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 24.6 MHz, which is the audio data rate of 28 kHz to 192 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 information.

Table 1 on page 2 provides a list of transformer design and analysis papers.

Pulse Engineering
http://www.pulseeng.com

Schott Corporation
http://www.schottcorp.com

Scientific Conversion Inc.
http://www.scientificconversion.com

VITEC
http://www.VitecCorp.com

1-Cirrus Logic is unable to guarantee the performance of components manufactured by others.
Manufacturer | Document Title | Document Number
--- | --- | ---
Pulse Engineering | Understanding Common Mode Noise | G019
 | Introduction to Transformer Magnetics | G022
Scientific Conversion Inc. | 1998 AES paper: The Effect of Transformers on Transmission of Digital Audio Signals | 
 | 2001 AES paper: Characterizing Digital Audio Transformers with Induced Jitter Histograms | 

Table 1: Transformer Design and Analysis Papers

Contacting Cirrus Logic Support
For all product questions and inquiries contact a Cirrus Logic Sales Representative.
To find one nearest you go to [www.cirrus.com](http://www.cirrus.com)

IMPORTANT NOTICE
Cirrus Logic, Inc. and its subsidiaries ("Cirrus") believe that the information contained in this document is accurate and reliable. However, the information is subject to change without notice and is provided "AS IS" without warranty of any kind (express or implied). Customers are advised to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgment, including those pertaining to warranty, patent infringement, and limitation of liability. No responsibility is assumed by Cirrus for the use of this information, including use of this information as the basis for manufacture or sale of any items, or for infringement of patents or other rights of third parties. This document is the property of Cirrus and by furnishing this information, Cirrus grants no license, express or implied under any patents, mask work rights, copyrights, trademarks, trade secrets or other intellectual property rights. Cirrus owns the copyrights associated with the information contained herein and gives consent for copies to be made of the information only for use within your organization with respect to Cirrus integrated circuits or other parts of Cirrus. This consent does not extend to other copying such as copying for general distribution, advertising or promotional purposes, or for creating any work for resale.

An export permit needs to be obtained from the competent authorities of the Japanese Government if any of the products or technologies described in this material and controlled under the "Foreign Exchange and Foreign Trade Law" is to be exported or taken out of Japan. An export license and/or quota needs to be obtained from the competent authorities of the Chinese Government if any of the products or technologies described in this material is subject to the PRC Foreign Trade Law and is to be exported or taken out of the PRC.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). CIRRUS PRODUCTS ARE NOT DESIGNED, AUTHORIZED OR WARRANTED FOR USE IN AIRCRAFT SYSTEMS, MILITARY APPLICATIONS, PRODUCTS SURGICALLY IMPLANTED INTO THE BODY, LIFE SUPPORT PRODUCTS OR OTHER CRITICAL APPLICATIONS (INCLUDING MEDICAL DEVICES, AIRCRAFT SYSTEMS OR COMPONENTS AND PERSONAL OR AUTOMOTIVE SAFETY OR SECURITY DEVICES). INCLUSION OF CIRRUS PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK AND CIRRUS DISCLAIMS AND MAKES NO WARRANTY, EXPRESS, STATUTORY OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, WITH REGARD TO ANY CIRRUS PRODUCT THAT IS USED IN SUCH A MANNER. IF THE CUSTOMER OR CUSTOMER'S CUSTOMER USES OR PERMITS THE USE OF CIRRUS PRODUCTS IN CRITICAL APPLICATIONS, CUSTOMER AGREES, BY SUCH USE, TO FULLY INDEMNIFY CIRRUS, ITS OFFICERS, DIRECTORS, EMPLOYEES, DISTRIBUTORS AND OTHER AGENTS FROM ANY AND ALL LIABILITY, INCLUDING ATTORNEYS' FEES AND COSTS, THAT MAY RESULT FROM OR ARISE IN CONNECTION WITH THESE USES.

Cirrus Logic, Cirrus, and the Cirrus Logic logo designs are trademarks of Cirrus Logic, Inc. All other brand and product names in this document may be trademarks or service marks of their respective owners.