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Understanding Embedded - DSP (Digital Signal Processors)

Embedded - DSP (Digital Signal Processors) are specialized microprocessors designed to perform complex mathematical computations on digital signals in real-time. Unlike general-purpose processors, DSPs are optimized for high-speed numeric processing tasks, making them ideal for applications that require efficient and precise manipulation of digital data. These processors are fundamental in converting and processing signals in various forms, including audio, video, and communication signals, ensuring that data is accurately interpreted and utilized in embedded systems.

Applications of Embedded - DSP (Digital Signal Processors)

Details

Product Status	Not For New Designs
Type	Fixed Point
Interface	I²C, SPI
Clock Rate	150MHz
Non-Volatile Memory	-
On-Chip RAM	-
Voltage - I/O	3.30V
Voltage - Core	1.80V
Operating Temperature	0°C ~ 70°C (TA)
Mounting Type	Surface Mount
Package / Case	48-LQFP
Supplier Device Package	48-LQFP (7x7)
Purchase URL	https://www.e-xfl.com/product-detail/cirrus-logic/cs48dv2a-cqzr

CIRRUS LOGIC®

CS48DV2/6 Processor with Dolby® Volume

The final solution to inconsistent volume issues

CS48DV2/6 Processor Overview:

The CS48DV2 and CS48DV6 processors give OEMs a cost effective, fixed-function, simple-to-design Dolby Volume solution

Dolby Volume Overview:

- Consistent volume across all input sources and all content
- Consistent volume within the same program
- Eliminates need to constantly adjust volume
- Full, rich, and consistent experience at all volume levels
- Improved vocal and surround perception at low volume levels
- No artifacts or audible side effects

CS48DV2/6 Processor Features:

- 2.0 to 2.1 Channel / 3.0 to 5.1 Channel 32-bit fixed-function Dolby Volume processing (512 FFT Window / 20-Band)
- CS48DV2 supports up to 2.1 channel 32-bit PCM I/O at Fs of 32kHz, 44.1kHz & 48kHz
- CS48DV6 supports up to 5.1 channel 32-bit PCM I/O at Fs of 32kHz, 44.1kHz & 48kHz
- Integrated S/PDIF Transmitter
- 2/6 Channeld DSD input support (Rev. B)
- SPI™/I²C® serial control port
- Low-power standby: 260µW

CS48DV2/6 Key Benefits:

- Easy to design – only 10 parameters to control from host microcontroller
- High-performance & low cost
- No external SRAM/SDRAM memory needed
- Dedicated part number simplifies tracking and reporting tasks, reducing liability
- Firmware image can be downloaded from either host microcontroller or from external SPI Flash device at speeds up to 12.288Mhz

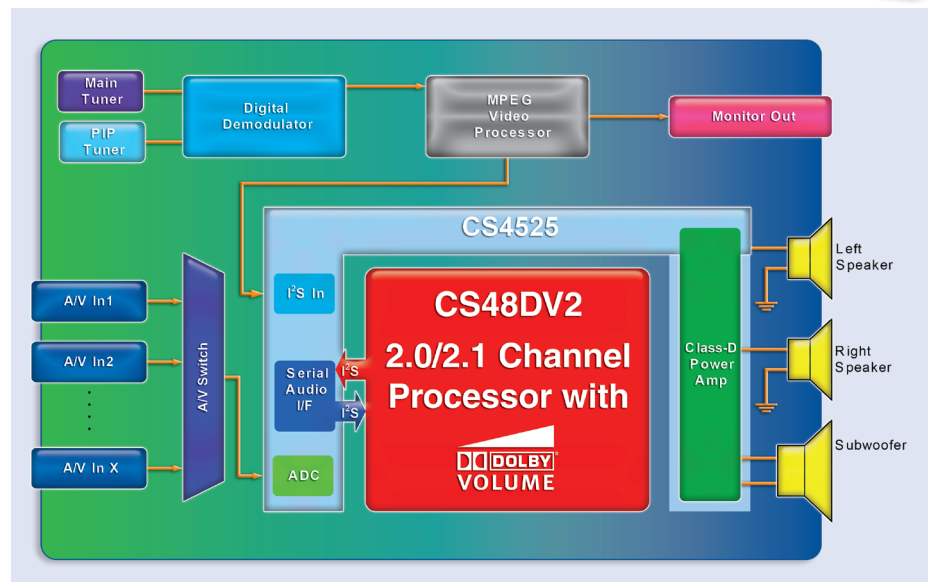### CS48DV2/6 Processor Target Markets:

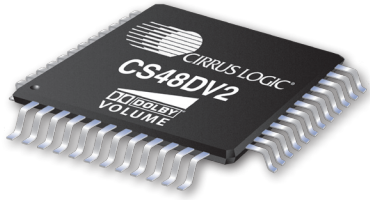#### Digital Televisions

5.1 Channel AVRs

Automotive Entertainment

2.1/5.1 Channel Hi-Fi, DVD Receivers and HTiBs

The CS48DV2 Processor with Dolby Volume implemented in a 2.1 channel DTV application
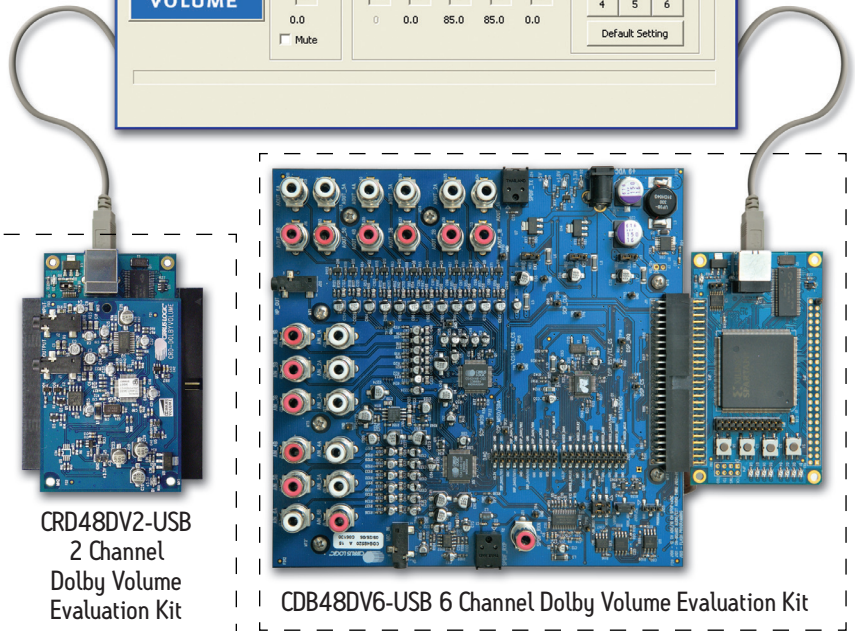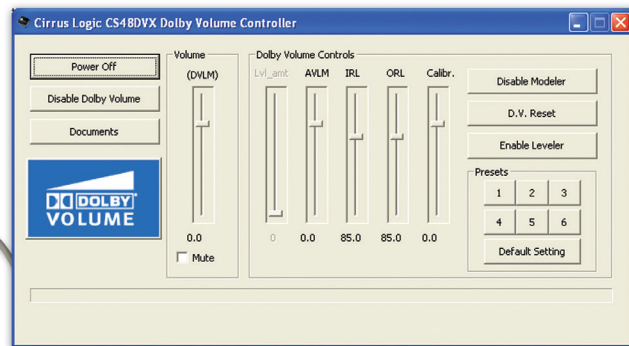
CS48DV2/6

Using the Cirrus Logic CS48DVx / CS49DV8 Controller GUI for Dolby Volume

The CS48DV2/6 ICs are programmed with the latest Dolby Volume firmware using the Cirrus Logic proprietary GUI software development & evaluation tool called Dolby Volume Controller. This same tool then configures the CS48DV2/6 through the SPI™/I²C® serial port via the USB 2.0 cable. The IC can be sent a command to boot itself using firmware loaded from ROM within the CS48DV2/6 (starting with Rev B Silicon - available in April, 2008), or it may be downloaded through the serial control port from either a master host microcontroller or an external I²C EEPROM or SPI Flash device. In all cases, the host microcontroller is responsible for downloading the specific hardware and software configuration commands. All Dolby Volume parameters running on the CS48DV2/6 firmware can be adjusted in real-time as well as allowing 6 different presets to be saved and recalled easily, enabling very simple and quick "A/B" listening tests for the target design.

Ordering Information:

CS48DV2/6 Processor Family

Device(s)	CS48DV2A-CQZ
	(Available December '07)
	CS48DV2B-CQZ
	(Available April '08)
	CS48DV6B-CQZ
	(Available April '08)
	CS48DV2A-DQZ
	(Automotive)
	(Available December '07)
Package	48-Pin LQFP
Eval. Boards	CRD48DV2-USB
	CDB48DV6-USB
Application Note	AN298PPMN
Tools	Cirrus Logic CS48DVx / CS49DV8 Dolby Volume Controller GUI: software tool offers a simple and quick method during the evaluation & design stage

CRD48DV2-USB 2 Channel Dolby Volume Evaluation Kit

CDB48DV6-USB 6 Channel Dolby Volume Evaluation Kit