UMC



T-77-13 UM66T Series

Simple Melody Generator

Features

- 62-note ROM memory
- 1,3V to 3.3V operating voltage and low power consumption
- Dynamic speaker can be driven with an external NPN transistor.

OSC, resistor is built-in One-shot mode or level-hold mode can be selected Power on reset; melody begins from the first note

Direct piezo drive,

General Description

The UM66T series is a CMOS LSI designed for use in door bells, telephones and toy applications. It is an on-chip ROM programmed for musical performance. Produced by CMOS technology, the device results in very low

Pin Configuration





Pin Description

Pin No.	Designation	Description		
1	O/P	Melody output		
2	V _{DD}	Positive power supply		
3	V _{SS}	Negative power supply		

power consumption. Since the UM66T series includes oscillator and mode selector circuits, a compact melody module can be constructed with only a few additional components.

Block Diagram



Absolute Maximum Ratings*

DC Supply Voltage	-0.3V to +5.0V
Operating Ambient Temperature	10°C to 60°C
Storage Temperature	55°C to 125°C

*Comments

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

UM66T Series

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D.C. Electrical Characteristics

 $(V_{SS} = 0V, T_A = 25^{\circ}C, F_{OSC} = 65536 \text{ Hz}, \text{ unless otherwise specified.})$

Parameter Operating Voltage		Symbol V _{DD}	Min. 1.3V	Тур.	Мах. 3.3∨	Conditions
Current	Operating	Ι _D		-	60 µA	V _{DD} = 1,5V ^O /p open
0/p Dri	O/p Drive Current		600 µA	1.5mA	-	V _{DD} = 1.3V V _{O/P} = 0.8V
O/p Si	O/p Sink Current		600 µA	1.5mA		V _{DD} = 1.3V Vo _{/P} = 0.5V
Frequency Deviation Per Lot		△F/F	-12%	-	33%	V _{DD} = 1.5V
Frequency Stability		∆F/F		-	12%	F _{OSC} (1.6V) - F _{OSC} (1.3V)
						F _{OSC} (1.3V)

Functional Description

Oscillator Circuit

The oscillator frequency is used as a time base for tone and beat generators. Its accuracy affects the quality of the music.

Tone Generator

Tone frequencies are oscillator frequencies \div M, where M is any even number from 64 to 254. Within a melody, 14 scales can be selected including PAUSE code and END code. The tone generator is a programmed divider. The range of scales is from "C4" to "C6" and range of frequency varies from 258 Hz to 32768 Hz.

Beat Generator

The beat generator is also a programmed divider. It

contains 15 available beats as follows: 1/4, 1/2, 3/4, 1, 1-1/4, 1-1/2, 1-3/4, 2, 2-1/4, 2-1/2, 2-3/4, 3, 3-1/4, 3-1/2, 3-3/4 J. Four beats can be selected from these.

Melody ROM

The mask ROM can memorize 64 notes with 6 bits; 4 bits are used for controlling the scale code and 2 bits are used for controlling the rhythm code.

Tempo Generator

There are 15 available tempos in the UM66T. The 15 tempos are: 128, 137, 148, 160, 175, 192, 213, 240, 274, 320, 384, 480, 640, 960, 1920 J/minute.

Typical Application Circuits

ONE SHOT MODE FOR PIEZO



ONE SHOT MODE FOR SPEAKER



ONE SHOT MODE FOR PIEZO (Normal closed switch)



ONE SHOT MODE FOR SPEAKER

(Normal closed switch)







UM66T Series

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ONE SHOT MODE FOR SPEAKER





LEVEL HOLD MODE FOR PIEZO



LEVEL HOLD MODE FOR SPEAKER





UM66T Series

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Ordering Information



Song Series List

Part No.	Song Name			
UM66T01 L/S	Jingle Bells + Santa Claus is Coming To Town + We Wish You a Merry X'mas			
UM66T02 L/S	Jingle Beils			
UM66T04 L/S	Jingle Bells + Rudolph, the Red-nosed Reindeer + Joy to the World			
UM66T05 L/S	Home Sweet Home			
UM66T06 L/S	Let Me Call You Sweetheart			
UM66T08 L/S	Happy Birthday to You			
UM66T09 L/S	Wedding March (Mendelssohn)			
UM66T11 L/S	Love Me Tender, Love Me True			
UM66T13 L/S	Easter Parade			
UM66T19 L/S	For Elise			
UM66T32 L/S	Waltz			
UM66T33 L/S	Mary Had a Little Lamb			
UM66T34 L/S	The Train is Running Fast			
UM66T68 L/S	It's a Small world			