MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

TextToSpeech Click

PID: MIKROE-2253

Text To Speech Click is a compact add-on board that can make your robot or portable device talk in US English, Castilian Spanish, or Latin American Spanish. This board features the S1V30120, a speech synthesis IC powered by the Fonix DECtalk® v5 engine from Epson. The S1V30120 can talk in one of three predefined voices, and the Fonix DECtalk® v5 speech synthesis engine includes a parser that gives users fine control over the quality, pitch, and intonation of the synthesized speech. The text-to-speech is reproduced at an 11.025KHz sampling rate. This Click board™ makes the perfect solution for the development of talking robots, text-to-speech, and speech-processing applications for embedded systems and portable devices.

Text To Speech Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

Text To Speech Click is based on the S1V30120, a speech synthesis IC powered by the Fonix DECtalk® v5 engine from Epson. Speech synthesis is the production of the human voice from a non-human object and can be software or hardware type. The Text To Speech Click is a hardware solution. The S1V30120 contains all the required analog codecs, memory, and Epson-supplied embedded algorithms. Because of the initialization data that should be uploaded to this Click board™ on power-up, the host MCU should have at least 45KB of Flash memory. The Fonix DECtalk® v5 speech synthesizer engine is one of the most intelligible TTS (text-to-speech) synthesizers, with the most natural sounding voice, as a multi-language synthesizer. The S1V30120 also has Audio reproduction capabilities (ADPCM decoding), with audio

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reproduction bit rates of 80kbps, 48kbps, 40kbps, 32kbps, 24kbps, and with a sampling rate of 16,8 kHz.

The Text To Speech Click features a 3.5mm audio jack for connecting an active external speaker. The LM386, a low-voltage audio power amplifier from Texas Instruments, is used to amplify the sound toward the audio jack. In addition, as a 3.3V and 5V board, this Click board™ features the TXB0106, a 6-bit bidirectional level-shifting and voltage translator with auto-direction sensing and ±15-kV ESD protection from Texas Instruments. This TXB1016 makes the development of applications safe on any MCU regardless of supported power supplies.

The Speech To Text Click uses a standard 4-wire SPI serial interface to communicate with the MCU over the mikroBUS™ socket. In addition, this Click board™ features a few other functionalities, such as an RST pin to reset the S1V30120 and MUT, which will disable the LM386, thus the audio output. The RDY pin will send the interrupt signal to the host MCU when the S1V30120 is ready.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the I/O SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. However, the Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used, as a reference, for further development.

Specifications

Type	Speakers
Applications	Can be used for the development of the talking robots, text to speech and speech processing applications for embedded systems and portable devices
On-board modules	S1V30120 - speech synthesis IC powered by the Fonix DECtalk® v5 engine from Epson
Key Features	Fonix DECtalk® v5 fully parametric speech synthesis, US English, Castilian Spanish or Latin American Spanish language in nine predefined voices, control over the quality, pitch and intonation of the synthesized speech, and more
Interface	GPIO,SPI
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on TextToSpeech Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin		Pin	Notes

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		mikro™ BUS					
Mute	**MUT**	1	AN	PWM	16	NC	
Reset	**RST**	2	RST	INT	15	**RDY**	Data Ready Interrupt
SPI Chip Select	**CS**	3	CS	RX	14	NC	
SPI Clock	**SCK**	4	SCK	TX	13	NC	
SPI Data OUT	**SDO**	5	MISO	SCL	12	NC	
SPI Data IN	**SDI**	6	MOSI	SDA	11	NC	
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
-	PWR	-	Power LED Indicator
-	I/O SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

TextToSpeech Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Reproduction Bitrates	24	-	80	Kbps
Audio Sampling Rate	-	16.8	-	KHz
Text To Speech Sampling Rate	-	11.025	-	KHz

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

Downloads

TextToSpeech click example on Libstock

Learn Article - Make Robot Speak

TextToSpeech click schematic

TextToSpeech click 2D and 3D files

TXB0106 datasheet

S1V30120 datasheet

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[LM386 datasheet]