

KS5313**CMOS DIGITAL INTEGRATED CIRCUIT****SIMPLE MELODY IC**

The KS5313 series is a CMOS LSI chip which electronically plays a prearranged melody.

FUNCTIONS

- Tempo: 16 kinds
- Sound range: 2.5 octave
- Selection of melody start switch (Active high switch or active floating switch)
- Selection of melody start signal (Level hold or one shot trigger)
- Selection of automatic stop or repeat of the melody
- Melody stop input
- Level Hold mode/one shot mode user option: 16 Dip
- Level Hold mode only: 8 Dip.

FEATURES

- One chip CMOS construction
- Plays a melody consisting of 64 notes
- Starts from the head of melody
- Very low stand-by current
- 33KHz operating frequency
- 1.5V operation

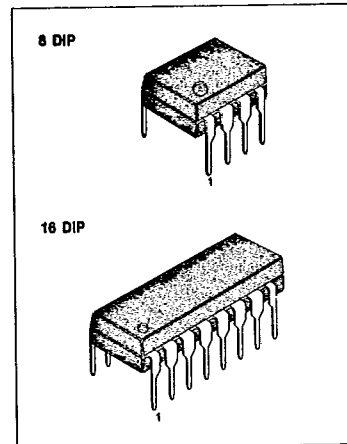
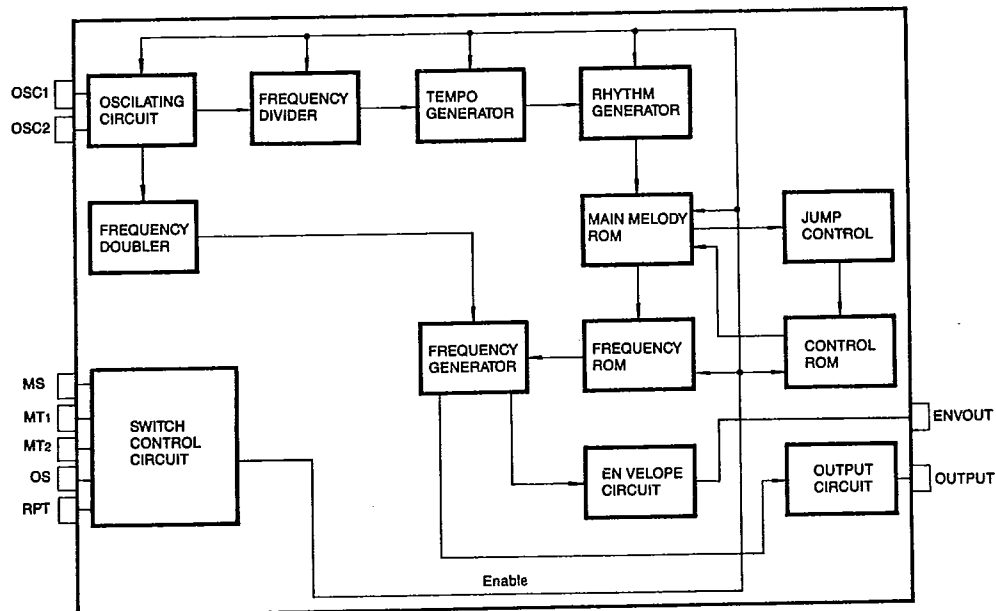
**BLOCK DIAGRAM**

Fig. 1



KS5313

CMOS DIGITAL INTEGRATED CIRCUIT

T-77-13

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{DD}	0.3 ~ -2.0	V
Input Voltage	V _{IN}	V _{SS} + 0.3 ~ V _{DD} - 0.7	V
Operating Temperature	T _{opr}	-20 ~ +70	°C
Storage Temperature	T _{stg}	-55 ~ +125	°C

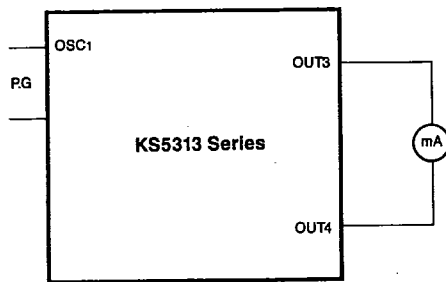
ELECTRICAL CHARACTERISTICS

(T_a = 25°C, V_{SS} = -1.5V, V_{DD} = 0V unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Operating Voltage	V _{SS}		1.2	1.5	2	V
Input High Voltage	V _{IH}		V _{DD} - 0.1		V _{DD}	V
Input Low Voltage	V _{IL}		V _{SS}		V _{SS} + 0.1	V
Stand-by Current	I _{ST}	Without Load		0.1	0.3	μA
Operating Current	I _{OP}	Without Load		20	30	μA
Input High Current	I _{IH}	V _{IH} = V _{DD}	1.5		15	μA
Input Low Current	I _{IL}	V _{IL} = V _{SS}			0.05	μA
Output 0 Current	I ₀₀	V _{SS} = -1.2V, V _{OH} = -0.7V, E _{NV} = V _{SS}	15			μA
Output 3, 4 Current	I _{O(3,4)}	V _{DD} = 0V, V _{SS} = -1.5V	± 1.8			mA
Output Low Voltage	V _{OL}	Without Load	V _{SS}		V _{SS} + 0.1	V
Output High Voltage	V _{OH}	Without Load	V _{DD} - 0.1		V _{DD}	V
Operating Frequency	F _{OSC}		30	33	36	KHz

TEST CIRCUIT

1) OUT 3 AND OUT 4 DRIVE CURRENT TEST CIRCUIT



PG: Pulse Generator (1020Hz)

Fig. 2

2) OUT 0 CURRENT TEST CIRCUIT

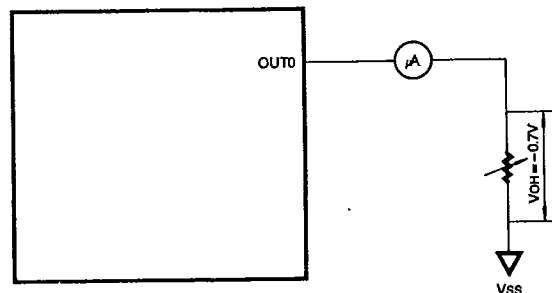


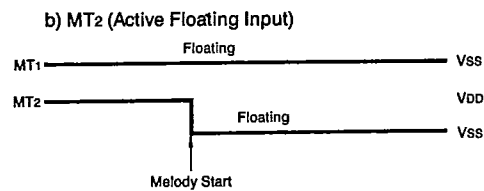
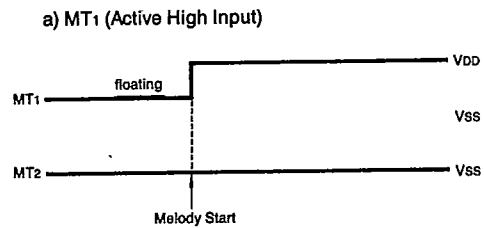
Fig. 3

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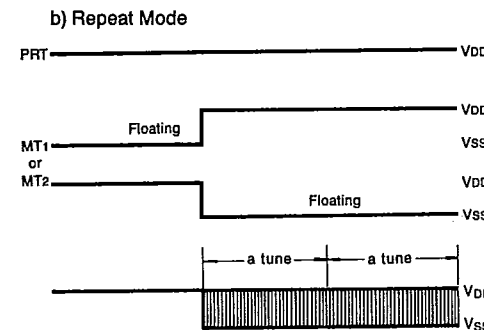
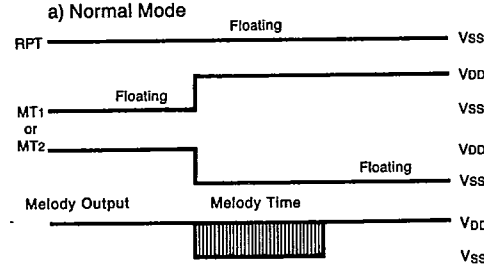
CMOS DIGITAL INTEGRATED CIRCUIT

TIMING

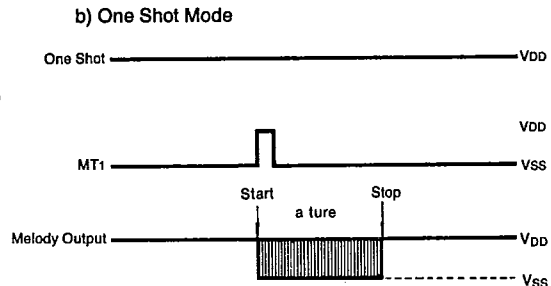
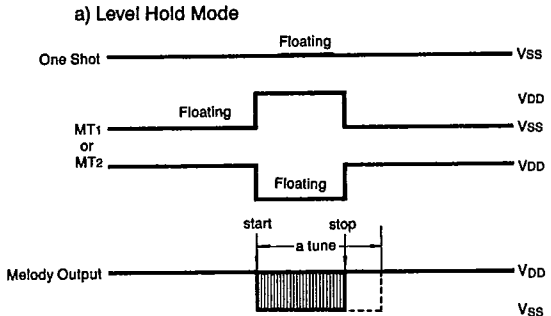
1) MELODY START INPUT



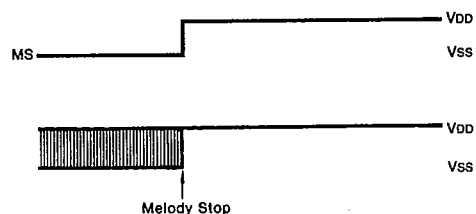
3) REPEAT INPUT



2) MELODY START SIGNAL



4) MELODY STOP

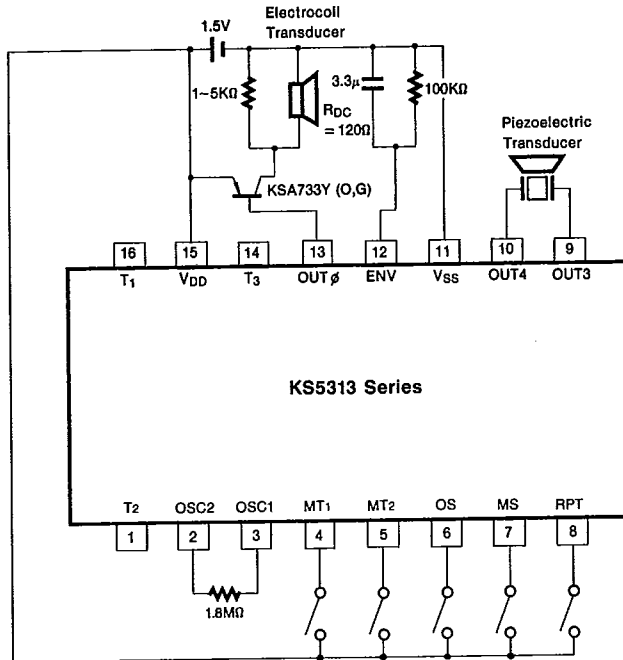


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CMOS DIGITAL INTEGRATED CIRCUIT

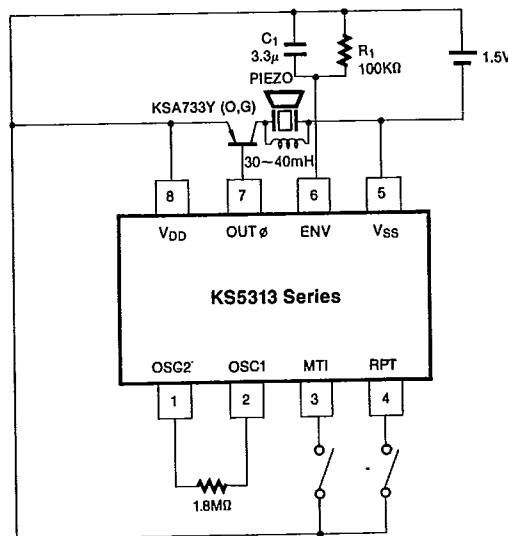
APPLICATION CIRCUIT

1) ONE SHOT & LEVEL HOLD MODE



* Currently available types
 KS5313N: MINUET (BACH)
 KS5313Q: Home Sweet Home
 KS5313S: Big Ben
 KS5313T: For Elise

2) LEVEL HOLD MODE



*C₁ and R₁ are necessary only when employ ENVELOPE circuit. Otherwise, ENVELOPE terminal must be connected to V_{SS}.

