

The Interactive Speech™ line of ICs and software was developed to “bring life to products” through advanced speech recognition and audio technologies. The Interactive Speech Product Line is designed for cost-sensitive consumer electronic applications such as home electronics, home automation, toys, and personal communication. The product line includes the award-winning RSC mixed signal processor family and the SC series of long-duration speech and music synthesis microcontrollers. All IC’s are supported by complete evaluation and development tools.

RSC-4x SPEECH RECOGNITION PROCESSORS

The **RSC-4x** family of chips are the world’s most advanced speech processors, and are designed to add sophisticated audio technologies to cost-sensitive embedded and consumer products. Based on an 8-bit microcontroller, the **RSC-4x** family integrates speech-optimized digital and analog processing blocks into a single chip solution capable of accurate speech recognition as well as high quality, low data-rate compressed audio playback. Products can use one or all features in a single application.



The **RSC-4x** family supports the **FluentChip™** technology library, which includes high-quality speech recognition, speech and music synthesis, voice password, and voice record and playback functions. Powerful application code development tools, a C-compiler, and “push-button” voice recognition command tools and speech compression tools are available. **Quick T2SI™** is Sensory’s revolutionary text-based Speaker Independent recognition development tool. The **Quick Synthesis** tool generates highly compressed, low data rate music and speech synthesis in a few minutes.

In addition to best-in-class recognition performance, the **RSC-4x** family provides a high level of on-chip feature integration, including a microphone preamplifier, 16-bit ADC, vector math accelerator, 3 independent timers, 10-bit DAC, 4.8 Kbytes of RAM and code ROM. A complete system may be built by adding only a battery, speaker, microphone, and a few resistors and capacitors.

SC-6x SERIES LONG-DURATION SPEECH PROCESSOR

The **SC-6x** series is intended for high-quality, low-cost, long-duration audio playback applications. The SC-691 is a preprogrammed slave synthesizer that accepts commands and compressed speech data from other microprocessors or microcontrollers and converts it to speech output. This chip is built around a 12.32 million instructions per second (MIPS) Digital Signal Processor (DSP) that minimizes battery drain and enables developers to create products yielding speech quality never before obtained at such low data rates at very competitive price points.

SC-6x ICs employ four key speech technologies - **CX**, **MX**, **ADPCM** and **LPC** - that produce natural sounding speech while using relatively small amounts of memory. Midi-like, polyphonic music output is also supported, and can be played back simultaneously with a vocal track. Features include three low-power modes, configurable I/O, two timers, a 10-bit DAC, and an eight-level interrupt control unit.



SUMMARY TABLE

	RSC-4x Family		SC-6x Series
	464	4128	691
Core	8-bit CPU	8-bit CPU	16-bit DSP
Additional Memory Req'd	No	No	Yes, plus CPU
External Memory Bus	No	Yes	Via host CPU
Maskable ROM	64 Kbytes	128 Kbytes	0 ⁽⁴⁾
Speech Duration⁽¹⁾, max	2.5 ⁽²⁾ min	6 ⁽²⁾ min	Unlimited (off-chip)
RAM	2.8 Kbytes	4.8 Kbytes	0 ⁽⁴⁾
I/O lines	16	24	5
Technology Library	FluentChip™		CX, MX, ADPCM LPC & Music
Key Technologies	Speaker Independent Recognition		CX/MX/LPC/ADPCM Speech Synthesis 10-Channel Midi-like Music + Vocals
	Speaker Dependent Recognition		
	Speaker Verification		
	Multi-Word SI/SD WordSpotting		
	Continuous Listening		
	SX Speech Synthesis		
	8-Channel Midi-like Music		
	Wake-up on Audio		
SI Words⁽³⁾ On-chip, max	60	500	N/A
SD/SV Words On-chip	1/1	7/5	N/A
Package Options	LQFP-100, die	LQFP-100, die	LQFP-64, die

Notes:

- (1) For applications performing only compressed speech playback.
- (2) On-chip—unlimited duration off-chip
- (3) For applications performing only SI recognition.
- (4) The SC-691 is a slave chip with 4/8-bit parallel interface.
- (5) External memory bus is only available on the die version.

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