Subject:	Revised Sections in the UAC 3552A data sheet
Data Sheet Concerned:	UAC 3552A 6251-478-1PD, Edition Nov. 9, 1999
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Information is valid for version A3.

Revised Sections in the UAC 3552A data sheet:

2.1.6 "General Purpose I/O"

3.2 "Pin Connections and Short Descriptions"

4.2 "Typical Application"

2.1.6. General Purpose I/O

The GPIO pins are used to connect keys which are related to the USB HID class or for vendor-specific control functions and LEDs in order to indicate on/off states, for example.

The configuration is defined in the EEPROM. So a high flexibility of adapting the device to the individual application is achieved. This is supported by an Excel-based tool (uac3552a-a3.xls) that is shipped along with the ICs.

In the following, the configurations are described in detail.

2.1.6.1. Standard Mode

The standard configuration defines the GPIOs as eight input pins. The pins GPIO0...GPIO3 are used as the basic HID-key pins and the pins GPIO4...GPIO7 are not defined. This is also the default mode and the UAC 3552A will be shipped with this configuration. The function of the input pins is shown in Table 2–1.

Table 2–1: Standard Key Configuration

Pin	Function
GPIO0	Volume Up
GPIO1	Volume Down
GPIO2	Mute Toggle
GPIO3	Bass-Boost Toggle

2.1.6.2. Standard Mode with Rotary Decoder

The standard up/down control is replaced by the rotary control (shaft-encoder) in this mode. The output pins of the shaft-encoder have to be connected to the Volume Up/Down Pins (GPIO0/GPIO1).

The decoding software in the UAC 3552A translates the rotary control into standard up/down control, so the host computer will not see a difference to the standard configuration.

2.1.6.3. Extended Mode with Up/Down Keys

The extended mode allows up/down control for

– Volume

– Balance (i.e.: left-right)

– Bass

– Treble

and on/off control for

– Mute

– Bass-Boost

This is achieved by a select button which allows to step through the up/down modes in a sequential way. The selected up/down modes are indicated by LEDs which are also connected to the GPIO-Pins.(see Fig. 4–4 on page 5)

Table 2–2: Usage of the GPIO pins

Pin	Key-Function	LED-Function
GPIO0	Up-Key	Balance LED
GPIO1	Down-Key	Bass LED
GPIO2	Mute On/Off Key	Treble LED
GPIO3	Bass-Boost On/Off Key	Mute LED
GPIO4	Select Key	
GPIO5	not defined	
GPIO6	not defined	
GPIO7	not defined	
Note: Volume mode is indicated by all LEDs turned off		

Pressing the select key lets the UAC 3552A step through:

– Volume Mode

– Balance Mode

– Bass Mode

– Treble Mode

With no key pressed, the chip automatically switches back into Volume Mode after a defined time (EEPROM-programmable time constant). This timer function is retriggered whenever a key is pressed.

2.1.6.4. Extended Mode with Rotary Decoder

The Extended Mode can also be combined with the rotary decoder.

All up/down controls are replaced by on-chip rotary decoding in this mode.

2.1.6.5. GPI-READ Disabled Mode

This mode changes the HID communications between the chip and the host computer in a way, that the host is still polling the HID endpoint but will never get a returned keycode. So the control of the GPIOs is completely up to vendor-specific driver software.

2.1.6.6. Analog Mode

When the device is not connected to USB, the functionality of volume control and mute pins are preserved. In this case, however, the parameters are directly transferred to the DSP core. This allows the device to be operated in stand-alone mode providing volume and mute control for analog sources.

3.2. Pin Connections and Short Descriptions

NC = not connected, leave vacant
LV   = if not used, leave vacant
VSS = if not used, connect to VSS
X   = obligatory; connect as described in
        circuit diagram
VDD = connect to VDD

Pin No.	Pin Name	Type	Connection (If not used)	Short Description
1	AGNDC	IN/OUT	X	Analog reference voltage
2	AVSS1	IN	X	VSS 1 for audio back-end
3	AVSS0	IN	X	VSS 0 for audio output amplifiers
4	OUTL	OUT	LV	Audio Output: Headphone left or Speaker +
5	OUTR	OUT	LV	Audio Output: Headphone right or Speaker −
6	AVDD0	IN	X	VDD 0 for audio output amplifiers
7	AVDD1	IN	X	VDD 1 for audio back-end
8	XTI	IN	X	quartz oscillator pin 1
9	XTO	OUT	X	quartz oscillator pin 2
10	NC		LV	Not connected
11	NC		LV	Not connected
12	NC		LV	Not connected
13	NC		LV	Not connected
14	GPIO 0	IN	VSS	HID IO 0 – Volume Up
15	GPIO 1	IN	VSS	HID IO 1 – Volume Down

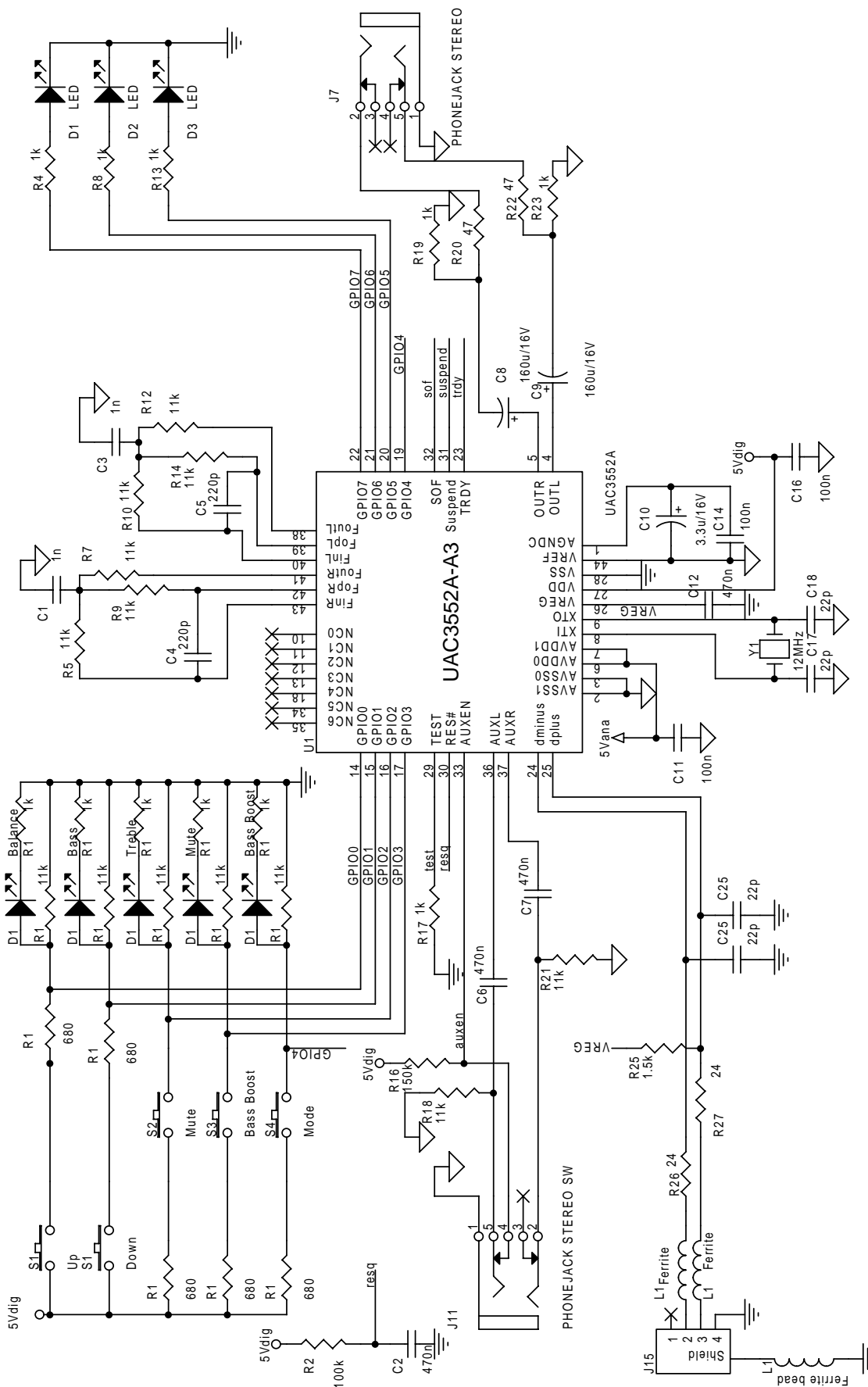| Pin No.	Pin Name	Type	Connection (If not used)	Short Description
16	GPIO 2	IN	VSS	HID IO 2 – Mute Toggle
17	GPIO 3	IN	VSS	HID IO 3 – Bass-Boost Toggle
18	NC		LV	Not connected
19	GPIO 4	IN	VSS	HID IO 4
20	GPIO 5	IN	VSS	HID IO 5
21	GPIO 6	IN	VSS	HID IO 6
22	GPIO 7	IN	VSS	HID IO 7
23	TRDY	OUT	LV	Test Output Pin
24	DMINUS	IN/OUT	X	USB DATA MINUS
25	DPLUS	IN/OUT	X	USB DATA PLUS
26	VREG	OUT	X	Capacitor for internal supply
27	VDD	IN	X	digital VDD
28	VSS	IN	X	digital VSS
29	TEST	IN	X	Test Enable
30	RESQ	IN	VDD	Power On Reset, active low
31	SUSPEND	OUT	LV	Low-Power Mode Indicator
32	SOF	OUT	LV	1-ms Start-Of-Frame Signal
33	AUXEN	IN	VSS	Enable AUX Input
34	NC		LV	Not connected
35	NC		LV	Not connected
36	AUXL	IN	VSS	AUX Input Left
37	AUXR	IN	VSS	AUX Input Right
38	FOUTL	OUT	X	Output to left external filter
39	FOPL	IN/OUT	X	Filter op amp inverting input, left
40	FINL	IN/OUT	X	Input for FILTOUTL or filter op amp output (line out)
41	FOUTR	OUT	X	Output to right filter op amp
42	FOPR	IN/OUT	X	Right Filter op amp inverting input
43	FINR	IN/OUT	X	Input for FILTOUTR or Filter op amp output (line out)
44	VREF	IN	X	Analog reference Ground

4.2. Typical Application

Fig. 4–4: Application Circuit