
Application Note

AES AND S/PDIF RECOMMENDED TRANSFORMERS

Transformers are used in professional digital audio interfaces to provide high-frequency rejection, impedance matching, DC blocking and short-circuit protection. Due to the specialized needs of this application several manufacturers have designed transformers specifically for AES and S/PDIF circuits.

The transformer used in the professional interface should be capable of operation from 3.6 to 12.8 MHz, which is the audio data rate of 28 kHz to 100 kHz after biphase-mark encoding. Transformers provide isolation from ground loop, 60 Hz noise, and common mode noise and interference. One of the important considerations when choosing transformers is minimizing shunt capacitance between primary and secondary windings. The higher the shunt capacitance, the lower the isolation between primary and secondary and the more coupling that can occur for high frequency energy. This energy appears in the form of common mode noise on the receive side ground and has the potential to degrade analog performance. Therefore, shielded transformers optimized for minimum primary to secondary capacitance may be desirable.

The companies listed in the next column are a few manufacturers of digital audio transformers. Please contact these manufacturers directly for more detailed information¹.

[Table 1 on page 2](#) provides a list of transformer design and analysis papers.

¹-Cirrus Logic is unable to guarantee the performance of components manufactured by others.

Pulse Engineering

Telecom Products Group
PO Box 12235
San Diego, CA 92110
(619) 674-8100
(619) 674-8262 fax
<http://www.pulseeng.com>

Schott Corporation

1000 Parkers Lane Rd.
Wayzata, MN 55391
(612) 475-1173
<http://www.schottcorp.com>

Scientific Conversion Inc.

42 Truman Dr.
Novato, CA 94947
(415) 892-2323
(415) 892-2321 fax
<http://www.scientificconversion.com>
email: inquiry@scientificconversion.com
Many other types available.
Contact Scientific Conversion for catalog.

VITEC

4027 Clipper Court
Fremont, CA 94538
(510) 353-9260
(510) 353-9836 fax
<http://www.VitecCorp.com>
email: David.Chang@VitecCorp.com

Manufacturer	Document Title	Document Number
Pulse Engineering	<i>Understanding Common Mode Noise</i>	G019
	<i>Introduction to Transformer Magnetics</i>	G022
Scientific Conversion Inc.	<i>1998 AES Paper</i>	

Table 1: Transformer Design and Analysis Papers