

2010
Summer

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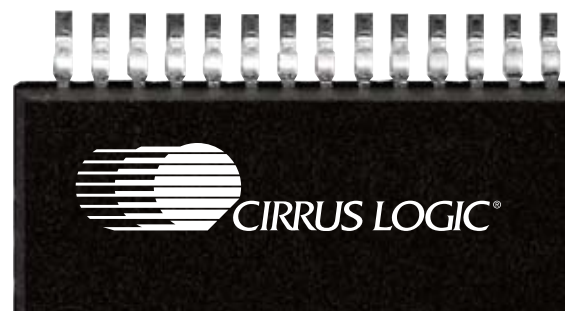
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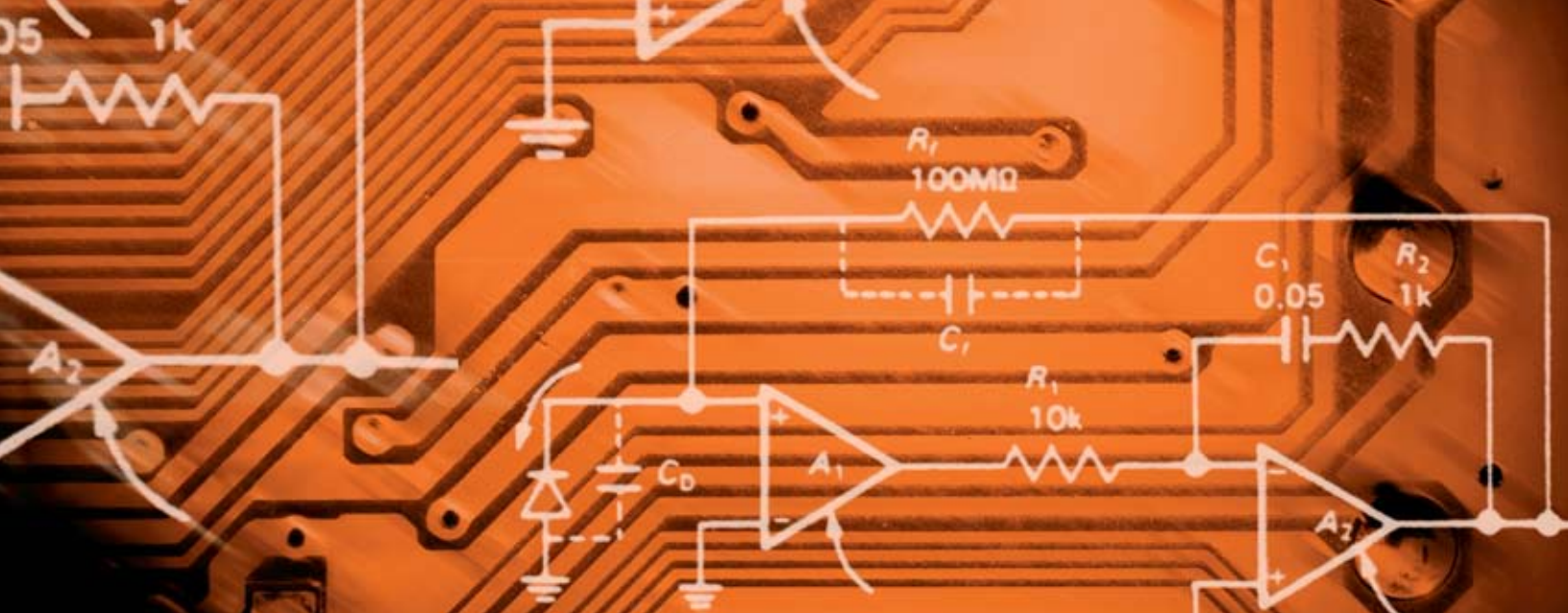
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Audio Components

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

AUDIO DSPs

- CS493xxx Family
- CS485xx Family
- CS4953xx Family
- CS4970xx Family

AUDIO SOCs

- CS470xx Family

COBRANET NETWORKED DIGITAL AUDIO

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

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- CS4365/85
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- CS4398

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- CS4270
- CS4271
- CS4272

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- CS42888

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- CS42L52
- CS42L55
- CS42L73
- CS43L21
- CS43L22
- CS53L21

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- CS35L01
- CS35L03

DIGITAL AMPLIFIER POWER STAGES

- CS4412A

INTEGRATED CLASS-D AUDIO AMPLIFIERS

- CS3511
- CS4525

VOLUME CONTROL

- CS3308
- CS3310
- CS3318

INTERFACES & SAMPLE-RATE CONVERTERS

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

CLOCK GENERATION & JITTER REDUCTION

- CS2000
- CS2100
- CS2200
- CS2300

Audio DSPs

SPECIFICATIONS

Part	Processor	DSP Tools	Key Firmwares & Features	DSP Core Speed/Temp Range	Package
CS485xx	Tiny, cost effective, mega-performance PCM processors targeted for: mini-systems, DVD receivers, soundbars, 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
CS4953xx	Single-chip multistandard surround sound decoder targeted for playback from analog & S/PDIF sources				
CS495303	Dual 32-bit	DSP Composer	(DD, DDEX, AAC) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
CS495313	Dual 32-bit	DSP Composer	(DD, DDEX, DTS, DTSES, DTS96, AAC) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP 144 LQFP
NEW CS495314	Dual 32-bit	DSP Composer	(DD, DDEX, DTS, DTSES, DTS96, AAC) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
CS4970xx	Single-chip multistandard surround sound decoder targeted for playback from HD DVD™, Blu-ray Disc® players, & all analog, S/PDIF & HDMI® sources				
NEW CS497014	Dual 32-bit	DSP Composer, ASM, C	(DD+, DTHD, DD, DDEX, AAC) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
CS497024	Dual 32-bit	DSP Composer, ASM, C	(DD+, DTHD, DTSBRA, DTSMA, DTSBTR, DTSES, DTS96, DD, DDEX, DTS, AAC) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP

Audio SOC's (DSP with Integrated Mixed-Signal)

SPECIFICATIONS

Part	Processor	Speed (MIPS)	Car Audio DSP's	General Audio DSP's	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, soundbars, sound projectors, car audio, DTVs. DSP Composer, a graphical DSP programming tool from Cirrus Logic, makes advanced DSP programming of this integrated device family a breeze.									
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, 8 channel HW SRC Block	100 LQFP
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, 8 channel HW SRC	100 LQFP
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, 8 channel HW SRC	100 LQFP

Recommended Replacements for New Designs

Not Recommended for New Designs	Recommended Replacement
CS48AU2B	CS48520
CS48DV2B	CS48520
CS493253	CS497014-CVZ
CS493254	CS497014-CVZ
CS493263	CS495314-CVZ
CS493264	CS495314-CVZ
CS493295	CS495314-CVZ
CS493302	CS48540-CQZ
CS494xxx (CS494003)	CS4953xx
CS4950xx (CS495002)	CS4953xx
CS4951xx (CS495102)	CS4953xx
CS4952xx (CS495202)	CS4953xx
CS495303-CVZ	CS497014-CVZ
CS495304	CS497014-CVZ
CS495313-CQZ	CS495314-CVZ
CS495313-CVZ/CQZ	CS495314-CVZ
CS4953xx	CS4953xx
CS497004	CS497024-CVZ
CS497004-CQZ	CS497024-CVZ

Algorithm & Nomenclature Abbreviations

Decoding Algorithm & Nomenclature Abbreviation Table	
AAC = MPEG-2 AAC Multichannel Low Complexity	DTSLBR = DTS Express
CBR = Constant Bit Rate	DTSMA = DTS® Master Audio
DD = Dolby Digital®	ES = Elementary Stream
DD+ = Dolby Digital Plus	HE-AAC = MPEG-4 AAC Multichannel Low Complexity
DDCE = Dolby Digital Consumer Encoder (5.1 Channel)	MP3 = MPEG 1, Layer II & III CBR & VBR
DDEX = Dolby Digital EX®	MPEG = MPEG 2, Layer II Stereo & Multichannel
DTHD = Dolby® TrueHD	PES = Packetized Elementary Stream
DTS = DTS Digital Surround™	PP = Post-Processing
DTS96 = 96 kHz/24-bit	PULSE = Dolby Pulse (MPEG-4 AAC Multichannel Low Complexity Decoder with Metadata Support)
DTSENC = DTS Digital Surround Encoder (5.1 Channel)	STCR = Dolby Stereo Creator
DTSES = DTS-ES™ Matrix/Discrete	VBR = Variable Bit Rate
DTSHRA = DTS® High-Resolution Audio	
Post-Processing (PP1) Inclusion & Algorithm Abbreviation Table	
APP = Advanced Post-Processor	DVS = Dolby Virtual Speaker® 2
BXR = Cirrus Band Xpander™	L7 = Logic7™
CBE = Cirrus Bass Enhancement	LIM = Compressor/Limiter
CBM = Cross-Bar Mixer	NEO = DTS Neo:6™
CSHP = SRS Circle Surround Headphone (includes SRS HP 360° & Circle Surround)	NER = DTS Neural Surround
CVT = Cirrus Virtualization Technology	PEQ = Parametric EQ
DH = Dolby Headphone® 2	PL = Dolby® Pro Logic®
DVL = Cirrus® Dynamic Volume Leveler	PLII = Dolby Pro Logic II
DVOL = Dolby Volume	PLIIx = Dolby Pro Logic® IIx
DVOLMC= Dolby Volume Multichannel	PLZz = Dolby Pro Logic IIz

Algorithm & Nomenclature Abbreviations (continued)

Post-Processing (PP1) Inclusion & Algorithm Abbreviation Table (continued)	
REEQ = THX Cinema Re-EQ™	TSXT = SRS® TruSurround XT®
SPP = Stand Post-Processory	TUX = THX Select2/Ultra2™ Surround EX
TB = SRS TruBass®	TV = SRS TruVolume®
TC = Tone Control	TVMC = SRS TruVolume Multichannel
TEX = THX Surround EX™	WOW = SRS® WOW™
THX = THX® Cinema	WOWHD = SRS WOW HD™
TSHD = SRS TruSurround® HD/HD4	
Post-Processing (PP2 includes all of the above +) Inclusion & Algorithm Abbreviation Table	
AUD = Audistry®	DYNVOL = Audyssey Dynamic Volume® / Dynamic EQ®
AUDY = Audyssey® MultEQ XT™	TUX+ = THX Select2/Ultra2™ Surround EX™ with Loudness Plus

Cirrus Logic Audio DSP Tools

FEATURES

DSP Composer	DSP Composer is a graphical tool supporting drag-and-drop design of custom audio signal flows. Users of this tool can create custom audio processing firmware for any of the DSP IC Families without writing custom DSP code, by combining choices from a large selection of existing audio processing primitive elements. DSP Composer also provides run-time control of firmware parameters, both for custom processing blocks and for Cirrus Logic supplied processing blocks.
CLIDE	The Cirrus Logic Integrated Development Environment (CLIDE) is an Eclipse-based workbench supporting development of custom code for Cirrus Logic DSPs. CLIDE encapsulates many of the other available programming tools, including: assembler; linker; C compiler; debugger; and simulator. CLIDE also includes a set of wizards to aid in the creation of different forms of DSP projects, such as custom ULDs and custom Composer primitives.
DSP Condenser	DSP Condenser is a set of tools and a methodology to support creation of a complex AVR or soundbar application using Cirrus Logic multi-core DSPs. The tool set includes tools for defining the firmware and configuration settings for all DSP firmware to be supported by the application, plus sample microcode (written in C) for controlling the DSP. The DSP Condenser tool set "condenses" the output of multiple DSP Composer projects into a single flash image that is then managed by the DSP operating system (OS).
Micro Condenser	Micro Condenser is a set of tools and a methodology to support creation of flash image containing firmware and configuration settings for a single-core or multi-core DSP. The tool set includes sample microcode (written in C) for controlling the DSP.
C Compiler	The Cirrus C Compiler (CCC) is an ISO-compliant C compiler with ISO-recommended enhancements for supporting DSP architectures, including: support for fixed point arithmetic types; and support for separate memory spaces.

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	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	Digital audio network interface module with dual Ethernet ports and audio DSP (available as a reference design)	CPB181012-CM2, CPB181022-CM2, CS496122-CM2, (all available with female-bottom or male-top headers)	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	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 Reference Design	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"
CobraNet LE Reference Design	Low-cost, 2 channel I/O end-node reference design	Available direct from Attero Tech www.atterotech.com	2	Stereo 1/8" input and output, stereo RCA input and output, I²S 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 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 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.

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
CS5343/44	24	98	−92	96	Single-ended	VA = 3.3 or 5	CS5343—I²S CS5344—LJ	10 TSSOP
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
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
CS4344/45/48	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
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
CS4354	2	24	101	−86	192	Single-ended	VA/VD = 5.0 VL = 1.5 to 5.0	2 V _{RMS} line driver	14-SOIC
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
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

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

HD Audio CODECs

SPECIFICATIONS

Part	Bus	Converters	Feature
NEW CS4207	HD	Six 192 kHz DACs; Four 96 kHz ADCs	S/PDIF receiver with sample-rate converter, 2 S/PDIF transmitters, MIC pre-amp, ground centered HP driver, 2 digital MIC inputs

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

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
CS4244	24	108 DAC 105 ADC	−90 DAC −95 ADC	192	Single-ended or Differential	VA = 3.3 or 5 VL = 1.8 to 5	4 DACs, 4 ADCs, PCM and TDM I/F	40 QFN
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

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
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
CS42L73	24	91 ADC 97 DAC	-85	48	Pseudo Differential	VA/VCP/VL = 1.66 to 1.94 VP = 3.0 to 5.25 VD = 0.85 to 1.40	2 ADCs, 4 DACs, Class-H HP, Class A/B speaker driver, 3x asynchronous serial ports	60 WLCSP
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
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

Low Power Class-D Audio Amplifiers

SPECIFICATIONS

Part	Power (W)	Dynamic Range (dB)	THD+N %	PSRR (dB)	Channels	Power Supply (V)	Gain	Comments	Package
CS35L00	3	98	0.02	-85	1	2.5 to 5.5	Selectable +6/+12dB	Hybrid Class-D architecture, < 1mA quiescent current	10 DFN
CS35L01	3	98	0.02	-85	1	2.5 to 5.5	+6dB	Hybrid Class-D architecture, < 1mA quiescent current	9 WLCSP
CS35L03	3	98	0.02	-85	1	2.5 to 5.5	+12dB	Hybrid Class-D architecture, < 1mA quiescent current	9 WLCSP

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
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 28 QFN
CS8416	192	—	✓	✓	✓	✓	✓	—	28 SOIC 28 TSSOP 28 QFN
CS8420	96	✓	✓	✓	✓	✓	✓	✓	28 SOIC
CS8421	192	—	—	—	—	—	—	✓	20 TSSOP 20 QFN
CS8422	192	—	✓	✓	✓	✓	✓	✓	32 QFN
CS8427	96	✓	✓	✓	✓	✓	✓	—	28 SOIC 28 TSSOP

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

Energy Solutions

ENERGY MEASUREMENT AND POWER MANAGEMENT PRODUCTS

For over a decade, Cirrus Logic has been a proven leader in the energy metering and monitoring market. Combining advanced Delta-Sigma technology with expert Digital Signal Processing, Cirrus Logic offers a broad product family with superior performance to support a wide variety of application requirements.

Enabled by Cirrus Logic's EXL™ core architecture, the CS1500 and CS1600 digital PFC controllers intelligently solve power management challenges, allowing for smarter, greener energy products.

ENERGY MEASUREMENT

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

POWER MANAGEMENT

- CS1500
- CS1600

Energy Measurement

SPECIFICATIONS

Part	Channels	Energy Data Linearity – 1000:1 Range	Energy Pulse Outputs	Instantaneous I and V	Real (Active) Power	$I_{RMS} \cdot V_{RMS}$	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

Power Factor Correction Controllers—Power Supplies

SPECIFICATIONS

Part	Control Method	Digital EMI Shaping		Peak Current Spreading	IC Supply Current [mA]	V_{DO} Range [V]	T_J Op. Range [°C]	Gate Driver (Source/Sink) [Ω]	Internal Feedback Compensation	Package
		Max f_{sw} [kHz]	Frequency Spreading							
CS1500	VF-DCM	70	✓	✓	1.9	7.9 - 17.0	-40 to +125	9 / 6	✓	SOIC-8

Power Factor Correction Controllers—Lighting Ballasts

SPECIFICATIONS

Part	Control Method	Digital EMI Shaping		Peak Current Spreading	IC Supply Current [mA]	V_{DO} Range [V]	T_J Op. Range [°C]	Gate Driver (Source/Sink) [Ω]	Internal Feedback Compensation	Package
		Max f_{sw} [kHz]	Frequency Spreading							
CS1600	VF-DCM	70	✓	✓	1.9	7.9 - 17.0	-40 to +125	9 / 6	✓	SOIC-8

Industrial Components

HIGH-PRECISION ANALOG & MIXED-SIGNAL ICs & PROCESSORS

Cirrus Logic high-precision analog and mixed-signal ICs for industrial measurement applications—such as industrial process control, analytical instruments, consumer utility 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, and a wide variety of ARM9-based system-on-chip processors.

AMPLIFIERS

- CS3002
- CS3003
- CS3004
- CS3012
- CS3013
- CS3014

EMBEDDED PROCESSORS

ARM 9 Embedded Processors

- EP9301
- EP9302
- EP9307
- EP9312
- EP9315

Networked Attached Storage (NAS) Reference Design

- NAS ARM 9

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
- CS5374
- CS5376A

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
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
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

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

Delta-Sigma A/D Converters

SPECIFICATIONS

Part Number	Resolution (bits)	Throughput (Sps)	Integral Linearity (%FS)	Differential Linearity ($\pm$ 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 ($\pm$ 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	$\pm$ 0.0015%	NMC	1	35	20 SSOP
CS5531	16	7 – 3840	$\pm$ 0.0015%	NMC	2	35	20 SSOP
CS5532	24	7 – 3840	$\pm$ 0.0015%	NMC	2	35	20 SSOP
CS5533	16	7 – 3840	$\pm$ 0.0015%	NMC	4	35	24 SSOP
CS5534	24	7 – 3840	$\pm$ 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 ($\pm$ 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

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	DS modulator	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

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 DS modulator	24	124	–118	25	5 V _{p-p} diff	24 SSOP
CS5372A	Dual DS modulator	24	124	–118	25	5 V _{p-p} diff	24 SSOP
CS5374	Dual high performance amplifier & DS modulator	24	124	–118	32.5	5 V _{p-p} diff	48 QFN
CS5376A	Quad filter	—	—	—	<10	—	64 TQFP

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), pulse width modulation amplifiers (PWM/switching) and precision voltage references (VRE). 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.

HIGH-CURRENT LINEAR AMPLIFIERS

- | | |
|------------|-----------|
| • MP103FC | • PA12A |
| • MP108FD | • PA12H |
| • MP108FDA | • PA13 |
| • MP111FD | • PA13A |
| • MP230FC | • PA16 |
| • MP240FC | • PA162DK |
| • MP38CL | • PA50 |
| • MP38CLA | • PA51 |
| • MP39CL | • PA52 |
| • MP39CLA | • PA61 |
| • PA01 | • PA73 |
| • PA02 | • PA74 |
| • PA03 | • PA74A |
| • PA04 | • PA75 |
| • PA05 | • PA76 |
| • PA07 | • PA76A |
| • PA09 | • PA92 |
| • PA09M | • PA93 |
| • PA10 | • PA96 |
| • PA107DP | • PB50 |
| • PA119 | • PB51 |
| • PA12 | • PB58 |

HIGH-CURRENT PWM AMPLIFIERS

- | | |
|------------|---------------|
| • MSA240KC | • SA303HU-FH |
| • MSA260KC | • SA306AHU-FH |
| • SA01 | • SA50 |
| • SA03 | • SA53HU-FH |
| • SA08 | • SA57AHU-FH |
| • SA09 | • SA60 |
| • SA12 | |

HIGH-SPEED LINEAR AMPLIFIERS

- | | |
|------------|--------|
| • MP103FC | • PA84 |
| • MP108FD | • PA85 |
| • MP108FDA | • PA90 |
| • MP111FD | • PA91 |
| • MP400FC | • PA94 |
| • PA05 | • PA96 |
| • PA09 | • PA98 |
| • PA107DP | • PB50 |
| • PA119 | • PB51 |
| • PA78DK | • PB58 |
| • PA79DK | |

HIGH-VOLTAGE LINEAR AMPLIFIERS

- | | |
|-----------|----------|
| • MP103FC | • PA79DK |
| • MP108FD | • PA81J |
| • MP111FD | • PA82J |
| • MP230FC | • PA83 |
| • MP240FC | • PA84 |
| • MP38CL | • PA85 |
| • MP39CL | • PA88 |
| • PA03 | • PA89 |
| • PA04 | • PA90 |
| • PA05 | • PA91 |
| • PA07 | • PA92 |
| • PA08 | • PA93 |
| • PA107DP | • PA94 |
| • PA15 | • PA95 |
| • PA240CC | • PA96 |
| • PA241CE | • PA97 |
| • PA243DF | • PA98 |
| • PA50 | • PB50 |
| • PA52 | • PB51 |
| • PA78DK | • PB58 |

HIGH-VOLTAGE PWM AMPLIFIERS

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

PRECISION VOLTAGE REFERENCES

- | | |
|------------------|-----------|
| • VRE100/101/102 | • VRE304 |
| • VRE104 | • VRE305 |
| • VRE107 | • VRE306 |
| • VRE117 | • VRE310 |
| • VRE202 | • VRE405 |
| • VRE204 | • VRE410 |
| • VRE205 | • VRE505 |
| • VRE210 | • VRE3025 |
| • VRE302 | • VRE3050 |

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
NEW MP103FC	15	200	180	26	54
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
NEW PA107DP	5	200	3000	35	60
PA16	5	38	20	40	62.5
PA73	5	60	2.6	5	67
PA162DK	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
PA75	2 x 1.5	40	1.4	10	19/28

High-Current Linear Amplifiers (continued)

SPECIFICATIONS

Model	Output Current MAX (A)	Supply Voltage MAX (V)	Slew Rate TYP (V/us)	Standby Current MAX (mA)	Power Dissipation MAX (W)
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

High-Current PWM Amplifiers

SPECIFICATIONS

	Mode	Output Current MAX (A)	Supply Voltage MAX (V)	Switching Frequency (kHz)	Power Delivery MAX (KW)	Power Dissipation MAX (W)
	SA03	30	100	22.5	3	300
	SA08	20	450	22.5	9	250
	SA01	20	100	42	2	185
	MSA260KC	20	450	50	9	250
	MSA240KC	20	100	50	2	250
	SA12	15	200	200	3	250
NEW	SA306AHU-FH	17	60	100	1	100
NEW	SA57AHU-FH	17	60	100	1	100
NEW	SA303HU-FH	10	60	100	0.6	100
NEW	SA53HU-FH	10	60	100	0.6	100
	SA60	10	80	250	0.8	140
NEW	SA09	7.5	60	500	0.45	80
	SA50	5	80	45	0.5	120

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)
NEW	PA107DP	3000	200	5	35	60
	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

High-Speed Linear Amplifiers (continued)

SPECIFICATIONS

Model	Slew Rate TYP (V/ μ s)	Supply Voltage MAX (V)	Output Current MAX (A)	Standby Current MAX (mA)	Power Dissipation MAX (W)
MP400FC	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
PA09	200	80	2	85	78
NEW MP103FC	180	200	15	26	54
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

High-Voltage Linear Amplifiers

SPECIFICATIONS

Model	Supply Voltage MAX (V)	Output Current MAX (A)	Slew Rate TYP (V/ μ s)	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

High-Voltage Linear Amplifiers (continued)

SPECIFICATIONS

	Model	Supply Voltage MAX (V)	Output Current MAX (A)	Slew Rate TYP (V/us)	Standby Current MAX (mA)	Power Dissipation MAX (W)
	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
NEW	MP103FC	200	15	180	26	54
	MP108FD	200	10	170	65	100
	MP240FC	200	20	14	25	170
	MP38CL	200	7	63	24	125
	PA04	200	20	50	90	200
NEW	PA107DP	200	5	3000	35	60
	PA52	200	40	50	36	400
	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

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

Precision Voltage References

SPECIFICATIONS

Model	Output(V)	Initial Error (mV)	TempCo (ppm/°C)	Noise (μVpp)	Package	Feature
VRE100/101/102	±10	0.5, 0.8, 1.0, 1.5	0.3, 0.5	6	DIP14	High Rel Military
VRE104	4.5	0.4, 0.8	0.4, 0.8	3	DIP14	High Rel Military
VRE107	±5	0.4, 0.8	0.4, 0.8	3	DIP14	High Rel Military
VRE117	±3	0.2, 0.3	0.3, 0.6	1.5	DIP14	Low Output V, High Rel Military
VRE202	2.5	0.2, 0.3	0.4, 0.8	1.5	LCC20	Small Pkg
VRE204	4.5	0.4, 0.8	0.4, 0.8	3	LCC20	Small Pkg, High Rel Military
VRE205	5	0.4, 0.8	0.4, 0.8	3	LCC20	Small Pkg, High Rel Military
VRE210	10	0.3, 0.4, 0.5, 0.8	0.3, 0.5	6	LCC20	Small Pkg, High Rel Military
VRE302	2.5	0.25, 0.4, 0.5	0.6, 1.0, 2.0	1.5	DIP8, SMT8	Low Cost
VRE304	4.5	0.4, 0.7, 0.9	0.6, 1.0, 2.0	3	SMT8	Low Cost
VRE305	5	0.5, 0.8, 1.0	0.6, 1.0, 2.0	3	DIP8, SMT8	Low Cost
VRE306	6	0.6, 1.0, 1.2	0.6, 1.0, 2.0	3	SMT8	Low Cost
VRE310	10	1.0, 1.6, 2.0	0.6, 1.0, 2.0	6	DIP8, SMT8	Low Cost
VRE405	±5.0	0.5, 0.8, 1.0	0.6, 1.0, 2.0	3	DIP14, SMT14	Dual, Low Cost
VRE410	±10.0	1.0, 1.6, 2.0	0.6, 1.0, 2.0	6	SMT14	Dual, Low Cost
VRE505	5	0.5, 0.8	0.6, 1.0	3	SMT8	Low Cost
VRE3025	2.5	0.2, 0.4, 0.5	0.6, 1.0, 2.0	1.5	DIP8, SMT8	+10V Supply
VRE3050	5	0.4, 0.7, 0.9	0.6, 1.0, 2.0	3	SMT8	+10V Supply

Communication Components

WIDE VARIETY OF INTERFACE, T1, 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

ETHERNET

- CS8900A
- CS8952

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 Cancellor

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

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

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CobraCom Reference Design	6	CS42L52	11	CS495304	3
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CS3003	17	CS4365/85	8	CS497024-CVZ	3
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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
Toll-Free +1-800-888-5016

CIRRUS LOGIC TUCSON

5980 N. Shannon Road
Tucson, Arizona 85741
United States
T +1-520-690-8600
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
www.cirrus.com/cn

JAPAN

CIRRUS LOGIC K.K.

Aioi Sonpo, Building 6F
5-6 Niban-cho
Chiyoda-ku
Tokyo, Japan 102-0084
T +81-3-5226-7757
www.cirrus.com/jp

EUROPE

CIRRUS LOGIC (U.K.) LTD.

Ground Floor Offices
James House, Mere Park
Dedmere Road
Marlow, Buckinghamshire SL7 1FJ
United Kingdom
T +44-0-1628-891-300