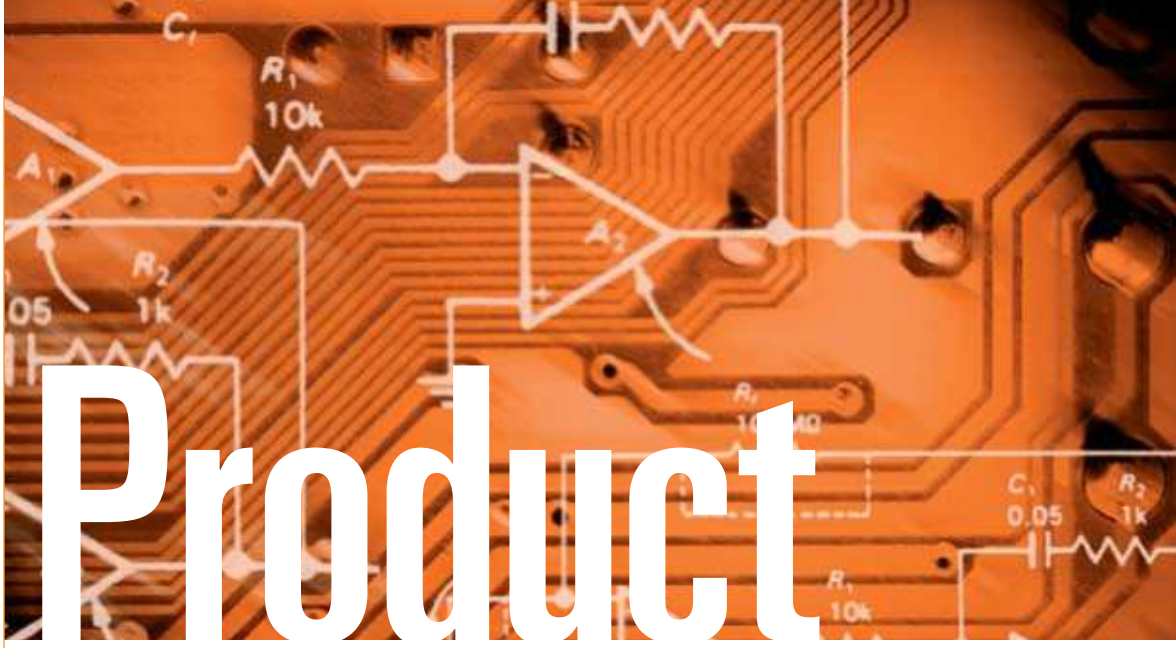
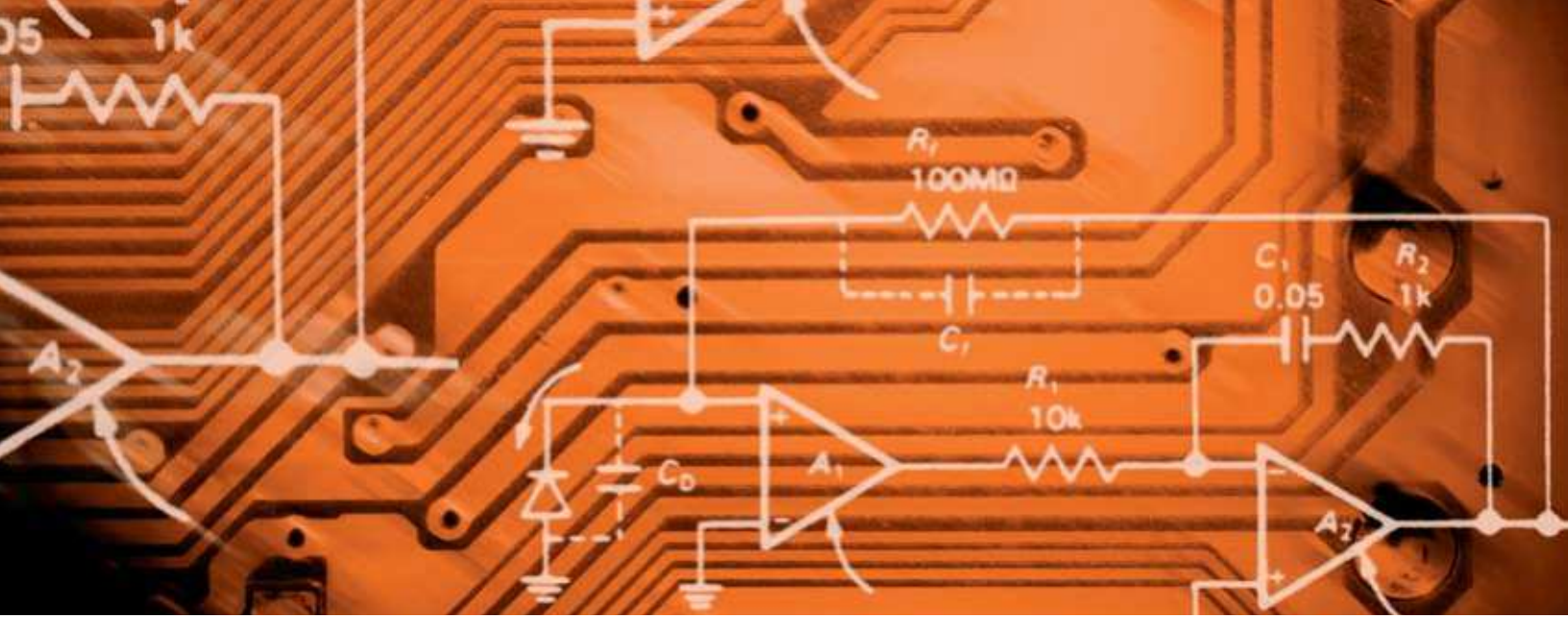


2009 Product Summary

1 AUDIO COMPONENTS
13 INDUSTRIAL COMPONENTS
24 COMMUNICATION COMPONENTS
27 PROCESSORS
30 PRODUCT NUMBER INDEX

CIRRUS LOGIC®



Copyright © 2009 Cirrus Logic, Inc.

All rights reserved

Printed in the USA

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 upon 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, indemnification, and limitation of liability. No responsibility is assumed by Cirrus for the use of this information, 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. No part of this publication may be copied, reproduced, stored in a retrieval system, or transmitted, in any form or by any means (electronic, mechanical, photographic, or otherwise) unless distributed in its entirety with all copyright notices attached. No part of this publication may be used as a basis for manufacture or sale of any items without the prior written consent of Cirrus.

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 to be suitable for use in products surgically implanted into the body, automotive safety or security devices, life-support products or other critical applications. Inclusion of Cirrus products in such applications is understood to be fully at the customer's risk and Cirrus disclaims and makes no warranty of merchantability and fitness for particular purpose, with regard to any Cirrus product that is used in such a manner. If the 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, Apex Precision Power, Apex, Entertainment Processors, CobraNet, CobraCAD, CobraCom, Crystal LAN, MaverickKey, MaverickCrunch, Popguard, Intelligent Room Calibration, Optimal Integration, DSP Conductor, Total-S, Single-S, Extreme-S, Multipath, PacketPage, Cirrus Logic framework, Cirrus Extended Surround, and the Cirrus Logic logo designs are the trademarks of Cirrus Logic, Inc. All other brand and product names in this document may be trademarks or service marks of their respective owners.

Audio Components

A LEADER IN INNOVATIVE AUDIO ICs

Cirrus Logic enjoys a long-standing reputation as a leader in innovative audio ICs. Cirrus Logic's portfolio of products includes audio converters such as analog-to-digital converters (ADCs), digital-to-analog converters (DACs), CODECs, S/PDIF interfaces, sample rate converters, and Class-D amplifier solutions. Cirrus Logic also offers a wide range of digital signal processors (DSPs), and Cirrus' CobraNet technology is the de facto standard for delivering uncompressed digital audio via Ethernet networks.

Our products are used in a wide array of consumer applications, including audio/video receivers, DVD and Blu-ray Disc® players, complete home theater systems, set-top boxes, gaming devices, sound cards, portable products and digital TVs. Applications for products within professional markets include digital mixing consoles, multitrack digital recorders and effects processors. Applications for products within automotive markets include amplifiers, satellite radio systems and multispeaker car audio systems.

LEARN MORE AT
www.cirrus.com

CLOCK GENERATION & JITTER REDUCTION

- CS2000
- CS2100
- CS2200
- CS2300

AUDIO A/D CONVERTERS

- CS5340
- CS5341
- CS5342
- CS5343/44
- CS5345
- CS5346
- CS5351
- CS5361
- CS5364/66/68
- CS5381

AUDIO D/A CONVERTERS

- CS4334/35/38/39
- CS4344/45/46/48
- CS4349
- CS4350
- CS4351
- CS4352
- CS4353
- CS4361
- CS4362A/82A
- CS4364/84
- CS4365/85
- CS4391A
- CS4392
- CS4398

MULTICHANNEL CODECs

- CS42324/25
- CS42416/26
- CS42418/28
- CS42432
- CS42435
- CS42436/38
- CS42448
- CS42516/26
- CS42518/28
- CS42888

STEREO CODECs

- CS4245
- CS4265
- CS4270
- CS4271
- CS4272

PORTABLE AUDIO CONVERTERS

- CS42L51
- CS42L52
- CS42L55
- CS43L21
- CS43L22
- CS44L11
- CS53L21

PWM CONTROLLERS

- CS4461
- CS44600
- CS44800

POWER STAGE

- CS4412A

INTEGRATED CLASS-D AUDIO AMPLIFIERS

- CS3511
- CS4525

VOLUME CONTROL

- CS3308
- CS3310
- CS3318

INTERFACES & SAMPLE-RATE CONVERTERS

- CS8406
- CS8416
- CS8420
- CS8421
- CS8422
- CS8427

AC '97 CODECs

- CS4202
- CS4205
- CS4299

AUDIO DSPs

- CS493xxx Family
- CS485xx Family
- CS48AU2x Family
- CS48DV2x Family
- CS48DV6x Family
- CS4953xx Family
- CS4970xx Family
- CS49DV8x Family

AUDIO SOCs

- CS470xx Family

COBRANET® NETWORKED DIGITAL AUDIO

- CS1810xx Transport Processor ICs
- CS4961xx Audio Network Processor ICs
- CM-1 Transport Module
- CM-2 Transport and DSP Module
- EV-2 Development Board
- CobraCom™ Reference Design
- CobraNet® LE Reference Design
- DSP Conductor™ Software
- CobraCAD™ Software
- CobraNet® Discovery Software

Clock Generation and Jitter Reduction

SPECIFICATIONS

Part Number	One-Time Programmable	Frequency Synth/Clock Generator	Clock Multiplier/ Jitter Remover	Power Supply (V)	Input Frequency Range	Reference Frequency Range	Output Frequency Range	Package
CS2000	CS2000-OTP	✓	✓	3.3	50 Hz to 30 MHz	8 to 75 MHz	6 to 75 MHz	10 MSOP
CS2100	CS2100-OTP	—	✓	3.3	50 Hz to 30 MHz	8 to 75 MHz	6 to 75 MHz	10 MSOP
CS2200	CS2200-OTP	✓	—	3.3	—	8 to 75 MHz	6 to 75 MHz	10 MSOP
CS2300	CS2300-OTP	—	✓	3.3	50 Hz to 30 MHz	Internally generated	6 to 75 MHz	10 MSOP

Audio A/D Converters

SPECIFICATIONS

Part Number	Resolution (bits)	Dynamic Range (dB)	THD+N (dB)	Sample Rate (kHz)	Analog Inputs	Power Supply (V)	Comments	Package
CS5340	24	101	–94	192	Single-ended	VA = 3.3 or 5, VD = 3.3 or 5, VL = 1.8 to 5	Pin compatible with CS5341	16 TSSOP
CS5341	24	105	–98	192	Single-ended	VA = 3.3 or 5, VD = 3.3 or 5, VL = 1.8 to 5	Pin compatible with CS5340	16 TSSOP
CS5342	24	105	–98	192	Single-ended	VA = 3.3 or 5, VD = 3.3 or 5, VL = 2.5 to 5	384*Fs MCLK	16 TSSOP
CS5343/44	24	98	–92	96	Single-ended	VA = 3.3 or 5	CS5343 – I^2S CS5344 – LJ	10 TSSOP
CS5345	24	104	–95	192	Single-ended	VA = 3.3 or 5, VD = 3.3 or 5, VLS/VLC = 1.8 to 5	6:1 Input MUX, PGA, MIC preamp	48 LQFP
NEW **CS5346**	24	103	–95	192	Single-ended	VA = 5, VD = 3.3, VL = 3.3 to 5	6:1 input MUX, PGA, MIC pre-amp, high input impedance	48 LQFP
CS5351	24	108	–98	192	Single-ended	VA = 5, VD = 3.3 or 5, VL = 2.5 to 5	Functionally compatible with CS5361	24 SOIC 24 TSSOP
CS5361	24	114	–105	192	Differential	VA = 5, VD = 3.3 or 5, VL = 2.5 to 5	Pin compatible with CS5381	24 SOIC 24 TSSOP
CS5364/66/68	24	114	–105	192	Differential	VA = 5, VD = 3.3 or 5, VLS/VLC = 1.8 to 5	4-/6-/8-channel ADC, TDM, on-chip oscillator	48 LQFP
CS5381	24	120	–110	192	Differential	VA = 5, VD = 3.3 or 5, VL = 2.5 to 5	Flagship performance	24 SOIC 24 TSSOP

Audio D/A Converters

SPECIFICATIONS

Part Number	Channels	Resolution (bits)	Dynamic Range (dB)	THD+N (dB)	Sample Rate (kHz)	Analog Outputs	Power Supply (V)	Comments	Package
CS4334/35/38/39	2	24	96	–88	96	Single-ended	VA = 5	Entry-level stereo DAC	8 SOIC
CS4344/45/46/48	2	24	105	–90	192	Single-ended	VA = 3.3 or 5	Upgrade for CS4340 and CS4340A	10 TSSOP
CS4349	2	24	101	–91	192	Single-ended	VA = 3.3 or 5	1 V_{RMS} @ 3.3 V, Volume Control	24 TSSOP
CS4350	2	24	109	–91	192	Single-ended or Differential	VA = 3.3 or 5 VLC = 3.3 to 5 VLS = 1.5 to 5	Integrated PLL, TDM	24 TSSOP
CS4351	2	24	112	–100	192	Single-ended	VA = 9 or 12 VD = 3.3 VL = 1.8 to 3	Line driver, 2 V_{RMS} output	20 TSSOP
CS4352	2	24	106	–93	192	Single-ended	VA = 9 or 12 VD = 3.3 VL = 1.5 to 5	Line driver, 2 V_{RMS} output	20 TSSOP
NEW **CS4353**	2	24	106	–93	192	Single-ended	VA = 3.3 VCP = 3.3 VL = 0.9 to 3.3	Ground-centered 2 V_{RMS} line-level outputs	24 QFN
CS4361	6	24	105	–95	192	Single-ended	VA = 5 VL = 1.8 to 5	Entry-level 6-channel DAC	20 TSSOP
CS4362A/82A	6/8	24	114	–100	192	Differential	VA = 5 VD = 2.5 VL = 1.8 to 5	6-/8-channel DAC, DSD	48 LQFP
CS4364/84	6/8	24	103	–88	192	Single-ended	VA = 5 VD = 2.5 VL = 1.8 to 5	6-/8-channel DAC, DSD, footprint compatible with CS4365/85	48 LQFP
CS4365/85	6/8	24	114	–100	192	Differential	VA = 5 VD = 2.5 VL = 1.8 to 5	6-/8-channel DAC, DSD, TDM	48 LQFP
CS4391A	2	24	108	–94	192	Differential	VA = 5 VL = 1.8 to 5	DSD, pin compatible with CS4392	20 TSSOP
CS4392	2	24	114	–100	192	Differential	VA = 5 VL = 1.8 to 5	DSD, selectable digital filters, pin compatible with CS4391A	20 TSSOP
CS4398	2	24	120	–107	192	Differential	VA = 5 VD = 3.3 or 5 VL = 1.8 to 5	Flagship DAC, DSD processor, selectable D-filter	28 TSSOP

Multichannel CODECs

SPECIFICATIONS

Part	Resolution (bits)	Dynamic Range (dB)	THD+N (dB)	Sample Rate (kHz)	Analog I/O	Power Supply (V)	Comments	Package
CS42324/25	24	100 DAC 95 ADC	–90 DAC –88 ADC	96	Single-ended	VA = 9 or 12 VD = 3.3 VL = 1.8 or 3.3	4 DACs, 2 ADCs, 2 V_{RMS} I/O, I/O MUX, HP Driver (CS42325 only)	48 LQFP
CS42416/26	24	110/114 DAC 114 ADC	–100 DAC –100 ADC	192	Differential DACs Single-ended or Differential ADCs	VA = 5 VD = 3.3 or 5 VL = 1.8 to 5	6 DACs, 2 ADCs, digital volume control	64 LQFP
CS42418/28	24	110/114 DAC 114 ADC	–100 DAC –100 ADC	192	Differential	VA = 5 VD = 3.3 or 5 VL = 1.8 to 5	8 DACs, 2 ADCs, PLL, digital volume control	64 LQFP
CS42432	24	108 DAC 105 ADC	–98 DAC –98 ADC	192	Single-ended or Differential	VA = 3.3 or 5 VD = 3.3 VL = 1.8 to 5	6 DACs, 4 ADCs TDM I/F	52 MQFP
CS42435	24	108 DAC 105 ADC	–98 DAC –98 ADC	192	Single-ended or Differential	VA = 3.3 or 5 VD = 3.3 VL = 1.8 to 5	8 DACs, 6 ADCs TDM I/F	52 MQFP
CS42436/38	24	105/108 DAC 102/105 ADC	–95/–98 DAC –95/–98 ADC	192	Single-ended or Differential	VA = 3.3 or 5 VD = 3.3 VL = 1.8 to 5	6/8 DACs, 6 ADCs TDM I/F	52 MQFP
CS42448	24	108 DAC 105 ADC	–98 DAC –98 ADC	192	Single-ended or Differential	VA = 3.3 or 5 VD = 3.3 to 5 VL = 1.8 to 5	8 DACs, 6 ADCs TDM and PCM I/F	64 LQFP
CS42516/26	24	110/114 DAC 114 ADC	–100 DAC –100 ADC	192	Differential	VA = 5 VD = 3.3 or 5 VL = 1.8 to 5	6 DACs, 2 ADCs, S/PDIF Rx, digital volume control	64 LQFP
CS42518/28	24	110/114 DAC 114 ADC	–100 DAC –100 ADC	192	Differential	VA = 5 VD = 3.3 or 5 VL = 1.8 to 5	8 DACs, 2 ADCs, S/PDIF Rx, digital volume control	64 LQFP
CS42888	24	108 DAC 105 ADC	–98 DAC –98 ADC	192	Single-ended or Differential	VA = 3.3 or 5 VD = 3.3 or 5 VL = 1.8 to 5	8 DACs, 4 ADCs, PCM and TDM I/F	64 LQFP

Stereo CODECs

SPECIFICATIONS

Part	Resolution (bits)	Dynamic Range (dB)	THD+N (dB)	Sample Rate (kHz)	Analog I/O	Power Supply (V)	Comments	Package
CS4245	24	104 ADC 104 DAC	–95 ADC –90 DAC	192	Single-ended	VA = 3.3 or 5 VD = 3.3 or 5 VL = 1.8 to 5	6:1 input MUX, MIC pre-amp, PGA	48 LQFP
CS4265	24	104 ADC 104 DAC	–95 ADC –90 DAC	192	Single-ended	VA = 3.3 or 5 VD = 3.3 or 5 VL = 1.8 to 5	2:1 input MUX, MIC pre-amp, PGA, S/PDIF out	32 QFN
CS4270	24	105 ADC 105 DAC	–95 ADC –95 DAC	192	Single-ended	VA = 3.3 or 5 VD = 3.3 or 5 VL = 1.8 to 5	Volume control, passive filters, 3.3 V operation	24 TSSOP
CS4271	24	108 ADC 114 DAC	–98 ADC –100 DAC	192	Single-ended ADC Differential DAC	VA = 5 VD = 3.3 or 5 VL = 2.5 to 5	Stereo CODEC, volume control, compatible with CS4272	28 TSSOP
CS4272	24	114 ADC 114 DAC	–100 ADC –100 DAC	192	Differential ADC Differential DAC	VA = 5 VD = 3.3 or 5 VL = 2.5 to 5	Stereo CODEC, volume control, on-chip oscillator	28 TSSOP

Portable Audio Converters

SPECIFICATIONS

Part	Resolution (bits)	Dynamic Range (dB)	THD+N (dB)	Sample Rate (kHz)	Analog I/O	Power Supply (V)	Comments	Package
CS42L51	24	98 ADC 98 DAC	–88 ADC –86 DAC	96	Single-ended	VA = 1.8 to 2.5 VD = 1.8 to 2.5 VL = 1.8 to 3.3	CODEC, 3:1 MUX, PGA, MIC pre-amp, HP amp	32 QFN
CS42L52	24	98 ADC 98 DAC	–88 ADC –86 DAC	96	Single-ended	VA/VD = 1.65 to 2.83 VP = 2.37 to 5.35 VL = 1.8 to 3.3	CODEC, 4:1 MUX, PGA, MIC pre-amp, HP/speaker amps	40 QFN
NEW **CS42L55**	24	95 ADC 99 DAC	–87 ADC –86 DAC	48	Pseudo-differential	VA/VD = 1.65 to 2.71 VCP = 1.65 to 2.73 VL = 1.65 to 3.47	CODEC, Class-H HP amp, 2:1 MUX, PGA	36 QFN
CS43L21	24	98	–86	96	Single-ended	VA = 1.8 to 2.5 VD = 1.8 to 2.5 VL = 1.8 to 3.3	DAC with HP amp and volume control	32 QFN
CS43L22	24	98	–88	96	Single-ended	VA = 1.65 to 2.83 VD = 1.65 to 2.83 VP = 2.37 to 5.35 VL = 1.8 to 3.3	DAC with HP and Class-D speaker amps	40 QFN
CS44L11	24	95	–64	96	Single-ended	VA = 1.8 to 2.4 VD = 1.8 to 2.4	Digital headphone amp	16 TSSOP
CS53L21	24	98	–88	96	Single-ended	VA = 1.8 to 2.5 VD = 1.8 to 2.5 VL = 1.8 to 3.3	ADC, 3:1 MUX, PGA, MIC pre-amp	32 QFN

PWM Controllers

SPECIFICATIONS

Part	Resolution (bits)	Dynamic Range (dB)	THD+N %	Sample Rate (kHz)	Power Supply (V)	Comments	Package
CS4461	—	—	—	—	VD = 5 VL = 3.3 to 5	PSR feedback ADC	24 TSSOP
CS44600	24	100	< 0.05	192	VD = 2.5 VL = 3.3 to 5	6-channel digital amplifier controller	64 LQFP
CS44800	24	100	< 0.05	192	VD = 2.5 VL = 3.3 to 5	8-channel digital amplifier controller	64 LQFP

Power Stage

SPECIFICATIONS

Part	Power (W)	Dynamic Range (dB)	THD+N %	Channels	Power Supply (V)	Comments	Package
CS4412A	30	102	0.1	4	VP = 8 to 18 VD = 2.5 or 5	Quad power stage IC thermally enhanced	48 QFN

Integrated Class-D Audio Amplifiers

SPECIFICATIONS

Part	Power (W)	Dynamic Range (dB)	THD+N %	Channels	Power Supply (V)	Comments	Package
NEW **CS3511**	2 x 10	98	0.03	2.0	VP = 9 to 12	Integrated digital audio amp w/ feedback and differential input	32 QFN
CS4525	2 x 15	102	0.1	2.1	VP = 8 to 18 VD = 2.5 or 5	Integrated digital audio amp w/ ADC, SRC and signal processor	48 QFN

Volume Control

SPECIFICATIONS

Part	Channel	Dynamic Range (dB)	THD+N (dB)	Analog I/O	Power Supply (V)	Comments	Package
CS3308	8	123	–112	Single-ended	VA = ±5 VD = 3.3	+22 dB gain/–96 dB attenuation, 0.25 dB step	48 LQFP
CS3310	2	116	–100	Single-ended	VA = ±5 VD = 5	+31.5 dB gain/–95.5 dB attenuation, 0.5 dB step	16 SOIC
CS3318	8	127	–112	Single-ended	VA = ±8 to ±9 VD = 3.3	+22 dB gain/–96 dB attenuation, 0.25 dB step	48 LQFP

Interfaces & Sample-Rate Converters

SPECIFICATIONS

Part	Sample Rate (kHz)	S/PDIF, IEC-60958 Transmitter	S/PDIF, IEC-60958 Receiver	AES/EBU	EIAJ CP1201	Host Interface	Channel Status Buffer Memory	SRC	Package
CS8406	192	✓	—	✓	✓	✓	✓	—	28 SOIC 28 TSSOP
CS8416	192	—	✓	✓	✓	✓	✓	—	28 SOIC 28 TSSOP 28 QFN
CS8420	96	✓	✓	✓	✓	✓	✓	✓	28 SOIC
CS8421	192	—	—	—	—	—	—	✓	20 TSSOP 20 QFN
NEW **CS8422**	192	—	✓	✓	✓	✓	✓	✓	32 QFN
CS8427	96	✓	✓	✓	✓	✓	✓	—	28 SOIC 28 TSSOP

AC '97 CODECs

SPECIFICATIONS

Part	Bus	Converters	Feature	Package
CS4202	AC '97	20-bit stereo DAC; 18-bit stereo ADC	S/PDIF transmitter	48 TQFP/LQFP
CS4205	AC '97	20-bit stereo DAC; 18-bit stereo ADC	Sample-rate converter	48 TQFP/LQFP
CS4299	AC '97	20-bit stereo DAC; 18-bit stereo ADC	Sample-rate converter	48 TQFP/LQFP

Audio DSPs

SPECIFICATIONS

Part	Processor	DSP Tools	Key Firmwares & Features	Temp Range	Package
CS493xxx	**Supported exclusively with existing firmwares, many functions available for license, ideal for reduced requirements and low-cost opportunities**				
CS493253	Dual 24-bit	None	DD + PLII, IEC61937 via I²S	86 MHz~70 °C	44 PLCC
CS493254	Dual 24-bit	None	DD + PLII, IEC61937 via I²S + DDEX	86 MHz~70 °C	44 PLCC
CS493263	Dual 24-bit	None	DD + PLII, IEC61937 via I²S + DTS	86 MHz~70 °C	44 PLCC
CS493264	Dual 24-bit	None	DD + PLII, IEC61937 via I²S + DDEX	86 MHz~70 °C	44 PLCC
CS493295	Dual 24-bit	None	also includes support for AAC	86 MHz~70 °C	44 PLCC
CS493302	Dual 24-bit	None	MP3 & PCM Processor for THX® & automotive applications	86 MHz~70 °C & 72 MHz~85 °C	44 PLCC
CS493105	Dual 24-bit	None	Broadcast audio decoder, DD, MPEG, AAC ES/PES streams	86 MHz~70 °C	44 PLCC
CS493115	Dual 24-bit	None	Broadcast audio decoder, DD, MPEG, AAC ES/PES streams	86 MHz~70 °C	44 PLCC
CS493122	Dual 24-bit	None	Broadcast audio decoder, DD, MPEG, AAC ES/PES streams	86 MHz~70 °C	44 PLCC
CS485xx	**Tiny, cost effective, mega-performance PCM processors targeted for: mini-systems, DVD receivers, speaker bars, car audio, DTVs**				
CS48520	Single 32-bit	DSP Composer, ASM, C	4 channel audio PP1	150 MHz~70 °C (300 M MAC/Sec)	48 QFP
CS48540	Single 32-bit	DSP Composer, ASM, C	8 channel audio PP1	150 MHz~70 °C (300 M MAC/Sec)	48 QFP
CS48560	Single 32-bit	DSP Composer, ASM, C	> 8 channel audio PP1	150 MHz~70 °C & 130 MHz~85 °C	48 QFP
CS48AU2x	**Audyssey® EQ/Dynamic Volume/Dynamic EQ/BassXT-enabled device ideally targeted for DTVs, portable audio docking stations, automotive entertainment, I²S I/O**				
CS48AU2B	Single 32-bit	DSP Composer	2.0 channel Audyssey® EQ/Dynamic Volume/Dynamic EQ/BassXT controller (selected additional functions available through DSP Composer)	150 MHz~70 °C (300 M MAC/Sec)	48 LQFP
CS48DV2x	**Dolby® Volume-enabled device ideally targeted for DTVs, portable audio docking stations, automotive entertainment, I²S I/O**				
CS48DV2A	Single 32-bit	Demo GUI	2 channel Dolby® Volume controller (fixed function)	150 MHz~70 °C (300 M MAC/Sec)	48 LQFP
NEW **CS48DV2B**	Single 32-bit	DSP Composer	2.1 channel Dolby® Volume controller (selected additional functions available through DSP Composer)	150 MHz~70 °C (300 M MAC/Sec)	48 LQFP
CS48DV6x	**Dolby® Volume-enabled device ideally targeted for 5.1 channel audio/video receivers, DVD receivers, soundbars, I²S I/O**				
NEW **CS48DV6B**	Single 32-bit	DSP Composer	5.1 channel Dolby® Volume controller (fixed function)	150 MHz~70 °C (300 M MAC/Sec)	48 LQFP
CS4953xx	**Single-chip multistandard surround sound decoder targeted for playback from analog & S/PDIF sources**				
CS495303	Dual 32-bit	DSP Composer, ASM, C	(DD, DDEX, AAC, MPEG) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
CS495313	Dual 32-bit	DSP Composer, ASM, C	(DD, DDEX, DTS, DTSES, DTS96, AAC, MPEG) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP 144 LQFP

Audio DSPs

SPECIFICATIONS

Part	Processor	DSP Tools	Key Firmwares & Features	Temp Range	Package
CS4970xx	**Single-chip multistandard surround sound decoder targeted for playback from HD DVD™, Blu-ray Disc® players, & all analog, S/PDIF & HDMI® sources**				
CS497004	Dual 32-bit	DSP Composer, ASM, C	(DD+, DTHD, DTSHRA, DTSMA, DTSLBR, DTSES, DTS96, DD, DDEX, DTS, AAC, MPEG) + PP2	150 MHz~70 °C (600 M MAC/Sec)	144 LQFP
CS497024	Dual 32-bit	DSP Composer, ASM, C	(DD+, DTHD, DTSHRA, DTSMA, DTSLBR, DTSES, DTS96, DD, DDEX, DTS, AAC, MPEG) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
CS49DV8x	**Dolby® Volume-enabled device ideally targeted for audio/video receivers and DVD receivers, I²S I/O**				
NEW **CS49DV8C**	Dual 32-bit	DSP Composer	8 channel Dolby® Volume control (fixed function)	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP

Audio SOCs (DSP with Integrated Mixed-Signal)

SPECIFICATIONS

Part	Processor	Speed (MIPS)	Car Audio DSPs	General Audio DSPs	Resolution (bits)	Dynamic Range (dB)	A/D Channels	D/A Channels	Comments	Package
CS470xx	**Tiny, cost effective, mega-performance PCM processors with integrated CODEC targeted for mini-systems, DVD receivers, speakerbars, car audio, DTVs**									
NEW **CS47024**	Single 32-bit	150	CS47024B-DQZ	CS47024B-CQZ	24	108 DAC 105 ADC	2	4	2 ADC w/ 5:1 MUX, 4 DAC, S/PDIF Rx/Tx, SRC	100 LQFP
NEW **CS47028**	Single 32-bit	150	CS47028B-DQZ	CS47028B-CQZ	24	108 DAC 105 ADC	2	8	2 ADC w/ 5:1 MUX on 1 ADC, 8 DAC, S/PDIF Rx/Tx, SRC	100 LQFP
NEW **CS47048**	Single 32-bit	150	CS47048B-DQZ	CS47048B-CQZ	24	108 DAC 105 ADC	4	8	4 ADC w/ 5:1 MUX, 8 DAC, S/PDIF Rx/Tx, SRC	100 LQFP

Recommended Replacements for New Design

Not Recommended for New Design	Recommended Replacement
CS494xxx (CS494003)	CS4953xx
CS4950xx (CS495002)	CS4953xx
CS4951xx (CS495102)	CS4953xx
CS4952xx (CS495202)	CS4953xx

Algorithm & Nomenclature Abbreviations

Decoding Algorithm & Nomenclature Abbreviation Table	
DTSES = DTS-ES™ Matrix/Discrete	DD = Dolby Digital®
DTS = DTS Digital Surround™	DDEX = Dolby Digital® Surround EX®
DTS96 = 96 kHz/24-bit	DD+ = Dolby Digital® Plus
DTHD = Dolby® TrueHD	DTSHRA = DTS® High Resolution Audio
AAC = MPEG-2 AAC Multichannel	DTSMA = DTS® Master Audio
PP = Post-Processing	DTSLBR = DTS® Express
ES = Elementary Stream	MPEG = MPEG 2, Layer II Stereo & Multichannel
PES = Packetized Elementary Stream	MP3 = MPEG 1, Layer II & III CBR & VBR
CBR = Constant Bit Rate	VBR = Variable Bit Rate

Algorithm & Nomenclature Abbreviations (continued)

Post-Processing (PP1) Inclusion & Algorithm Abbreviation Table	
PL = Dolby® Pro Logic®	PLII = Dolby® Pro Logic® II
PLIIx = Dolby® Pro Logic® IIx	NEO = DTS:Neo6™
TSXT = SRS® TruSurround XT®	TSHD = SRS® TruSurround® HD/HD4
WOW™ = SRS® WOW™	WOWHD™ = SRS® WOW HD™
TB = SRS® TruBass®	TV = SRS® TruVolume®
CBM = Cross-Bar Mixer	TC = Tone Control
LIM = Compressor/Limiter	DVL = Cirrus® Dynamic Volume Leveler
L7 = Logic7™	DVS = Dolby® Virtual Speaker® 2
NER = Neural-THX® Surround	DH = Dolby Headphone® 2
THX = THX® Cinema	REEQ = THX® Cinema Re-EQ™
TEX = THX® Surround EX™	TUX = THX® Select2/Ultra2™ Surround EX
Post-Processing (PP2 includes all of the above +) Inclusion & Algorithm Abbreviation Table	
AUDY = Audyssey® MultEQ XT™	TUX+ = THX® Select2/Ultra2™ Surround EX™ with Loudness Plus
AUD = Audistry®	DYNVOL = Audyssey® Dynamic Volume® / Dynamic EQ®

CobraNet® Transport and Audio Network Processor ICs

SPECIFICATIONS

Family	Description	CobraNet® Part Numbers	Audio Channels over Ethernet	Serial Input/ Serial Output Ports	Ethernet Interface	IC Package
CS1810xx CS4961xx*	The CS1810xx Family contains CobraNet® networked digital audio interface ICs. The CS4961xx Family provides digital audio signal processing along with the network interface function.	CS181002 CS496102*	2	One synchronous, capable of supplying up to 2 full-duplex channels at 48 and/or up to 96 kHz sample rates.	Supports 100BASE-Tx, 100 Mbps, full duplex Ethernet, fully compliant with IEEE 802.3u.	144 LQFP
		CS181012 CS496112*	8	Quad synchronous, capable of supplying up to 8 full-duplex channels at 48 and/or up to 96 kHz sample rates.		
		CS181022 CS496122*	16	Quad synchronous, capable of supplying up to 16 full-duplex channels at 48 kHz, or up to 8 channels at 96 kHz sample rates.		

*The CS4961xx series includes a 32-bit, 120 MIPS digital signal processor for audio processing of any or all channels.

CobraNet® System Modules

SPECIFICATIONS

Product	Description	CobraNet® Part Numbers	Audio Channels over Ethernet (full-duplex)	Serial Input/ Output Ports	Ethernet Interface	Integrated DSP (MIPS)	Board Dimensions
CM-1 Transport Module	Digital audio network interface module with dual Ethernet ports	See your Cirrus Logic sales representative for available models.	32	Quad synchronous, up to 32 channels at 48 and/or up to 96 kHz sample rates	100BASE-Tx, 100 Mbps, full duplex Ethernet, fully compliant with IEEE 802.3u	—	3.5" X 3.5"
CM-2 Transport and DSP Module	Digital audio network interface module with dual Ethernet ports and audio DSP	CPB496122-CM2-FB and CPB496122-CM2-MT	16	Quad synchronous, capable of supplying up to 16 full-duplex channels at 48 kHz sample rate or up to 8 full-duplex channels at 96 kHz sample rate	100BASE-Tx, 100 Mbps, full duplex Ethernet, fully compliant with IEEE 802.3u	32-bit DSP, 120 MIPS	3.5" X 3.5"
EV-2 Development Board	CobraNet® development platform for use with the CM-1 and CM-2 modules	CDB-496122-EV2	16	One digital AES3 input stream (two channels) or one digital AES3 output stream (two channels). Two analog audio input channels, two analog audio output channels	100BASE-Tx, 100 Mbps, full duplex Ethernet, fully compliant with IEEE 802.3u	32-bit DSP, 120 MIPS	8" X 7"
CobraCom™ Reference Design	CobraNet® microphone and network-powered loudspeaker reference design	CRD-CobraCom	16	Using the CS4961xx series provides up to 16 audio channels with audio DSP capability	100BASE-Tx, 100 Mbps, full duplex Ethernet, fully compliant with IEEE 802.3u and 802.3af Power-over-Ethernet	32-bit DSP, 120 MIPS	5.4" X 4"
NEW **CobraNet® LE Reference Design**	Low-cost, 2 channel I/O end-node reference design	See your Cirrus Logic sales representative	2	Stereo 1/8" input and output, stereo RCA input and output, I^2S digital audio outputs	100Base-Tx, 10 Mbps, full duplex Ethernet, fully compliant with IEEE 802.3u and 802.3af Power-over-Ethernet	—	5" x 3"

CobraNet® Software Tools

FEATURES

DSP Conductor™	DSP Conductor™ software is a powerful, graphical tool for rapid, drag-and-drop audio signal processing firmware development on CS4961xx-based platforms, such as the CM-2 module or an OEM's custom hardware. Drawing upon a comprehensive library of DSP functions, an OEM can design the audio processing of a product, then lock the DSP firmware down into the CS4961xx-based CobraNet® product. These audio functions can be controlled either by the product's user interface or through remote SNMP commands over the CobraNet® Ethernet LAN. Further, any CS4961xx node can be re-programmed in real-time from a PC on the network, enabling multi-purpose products to serve different audio processing functions for different applications at the push of a button.
CobraCAD™	CobraCAD™ software is a graphical, drag-and-drop design and verification tool for modeling a network of CobraNet-enabled gear and standard Ethernet switches. A library of commercially available, CobraNet®-enabled products is the place to start for designing a virtual CobraNet® network, then making sure it will perform as required. CobraCad™ software is ideal for consultants and integrators preparing a bid for a client and for installers and expert end users who need to visualize the network before or after deployment.
CobraNet® Discovery	CobraNet® Discovery is a CobraNet® network maintenance utility that automatically discovers CobraNet® devices on the network, configures them and queries and reports the working state of a CobraNet® network and its devices. Discovery also provides a CobraNet® firmware update function.

Industrial Components

HIGH-PRECISION ANALOG & MIXED-SIGNAL ICs

Cirrus Logic high-precision analog and mixed-signal ICs for industrial measurement applications—such as industrial process control, analytical instruments, consumer utility, digital power meters and seismic systems—are based on proprietary advanced Delta-Sigma technology. Cirrus Logic provides many proprietary products, including analog-to-digital converters, digital-to-analog converters, modulator and amplifier ICs.

AMPLIFIERS

- CS3001
- CS3002
- CS3003
- CS3004
- CS3011
- CS3012
- CS3013
- CS3014

DELTA-SIGMA A/D CONVERTERS

- CS5505
- CS5506
- CS5507
- CS5508
- CS5509
- CS5510
- CS5511
- CS5512
- CS5513
- CS5529

DELTA-SIGMA A/D CONVERTERS WITH INTEGRATED AMPLIFIERS

- CS5521
- CS5522
- CS5523
- CS5524
- CS5525
- CS5526
- CS5528
- CS5530
- CS5531
- CS5532
- CS5533
- CS5534
- CS5550

HIGH-THROUGHPUT DELTA-SIGMA A/D CONVERTERS

- CS5560
- CS5566
- CS5571
- CS5581

GEOPHYSICAL PRODUCTS

Single-S™

- CS3301A
- CS3302A
- CS5373A
- CS5378

Total-S™

- CS3301A
- CS3302A
- CS4373A
- CS5371A
- CS5372A
- CS5376A

Extreme-S™

- CS5201
- CS5203A
- CS5204
- CS5205
- CS5207

ENERGY MEASUREMENT

- CS5451A
- CS5460A
- CS5461A
- CS5462
- CS5463
- CS5464
- CS5466
- CS5467

ENERGY MEASUREMENT SYSTEM-ON-CHIP

- CS740111
- CS740121
- CS740131

LEARN MORE AT
www.cirrus.com

Amplifiers

SPECIFICATIONS

Part Number	Device	Supply Voltage (V)	Supply Current (mA)	V_{OS} (µV) Max	V_{OS} Drift (µV/°C)	e_{NOISE} (nV/√Hz)	A_{OL} min (dB)	Package
CS3001	Single	2.7 to 6.7	2.1	10	0.05	6	200	8 SOIC
CS3002	Dual	2.7 to 6.7	3.6	10	0.05	6	200	8 SOIC
CS3003	Single	2.7 to 5.25	1.0	10	0.05	17	150	8 SOIC
CS3004	Dual	2.7 to 5.25	2.0	10	0.05	17	150	8 SOIC
CS3011	Single	2.7 to 6.7	0.9	10	0.05	12	200	8 SOIC
CS3012	Dual	2.7 to 6.7	1.7	10	0.05	12	200	8 SOIC
CS3013	Single	2.7 to 5.25	0.5	10	0.05	22	135	8 SOIC
CS3014	Dual	2.7 to 5.25	1.0	10	0.05	22	135	8 SOIC

Delta-Sigma A/D Converters

SPECIFICATIONS

Part Number	Resolution (bits)	Throughput (Sps)	Integral Linearity (%FS)	Differential Linearity (±LSB)	Number of Channels	Power Consumption (mW)	Package
CS5505	16	20 – 100	0.0015%	0.25	4	3.2	24 SOIC
CS5506	20	20 – 100	7.0E-4%	NMC	4	3.2	24 SOIC
CS5507	16	20 – 100	0.0015%	0.25	1	3.2	20 SOIC
CS5508	20	20 – 100	7.0E-4%	NMC	1	3.2	20 SOIC
CS5509	16	20 – 200	0.0015%	0.25	1	1.7	16 SOIC
CS5510	16	53 – 212	0.0015%	NMC	1	1.4	8 SOIC
CS5511	16	100 (typical)	0.0015%	NMC	1	1.5	8 SOIC
CS5512	20	53 – 326	7.0E-4%	NMC	1	1.8	8 SOIC
CS5513	20	100 (typical)	7.0E-4%	NMC	1	1.9	8 SOIC
CS5529	16	1 – 303	0.0015%	NMC	1	2.6	20 SOIC

Delta-Sigma A/D Converters with Integrated Amplifiers

SPECIFICATIONS

Part	Resolution (bits)	Throughput (Sps)	Integral Linearity (%FS)	Differential Linearity (±LSB)	Number of Channels	Power Consumption (mW)	Package
CS5521	16	1 – 400	0.0015%	NMC	2	6	20 SSOP
CS5522	24	1 – 606	7.0E-4%	NMC	2	9	20 SSOP
CS5523	16	1 – 400	0.0015%	NMC	4	6	24 SSOP
CS5524	24	1 – 606	7.0E-4%	NMC	4	9	24 SSOP
CS5525	16	3 – 606	0.0015%	NMC	1	9.4	20 SSOP
CS5526	20	3 – 606	7.0E-4%	NMC	1	9.4	20 SSOP
CS5528	24	1 – 606	7.0E-4%	NMC	8	9	24 SSOP
CS5530	24	7 – 3840	±0.0015%	NMC	1	35	20 SSOP
CS5531	16	7 – 3840	±0.0015%	NMC	2	35	20 SSOP
CS5532	24	7 – 3840	±0.0015%	NMC	2	35	20 SSOP
CS5533	16	7 – 3840	±0.0015%	NMC	4	35	24 SSOP
CS5534	24	7 – 3840	±0.0015%	NMC	4	35	24 SSOP
CS5550	24	2440 – 4000	0.01%	NMC	2	21	24 SSOP

High-Throughput Delta-Sigma A/D Converters

SPECIFICATIONS

Part	Resolution (bits)	Throughput (kSPS)	Integral Linearity (%FS)	Differential Linearity (±LSB)	Number of Channels	Power Consumption (mW)	Package
CS5560	24	50	±5 ppm	0.1	1, Differential	90	24 SSOP
CS5566	24	5	±5 ppm	0.1	1, Differential	20	24 SSOP
CS5571	16	100	±8 ppm	0.1	1, Single-ended	85	24 SSOP
CS5581	16	200	±8 ppm	0.1	1, Single-ended	85	24 SSOP

Geophysical Products Single-S™

SPECIFICATIONS

Part	Description	Resolution (bits)	Dynamic Range (dB)	THD (dB)	Power Consumption Per Channel (mW)	Signal Range (V)	Package
CS3301A	Geophone amplifier	—	—	–121	27.5	5 V_{p-p} diff	24 SSOP
CS3302A	Hydrophone amplifier	—	—	–118	25	5 V_{p-p} diff	24 SSOP
CS5373A	A/D converter	24	124	–118	25	5 V_{p-p} diff	28 SSOP
	D/A converter	24	114	–116	40	5 V_{p-p} diff	
CS5378	Filter with PLL	—	—	—	20	—	28 SSOP

Geophysical Products Total-S™

SPECIFICATIONS

Part	Description	Resolution (bits)	Dynamic Range (dB)	THD (dB)	Power Consumption Per Channel (mW)	Signal Range (V)	Package
CS3301A	Geophone amplifier	—	—	–121	27.5	5 V_{p-p} diff	24 SSOP
CS3302A	Hydrophone amplifier	—	—	–118	25	5 V_{p-p} diff	24 SSOP
CS4373A	D/A converter	24	114	–116	10	5 V_{p-p} diff	28 SSOP
CS5371A	Single A/D converter	24	124	–118	25	5 V_{p-p} diff	24 SSOP
CS5372A	Dual A/D converter	24	124	–118	25	5 V_{p-p} diff	24 SSOP
CS5376A	Quad filter	—	—	—	<10	—	64 TQFP

Geophysical Products Extreme-S™

SPECIFICATIONS

Part	Description	Resolution (bits)	Dynamic Range (dB)	THD (dB)	Power Consumption Per Channel (mW)	Signal Range (V)	Package
CS5201	High-temperature D/A converter	24	114	–116	10	5 V_{p-p} diff	28 SOIC ceramic
CS5203A	High-temperature amplifier	—	—	–121	28	5 V_{p-p} diff	24 SOIC ceramic
CS5204	High-temperature quad filter	—	—	—	<10	—	64 ceramic
CS5205	High-temperature A/D converter	24	122	–117	32.5	5 V_{p-p} diff	24 SOIC ceramic
CS5207	High-temperature A/D converter	24	122	–117	32.5	5 V_{p-p} diff	24 SOIC ceramic

Energy Measurement

SPECIFICATIONS

Part	Channels	Energy Data Linearity – 1000:1 Range	Energy Pulse Outputs	Instantaneous I and V	Real (Active) Power	I_{RMS}, V_{RMS}	Apparent Power (S)	Reactive Power (Q)	Temp Sensor	Package
CS5451A	6	—	—	✓	—	—	—	—	—	28 SSOP
CS5460A	2	0.1% of reading	✓	✓	✓	✓	—	—	—	24 SSOP
CS5461A	2	0.1% of reading	✓	✓	✓	✓	✓	—	✓	24 SSOP
CS5462	2	0.1% of reading	✓	—	✓	—	—	—	—	24 SSOP
CS5463	2	0.1% of reading	✓	✓	✓	✓	✓	✓	✓	24 SSOP
CS5464	3	0.1% of reading	✓	✓	✓	✓	✓	✓	✓	28 SSOP
CS5466	2	0.1% of reading	✓	—	✓	—	—	—	—	24 SSOP
CS5467	4	0.1% of reading	✓	✓	✓	✓	✓	✓	✓	28 SSOP

Energy Measurement System-on-Chip

SPECIFICATIONS

Part	ADCs	W, VA, VAR, PF, RMS	MCU	Flash	RAM	RTC	LCD Driver	Temp Sensor	SSI/UART	Package
CS740111	3	✓	ARM7TDMI	32 KB	8 KB	✓	✓	✓	1/2	64 LQFP
CS740121	3	✓	ARM7TDMI	64 KB	8 KB	✓	✓	✓	1/2	64 LQFP
CS740131	3	✓	ARM7TDMI	128 KB	8 KB	✓	✓	✓	1/2	64 LQFP

Apex Precision Power™ Products

POWER ANALOG ICs, MODULES AND HYBRIDS

Apex Precision Power™ is the brand name for Cirrus Logic's high performance precision power analog family of products. Apex Precision Power™ products drive innovation in the design and manufacturing of power operational amplifiers (linear) and pulse width modulation amplifiers (PWM/switching). A mix of IC, board-level module and hybrid product designs is used to deliver up to 50 A of output current while operating on voltage supplies ranging from 8.5 V up to 1200 V. Target applications focus on the high power precision control of current, voltage and speed applications in the industrial, test and measurement, aerospace and medical markets.

APEX PRECISION POWER™ HIGH-CURRENT LINEAR AMPLIFIERS

- PA50
- PA52
- MP230FC
- PA03
- PA05
- MP240FC
- PA04
- MP111FD
- PA12A
- PA13A
- MP108FDA
- MP39CLA
- MP108FD
- MP39CL
- PA12
- PA13
- PA51
- PA61
- MP38CLA
- PA93
- MP38CL
- PA01
- PA02
- PA07
- PA10
- PA16
- PA73
- PA162
- PA119
- PA92
- PA09M
- PA74A
- PA76A
- PA74
- PA76
- PA09
- PB50
- PA60EU
- PA75CC
- PA96
- PB51
- PB58
- PA12H

APEX PRECISION POWER™ HIGH-CURRENT PWM AMPLIFIERS

- SA03
- SA08
- SA01
- MSA260KC
- MSA240KC
- SA12
- SA306
- SA60
- SA50
- SA57

APEX PRECISION POWER™ HIGH-VOLTAGE LINEAR AMPLIFIERS

- PA89
- PA94
- PA95
- PA97
- PA15
- PA85
- PA88
- PA91
- PA98
- PA90
- PA92
- PA93
- PA240CC
- PA241CE
- PA243DF
- PA78DK
- PA79DK
- PA08
- PA82J
- PA83
- PA84
- PA96
- PB51
- PB58
- MP108FD
- MP240FC
- MP38CL
- PA04
- PA52
- PA69EU
- PA86EU
- PB50
- PA03
- PA81J
- MP111FD
- MP230FC
- MP39CL
- PA05
- PA07
- PA50

APEX PRECISION POWER™ HIGH-VOLTAGE PWM AMPLIFIERS

- MSA260KC
- SA08
- SA12
- MSA240KC
- SA01
- SA03
- SA50
- SA60

APEX PRECISION POWER™ HIGH-SPEED LINEAR AMPLIFIERS

- PA98
- PA85
- PA119
- PA94
- PA79DK
- PA78DK
- PA86EU
- MP400
- PA91
- PA90
- PB58
- PA96
- PA69EU
- PA09
- PA84
- MP108FDA
- MP108FD
- MP111FD
- PB51
- PB50
- PA05

LEARN MORE AT
www.cirrus.com

Apex Precision Power™ High-Current Linear Amplifiers

SPECIFICATIONS

Model	Output Current MAX (A)	Supply Voltage MAX (V)	Slew Rate TYP (V/us)	Standby Current MAX (mA)	Power Dissipation MAX (W)
PA50	40	100	50	36	400
PA52	40	200	50	36	400
MP230FC	30	100	15	35	210
PA03	30	150	8	300	500
PA05	30	100	100	120	250
MP240FC	20	200	14	25	170
PA04	20	200	50	90	200
MP111FD	15	100	130	157	170
PA12A	15	100	4	50	125
PA13A	15	90	4	50	135
MP108FDA	11	200	170	65	100
MP39CLA	11	100	10	24	125
MP108FD	10	200	170	65	100
MP39CL	10	100	10	24	125
PA12	10	90	4	50	125
PA13	10	90	4	50	135
PA51	10	72	2.6	10	97
PA61	10	90	2.8	10	97
MP38CLA	8	200	63	24	125
PA93	8	400	50	14	125
MP38CL	7	200	63	24	125
PA01	5	56	2.6	50	67
PA02	5	38	20	40	48
PA07	5	100	4	30	67
PA10	5	90	3	30	67
PA16	5	38	20	40	62.5
PA73	5	60	2.6	5	67
PA162	4 x 1	40	1.4	20	45
PA119	4	80	900	120	78
PA92	4	400	50	14	80
PA09M	3	80	200	85	78
PA74A	2 x 3	40	1.4	40	36/60
PA76A	2 x 3	40	1.4	40	36/60
PA74	2 x 2.5	40	1.4	40	36/60
PA76	2 x 2.5	40	1.4	40	36/60
PA09	2	80	200	85	78
PB50	2	200	100	25	35
PA60EU	2 x 1.5	40	1.4	10	16/31
PA75CC	2 x 1.5	40	1.4	10	19/28
PA96	1.5	300	250	18	83
PB51	1.5	300	100	18	83
PB58	1.5	300	250	35	70
PA12H	1	90	4	100	6

Apex Precision Power™ High-Current PWM Amplifiers

SPECIFICATIONS

Mode	Output Current MAX (A)	Supply Voltage MAX (V)	Switching Frequency (kHz)	Power Delivery MAX (W)	Power Dissipation MAX (W)
SA03	30	100	22.5	73	300
SA08	20	450	22.5	90	250
SA01	20	100	42	78	185
MSA260KC	20	450	50	20	250
MSA240KC	20	100	50	78	250
SA12	15	200	200	200	250
NEW **SA306**	17	60	100	100	17
SA60	10	80	250	12	140
SA50	5	80	45	18	120
NEW **SA57**	17	60	100	100	17

Apex Precision Power™ High-Voltage Linear Amplifiers

SPECIFICATIONS

Model	Supply Voltage MAX (V)	Output Current MAX (A)	Slew Rate TYP (V/us)	Standby Current MAX (mA)	Power Dissipation MAX (W)
PA89	1200	0.075	30	6	40
PA94	900	0.1	700	24	30
PA95	900	0.1	30	2.2	30
PA97	900	0.01	8	1	5
PA15	450	0.2	20	3	30
PA85	450	0.2	1000	25	30
PA88	450	0.1	30	2	15
PA91	450	0.2	300	14	30
PA98	450	0.2	1000	25	30
PA90	400	0.2	300	14	30
PA92	400	4	50	14	80
PA93	400	8	50	14	125
PA240CC	350	0.06	40	2.5	14
PA241CE	350	0.06	40	2.5	12
PA243DF	350	0.06	40	5	11/20
PA78DK	350	0.15	350	2.5	23
PA79DK	350	0.15	350	2.5	26
PA08	300	0.15	30	8.5	17.5
PA82J	300	0.015	20	8.5	11.5
PA83	300	0.075	30	8.5	17.5
PA84	300	0.04	180	7.5	17.5
PA96	300	1.5	250	18	83
PB51	300	1.5	100	18	83
PB58	300	1.5	250	35	70
MP108FD	200	10	170	65	100
MP240FC	200	20	14	25	170
MP38CL	200	7	63	24	125
PA04	200	20	50	90	200
PA52	200	40	50	36	400
PA69EU	200	0.05	200	2.5	23
PA86EU	200	0.15	350	2.5	23
PB50	200	2	100	25	35
PA03	150	30	8	300	500
PA81J	150	0.03	20	8.5	11.5
MP111FD	100	15	130	157	170
MP230FC	100	30	15	35	210
MP39CL	100	10	10	24	125
PA05	100	30	100	120	250
PA07	100	5	4	30	67
PA50	100	40	50	36	400

Apex Precision Power™ High-Voltage PWM Amplifiers

SPECIFICATIONS

Model	Supply Voltage MAX (V)	Output Current MAX (A)	Switching Frequency (kHz)	Power Delivery MAX (W)	Int. Power MAX (W)
MSA260KC	450	20	50	250	300
SA08	450	20	22.5	250	250
SA12	200	15	200	250	185
MSA240KC	100	20	50	250	250
SA01	100	20	42	185	250
SA03	100	30	22.5	300	250
SA50	80	5	45	120	140
SA60	80	10	250	140	80

Apex Precision Power™ High-Speed Linear Amplifiers

SPECIFICATIONS

Model	Slew Rate TYP (V/us)	Supply Voltage MAX (V)	Output Current MAX (A)	Standby Current MAX (mA)	Power Dissipation MAX (W)
PA98	1000	450	0.2	25	30
PA85	1000	450	0.2	25	30
PA119	900	80	4	120	78
PA94	700	900	0.1	24	30
PA79DK	350	350	0.15	2.5	26
PA78DK	350	350	0.15	2.5	23
PA86EU	350	200	0.15	2.5	23
NEW **MP400**	350	50	0.2	2.5	14.2
PA91	300	450	0.2	14	30
PA90	300	400	0.2	14	30
PB58	250	300	1.5	35	70
PA96	250	300	1.5	18	83
PA69EU	200	200	0.05	2.5	23
PA09	200	80	2	85	78
PA84	180	300	0.04	7.5	17.5
MP108FDA	170	200	11	65	100
MP108FD	170	200	10	65	100
MP111FD	130	100	15	157	170
PB51	100	300	1.5	18	83
PB50	100	200	2	25	35
PA05	100	100	30	120	250

Communication Components

WIDE VARIETY OF INTERFACE, TI, ETHERNET, INFRARED AND ECHO CANCELLER ICs

Cirrus Logic, a pioneer in the development of world-class telecommunication ICs, continues to provide cost-effective solutions.

T1/E1/J1 LIUs

Short-Haul Single-Port Line Interface Units

- CS61535A
- CS61574A
- CS61575
- CS61577

Short-Haul Multi-Port Line Interface Units

- CS61584A
- CS61880
- CS61884

INFRARED & ECHO CANCELLER

- CS6422
- CS8130

ETHERNET

- CS8900A
- CS8952

LEARN MORE AT
www.cirrus.com

Short-Haul Single-Port Line Interface Units

SPECIFICATIONS

Part	Power Supply (V)	Control Modes	Line Coders	Number of Channels	TBR-12 Compliant	Impedance Matching Line Driver	Package
CS61535A	5	Host, H/W & Extended H/W	AMI, B8ZS & HDB3	1	✓	✓	28 PLCC
CS61574A	5	Host, H/W & Extended H/W	AMI, B8ZS & HDB3	1	✓	✓	28 PLCC
CS61575	5	Host, H/W & Extended H/W	AMI, B8ZS & HDB3	1	✓	✓	28 PLCC
CS61577	5	Host, H/W & Extended H/W	AMI, B8ZS & HDB3	1	✓	—	28 PLCC

Short-Haul Multi-Port Line Interface Units

SPECIFICATIONS

Part	Power Supply (V)	Control Modes	Line Coders	Number of Channels	TBR-12 Compliant	Impedance Matching Line Driver	Arbitrary Waveform Option	Package
CS61584A	3.3 or 5	Host & H/W	AMI, B8ZS & HDB3	2	✓	✓	✓	64 TQFP
CS61880	3.3	Host & H/W	AMI & HDB3	8	✓	✓	✓	144 LQFP 160 BGA
CS61884	3.3	Host & H/W	AMI, HDB3 & B8ZS	8	✓	✓	✓	144 LQFP

Infrared & Echo Canceller

SPECIFICATIONS

Part	Media Supported	Digital Interface	Number of Channels	Power Supply (V)	Package
CS6422	Analog audio (MIC and telephone)	Acoustic interface and network interface (both ANALOG)	2 – Full Duplex	5	20 SOIC
CS8130	IR	IrDA, HPSIR, ASK (CW) and TV remote compatible	1	2 to 5	20 SSOP (5x7 mm)

Ethernet

SPECIFICATIONS

Part	Media Supported	Digital Interface	Number of Channels	Power Supply	Package
CS8900A	10Base-T	ISA and general purpose parallel	1	5 V, 3.3 V	100 LQFP
CS8952	10Base-T, 100Base-X and NRZ (optical)	MII	1	5 V with support of 3.3 V digital I/O	100 TQFP

Processors

POWERFUL GENERAL PURPOSE PROCESSORS

A wide variety of 32-bit ARM 7- and ARM 9-based system-on-a-chip processors that offer a wide range of performance and features at cost-effective price points.

EMBEDDED PROCESSORS

ARM 7 Embedded Processors

- EP7309
- EP7311
- EP7312

ARM 9 Embedded Processors

- EP9301
- EP9302
- EP9307
- EP9312
- EP9315

Networked Attached Storage (NAS) Reference Design

- NAS ARM 9

Internet Protocol Radio Demonstration Platform

- Internet Protocol Radio (IPR)

ARM 7 Embedded Processors

SPECIFICATIONS

Part	Processor	Processor Speed (MHz)	Cache	MMU	DRAM Controller	On-chip SRAM (KB)	LCD Controller	DAI	Package
EP7309	ARM 720T	74	8 KB unified	✓	—	48	✓	✓	208 LQFP 256 PBGA
EP7311	ARM 720T	90 & 74	8 KB unified	✓	SDRAM	48	✓	—	208 LQFP 256 PBGA
EP7312	ARM 720T	90 & 74	8 KB unified	✓	SDRAM	48	✓	✓	208 LQFP 256 PBGA

ARM 9 Embedded Processors

SPECIFICATIONS

Part	Processor Speed (MHz)	Cache Data/Code (K)	Ethernet MAC	PCMCIA Device	IDE/IF	USB Hosts	Display I/F	Graphics Engine	Math Crunch Engine	Touch/ ADC	Package
EP9301	166	16/16	✓	—	—	2	—	—	—	5 ADC	208 TQFP
EP9302	200	16/16	✓	—	—	2	—	—	✓	5 ADC	208 LQFP
EP9307	200	16/16	✓	—	—	3	✓	✓	✓	8-wire	272 TFBGA
EP9312	200	16/16	✓	—	2	3	✓	—	✓	8-wire	352 PBGA
EP9315	200	16/16	✓	✓	2	3	✓	✓	✓	8-wire	352 PBGA

Networked Attached Storage (NAS) Reference Design

Reference Design	Target Device	Development Platform	Operating System	Key Software Features
NAS ARM 9	EP9312 and EP9315	EDB9315A	Linux®	Auto-detect for easy customer set-up, network file server, print server, group and user level security and customizable user interface

Internet Protocol Radio Demonstration Platform

Reference Design	Target Device	Development Platform	Operating System	Key Software Features
Internet Protocol Radio (IPR)	EP9307	ERD9307IPR	Linux®	The IPR demo platform provides a low cost solution for demonstrating and exploring the capability of using Cirrus Logic EP9307 for Internet radio applications

Product Number Index

CM-1 Transport Module 12
CM-2 Transport and DSP Module 12
CobraCAD™ 12
CobraCom™ Reference Design 12
CobraNet® Discovery 12
CobraNet® LE Reference Design 12
CS1810xx Family 11
CS181002 11
CS181012 11
CS181022 11
CS2000 2
CS2100 2
CS2200 2
CS2300 2
CS3001 14
CS3002 14
CS3003 14
CS3004 14
CS3011 14
CS3012 14
CS3013 14
CS3014 14
CS3301A 16, 17
CS3302A 16, 17
CS3308 6
CS3310 6
CS3318 6
CS3511 6
CS4202 7
CS4205 7
CS42324/25 4
CS42416/26 4
CS42418/28 4
CS42432 4
CS42435 4
CS42436/38 4
CS42448 4
CS4245 5
CS42516/26 4
CS42518/28 4
CS4265 5
CS4270 5
CS4271 5
CS4272 5
CS42888 4
CS4299 7
CS42L51 5
CS42L52 5
CS42L55 5
CS4334/35/38/39 3
CS4344/45/46/48 3
CS4349 3
CS4350 3
CS4351 3
CS4352 3
CS4353 3
CS4361 3
CS4362A/82A 3
CS4364/84 3
CS4365/85 3
CS4373A 17
CS4391A 3
CS4392 3
CS4398 3
CS43L21 5
CS43L22 5
CS4412A 6
CS44600 6
CS44800 6
CS4461 6
CS44L11 5
CS4525 6
CS470xx Family 9
CS47024 9
CS47028 9
CS47048 9
CS485xx Family 8
CS48520 8
CS48540 8
CS48560 8
CS48AU2x Family 8
CS48AU2B 8
CS48DV2x Family 8
CS48DV2A 8
CS48DV2B 8
CS48DV6x Family 8
CS48DV6B 8
CS493xxx Family 8
CS493105 8
CS493115 8
CS493122 8
CS493253 8
CS493254 8
CS493263 8
CS493264 8
CS493295 8
CS493302 8
CS494xxx Family 10
CS494003 10
CS4950xx Family 10
CS495002 10
CS4951xx Family 10
CS495102 10
CS4952xx Family 10
CS495202 10
CS4953xx Family 8, 10
CS495303 8
CS495313 8
CS4961xx Family 11, 12
CS496102 11
CS496112 11
CS496122 11
CS4970xx Family 9
CS497004 9
CS497024 9
CS49DV8x Family 9
CS49DV8C 9
CS5201 17
CS5203A 17
CS5204 17
CS5205 17
CS5207 17
CS5340 2
CS5341 2
CS5342 2
CS5343/44 2
CS5345 2
CS5346 2
CS5351 2
CS5361 2
CS5364/66/68 2
CS5371A 17
CS5372A 17
CS5373A 16
CS5376A 17
CS5378 16
CS5381 2
CS53L21 5
CS5451A 18
CS5460A 18
CS5461A 18
CS5462 18
CS5463 18
CS5464 18
CS5466 18
CS5467 18
CS5505 14
CS5506 14
CS5507 14
CS5508 14
CS5509 14
CS5510 14
CS5511 14
CS5512 14
CS5513 14
CS5521 15

Product Number Index (continued)

CS5522 . . . 15
CS5523 . . . 15
CS5524 . . . 15
CS5525 . . . 15
CS5526 . . . 15
CS5528 . . . 15
CS5529 . . . 14
CS5530 . . . 15
CS5531 . . . 15
CS5532 . . . 15
CS5533 . . . 15
CS5534 . . . 15
CS5550 . . . 15
CS5560 . . . 16
CS5566 . . . 16
CS5571 . . . 16
CS5581 . . . 16
CS61535A . . . 25
CS61574A . . . 25
CS61575 . . . 25
CS61577 . . . 25
CS61584A . . . 25
CS61880 . . . 25
CS61884 . . . 25
CS6422 . . . 26
CS740111 . . . 18
CS740121 . . . 18
CS740131 . . . 18
CS8130 . . . 26
CS8406 . . . 7
CS8416 . . . 7
CS8420 . . . 7
CS8421 . . . 7
CS8422 . . . 7
CS8427 . . . 7
CS8900A . . . 26
CS8952 . . . 26
DSP Conductor™ . . . 12
EP7309 . . . 28
EP7311 . . . 28
EP7312 . . . 28
EP9301 . . . 28
EP9302 . . . 28
EP9307 . . . 28
EP9312 . . . 28
EP9315 . . . 28
EV-2 Development Board . . . 12
Internet Protocol Radio (IPR) . . . 29
MP108FD . . . 20, 22, 23
MP108FDA . . . 20, 23
MP111FD . . . 20, 22, 23
MP230FC . . . 20, 22
MP240FC . . . 20, 22
MP38CL . . . 20, 22
MP38CLA . . . 20
MP39CL . . . 20, 22
MP39CLA . . . 20
MP400 . . . 23
MSA240KC . . . 21, 23
MSA260KC . . . 21, 23
NAS ARM 9 . . . 29
PA01 . . . 20
PA02 . . . 20
PA03 . . . 20, 22
PA04 . . . 20, 22
PA05 . . . 20, 22, 23
PA07 . . . 20, 22
PA08 . . . 22
PA09 . . . 20, 23
PA09M . . . 20
PA10 . . . 20
PA119 . . . 20, 23
PA12 . . . 20
PA12A . . . 20
PA12H . . . 20
PA13 . . . 20
PA13A . . . 20
PA15 . . . 22
PA16 . . . 20
PA162 . . . 20
PA240CC . . . 22
PA241CE . . . 22
PA243DF . . . 22
PA50 . . . 20, 22
PA51 . . . 20
PA52 . . . 20, 22
PA60EU . . . 20
PA61 . . . 20
PA69EU . . . 22, 23
PA73 . . . 20
PA74 . . . 20
PA74A . . . 20
PA75CC . . . 20
PA76 . . . 20
PA76A . . . 20
PA78DK . . . 22, 23
PA79DK . . . 22, 23
PA81J . . . 22
PA82J . . . 22
PA83 . . . 22
PA84 . . . 22, 23
PA85 . . . 22, 23
PA86EU . . . 22, 23
PA88 . . . 22
PA89 . . . 22
PA90 . . . 22, 23
PA91 . . . 22, 23
PA92 . . . 20, 22
PA93 . . . 20, 22
PA94 . . . 22, 23
PA95 . . . 22
PA96 . . . 20, 22, 23
PA97 . . . 22
PA98 . . . 22, 23
PB50 . . . 20, 22, 23
PB51 . . . 20, 22, 23
PB58 . . . 20, 22, 23
SA01 . . . 21, 23
SA03 . . . 21, 23
SA08 . . . 21, 23
SA12 . . . 21, 23
SA306 . . . 21
SA50 . . . 21, 23
SA57 . . . 21
SA60 . . . 21, 23

Notes

Notes

CONTACT US

For technical assistance in North America, please call:
1-800-625-4084.

For International technical assistance, please contact the Cirrus Logic office in your region.

For a complete list of Cirrus Logic's sales representatives and distributors, please visit the Contacts area at www.cirrus.com.



NORTH AMERICA

CORPORATE HEADQUARTERS

2901 Via Fortuna
Austin, Texas 78746
United States
T +1-512-851-4000
F +1-512-851-4977
Toll-Free +1-800-888-5016

CIRRUS LOGIC TUCSON

5980 N. Shannon Road
Tucson, Arizona 85741
United States
T +1-520-690-8600
F +1-520-888-3329
Toll-Free +1-800-888-5016

ASIA PACIFIC

CIRRUS LOGIC INTERNATIONAL LTD.

Suite 1427
Ocean Centre
Harbour City
5 Canton Road
Tsimshatsui
Kowloon, Hong Kong
China
T +852-2376-0801
F +852-2412-5178

JAPAN

CIRRUS LOGIC K.K.

Aioi Sonpo, Building 6F
5-6 Niban-cho
Chiyoda-ku
Tokyo, Japan 102-0084
T +81-3-5226-7757
F +81-3-5226-7677

EUROPE

CIRRUS LOGIC (U.K.) LTD.

1st Floor Offices
Park House, Mere Park
Dedmere Road
Marlow, Buckinghamshire SL71FJ
United Kingdom
T +44-0-1628-891-300
F +44-0-1628-891-988

LEARN MORE AT
www.cirrus.com