

CD audio decoder, digital servo and filterless DAC with integrated pre-amp and laser control

SAA7824

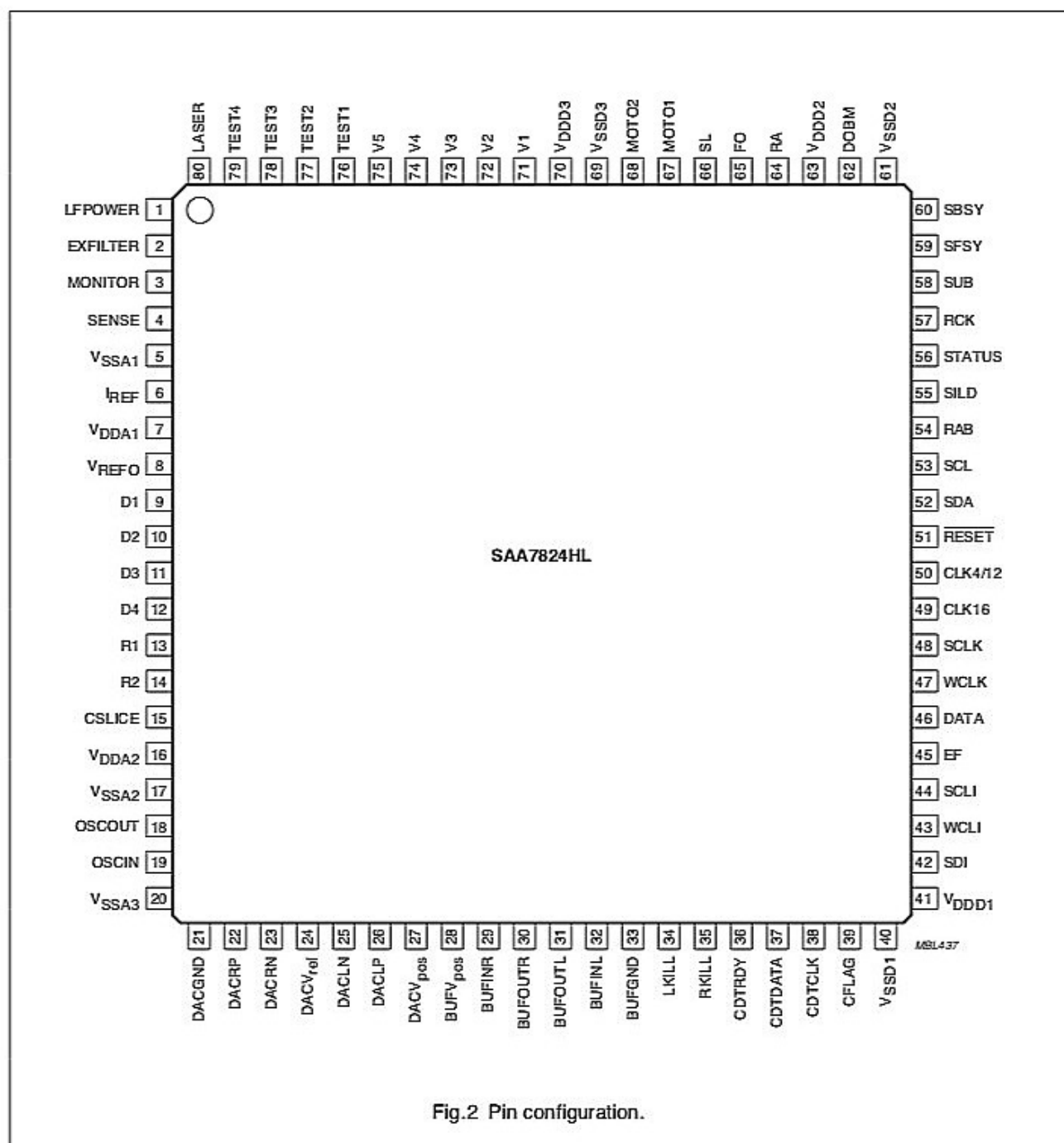


Fig.2 Pin configuration.

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7.10.1.2 Loopback external data into onboard DAC

The onboard DAC can also be set to accept serial data inputs from an external source, e.g. an Electronic Shock Absorption (ESA) IC. This is known as loopback mode and is enabled by setting shadow register 7 to 0000. This enables the serial data output pins (SCLK, WCLK, DATA and EF) so that data can be routed from the SAA7824 to an external ESA system (or external DAC).

The serial data from an external ESA IC can then also be input to the onboard DAC on the SAA7824 by utilising the serial data input interface (SCLI, SDI and WCLI).

In this mode, a wide range of data formats to the external ESA IC can be programmed as shown in Table 7. However, the serial input on the SAA7824 will always expect the input data from the ESA IC to be 16-bit $1f_s$ and the same data format, either I²S-bus or EIAJ, as the serial output format (set by decoder register 3).

The SAA7824 is compatible with a wide range of external DACs. Eleven formats are supported and are given in Table 7. Figures 14 and 15 show the Philips I²S-bus and the EIAJ data formats respectively. When the decoder is operated in lock-to-disc mode, the SCLK frequency is dependent on the disc speed factor 'd'.

All formats are MSB first and $1f_s$ is 44.1 kHz. The polarity of the WCLK and the data can be inverted; selectable by decoder register 7. It should be noted that EF is only a defined output in CD-ROM and $1f_s$ modes.

When using an external DAC (or when using the onboard DAC in non-loopback mode), the serial data inputs to the onboard DAC (SCLI, SDI and WCLI) should be tied to ground.

7.10.2 EXTERNAL DAC INTERFACE

Audio data from the SAA7824 can be sent to an external DAC, identical to the SAA732x series, in 'loopback' mode (i.e. shadow register 7 is set to 0000).

Table 7 DAC interface formats

REGISTER 3	SAMPLE FREQUENCY	NUMBER OF BITS	SCLK (MHz)	FORMAT	INTERPOLATION
1010	f_s	16	$2.1168 \times n$	CD-ROM (I ² S-bus)	no
1011	f_s	16	$2.1168 \times n$	CD-ROM (EIAJ)	no
1110	f_s	16/18 ⁽¹⁾	$2.1168 \times n$	Philips I ² S-bus 16/18 bits ⁽¹⁾	yes
0010	f_s	16	$2.1168 \times n$	EIAJ 16 bits	yes
0110	f_s	18	$2.1168 \times n$	EIAJ 18 bits	yes
0000	$4f_s$	16	$8.4672 \times n$	EIAJ 16 bits	yes
0100	$4f_s$	18	$8.4672 \times n$	EIAJ 18 bits	yes
1100	$4f_s$	18	$8.4672 \times n$	Philips I ² S-bus 18 bits	yes
0011	$2f_s$	16	$4.2336 \times n$	EIAJ 16 bits	yes
0111	$2f_s$	18	$4.2336 \times n$	EIAJ 18 bits	yes
1111	$2f_s$	18	$4.2336 \times n$	Philips I ² S-bus 18 bits	yes

Note

- In this mode the first 16 bits contain data, but if any of the fade, attenuate or de-emphasis filter functions are activated then the first 18 bits contain data.

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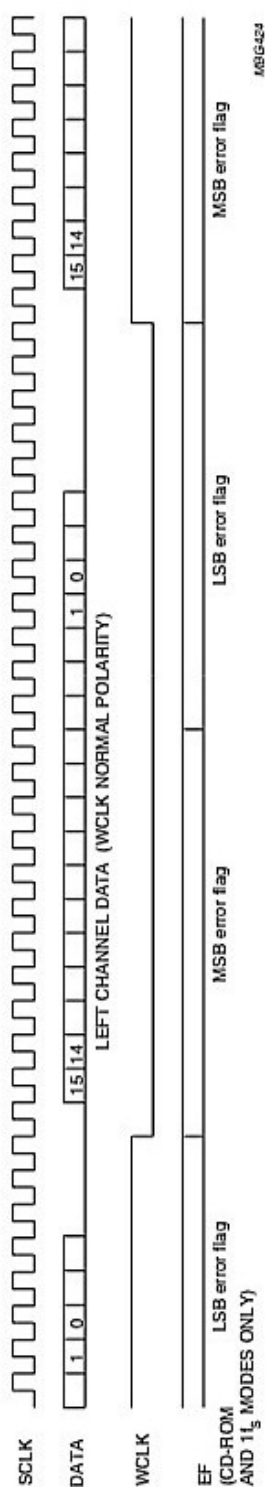


Fig.14 Philips I²S-bus data format (16-bit word length).

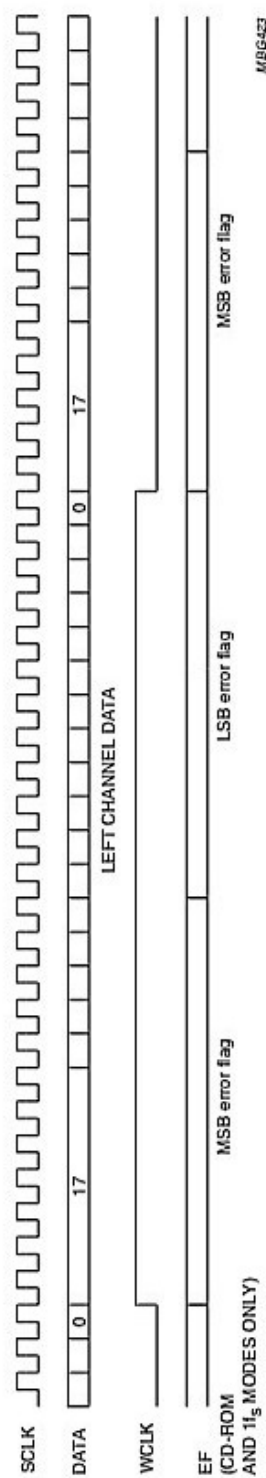


Fig. 15 EIAJ data format (18-bit word length).