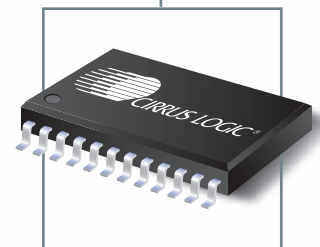
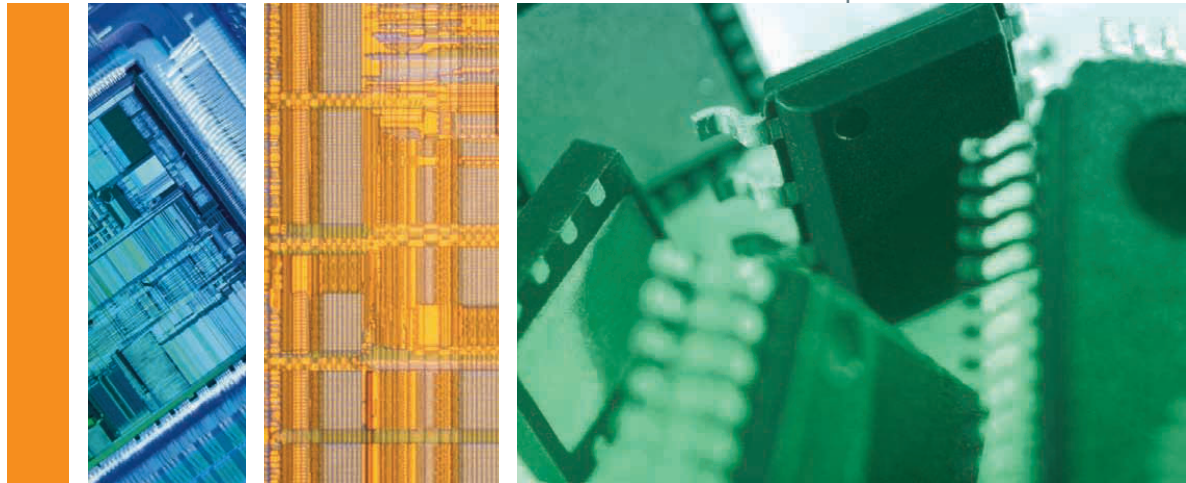




# 2008 Product Summary



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# Audio Components

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 converter ICs (ADCs), digital-to-analog converter ICs (DACs), CODECs, S/PDIF receivers, Class-D amplifier solutions as well as audio-optimized digital signal processors (DSPs).

Our products are used in a wide array of consumer applications, including audio/video receivers, DVD players and recorders, 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.

## Timing

- CS2000-CP
- CS2100-CP
- CS2200-CP
- CS2300-CP

## A/D Converters

- CS5340
- CS5341/42
- CS5343/44
- CS5345
- CS5351
- CS5361
- CS5364/66/68
- CS5381

## 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

## CODECs

- CS42324/25
- CS42416/26
- CS42418/28
- CS42432
- CS42435
- CS42436/38
- CS42448
- CS4245
- CS42516/26
- CS42518/28
- CS4265
- CS4270
- CS4271
- CS4272
- CS42888

## Portable Audio Converters

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

## PWM Controllers

- CS44600
- CS44800
- CS4461

## Power Stages

- CS4412A

## Integrated Class-D Audio Amplifier

- CS4525

## Volume Control

- CS3308
- CS3310
- CS3318

## Interfaces & Sample-Rate Converters

- CS8406
- CS8416
- CS8420
- CS8421
- CS8427

## PC Audio & Video Converters

- CS4202
- CS4205
- CS4299
- CS4954/55



## Clock Generation and Multiplication Timing – Specifications

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

## Audio A/D Converters – Specifications

Part	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 <sup>2</sup> S 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 pre-amp	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 to 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

## D/A Converters – Specifications

Part	Channels	Resolution	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
<b>NEW</b> CS4349	2	24	101	-91	192	Single-ended	VA = 3.3 or 5	1 V <sub>RMS</sub> @ 3.3 V, TDM	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 <sub>RMS</sub> output	20 TSSOP
CS4352	2	24	106	-93	192	Single-ended	VA = 9 or 12 VD = 3.3 VL = 1.5 to 3.3	Line driver, 2 V <sub>RMS</sub> output	20 TSSOP
<b>NEW</b> CS4353	2	24	106	-93	192	Single-ended	VA = 3.3 VCP = 3.3 VL = 0.9 to 3.3	Ground-Centered 2 V <sub>RMS</sub> 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
<b>NEW</b> 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 <sub>RMS</sub> I/O, I/O mux	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	96	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
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
<b>NEW</b> 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
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
CS4461	—	—	—	—	VD = 5 VD = 3.3 to 5	PSR feedback ADC	24 TSSOP

### Power Stages – 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 Amplifier – Specifications

Part	Power (W)	Dynamic Range (dB)	THD+N %	Channels	Power Supply (V)	Comments	Package
<b>NEW</b> 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 or 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
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

## Video Converters – Specifications

Part	DAC	Resolution	Input Standards	Input Formats	Copy Protection	Power Supply (V)	Package
CS4954/55	6	10-bit	ITU R.BT656 ITU R.BT601	8-bit YUV 8-bit YCbCr	Macrovision® 7 (CS4955)	3.3 or 5	48 TQFP

# Industrial Components

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 and SAR technology. We have more

than 125 active proprietary products, including analog-to-digital converters, digital-to-analog converters, successive approximation register (“SAR”) converters, modulator and amplifiers ICs.

## Amplifiers

- CS3001/02/11/12
- CS3003/04/13/14

## Energy Measurement

- CS5451A
- CS5460A
- CS5461A
- CS5462
- CS5463
- CS5464
- CS5466
- CS5467
- CS740110/20/30

## Industrial A/D Converters

- CS5012A/14/16
- CS5101A/02A
- CS5501/03
- CS5504
- CS5505/06/07/08
- CS5509
- CS5510/11/12/13
- CS5516/20
- CS5521/22/23/24/28
- CS5525/26
- CS5529
- CS5530
- CS5531/32/33/34
- CS5535/55
- CS5550
- CS5560/61
- CS5565/66
- CS5570/71
- CS5580/81

## Geophysical Products

- CS3301A
- CS3302A
- CS4373A
- CS5201
- CS5203A
- CS5204
- CS5205/07
- CS5321/22
- CS5371A/72A
- CS5373A
- CS5376A
- CS5378



# Apex Precision Power™ Products

Apex Precision Power™ is the new brand name for Cirrus Logic's high performance power analog products. Apex Precision Power™ products carry forward the design and manufacturing of power operational amplifiers (linear) and pulse width modulation amplifiers (PWM/switching). These IC, board-

level module and hybrid product designs can deliver up to 50 A of current output while operating on supply voltages up to 1200 V. Target applications include 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
- PA102
- 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
- SA56
- SA50
- SA305
- SA07

## Apex Precision Power™ High-Voltage Linear Amplifiers

- PA89
- PA94
- PA95
- PA97
- PA15
- PA85
- PA88
- PA91
- PA98
- PA90
- PA92
- PA93
- PA08V
- PA240CC
- PA241CE
- PA243DF
- PA78DK
- PA79DK
- PA102
- 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
- SA305
- SA306
- SA56
- SA07

## Apex Precision Power™ High-Speed Linear Amplifiers

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



## Amplifiers – Specifications

Part	Device	Supply Voltage (V)	Supply Current (mA)	V <sub>OS</sub> (μV)	V <sub>OS</sub> Drift (μV/°C)	e <sub>NOISE</sub> (nV/√Hz)	A <sub>OL</sub> 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 8 QFN
CS3004	Dual	2.7 to 5.25	2.0	10	0.05	17	150	8 SOIC 8 QFN
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	20	0.05	22	135	8 SOIC 8 QFN
CS3014	Dual	2.7 to 5.25	1	20	0.05	22	135	8 SOIC 8 QFN

## Delta-Sigma A/D Converters – Specifications

Part	Resolution (bits)	Throughput (kSPS)	Integral Linearity (%FS)	Differential Linearity (±LSB)	Number of Channels	Power Consumption (mW)	Package
CS5501	16	4000	0.0015%	.125	1	25	20 PDIP 20 SOIC
CS5503	20	4000	0.0015%	NMC	1	25	20 PDIP 20 SOIC
CS5504	20	20 – 200	7.0E-4%	NMC	2	4.4	20 PDIP 20 SOIC
CS5505	16	20 – 100	0.0015%	.25	4	3.2	24 PDIP 24 SOIC
CS5506	20	20 – 100	7.0E-4%	NMC	4	3.2	24 PDIP 24 SOIC
CS5507	16	20 – 100	0.0015%	.25	1	3.2	20 PDIP 20 SOIC
CS5508	20	20 – 100	7.0E-4%	NMC	1	3.2	20 PDIP 20 SOIC
CS5509	16	20 – 200	0.0015%	.25	1	1.7	16 PDIP 16 SOIC
CS5510	16	53 – 212	0.0015%	NMC	1	1.4	8 SOIC
CS5511	16	100	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 PDIP 20 SOIC

## Delta-Sigma A/D Converters with Integrated Amplifiers – Specifications

Part	Resolution (bits)	Throughput (kSPS)	Integral Linearity (%FS)	Differential Linearity ( $\pm$ LSB)	Number of Channels	Power Consumption (mW)	Package
CS5516	16	60	0.0015%	0.25	1	37.5	24 PDIP 24 SOIC
CS5520	20	60	7.0E-4%	NMC	1	37.5	24 PDIP 24 SOIC
CS5521	16	1 – 400	0.0015%	NMC	2	6	20 PDIP 20 SSOP
CS5522	24	1 – 606	7.0E-4%	NMC	2	9	20 PDIP 20 SSOP
CS5523	16	1 – 400	0.0015%	NMC	4	6	24 PDIP 24 SSOP
CS5524	24	1 – 606	7.0E-4%	NMC	4	9	24 PDIP 24 SSOP
CS5525	16	3 – 606	0.0015%	NMC	1	9.4	20 PDIP 20 SSOP
CS5526	20	3 – 606	7.0E-4%	NMC	1	9.4	20 PDIP 20 SSOP
CS5528	24	1 – 606	7.0E-4%	NMC	8	9	24 PDIP 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
<b>NEW</b> CS5535	24	500	0.0007%	NMC	1	5	16 TSSOP
CS5550	24	2440 – 4880	0.01%	NMC	2	21	24 SSOP
<b>NEW</b> CS5555	24	500	0.0015%	NMC	1	5	16 TSSOP

## Successive Approximation Register A/D Converters – Specifications

Part	Resolution (bits)	Throughput (kSPS)	Integral Linearity (%FS)	Differential Linearity ( $\pm$ LSB)	Dynamic Range (dB)	Power Consumption (mW)	Package
CS5012A	12	100	0.0060%	0.25	73	150	44 PLCC
CS5014	14	56	0.0020%	0.25	83	150	44 PLCC
CS5016	16	50	0.0010%	NMC	92	150	44 PLCC
CS5101A	16	100	0.0015%	NMC	92	280	28 PLCC
CS5102A	16	20	0.0015%	NMC	92	44	28 PLCC

## High-Throughput Delta-Sigma A/D Converters

	Part	Resolution (bits)	Throughput (kSPS)	Integral Linearity (%FS)	Differential Linearity ( $\pm$ LSB)	Number of Channels	Power Consumption (mW)	Package
<b>NEW</b>	CS5560	24	50	$\pm 6$ ppm	NMC	1, Differential	85	24 SSOP
<b>NEW</b>	CS5561	24	50	$\pm 6$ ppm	NMC	1, Single-ended	70	24 SSOP
<b>NEW</b>	CS5565	24	5	$\pm 6$ ppm	NMC	1, Single-ended	20	24 SSOP
<b>NEW</b>	CS5566	24	5	$\pm 6$ ppm	NMC	1, Differential	20	24 SSOP
<b>NEW</b>	CS5570	16	100	$\pm 15$ ppm	NMC	1, Differential	85	24 SSOP
<b>NEW</b>	CS5571	16	100	$\pm 15$ ppm	NMC	1, Single-ended	70	24 SSOP
<b>NEW</b>	CS5580	16	200	$\pm 15$ ppm	NMC	1, Differential	85	24 SSOP
<b>NEW</b>	CS5581	16	200	$\pm 15$ ppm	NMC	1, Single-ended	70	24 SSOP

## Geophysical Products – 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 <sub>p-p</sub> diff	24 SSOP
	CS3302A	Hydrophone amplifier	—	—	-118	25	5 V <sub>p-p</sub> diff	24 SSOP
	CS4373A	D/A converter	24	114	-116	10	5 V <sub>p-p</sub> diff	28 SSOP
<b>NEW</b>	CS5201	High-temperature D/A converter	24	114	-116	10	5 V <sub>p-p</sub> diff	28 SOIC ceramic
<b>NEW</b>	CS5203A	High-temperature amplifier	—	—	-121	28	5 V <sub>p-p</sub> diff	24 SOIC ceramic
<b>NEW</b>	CS5204	High-temperature quad Filter	—	—	—	<10	—	64 ceramic
<b>NEW</b>	CS5205	High-temperature A/D converter	24	122	-117	32.5	5 V <sub>p-p</sub> diff	24 SOIC ceramic
<b>NEW</b>	CS5207	High-temperature A/D converter	24	122	-117	32.5	5 V <sub>p-p</sub> diff	24 SOIC ceramic
	CS5321	A/D converter	24	120	-115	55	$\pm 4.5$	28 PLCC
	CS5322	Filter	—	—	—	11	—	28 PLCC
	CS5371A	A/D converter	24	124	-118	25	5 V <sub>p-p</sub> diff	24 SSOP
	CS5372A	A/D converter	24	124	-118	25	5 V <sub>p-p</sub> diff	24 SSOP
	CS5373A	A/D converter	24	124	-118	25	5 V <sub>p-p</sub> diff	28 SSOP
		D/A converter	24	114	-116	40	5 V <sub>p-p</sub> diff	
	CS5376A	Quad filter	—	—	—	<10	—	64 TQFP
	CS5378	Filter with PLL	—	—	—	20	—	28 SSOP

### 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
CS740110	3	✓	ARM7TDMI	32 KB	8 KB	✓	✓	✓	1/2	64 LQFP
CS740120	3	✓	ARM7TDMI	64 KB	8 KB	✓	✓	✓	1/2	64 LQFP
CS740130	3	✓	ARM7TDMI	128 KB	8 KB	✓	✓	✓	1/2	64 LQFP

## 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
PA102	20	350	15	1.5	350
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



## Apex Precision Power™ High-Current Linear Amplifiers – Specifications (continued)

Model	Output Current MAX (A)	Supply Voltage MAX (V)	Slew Rate TYP (V/us)	Standby Current MAX (mA)	Power Dissipation MAX (W)
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
<b>NEW</b> 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
<b>NEW</b> SA306	15	60	100	300	130
SA60	10	80	250	12	140
SA56	5	60	500	15	80
SA50	5	80	45	18	120
SA305	5	60	300	35	130
SA07	5	40	500	90	80

## Apex Precision Power™ High-Voltage Linear Amplifiers

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
PA08V	350	0.15	30	8.5	17.5
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
PA102	350	20	15	1.5	TBD
<b>NEW</b> 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

### Apex Precision Power™ High-Voltage Linear Amplifiers (continued)

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

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
SA305	60	5	300	130	120
SA306	60	15	100	300	130
SA56	60	5	500	80	130
SA07	40	5	500	80	80

## Apex Precision Power™ High-Speed Linear Amplifiers

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	TBD
PA78DK	350	350	0.15	2.5	23
PA86EU	350	200	0.15	2.5	23
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

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

solutions for long/short haul, T1/E1 LIUs, Ethernet, IR and echo canceller applications.

## T1/E1/J1 LIUs

- CS61535A
- CS61574A
- CS61575
- CS61577
- CS61581
- CS61584A
- CS61880
- CS61884
- CS62180B
- CXT6176/8192/8192A

## Infrared & Echo Canceller

- CS6422
- CS8130

## Ethernet

- CS8900A
- CS8952



### Long-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	Arbitrary Waveform Option	Package
CS61581	5	Host & 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

### 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

## T1/E1 Extras – Specifications

Part	Description	Temperature (°C)	Package
CS62180B	T1 Framer	-40 to 85	44 PLCC
CXT6176/8192/8192A	Crystals	-40 to 85	HC-49 HC-49U/N

Cirrus Logic has streamlined our Telecommunication and Networking portfolio to more efficiently support our customers by offering either super-set products or more integrated solutions while keeping pin compatibility. This will allow product re-use in new or multiple designs and reduce the associated engineering costs.

Obsolete/Not Recommended for New Design	Recommended Replacement
CS61304A	CS61575
CS61305A	CS61535A
CS61582	CS61584A
CS61583	CS61584A
CS61310	CS61581
CS61881	CS61884

## 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

Complementing Cirrus Logic's strength in analog and mixed-signal technologies, Cirrus Logic provides numerous 24-bit and 32-bit processor solutions ideally designed for audio and industrial markets. Cirrus Logic's processor solutions include audio-optimized digital signal processors (DSPs) for a wide range of consumer, professional and automotive entertainment applications, as well 32-bit embedded processor

systems-on-a-chip (SOCs) that offer a wide range of performance and features and cost-effective price points. In addition, Cirrus Logic's CobraNet® products and tools provide complete solutions for delivering uncompressed, professional-grade, digital audio over standard Ethernet networks.

## Audio DSPs

- CS485xxx Family
- CS493xxx Family
- CS4953xx Family
- CS497xxx Family
- CS48DV2x Family
- CS48DV6x Family
- CS49DV8x Family

## Audio DSP SOCs

- CS47030x Family

## CobraNet® Networked Digital Audio

- CS1810xx Transport Processors
- CS4961xx Audio Systems Processors
- DSP Conductor™ Software
- CobraCAD™ Software
- CobraNet® Discovery Software
- CobraNet® PCB Module Products
- CM-1 Transport Module
- CM-2 Transport and DSP Module
- EV-2 Development Board
- CobraCom Reference Design

## Embedded Processors

- EP7309
- EP7311
- EP7312
- EP9301
- EP9302
- EP9307
- EP9312
- EP9315
- EP9407
- NAS ARM 9
- Internet Protocol Radio





## Audio DSPs – Specifications

Part	Processor	DSP Tools	Key Firmwares & Features	Temp Range	Package
<b>CS493xxx</b>	<b>Supported exclusively with existing firmwares, many functions available for license, ideal for reduced requirements and low cost opportunities</b>				
CS493253	Dual 24-bit	None	DD + PLII, IEC61937 via I <sup>2</sup> S	86 MHz~70 °C	44 PLCC
CS493254	Dual 24-bit	None	DD + PLII, IEC61937 via I <sup>2</sup> S + DDEX	86 MHz~70 °C	44 PLCC
CS493263	Dual 24-bit	None	DD + PLII, IEC61937 via I <sup>2</sup> S + DTS	86 MHz~70 °C	44 PLCC
CS493264	Dual 24-bit	None	DD + PLII, IEC61937 via I <sup>2</sup> S + 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
<b>CS485xxx</b>	<b>Tiny, cost effective, mega performance PCM processors targeted for: mini-systems, DVD receivers, speaker bars, car audio, DTVs</b>				
CS48520	Single 32-bit	Composer, ASM, C	4 channel audio PP1	150 MHz~70 °C (300 M MAC/Sec)	48 QFP
CS48540	Single 32-bit	Composer, ASM, C	8 channel audio PP1	150 MHz~70 °C (300 M MAC/Sec)	48 QFP
CS48560	Single 32-bit	Composer, ASM, C	> 8 channel audio PP1	150 MHz~70 °C & 130 MHz~85 °C	48 QFP
<b>NEW</b> CS48DV2x	<b>Fixed function Dolby® Volume-enabled device ideally targeted for DTVs, portable audio docking stations, automotive entertainment, I<sup>2</sup>S I/O</b>				
CS48DV2A	Single 32-bit	Demo GUI	2 channel Dolby® Volume controller (fixed function)	150 MHz~70 °C (300 M MAC/Sec)	48 LQFP
CS48DV2B	Single 32-bit	Composer	2.1 channel Dolby® Volume controller (selected additional functions available through Composer)	150 MHz~70 °C (300 M MAC/Sec)	48 LQFP
<b>NEW</b> CS48DV6x	<b>Fixed function Dolby® Volume-enabled device ideally targeted for 5.1 channel audio/video receivers, DVD receivers, soundbars, I<sup>2</sup>S I/O</b>				
CS48DV6B	Single 32-bit	Demo GUI	5.1 channel Dolby® Volume controller (fixed function)	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
<b>CS4953xx</b>	<b>Single chip multistandard surround sound decoder targeted for playpack from analog &amp; S/PDIF sources</b>				
CS495303	Dual 32-bit	Composer, ASM, C	(DD, DDEX, AAC, MPEG) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
CS495313	Dual 32-bit	Composer, ASM, C	(DD, DDEX, DTS, DTSES, DTS96, AAC, MPEG) + PP2	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP
<b>NEW</b> CS497xxx	<b>Single chip multistandard surround sound decoder targeted for playpack from HD DVD™, Blu-ray Disc® players, &amp; all analog, S/PDIF &amp; HDMI® sources</b>				
CS497004	Dual 32-bit	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

## Audio DSPs – Specifications (continued)

Part	Processor	DSP Tools	Key Firmwares & Features	Temp Range	Package
<b>NEW</b> CS49DV8x	<b>Fixed function Dolby Volume®-enabled device ideally targeted for audio/video receivers and DVD receivers, I²S I/O</b>				
CS49DV8C	Dual 32-bit	Composer	8 Channel Dolby® Volume control (fixed function)	150 MHz~70 °C (600 M MAC/Sec)	128 LQFP

## Audio DSP SOCs – Specifications

Part	Processor	DSP Tools	Key Firmwares & Features	Temp Range	Package
<b>NEW</b> CS47030x	<b>Tiny, cost effective, mega performance PCM processors with integrated CODEC targeted for: mini-systems, DVD receivers, speaker bars, car audio, DTVs</b>				
CS47030x	Single 24-bit	Composer, ASM, C	Firmware same as CS485xxx family, device also includes: 4-in/8-out 24-bit audio CODEC, 5:1 stereo analog input mux, SPDIF in/out, SRC, PWM output, I²S I/O	150 MHz~70 °C & 130 MHz~85 °C	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® Low Bit Rate
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®	VIQ = SRS® Volume IQ
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™	DYNEQ = Audyssey® 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® Software Tools – Features

<b>DSP Conductor™</b>	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.
<b>CobraCAD™</b>	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.
<b>CobraNet® Discovery</b>	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.

## 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	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	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™	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"

### ARM 7 – Specifications\*

Part	Processor	Speed (MHz)	Cache	MMU	DRAM Controller	On-chip SRAM (KB)	LCD Ctrllr	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 - 9300<sup>1</sup> Series Specifications\*

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

<sup>1</sup>ARM 920T

\*Available in Commercial and Industrial Temperatures

### ARM 9 - 9400<sup>2</sup> Series Specifications\*

Part	Processor Speed (MHz)	Cache Data/Code	Ethernet MAC	Internal SRAM	SD/SDIO	USB Host or Device	Display I/F	Graphics Engine	Touch/ADC	Package
<b>NEW</b> EP9407	200	16 K/16 K	✓	✓	✓	2-HS 1-FS	24-bit	✓	8-wire	272 TFBGA

<sup>2</sup>ARM 926EJ

\*Available in Commercial and Industrial Temperatures

### 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

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