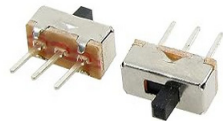Audio Tone Burst Generator using Raspberry Pi Pico and AD9833
Jed Margolin 4/24/2025
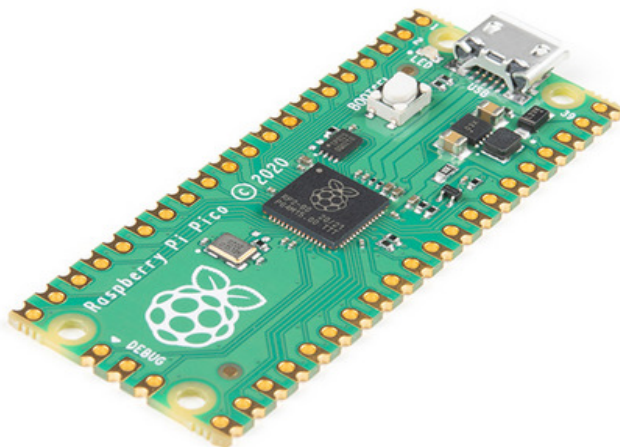Bill of Materials   Board: pico_tbg-r4

RefDes	Value	Description	Lead Spacing	
C1	10 uF	Capacitor, Electrolytic	0.1"	
C2	0.1 uF	Capacitor, Monolythic Ceramic	0.1"	
C3	10 uF	Capacitor, Electrolytic	0.1"	
C4	1 uF	Capacitor, Electrolytic	0.1"	Mount Horizontal
C5	1 uF	Capacitor, Electrolytic	0.1"	
C6	1000 pF	Capacitor, Mylar, 5%	0.3"	
C7	1000 pF	Capacitor, Mylar, 5%	0.3"	
C8	10 uF	Capacitor, Electrolytic	0.1"	
C9	0.1 uF	Capacitor, Monolythic Ceramic	0.1"	
C10	1000 pF	Capacitor, Monolythic Ceramic	0.1"	
C11	10 uF	Capacitor, Electrolytic	0.1"	
C12	0.1 uF	Capacitor, Monolythic Ceramic	0.1"	
C13	0.1 uF	Capacitor, Monolythic Ceramic	0.1"	
C14	1 uF	Capacitor, Electrolytic	0.1"	Mount Horizontal
C15	0.1 uF	Capacitor, Monolythic Ceramic	0.1"	
D1	1N5817	1N5817		
D2	1N5817	1N5817		
J1		Male Header 1x5, 0.1" spacing	Straight (for uart)	
J2		Female Header 1x7, 0.1" spacing	Straight (for AD9833)	
J3		Male Header 1x4, 0.1" spacing	Straight or Right Angle (Audio Out)	
J4		Male Header 1x4, 0.1" spacing	Straight or Right Angle (VCO In)	
LCD1		LCD1602 16 x 2 (5V, Parallel Only)		

For the LCD
  (4) M3x10 Nylon Standoffs
  (4) M3 Washers, 1mm thick
  (8) M3 x 6 Screws
  Male Header, 1x16, 0,1" spacing (on the LCD)
  Female Header, 1x16, 0,1" spacing (on the PCB)

RefDes	Value	Description	Lead Spacing	
LED1		LED, 5 mm, Green	LED	
LED2		LED, 5 mm, Green	LED	
PB1		Switch, Pushbutton, B3F-1070	6 x 6 x 4.3	
PB2		Switch, Pushbutton, B3F-1070	6 x 6 x 4.3	
PB3		Switch, Pushbutton, B3F-1070	6 x 6 x 4.3	
PB4		Switch, Pushbutton, B3F-1070	6 x 6 x 4.3	
PB5		Switch, Pushbutton, B3F-1070	6 x 6 x 4.3	

R1	68K	Resistor, carbon film, 1/4W 5%		
R2	10K	TrimPot: 3362P (1-turn)		
R3	100	Resistor, carbon film, 1/4W 5%		
R4	47K	Resistor, carbon film, 1/4W 5%		
R5	10K	Resistor, carbon film, 1/4W 5%		
R6	33K	Resistor, carbon film, 1/4W 5%		
R7	100K	Resistor, carbon film, 1/4W 5%		
R8	100K	Resistor, carbon film, 1/4W 5%		
R9	10K	Resistor, carbon film, 1/4W 5%		
R10	10K	Resistor, carbon film, 1/4W 5%		
R11	10K	TrimPot: 3362P (1-turn)		
R12	47K	Resistor, carbon film, 1/4W 5%		
R13	4.7K	Resistor, carbon film, 1/4W 5%		
R14	100	Resistor, carbon film, 1/4W 5%		
R15	10K	TrimPot: 3362P (1-turn) or 3296W (25-turn)		For VCO

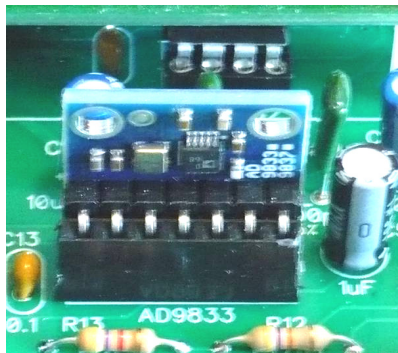|		
SW1	SPDT	The SPDT switch pins are on 0.1" centers. They are really
SW2	SPDT	inexpensive on eBay and AliExpress where they are called **"SS12D00G3 2 Position SPDT 1P2T 3 Pin PCB Panel Slide Switch"**. Their designation is "SS12D00G3"

U1	Pico	Raspberry Pi Pico	Use Official Pico Only (it has the logo)
		(2) Male Header 1x20, 0.1" spacing, straight (on Pico)	
		(1) Male Header 1x3, 0.1" spacing, straight (debugger port, on Pico)	
		(2) Female Header 1x20, 0.1" spacing, straight (on PCB)	

Official Pico (has logo)
Solder the headers
yourself.

U2   MCP6002-I/P OpAmp, 8-pin DIP
                         IC Socket with Machine Tooled Pins

AD9833 Module - for J2   Add Male Right angle header 1x7

For the Board
   (4) M3x18 Nylon Standoffs
   (4) M3 x 6 Screws

For VCO
   (1)   Jumper Pin Shorting Plug