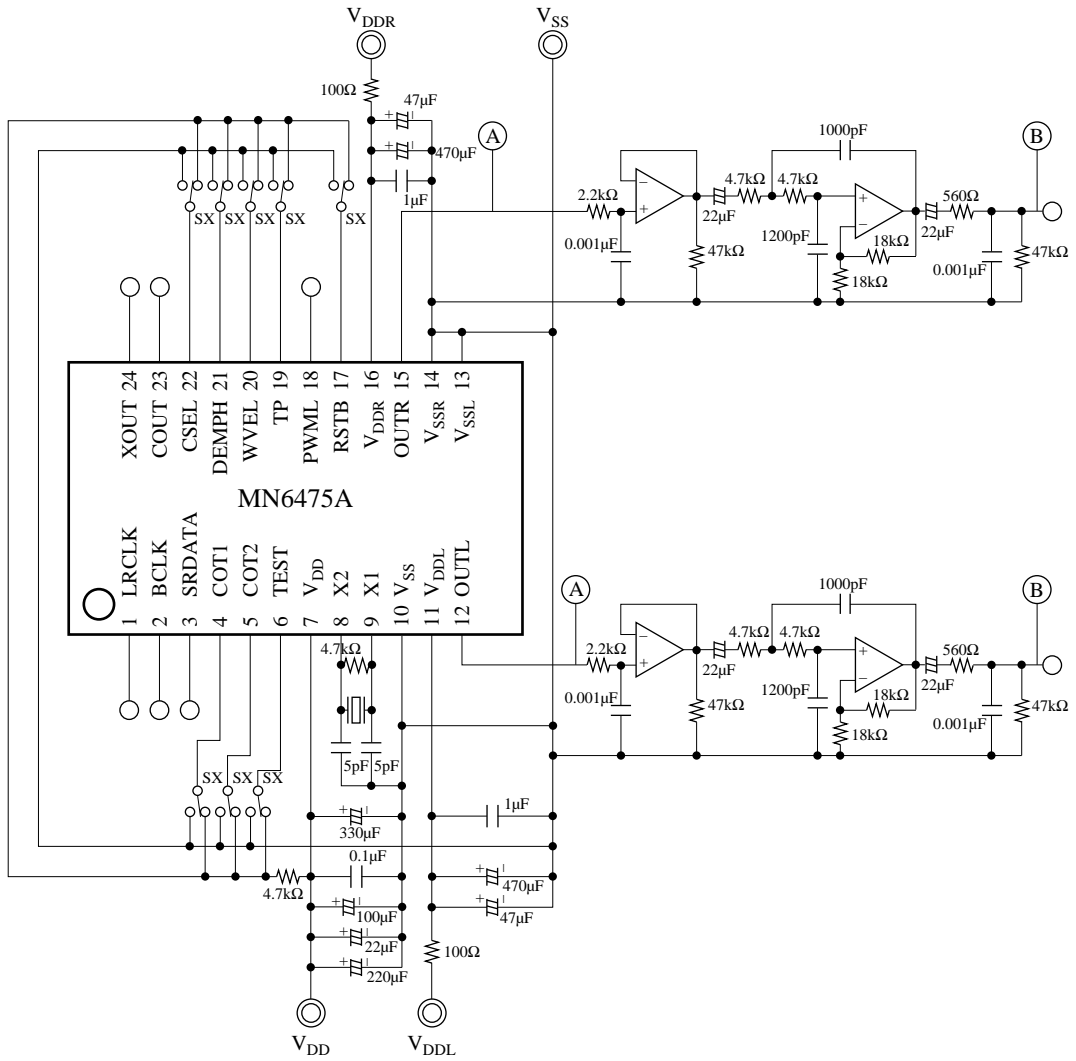
#### Notes

\*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

