Dual Atari POKEY Chip Synthesizer Features

The POKEY (POtentiometer KEYboard Integrated Circuit) is a 40 pin DIP that was designed in the late 1970s to be used in Atari's 8-bit family of home computers. It was used to sample potentiometers and matrices of switches (from a computer keyboard) as well as generate audio. It has 4 audio channels, each of which has 4 bits controlling attenuation, 8 bits controlling frequency, and 8 different timbres (square wave and polynomial pulse).

- MIDI Plug and Play USB Device
- Intelligent "Last Note" Pull Off: (Keeps track of the order notes are held down and always defaults to the most recently played note.)
- Glide/Portamento Legato: When a note is played while another note is held down, the pitch will glide to the new note. (Pitch will also glide linearly with respect to musical notes, not frequency.) With adjustable glide speed.
- Pitch Bend, mapped linearly with respect to musical notes, not frequency. Adjustable pitch bend range, from +/-1 semitone to +/-12 semitones (1 octave).
- Arpeggiator with adjustable speed. Ability to switch arpeggiator on and off while playing without affecting the intelligent pull off.
- Two monophonic channels on chip #2.
- Vibrato on monophonic modes.
- Adjustable decay (from continuous sustain to almost inaudible blips) using 4 bit onboard attenuation controls.
- Ability to play 4 bit 4ks/s drum samples from embedded PCM data, (audio data is actually 8 bit, but the chip only has 16 levels of volume) with adjustable sample playback rate and sample rate decimation.
- Two polyphonic modes, one for each chip, each utilizing 4 channels. Velocity sensitive, which can be toggled on or off globally. Polyphonic mode also replaces oldest notes with newer notes when polyphony limit is reached.
- Tremolo feature available on polyphonic mode.
- Shift Register/Polynomial/Waveform Selection. There are 8 tones, and they are:
    0. 5 bit → 17 bit polynomial
    1. 5 bit polynomial
    2. 5 bit → 4 bit polynomial
    3. 5 bit polynomial
    4. 17 bit polynomail
    5. No polynomial (Square Wave)
    6. 4 bit polynomial
    7. No polynomial (Weird combination of tones)
- Onboard LED shows MIDI commands received (excluding note-off commands).

Dual Atari POKEY Chip Synthesizer Channel / CC Guide

CH	1	2	3	4	5
	Drum Samples (Chip 1) Ch 1-4	Polyphonic (Chip 1) Ch 1-4	Polyphonic (Chip 2) Ch 1-4	Legato (Chip 2) Ch 3	Legato (Chip 2) Ch 4
CC#					
1	Sample Rate	Tremolo	Tremolo	Vibrato	Vibrato
2	GLOBAL: Bend Range				
3	Decay Mode	Decay Mode	Decay Mode	Decay Mode	Decay Mode
4	N/A	N/A	N/A	Arpeggiator On/Off	Arpeggiator On/Off
5	N/A	N/A	N/A	Arpeggiator Speed	Arpeggiator Speed
6	N/A	N/A	N/A	Shift Register Select	Shift Register Select
7	GLOBAL: Chip 1 Select Between 17 and 9 Shift Bits				
8	GLOBAL: Chip 1 Select Between 64k and 15k Frequency Divider				
9	GLOBAL: Chip 2 Select Between 17 and 9 Shift Bits				
10	GLOBAL: Chip 2 Select Between 64k and 15k Frequency Divider				
20	N/A	N/A	N/A	Portamento Speed	Portamento Speed
Pitch Bend	Sample Decimation	N/A	N/A	Pitch Bend	Pitch Bend