INTRODUCTION

SN6A060 is a single chip voice/dual tone melody synthesizer IC with 4*32 LCD direct drive capability which contains two 4-bit I/O ports, one 4-bit output ports and a tiny controller. By programming through the tiny controller, user's applications including LCD display, section combination, trigger modes, output status, voice/melody playing and other logic functions and then be easily implemented.

FEATURES

- Single power supply 2.4V – 5.1V
- Built in a tiny controller
- Two 4-bit I/O ports and one 4-bit output ports are provided
- Built in 64K*10 ROM
- 256*4 bits RAM for programming usage are provided
- 32*4 bits RAM for LCD display usage are provided
- Maximum 16k program ROM is provided
- Readable ROM code data
- Built in direct 4*32 LCD driver
- LCD 1/3 bias, 1/4 duty
- Built in a high quality speech synthesizer
- Adaptive playing speed from 2.5k-40kHz is provided
- Built in a dual tone melody generator
- Speech/Dual tone melody mixer is provided which SN6A060 can play speech and dual tone melody simultaneously
- Built in a PWM Direct Drive circuit output BUO1 and BUO2 directly connected to Speaker for sound output

■ PIN ASSIGNMENT

Symbol	I/O	Function Description
SEG1-SEG32	O	segment 1~32 for LCD driver
COM1-COM4	O	Com1-Com4 for LCD driver.
GND	I	Negative power supply.
VLC1, VLC2, VLC3	I	LCD voltage bias connection pins.
GND	I	Negative power supply.
P23-P20	I/O	Bit 3 to bit 0 of IO port 2.
P33-P30	I/O	Bit 3 to bit 0 of IO port 3.
P43-P40	O	Bit 3 to bit 0 of IO port 4.
BUO1	O	PWM output 1
BUO2	O	PWM output 2
RST	I	Reset pin with internal pull low.
OSC	I	Oscillation component connection pin.
TEST	I	For testing only.
XIN,XOUT		32768 Hz Crystal connection pins.
V_{DD}	I	Positive power supply.

■ ABSOLUTELY MAXIMUM RATING

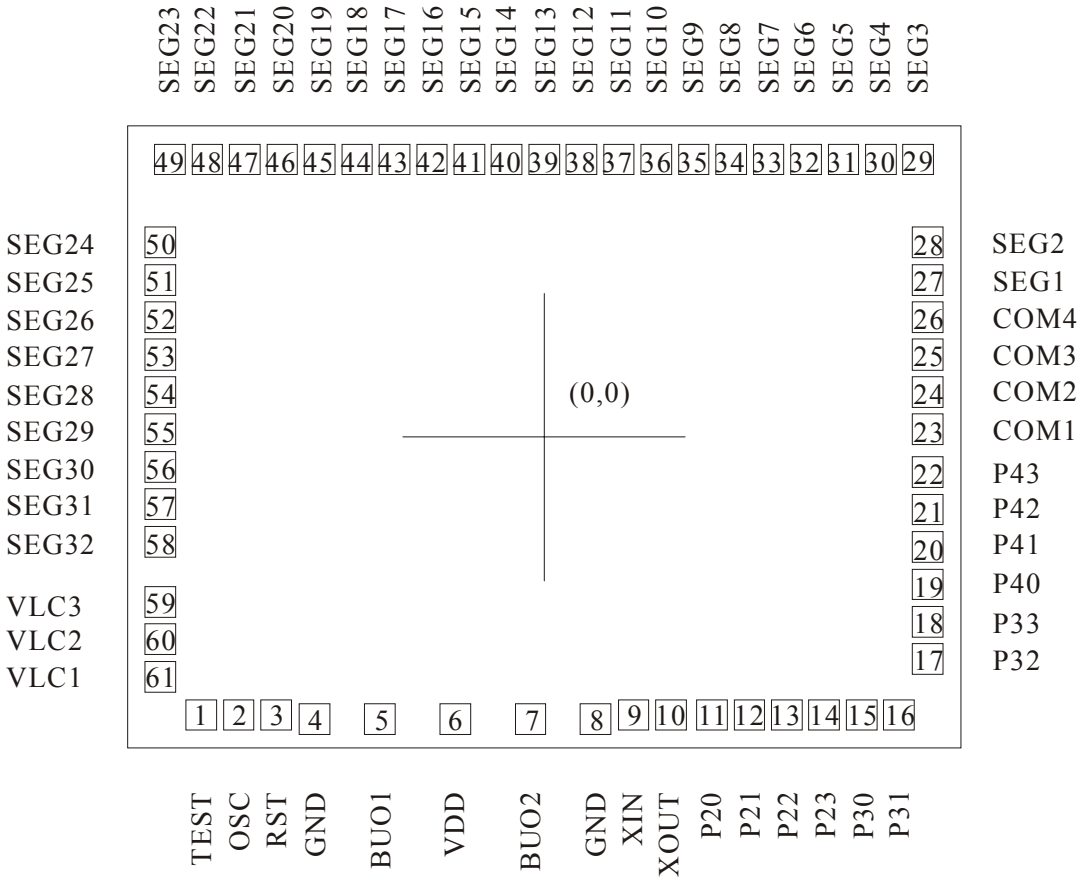
Items	Symbol	Min	Max	Unit.
Supply Voltage	V_{DD}-V	-0.3	6.0	V
Input Voltage	V_{IN}	V_{SS}-0.3	V_{DD}+0.3	V
Operating Temperature	T_{OP}	-20.0	70.0	°C
Storage Temperature	T_{STG}	-55.0	125.0	°C

■ ELECTRICAL CHARACTERISTIC

Item	Sym.	Min.	Typ.	Max.	Unit	Condition
Operating Voltage	V_{DD}	2.4	3.0	5.1	V	
Standby current 1	I_{SBY1}	-	-	1.0	*u*A	V_{DD}=3V,both system clk and 32768 Hz clk are off
Standby current 2	I_{SBY2}	-	2	4	*u*A	V_{DD}=3V, system clk is off, 32768 Hz clk is on and no LCD load
Operating Current	I_{OPR}	-		250	*u*A	V_{DD}=3V, no load
Input current of ,P2,P3	I_{IH}	-	3.0	10.0	*u*A	V_{DD}=3V,V_{IN}=3V
Drive current of P2,P3,P4	I_{OD}	-1.5	-2	-	*m*A	V_{DD}=3V,V_O=2.6V
large Sink current of P2,P3,P4	I_{OS1}	2.0	3	-	*m*A	V_{DD}=3V,V_O=0.4V
Small Sink current of P2,P3,P4	I_{OS2}	-	0.4	-	*u*A	V_{DD}=3V,V_O=0.4V
Drive current of Buo1	I_{OD}	100	120	-	*m*A	VDD=3V,Buo1=1.5V
Sink Current of Buo1	I_{OS}	100	120	-	*m*A	VDD=3V,Buo1=1.5V
Drive Current of Buo2	I_{OD}	100	120	-	*m*A	VDD=3V,Buo2=1.5V
Sink Current of Buo2	I_{OS}	100	120	-	*m*A	VDD=3V,Buo2=1.5V
Oscillation Freq.	F_{OSC}	-	2.0	-	MHz	V_{DD}=3V

Note: System clock frequency=Fosc/2.

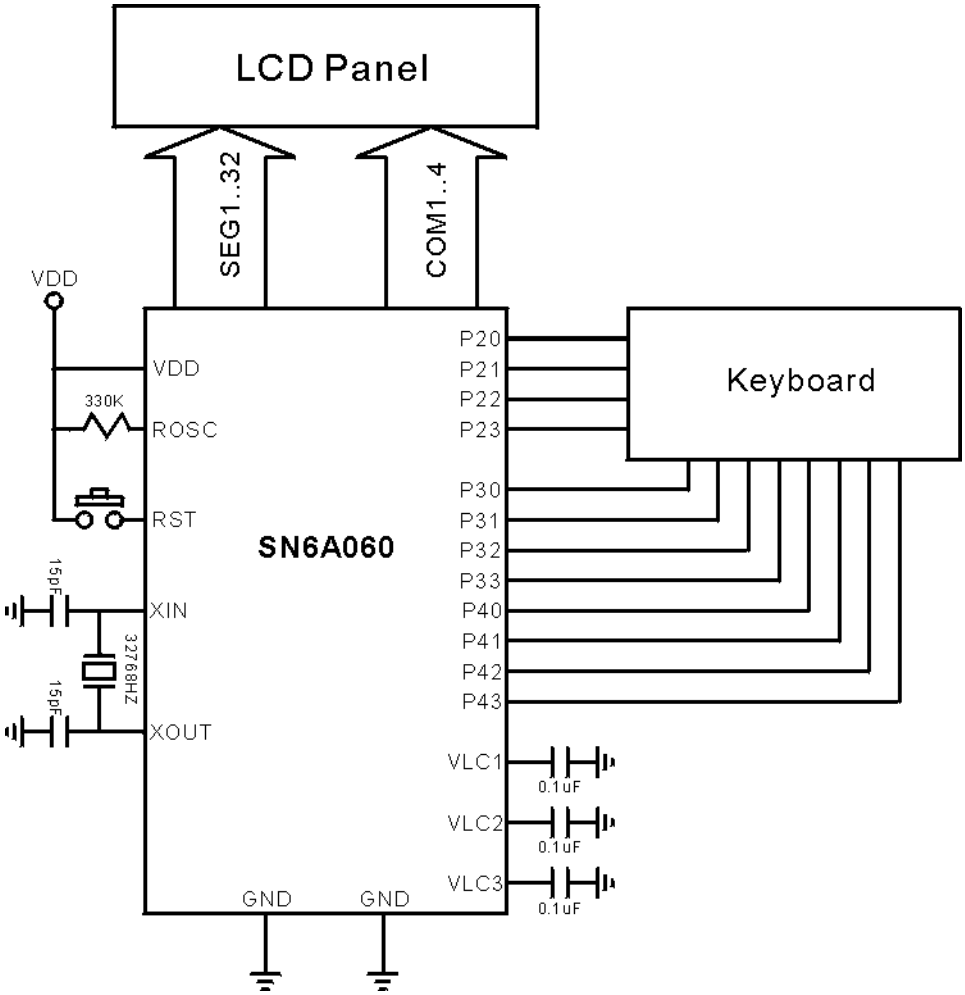
■ BONDING PAD



SN6A060

Note: The substrate MUST be connected to Vss in PCB layout.

■ APPLICATION CIRCUIT



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