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General Description

The AL1401A OptoGen interface is designed to accept four stereo pairs of audio data and produce the data stream appropriate for the Alesis ADAT® optical format, U.S. patent number 5,297,181.

Use of this product requires a license agreement between manufacturer and Alesis Studio Electronics. Details and agreement information are available upon request from Alesis Semiconductor or Alesis Studio Electronics.

Features

- ❑ Compatible with ADAT® Type I and II formats
- ❑ 4 stereo pairs as inputs using standard DAC formats
- ❑ 4 user bit inputs to transmit time-code, MIDI data, etc.
- ❑ Internal PLL generates required clocks from Word Clock.

Applications

- ❑ Transmit information to ADAT® compatible devices

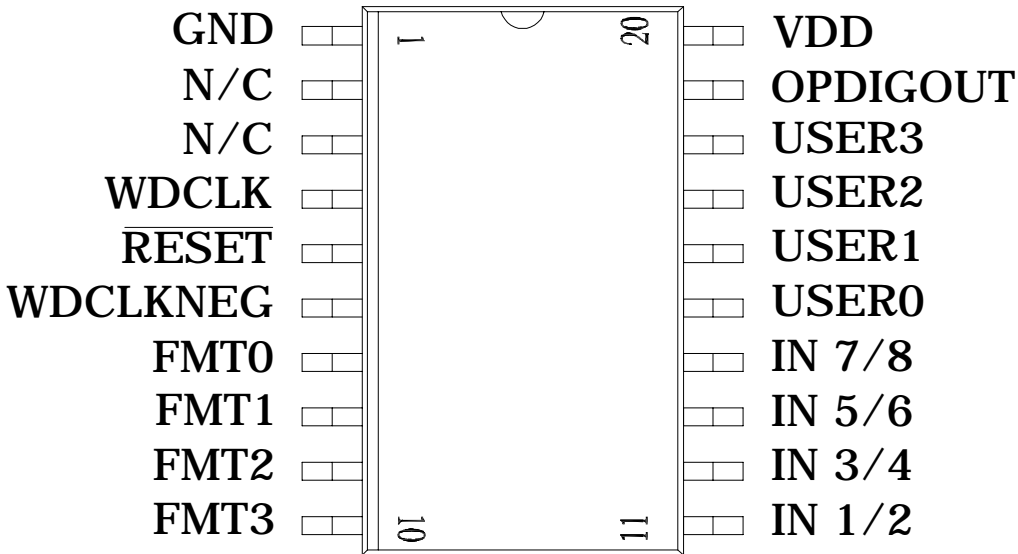


Figure A. 24 pin SOIC

OptoGen AL1401A Converter

Table 1. Electrical Characteristics and Operating Conditions

Symbol	Description	Min	Typ	Max	Units
Electrical Characteristics and Operating Conditions					
V _{DD}	Supply Voltage	4.5	5.0	5.5	V
I _{DD}	Supply Current	-	1.5	-	mA
GND	Ground	-	0.0	-	V
F _s	Sample rate	30	48	55	kHz
Temp	Temperature	0	25	70	°C

Outputs (OPDIGOUT)

V _{OH}	Logical "1" output voltage	0.9 V _{DD}	-	-	V _{DD}
V _{OL}	Logical "0" output voltage	-	-	0.1 V _{DD}	V _{DD}
I _{OH}	Logical "1" output current	-	-	-8	mA
I _{OL}	Logical "0" output current	-	-	8	mA

Inputs (WDCLK, WDCLKNEG, FMT, IN, USER, RESET)

V _{IH}	Logical "1" input voltage	0.75 V _{DD}	-	-	V _{DD}
V _{IL}	Logical "0" input voltage	-	-	0.25 V _{DD}	V _{DD}
I _{IH}	Logical "1" input current	-	-	1	uA
I _{IL}	Logical "0" input current	-	-	1	uA
C _{IN}	Logic Input Capacitance	-	5	-	pF

Table 2. Pin Descriptions

Pin #	Name	Pin Type	Description
1	GND	Power	Ground pin
2	N/C	-	No connection
3	N/C	-	No connection
4	WDCLK	Input	Word clock. Equal to sample frequency (Fs)
5	RESET	Input	Active low reset
6	WDCLKNEG	Input	Sets phase of word clock
7	FMT0	Input	Format0. Sets data format
8	FMT1	Input	Format1. Sets data format
9	FMT2	Input	Format2. Sets data format
10	FMT3	Input	Format3. Sets data format
11	IN 1/2	Input	Channels 1 and 2 data input
12	IN 3/4	Input	Channels 3 and 4 data input
13	IN 5/6	Input	Channels 5 and 6 data input
14	IN 7/8	Input	Channels 7 and 8 data input
15	USER0	Input	User 0 data bit input. Used to transmit timecode.
16	USER1	Input	User 1 data bit input. Used to transmit MIDI data.
17	USER2	Input	User 2 data bit input. Reserved, tie low.
18	USER3	Input	User 3 data bit input. Reserved, tie low.
19	OPDIGOUT	Output	Output to optical driver
20	V _{DD}	Power	+5V power pin

Table 3. Formats

Format0	Format1	Format2	Format3	Mode
0	0	0	0	16-bit right justified
1	0	0	0	18-bit right justified
0	1	0	0	20-bit right justified
1	1	0	0	22-bit right justified
0	0	1	0	16-bit left justified
1	0	1	0	18-bit left justified
0	1	1	0	20-bit left justified
1	1	1	0	22-bit left justified
0	0	0	1	Reserved
1	0	0	1	Reserved
0	1	0	1	Reserved
1	1	0	1	Reserved
0	0	1	1	24-bit right justified
1	0	1	1	24-bit left justified
0	1	1	1	Reserved
1	1	1	1	Mute

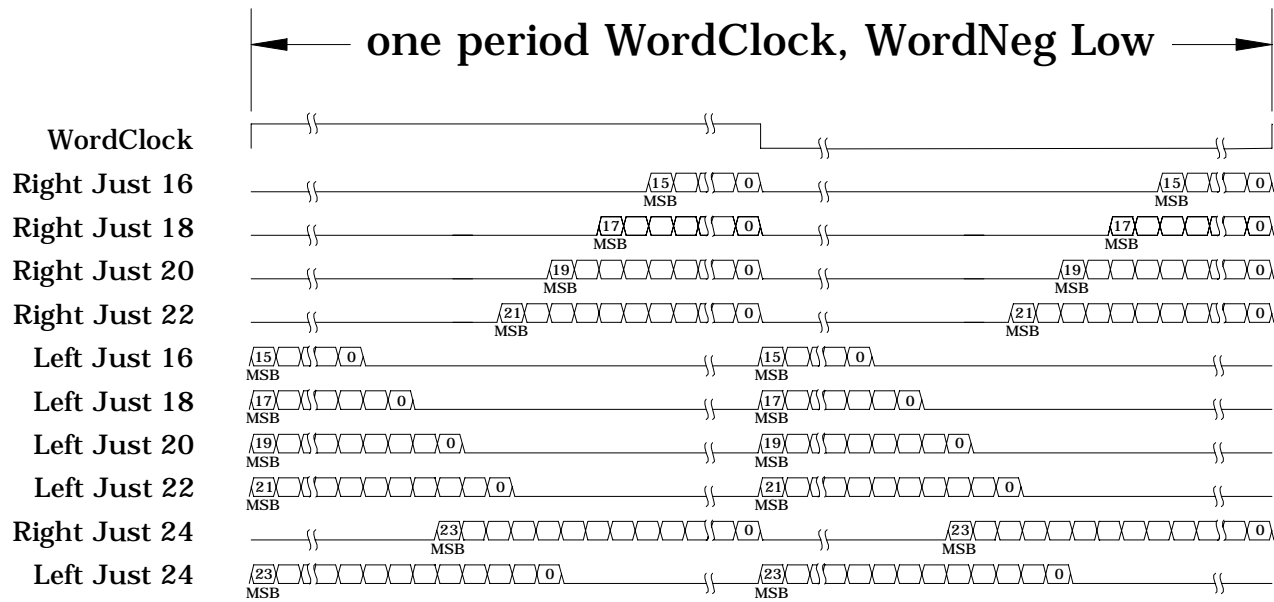


Figure B. Format Timing

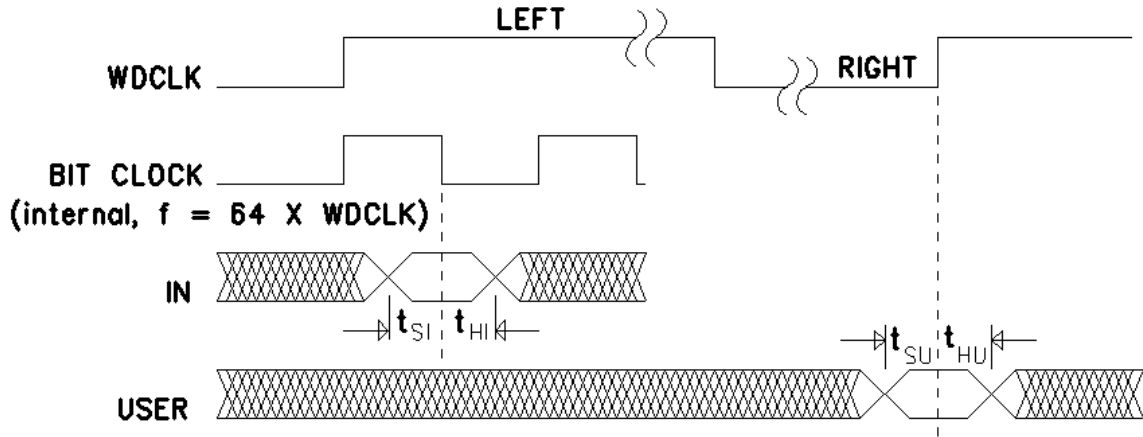


Figure C/Table 4. Input Timing

Symbol	Description	Min	Typ	Max	Units
t_{SI}	Setup of IN relative to center of bit period	-	10	30	nsec
t_{HI}	Hold of IN relative to center of bit period	-	10	30	nsec
t_{SU}	Setup of USER relative to end of right channel WDCLK time	-	-	100	nsec
t_{HU}	Hold of USER relative to end of right channel WDCLK time	-	-	100	nsec

(Above specifications hold after 2000 WDCLK cycles)

Mechanical Specification

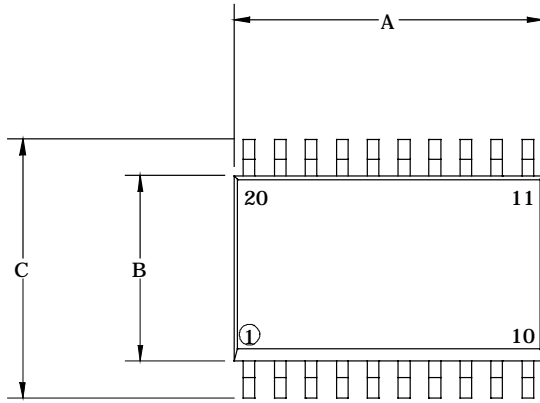


Table 5. Package Dimensions

	Dimensions (Typical)	
	Inches	Millimeters
A	.504"	12.80
B	.295"	7.50
C	.406"	10.30
D	.100"	2.50
E	.008"	0.20
F	.025"	0.64
G	.050"	1.27
H	.017"	0.42
J	.011"	0.27
K	.352"	8.94
L	.033"	0.83

Notes:

- 1) Dimension "A" does not include mold flash, protrusions or gate burrs.

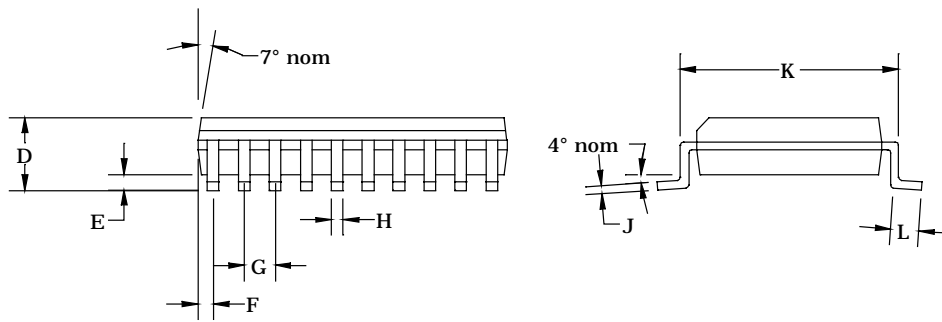
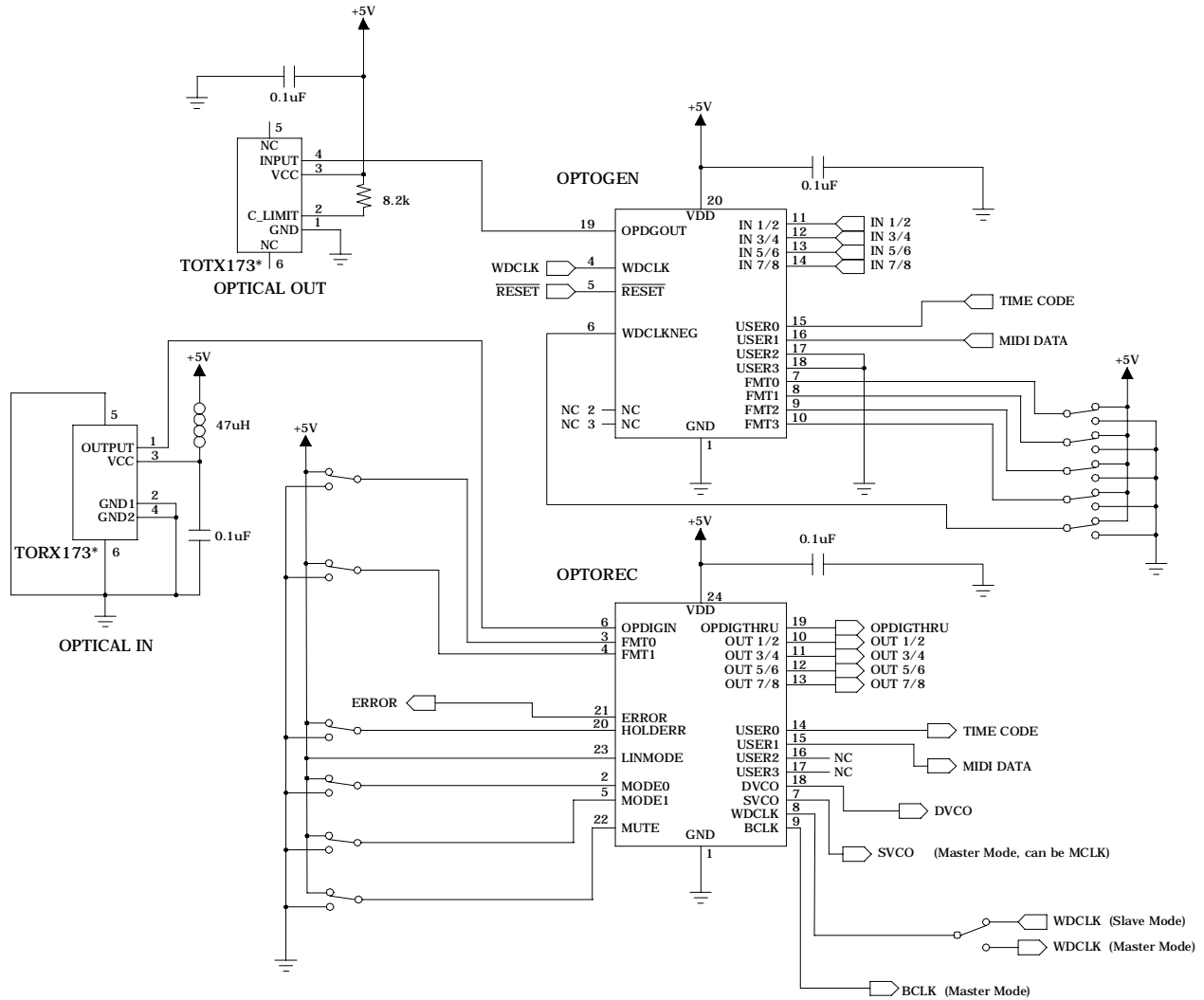


Figure D. Mechanical Drawing

Sample Application Schematic



* Optical I/O parts shown are Toshiba parts. The Sharp GP1F33RT or equivalent is also compatible.

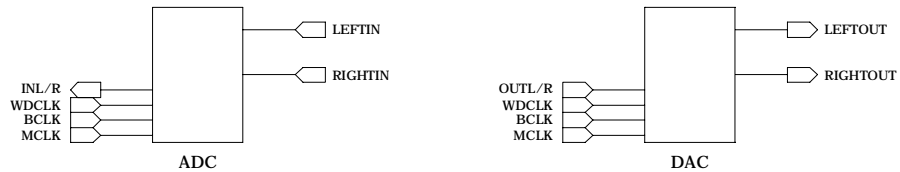


Figure E. OptoGen/OptoRec setup

The OptoGen accepts input from an ADC, then outputs the Alesis optical format. The OptoRec accepts input in Alesis optical format, then outputs to a DAC.

