SAM2695 Application Note

Migrate from SAM2195 to SAM2695

Overview

SAM2695 is the replacement for SAM2195. More than a simple shrunk version of SAM2195, SAM2695 also brings new features. This document focuses on new features and helps migrating SAM2195 applications in SAM2695 applications.

Specifications comparison chart

FEATURES	SAM2195	SAM2695
Sounds	General MIDI, Cleanwave	General MIDI, Cleanwave
Polyphony	64 max 38 with effects	64 max 38 with effects
Nominal Sampling Rate	37,5kHz	37,5kHz
Package	QFN44 (7x7)	QFN48 (6x6)
Reset and Power-down combined in one single pin	No	Yes
XTAL	9.6MHz	9.6Mhz or 12MHz
Audio Out channel	1 analog stereo line output	1 analog stereo line or headphones output
Audio In channel	No	1 Analog mike with selectable internal +20dB boost
Effects	Reverb Chorus Spatial Effect 4-band Equalizer	Reverb Chorus Spatial Effect 4-band Equalizer Mike Echo

Package & Pinout

SAM2195 and SAM2695 are housed in different package and have different pinout.

Note: PCB should be redesigned when porting SAM2195 application to SAM2695.

Reset and Power-down combined in one single pin

SAM2195: Reset is controlled by a dedicated pin RESET/. Power down mode is controlled by a dedicated pin PDWN/.
SAM2695: Reset and Power-down mode are controlled by the same pin RST/PD/.

12MHz XTAL support

Sourcing 9.6MHz Xtal can be difficult in small quantities. For this reason, SAM2695 also support standard 12MHz Xtal.
Level on XDIV pin sets the system clock divider:

- XDIV pulled low for Xtal=9.6MHz
- XDIV pulled high for Xtal=12MHz

Audio CODEC

- SAM2195 has only audio DAC with line stereo output (2.2Vpp Max).
- SAM2695 offers an embedded audio CODEC with:
  - Line or headphones stereo output (2.8Vpp Max, 30mW).
  - Mike input with Boost and Echo

  Parameters for SAM2695 CODEC can be set by new system exclusive messages. See SAM2695.pdf, page 36, §6 Codec Control System Exclusive.
  For CODEC specifications, see SAM2695.pdf, page 7, §5 DAC Charasteristics and §6 ADC Charasteristics.

Mike Echo

An Echo effect, dedicated to audio mike input is available in SAM2695.
New messages have been added in MIDI implementation to control mike echo parameters. See SAM2695.pdf, page 15, §2.1 Special MIDI Messages and page 19, §2.2 Controls.