Winbond Electronics Corporation America
2727 North First Street, San Jose, Ca. USA Tel:(408)943-6666 Fax:(408)554-1786

ES302 DEMONSTRATION BOARD



DEVICES SUPPORTED:

Products Supported	Ordering Code
ISD4002-120	ISD-ES302
ISD4002-150	ISD-ES302
ISD4002-180	ISD-ES302
ISD4002-240	ISD-ES302
ISD4003-04M	ISD-ES302
ISD4003-05M	ISD-ES302
ISD4003-06M	ISD-ES302
ISD4003-08M	ISD-ES302
ISD4004-08M	ISD-ES302
ISD4004-10M	ISD-ES302
ISD4004-12M	ISD-ES302
ISD4004-16M	ISD-ES302

CONTENTS OF KIT:

- Two AA Battries
- 16 Ohm Speaker
- ES302 Demo board with user's guide
- Three ISD4003 PDIP Samples

OVERVIEW:

The ES302 Demo board is designed to let listeners hear the voice quality of the 3 volt part and to demonstrate some of the features available through the SPI bus control.

HARDWARE:

The three major Integrated Circuits on the board are the ISD4000 voice chip, U2, the NSC COP820C microcontroller, U4, and an audio chip, U3. The audio chip is an ISD1020 of which only the microphone preamplifier and the speaker driver are used. It is run on 5 V whereas the ISD4000 is run on 3 V. The audio chip would not normally be needed because the audio input and speaker output functions are already on the board in a cellular phone, for example. The board is powered by two AA cells on the bottom side. These cells drive a voltage converter to get the 5 V for the audio chip and the microcontroller. This voltage is then regulated down to 3 V (or 3.3 VDC) for the ISD4000 device.

SOFTWARE:

The COP microcontroller provides the interface between the user's fingers on the keyboard and the ISD4000 device. It interprets the key strokes and issues the appropriate commands to the ISD4000. It also monitors the ISD4000 status registers and Interrupt Output to keep track of operations.

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INSTRUCTIONS:

The keyboard on the ES302 Demo board consists of a 2 x 3 matrix of various colored keys. As with many microcontroller project boards, ISD has also provided the white MASTER_RESET button at the bottom of the board in case of program lockup.

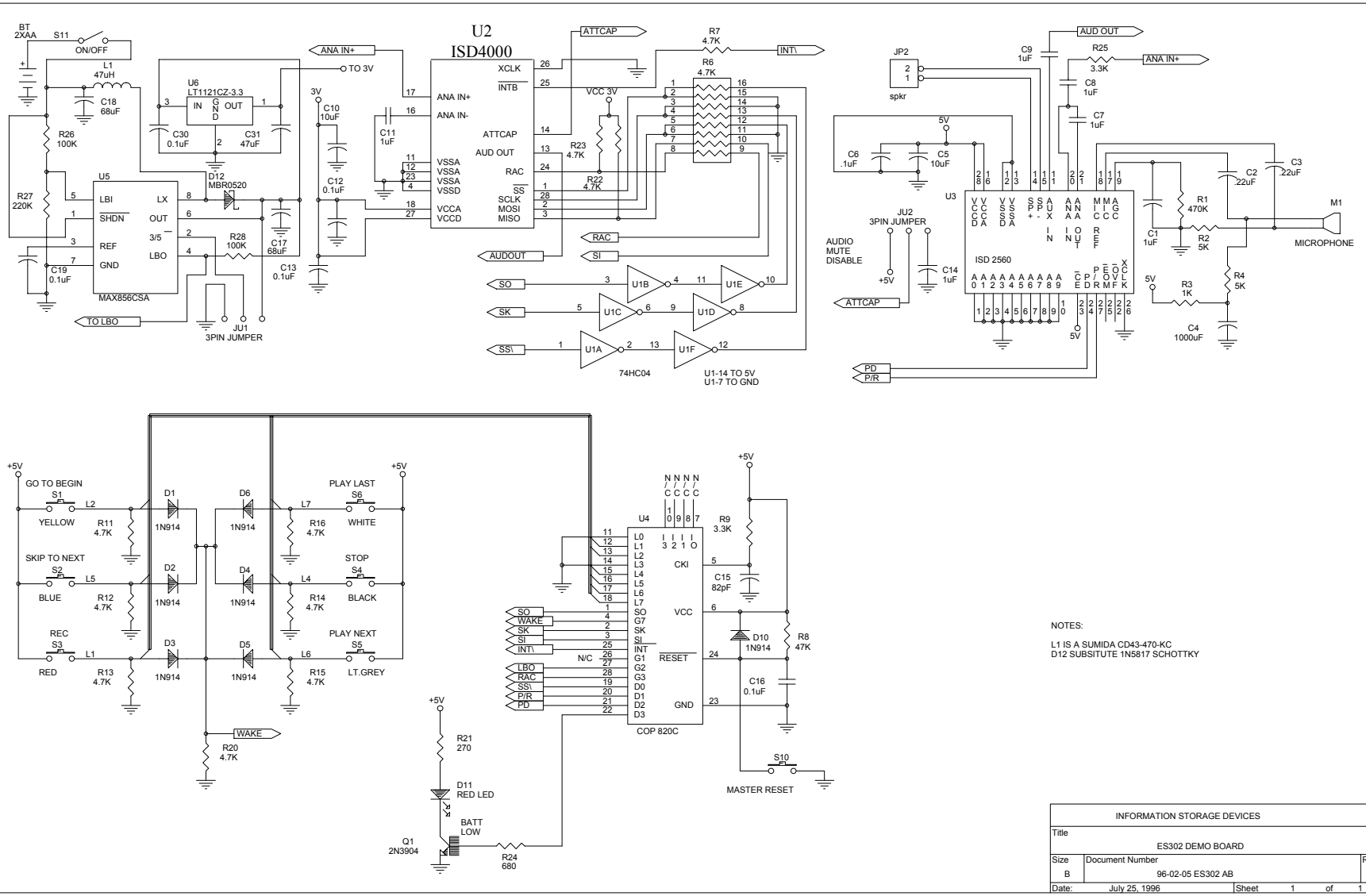
To operate the board, insert the desired ISD4000 product into the U2 socket. This can be any one of the four sample rates for comparison of the voice quality versus time duration listening. Power ON the board with S11 at the right hand side of the board. Up is the "ON" position. This applies the 3 V from the batteries to the converter chip. Check that the speaker is plugged into JP2 so that you can hear the results.

The six push-buttons are labeled on the PCB. Pushing the Yellow **"Go_to_Beg**" button will reset the address pointer to the front of the chip or address 000. The indication that this has been done will be a **double flash** of the LED, D11, in the bottom left corner of the PCB.

Pushing the Red **"Record**" button will turn on the Red LED to indicate that the chip is now recording anything it hears at the microphone **M1** near the top center of the board. The board will continue to Record until the end of the chip is reached or the **Black "Stop"** button is pressed. At that time the LED will go out and the board will stop Recording.

Pushing the White "**Play_Last**" button (or pushing the Yellow "**Go_to_Beg**" button, and then the White "**Play_Next**" button) will playback what you have just recorded. This message will play through to its end or stop when you press the Black "**Stop**" button.

The Blue "**Skip_to_Next**" button will let you bypass a message and play the one after that message. For example, had you recorded three messages, beginning at the front of the chip, and gone back to the beginning after the last message then you could press the White "**Play_Next**" button to play message #1, press the Blue **"Skip_tp_Next**" button to bypass message #2 and then press the White "**Play_Next**" to play message #3.


BT
2XAA
S11
ON/OFF
L1
47uH
C18
68uF
R26
100K
R27
220K
U5
LBI
LX
SHDN
OUT
3/5
REF
LBO
GND
MAX856CSA
C19
0.1uF
D12
MBR0520
C17
68uF
R28
100K
C13
0.1uF
TO LBO
JU1
3PIN JUMPER
U6
LT1121CZ-3.3
IN
GND
OUT
C30
0.1uF
C31
47uF
ANA IN+
TO 3V
3V
C10
10uF
C12
0.1uF
C11
1uF
U2
ISD4000
XCLK
INTB
ANA IN+
ANA IN-
ATTCAP
AUD OUT
VSSA
VSSA
VSSA
VSSD
RAC
SS
SCLK
MOSI
MISO
VCCA
VCCD
ATTCAP
R7
4.7K
INT\
R6
4.7K
VCC 3V
R23
4.7K
R22
4.7K
RAC
SI
AUDOUT
SO
SK
SS\
U1B
U1C
U1A
U1D
U1E
U1F
74HC04
U1-14 TO 5V
U1-7 TO GND
JP2
spkr
AUD OUT
C9
1uF
R25
3.3K
ANA IN+
C8
1uF
C7
1uF
5V
C6
.1uF
C5
10uF
U3
ISD 2560
JU2
3PIN JUMPER
AUDIO
MUTE
DISABLE
+5V
C14
1uF
ATTCAP
C1
1uF
R1
470K
R2
5K
C2
.22uF
C3
.22uF
M1
MICROPHONE
R3
1K
R4
5K
C4
1000uF
PD
P/R
+5V
GO TO BEGIN
S1
YELLOW
R11
4.7K
D1
1N914
SKIP TO NEXT
S2
BLUE
R12
4.7K
D2
1N914
REC
S3
RED
R13
4.7K
D3
1N914
D6
1N914
D4
1N914
D5
1N914
PLAY LAST
S6
WHITE
R16
4.7K
STOP
S4
BLACK
R14
4.7K
PLAY NEXT
S5
LT.GREY
R15
4.7K
L2
L5
L1
L7
L4
L6
WAKE
R20
4.7K
U4
COP 820C
CKI
VCC
RESET
GND
R9
3.3K
C15
82pF
D10
1N914
R8
47K
C16
0.1uF
S10
MASTER RESET
SO
WAKE
SK
SI
INT\
N/C
LBO
RAC
SS\
P/R
PD
R21
270
D11
RED LED
BATT
LOW
Q1
2N3904
R24
680
NOTES:
L1 IS A SUMIDA CD43-470-KC
D12 SUBSITUTE 1N5817 SCHOTTKY
INFORMATION STORAGE DEVICES
Title
ES302 DEMO BOARD
Size
B
Document Number
96-02-05 ES302 AB
REV
B
Date:
July 25, 1996
Sheet
1
of
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