

3sec PIEZO BUZZER DIRECT DRIVE VOICE SYNTHESIZER

GENERAL DESCRIPTION

The NJU5505 series is a PCM method voice synthesizer which consists of 98k bits data ROM, PWM type D/A converter, CR oscillator and control logics.

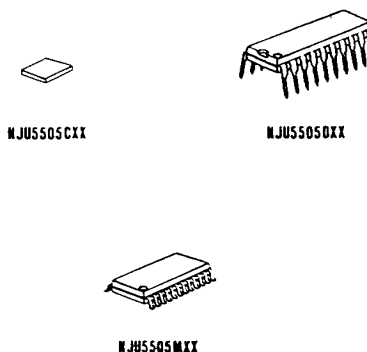
The operating voltage of 2.4V or over enables the operation using a small button cell or other types batteries.

The 98k bits data ROM can be divided into two independent sections of any desired length, where, using either or both of the ROM sections, sounds of human and animal voices or other kinds of sound effects can be programmed approximately for up to 3 sec in total.

The PWM type D/A converter can drive a piezo buzzer directly and a dynamic speaker also using simple external amplifier.

The NJU5505 can be applied to thinnest and smallest voice synthesis modules as it requires one resistor and capacitor only as external components. Consequently, it can widely be utilized for applications in the consumer field.

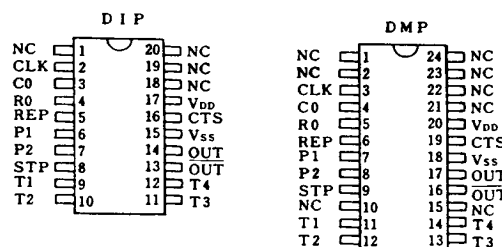
PACKAGE OUTLINE



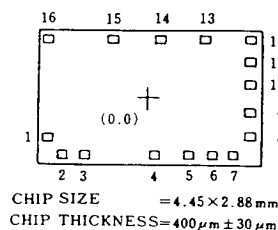
FEATURES

- Synthesis Method : 6 bits PCM
- Sampling Rate : 6 kHz
- Internal ROM size : 98k bits
- Synthesis Time : 2.730 seconds (MAX)
- D/A Converter : PWM Type (Voltage Mode)
- Divided ROMs Output 2 kinds of Voice or Sound Effects
- One-Shot with Repeat and Level-Hold Mode
- Piezo Buzzer Direct Drive
- Minimum External Components
- Low Current Consumption
- Power Save Function: Oscillation Stop After Replay Value Shifted Pull-down Resistance
- Operating Voltage : 2.4V ~ 3.6V
- Package Outline : DIP 20 / DMP 24 / CHIP 16
- C-MOS Technology

PIN CONFIGURATION



PAD LOCATION

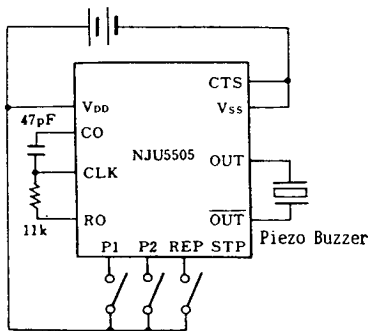


COORDINATES

Unit: μm							
No	PAD	X	Y	No	PAD	X	Y
1	CLK	-2120	-1180	9	T2	2030	-590
2	C0	-1900	-1330	10	T3	2030	180
3	R0	-1430	-1330	11	T4	2030	510
4	REP	-190	-1330	12	OUT	2030	1250
5	P1	960	-1330	13	OUT	890	1250
6	P2	1380	-1330	14	VSS	480	1250
7	STP	1710	-1330	15	CTS	-260	1250
8	T1	2030	-910	16	VDD	-2120	1250

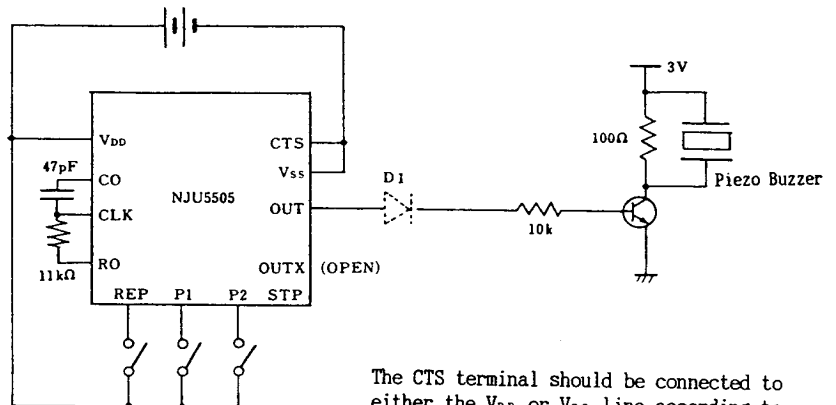
APPLICATION CIRCUITS

(1) Piezo Buzzer Direct Drive



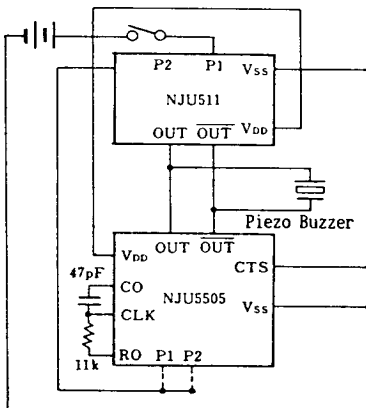
The CTS terminal should be connected to either the V_{DD} or V_{SS} line according to the operating mode.

(2) Piezo Buzzer Drive



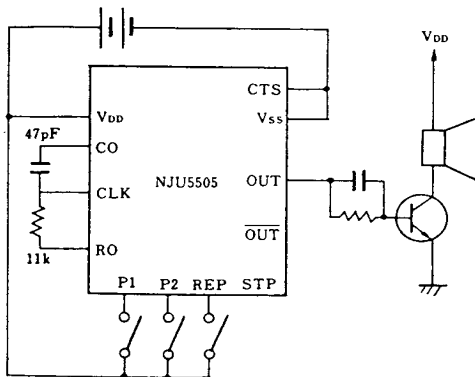
The CTS terminal should be connected to either the V_{DD} or V_{SS} line according to the operating mode.

(3) NJU5505 (Voice Synthesizer) Combin with NJU511



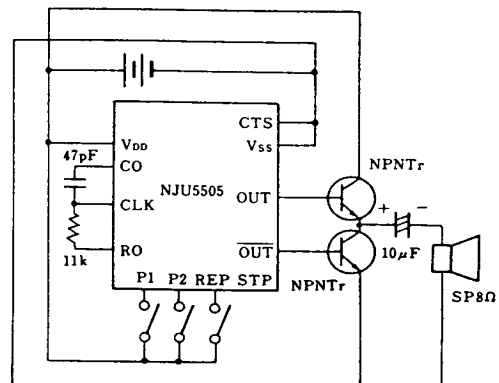
The CTS terminal should be connected to either the V_{DD} or V_{SS} line according to the operating mode.

(4) Speaker Drive



The CTS terminal should be connected to either the V_{DD} or V_{SS} line according to the operating mode.

(5) Speaker Drive



The CTS terminal should be connected to either the V_{DD} or V_{SS} line according to the operating mode.

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ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD}-V_{SS}$	- 0.3 ~ + 5.0	V
Input Voltage	V_{IN}	$V_{SS}-0.3 \sim V_{DD}+0.3$	V
Output Voltage	V_{OUT}	$V_{SS}-0.3 \sim V_{DD}+0.3$	V
Operating Temperature	T_{opr}	- 20 ~ + 70	°C
Storage Temperature	T_{stg}	- 55 ~ + 125	°C

ELECTRICAL CHARACTERISTICS

(Ta=25°C, $V_{DD}=3.0V$, $V_{SS}=0V$)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}			2.4	3.0	3.6	V
Stand-by Current	I_{DD1}				0.01	0.3	uA
Operating Current	I_{DD2}	OUT, $\overline{OUT}$ Open			0.5	1.5	mA
Oscillation Frequency	F_{osc}	R=11k Ω , C=47pF			768		kHz
Input Voltage	V_{IH}			$V_{DD}-0.3$		V_{DD}	V
	V_{IL}			V_{SS}		$V_{SS}+0.3$	
Input Current (Power Saving Mode)	I_{IH1}	P1, P2, REP	$V_{IH}=2.2V$		3.0	10.0	uA
	I_{IL1}		$V_{IL}=0.8V$		3.0	10.0	
Input Current (C-MOS Input)	I_{IH2}	CTS	$V_{IH}=2.2V$		0.01	0.1	uA
	I_{IL2}		$V_{IL}=0.8V$		0.01	0.1	
Output Current	I_{OH1}	OUT, $\overline{OUT}$	$V_{OH}=1.5V$	2.0	4.0		mA
	I_{OL1}		$V_{OL}=1.5V$	2.0	4.0		
	I_{OH2}	STP	$V_{OH}=2.2V$	50	250		uA
	I_{OL2}		$V_{OL}=0.8V$	50	250		