SINGLE TONE MELODY C-MOS

■ GENERAL DESCRIPTION

The NJU505 series is a single tone melody C-MOS IC incorporated 64 notes ROM.

It plays the melody using a piezo buzzer and single battery only.

The playing mode is one-shot mode with half-stops.

When the switch turns on at no melody status, the melody starts from the top and stops automatically if there is no switch operation daring the play.

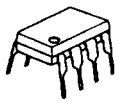
And if the switch turns on again during the melody playing status, the melody playing stops at halfway.

After melody playing, the LSI shifts to the power saving mode with oscillation stop to realize the long battery life.

The NJU505 series is suitable for melody greeting cards, toys, telephone rests and so on.

■ PACKAGE OUTLINE

NJU505CXX



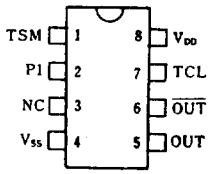
NJU505DXX

NJU505MXX

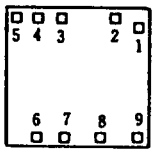
■ FEATURES

- Operating Voltage --- 1.2 ~ 3.6V
- Low Operating Current
- 3 Kinds of Playing Modes
  Bonding or Soldering Option
- CR Oscillation Circuits On-chip
- Piezo Buzzer Direct Drive
- Minimum External Components
- Power Saving Function
  Oscillation Stop After Replay
  Value Shifted Pull-down Resistance
- Package Outline : DIP / DMP / CHIP 8
- C-MOS Technology

■ PIN CONFIGURATION



■ PAD LOCATION



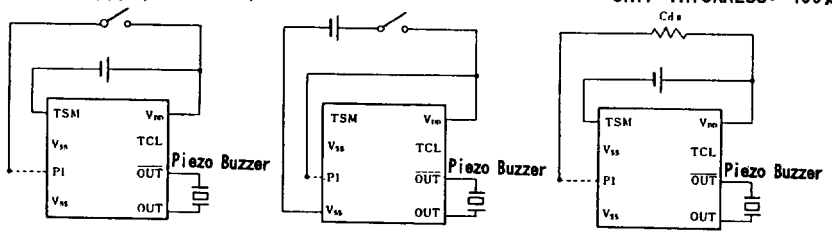
■ COORDINATES

UNIT: μm

No.	PAD Name	X	Y
1	TSM(NC)	1830	1780
2	Vss	1540	1870
3	P1	870	1870
4	NC	460	1870
5	Vss	130	1840
6	$\overline{OUT}$	460	130
7	OUT	870	130
8	TCL(NC)	1320	130
9	VDD	1830	130

CHIP SIZE: 1.96X2.00mm
CHIP THICKNESS: 400μm±30μm

■ APPLICATION CIRCUITS (CHIP FORM)



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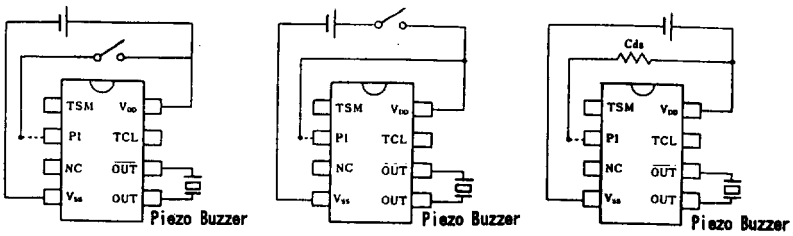
■ APPLICATION CIRCUITS (PACKAGE FORM)



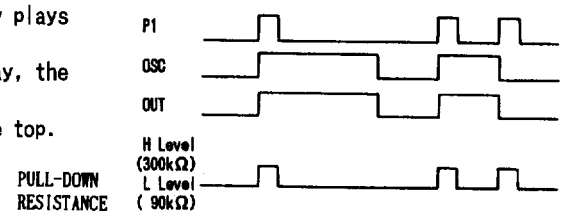
■ PLAYING MODE

The start and stop of the play is controlled by only one terminal of P1.

When the P1 terminal turns on, the melody plays one time.

If the P1 turns on again during the play, the melody is stopped.

And next turn on starts the melody from the top.



Note 1) Turn on level of P1 is V_{DD}.
Note 2) Minimum pulse width of all input are required over then 64msec as chatter free time.

■ POWER SAVE FUNCTION

(1) Oscillation Stop Function.....Oscillation stops automatically when melody stops.
The current consumption is less then 0.3μA while no playing.

(2) Input Current on P1.....Variable Pull-down resistance of P1 is controlled by switch conditions is as follows:
During making (V_{DD}).....300KΩ/1 Input
During breaking (V_{SS}).....90KΩ/1 Input
This function is especially effective for Cds using application.

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■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}-V_{SS}	- 0.3 ～ + 5.0	V
Input Voltage	V_{IN}	V_{SS}-0.2 ～ V_{DD}+0.2	V
Operating Temperature	T_{opr}	- 30 ～ + 85	℃
Storage Temperature	T_{stg}	- 65 ～ + 125	℃

■ ELECTRICAL CHARACTERISTICS

(Ta=25℃, V_{DD}=1.5V)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}			1.2	1.5	3.6	V
Stand-by Current	I_{DD1}	No Play, P1 Open			0.01	0.3	μA
Operating Current	I_{DD2}	Playing, OUT,$\overline{OUT}$ Open			40	70	μA
Input Current	I_{IL}	P1	V_{IL}=0.4V	0.7	1.5	3.0	μA
	I_{IH}		V_{IH}=1.1V	0.7	1.5	3.0	
Output Current	I_{OL}	OUT, $\overline{OUT}$	V_{OL}=0.75V	2.0			mA
	I_{OH}		V_{OH}=0.75V	2.0			
Oscillation Frequency	fo			80	100	120	kHz
Osc. Stop Voltage	V_{DS}					1.2	V

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■ MUSICAL SPECIFICATION

(1) TEMPO

NJU505 series can take from any one of following 15 different tempos.

♩ =	Tempo
43.5	LARGO
46.4	
49.7	
53.5	ADAGIO
58.0	
63.3	
69.6	
77.3	ANDANTE
87.0	
99.4	MODERAT
116	ALLEGRO
139	
174	PRESET
232	
348	

(2) NOTE/REST

The following 8 different notes and rest are provided.

Other kinds of note and rests may also be played by using TIE function.

notes	rests
𝅘𝅥𝅯	𝄾
𝅘𝅥𝅮	𝄿
𝅘𝅥𝅮.	𝄿.
♩	𝄽
♩+𝅘𝅥𝅯	𝄽+𝄾
♩.	𝄽.
♩..	𝄽..
𝅗𝅥	𝄻

(3) JUMP FUNCTION

Jump function saves the number of notes programed by repeating the same part.

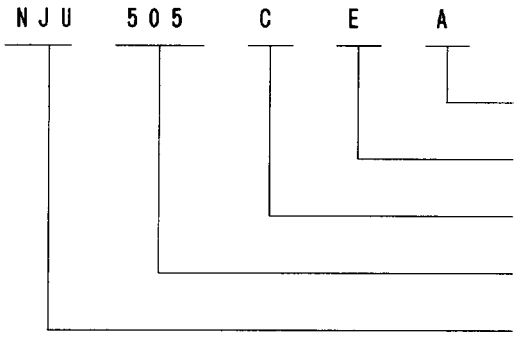
Maximum 7 jumps are available.

(4) COMPASS & SCALE

NJU505 series can poly 15 kinds of scales over 3 1/2 octave of G3 to D7 or G4 to D8.

■ ORDERING INFORMATION

The NJU505 series is named by following rules:



Music title

Music field

Package outline (C: Chip, D: DIP, M: DMP)

Device name

The mark of NJRC C-MOS products

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