



Analog Function Switch

Overview

The LC7824 is an analog switch incorporating seven switches into a single chip, making it ideal for audio and video applications in amplifiers, receivers and television equipment.

The LC7824 is controlled from a three-wire bus (C²B), allowing for an easy interface with a microcontroller. In addition, a device select pin allows two devices to be connected to the bus.

The LC7824 operates from a $\pm 9V$ supply and is available in 16-pin DIPs.

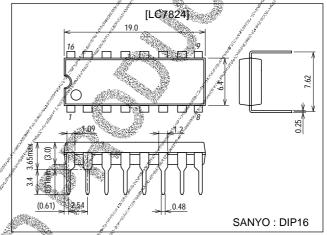
Features

- · Audio and video bandwidth.
- Seven analog switches.
- Select pin allows two LC7824s to be connected to a common, serial data bus.
- Easy microcontroller interface.
- ±9V supply.
- 16-pin DIP.

Package Dimensions

unit:mm

3006C-DIP16



Specifications

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Maximum supply voltage	V _{DD} max	-0.3 to +10	V
Waximum supply voltage	Vee max	-10 to +0.3	V
Logic-level input voltage range	. W	-0.3 to +10	V
Analog switch input voltage range	V ₁₂	$V_{\mbox{\footnotesize{EE}}}$ =0.3 to $V_{\mbox{\footnotesize{DD}}}$ +0.3	V
Voltage differential across switches when closed	200n //	0.5	V
Allowable power dissipation	Pd max	100	mW
Operating temperature range	Topr	−30 to +75	°C
Storage temperature range	Tstg	-40 to +125	°C

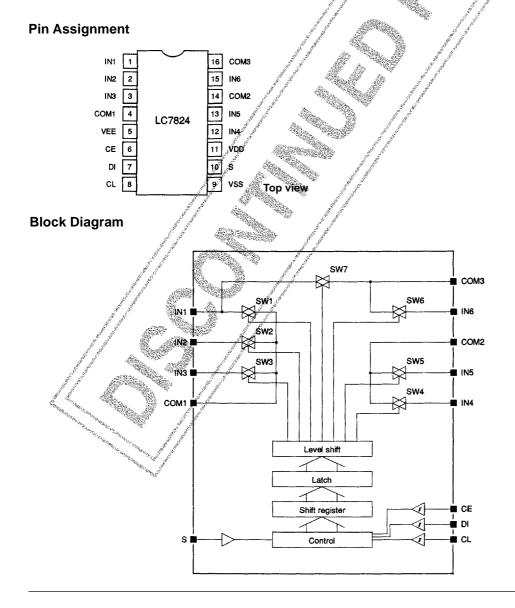
Recommended Operating Conditions at Ta = 25 °C

	Parameter	∦ ,Symbol	Conditions	Ratings	Unit
Supply voltage		√ V _{DD}		4.5 to 9	V
Supply voltage		Ø V _{FF}		–9 to 0	V

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Electrical Characteristics at Ta = -30 to +75°C, V_{DD} =4.5 to 9V

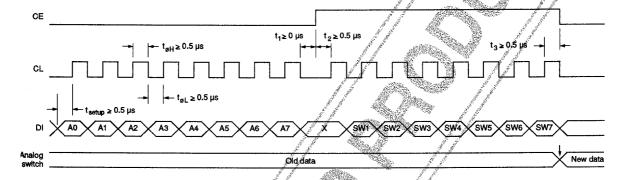
Parameter	Symbol	Conditions	Ratings			Unit
i didiffetei	Gyrribor	Conditions	min	typ	max	Offic
Supply current	I _{DD}	V _{DD} =9V, V _{EE} =-9V			1	mA
C ² B input low-level voltage	V _{IL1}		Vss	- An.	1	V
C ² B input high-level voltage	V _{IH1}		4.2	The Real Property lies	9	V
Select pin input low-level voltage	V _{IL2}	J	V _{SS}	No. of Lot	0.3V _{DD}	V
Select pin input high-level voltage	V _{IH2}	1	0.7V _{DD}	ji.	V _{DD}	V
Analog switch ON resistance	Roy	V _{DD} =5V, V _{EE} =-5V		150	100	Ω
Analog switch on resistance	R _{ON}	V _{DD} =9V, V _{EE} =-9V		110		Ω
Passband	fT	V _{IN} =1V, –1dB down	0	A.	.5	MHz
		V _{IN} =1V, –3dB down	0		10	MHz
Second and third order harmonic distortion	H2, H3	V _{IN} =1V, f=5MHz		60	Significant Control of the Control o	dB
Total harmonic distortion	THD	V _{IN} =1V, f=1kHz	ing S	0.01		%
Total narmonic distortion		V _{IN} =0.1V, f=1kHz	477.5	0.05		%
Feedthrough	FTH	V _{IN} =1V, f=5MHz	بار مواد	50		dB
Crosstalk	CT	V _{IN} =1V, f=5MHz	Settler ziter	50		dB
Input low-level current	I _Ι L	V _{DD} =9V, V _{EE} =-9V, V _I =0V	/ - 10			μΑ
Input high-level current	lін	V _{DD} =9V, V _{EE} =−9V, V _F =9V			10	μΑ
Switch leakage current	loff	V _{DD} =9V, V _{EE} =−9V, V _I =−9 to +9V	-10		+10	μΑ
Analog switch input voltage	V _{IN}	77 633 4 77	VEE		V_{DD}	V
C ² B input hysteresis width	VH		0.3			V



Pin Description

Number	Name	Description
1, 2, 3, 12, 13, 15	IN1 to IN6	Analog switch inputs/outputs
4, 14, 16	COM1 to COM3	Analog switch common inputs/outputs
5	V _{EE}	-4.5 to -9V supply voltage
6	CE	Schmitt-trigger, chip enable
7	DI	Schmitt-trigger, serial data input
8	CL	Schmitt-trigger, clock input
9	V _{SS}	Ground
10	S	Device select input
11	V _{DD}	4.5 to 9V supply voltage

Timing Characteristics



 $Ta = -30 \text{ to } +75^{\circ}\text{C}, V_{DD} = 4.5 \text{ to } 9\text{V}$

Parameter	Symbol		Ratings		
		min	typ	max	Unit
LOW-level clock pulsewidth	toL	0.5			μs
HIGH-level clock pulsewidth	56н/	0.5			μs
Setup time	1 At _ 24	0.5			μs
	t ₁	0			μs
Serial data input timing	t ₂	0.5			μs
		0.5			μs

Functional Description

The LC7824 analog switch is controlled from a three-wire bus, which comprises chip-enable, clock and serial data inputs. The 16-bit serial input code comprises eight address bits and eight control bits as shown in figure 1.

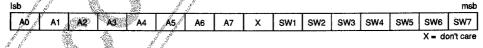


Figure 1. Data input

The address data is latehed on the rising edge of CE, and the input data, on the falling edge as shown in figure 2.

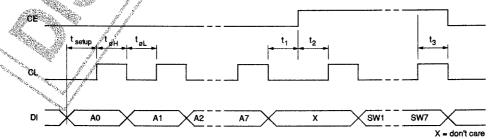


Figure 2. Input timing

When S (pin 10) is LOW, the device address is 01101110 (6EH), and when HIGH, 01101111 (6FH). Each switch is turned ON if the corresponding control bit is 1, and OFF, if 0. The X bit is ignored.

Typical Applications

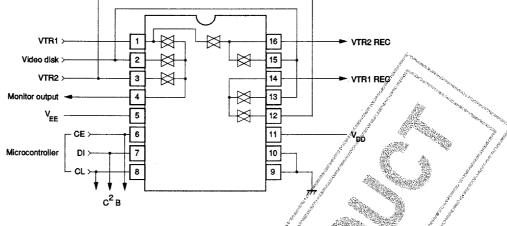


Figure 3. Video switching (1)

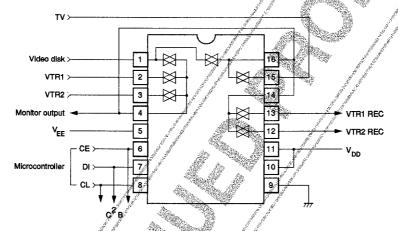


Figure 4. Video switching (2)

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