ABE (Accu-Bell Effector)

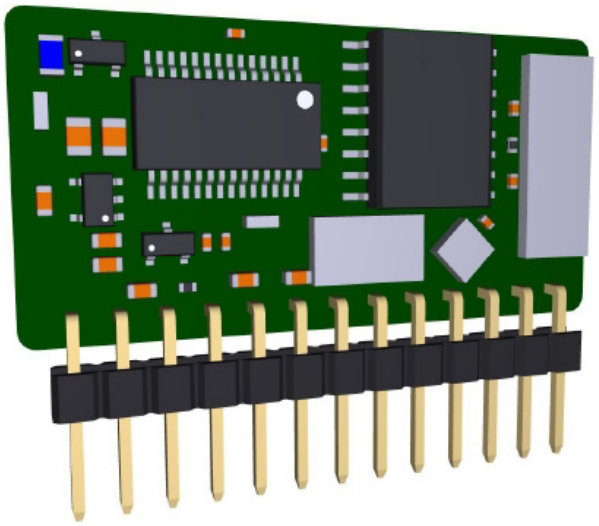
General Specification of Sound Effector

Features

- Tiny with vertical mounting for small footprint (36 X 21 mm)
- Built-in voltage regulator for easy integration
- Mono input / stereo output
- Multiple controllable parameters
- Effects available : plate reverb, echo with tap tempo & subdivisions, and stereo chorus
- May also be programmed as a BTDR-type reverb, as a higher-quality replacement for the BTDR (not pin-compatible)

Pin Descriptions

Pinout (0.1" centers)	
Pin	Name
1	VPOT (full-scale voltage reference for pots)
2	GPIO5
3	GPIO4
4	GPIO3
5	GPIO2
6	GPIO1
7	OUT2-
8	OUT2+
9	OUT1+
10	OUT1-
11	IN
12	GND
13	VDD



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Available Effects

The demo firmware consists of 3 effects : Plate reverb, Chorus and Echo.
The BTDR-type reverb is available separately as a special order.

- Stereo Plate Reverb
  - Classic plate reverb emulation with adjustable tone, decay and pre-delay.
- Stereo Chorus
  - This is a standard "quadrature" chorus — two voices with 90-degree phase difference between LFOs. Adjustable parameters are tone, depth and rate.
- Echo with Tap Tempo
  - Standard mono echo with adjustable tone, repeats, and delay time (50 - 1000 ms).
  - Tap tempo with subdivisions is also possible:
    - Tap more than once within 1 second to set (time knob sets subdivisions). LED blinks at quarter-note tempo, and the time knob is divided into 4 tempo subdivision:
      - 0-25%: 8th-note triplet
      - 25-50%: 8th-note
      - 50-75%: dotted 8th-note
      - 75-100%: quarter-note
    - Press only once within 1 second to deactivate tap tempo. Time knob returns to normal function.
- BTDR-type Stereo Reverb
  - This reverb emulates the AccuBell BTDR module with some enhancements, including adjustable tone, decay and pre-delay.

Demo Firmware configuration

GPIO1 => pot or resistor divider	**Chorus** 0.0V ≤ GPIO1 ≤ 1.0V	**Echo** 1.2V ≤ GPIO1 ≤ 2.1V	**Plate Reverb** 2.3V ≤ GPIO1 ≤ 3.3V
GPIO2 => pot	Tone	Tone	Tone
GPIO3 => pot	Depth	Repeats	Decay
GPIO4 => pot	Rate	Delay time / Subdivisions	Pre-delay
GPIO5 => switch & LED		Tap tempo	

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Specificaions

Dimensions	36 mm X 21 mm X 6.5 mm
VDD Supply Voltage	5.5V to 9.5V DC
VDD Supply Current	90 mA
Operating Ambient Temperature	-40 ℃ to +60 ℃
Maximum Input Level	2V peak-peak (preliminary)
Maximum Output Level, differential	TBD
SNR	90 dB minimum (preliminary)
VPOT Voltage	4.5 V DC (approx.), use only as shown in example schematic

Example Schematic