


Description

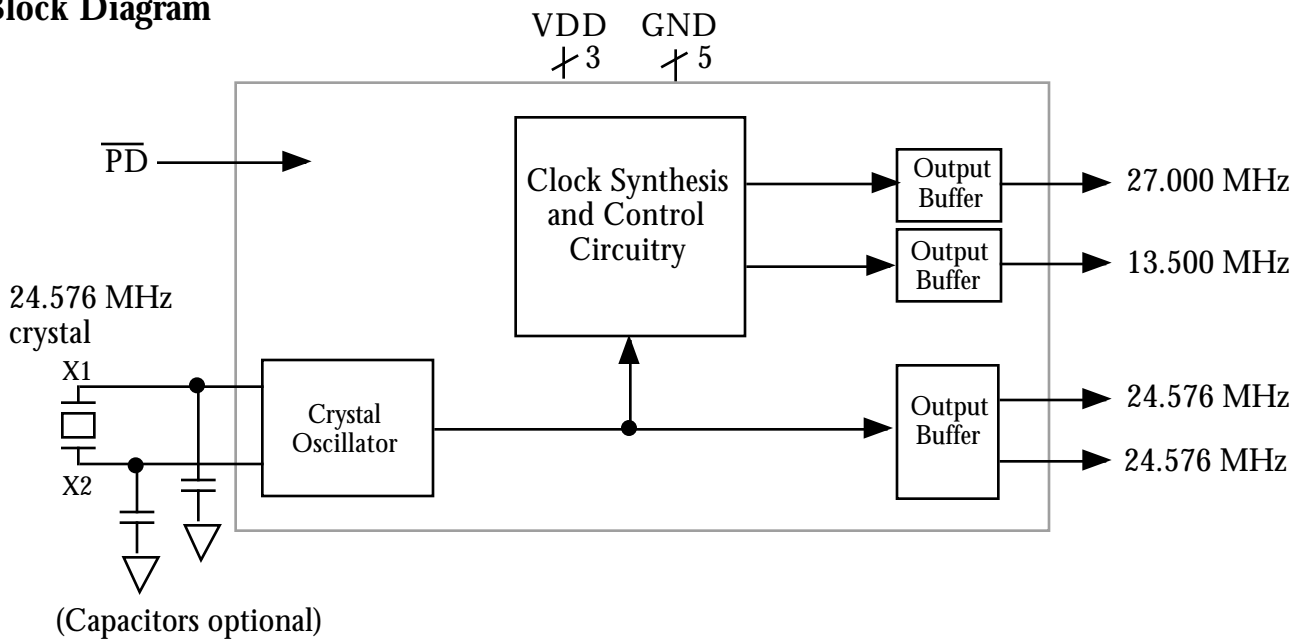
The MK1621 is a low cost, low jitter, high performance clock synthesizer designed for audio systems. Using analog Phase-Locked Loop (PLL) techniques, the device accepts a 24.576 MHz crystal or clock input to produce multiple output clocks. The power down pin turns off the device, drawing less than 10 μ A at 3.3 V.

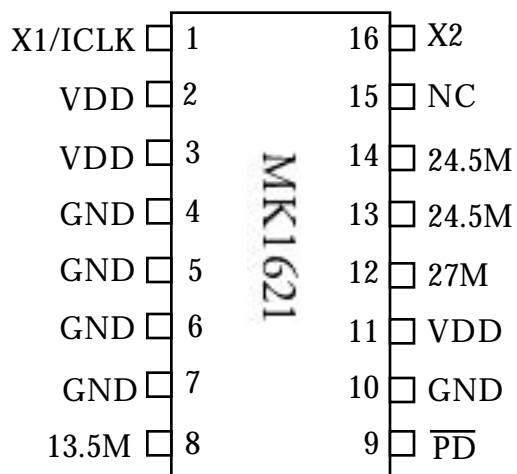
MicroClock offers a wide variety of clock synthesizers for desktop and portable computers. Consult MicroClock to eliminate crystals and oscillators from your board.

Features

- Packaged in 16 pin narrow (150 mil) SOIC 
- Inexpensive 24.576 MHz crystal or clock input
- Power down turns off chip
- Low jitter
- Four output clocks
- 25 mA output drive capability at TTL levels
- 3.3V or 5V supply voltage
- Advanced, low power, sub-micron CMOS process

Block Diagram



Pin Assignment


16 pin narrow (150 mil) SOIC

Pin Descriptions

Number	Name	Type	Description
1	X1/ICLK	I	Crystal connection. Connect to 24.576 MHz crystal or clock.
2	VDD	P	Connect to +3.3V or 5V.
3	VDD	P	Connect to +3.3V or 5V.
4	GND	P	Connect to ground.
5	GND	P	Connect to ground.
6	GND	P	Connect to ground.
7	GND	P	Connect to ground.
8	13.5M	O	13.500 MHz clock output.
9	\overline{PD}	I	Power Down. Active low. Clocks stop low.
10	GND	P	Connect to ground.
11	VDD	P	Connect to +3.3V or 5V.
12	27M	O	27.000 MHz clock output.
13	24.5M	O	24.576 MHz buffered crystal clock output.
14	24.5M	O	24.576 MHz buffered crystal clock output.
15	NC	-	No Connect.
16	X2	O	Crystal connection. Connect to 24.576 MHz crystal. Leave unconnected for clock input.

Key: I = Input, O = output, P = power supply connection

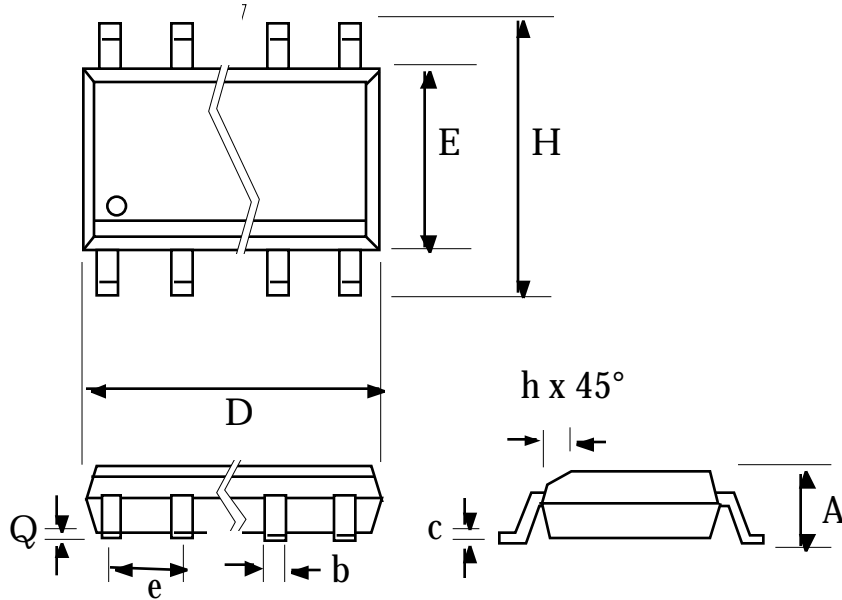
Electrical Specifications

Parameter	Conditions	Minimum	Typical	Maximum	Units
ABSOLUTE MAXIMUM RATINGS (Note 1)					
Supply voltage, VDD	Referenced to GND			7	V
Inputs and Clock Outputs	Referenced to GND	-0.5		VDD+0.5	V
Ambient Operating Temperature		0		70	°C
Soldering Temperature	Max of 10 seconds			260	°C
Storage temperature		-65		150	°C
DC CHARACTERISTICS (VDD = 5V unless noted)					
Operating Voltage, VDD		3.0		5.5	V
Input High Voltage, VIH		2			V
Input Low Voltage, VIL				0.8	V
Output High Voltage, VOH	IOH=-12mA	VDD-0.4			V
Output Low Voltage, VOL	IOL=12mA			0.4	V
Operating Supply Current, IDD, 5.0V	No Load		23		mA
Operating Supply Current, IDD, 3.3V	No Load		13		mA
Power Down Supply Current, IDDPD, 5V	No Load		7		µA
Short Circuit Current	Each output		±50		mA
Input Capacitance			7		pF
AC CHARACTERISTICS (VDD = 5V unless noted)					
Input Frequency			24.576		MHz
Input Crystal Accuracy				±30	ppm
Frequency Error, 27 MHz				6	ppm
Frequency Error, 13.5 MHz				6	ppm
Output Clock Rise Time	0.8 to 2.0V			1.5	ns
Output Clock Fall Time	2.0 to 0.8V			1.5	ns
Output Clock Duty Cycle	At VDD/2	45	50	55	%
Maximum Absolute Jitter, short term			200		ps

Notes: 1. Stresses beyond those listed under Absolute Maximum Ratings could cause permanent damage to the device. Prolonged exposure to levels above the operating limits but below the Absolute Maximums may affect device reliability.

External Components

The MK1621 requires a minimum number of external components for proper operation. Decoupling capacitors of 0.1µF should be connected between VDD and GND on pins 3 and 5, as close to the MK1621 as possible. A series termination resistor of 33 Ω may be used for each clock output. If a clock input is not used, the 24.576 MHz crystal must be connected as close to the chip as possible; if the crystal has a load capacitance of 18pF or less, no external capacitors are needed for the crystal. If exact tuning is required for crystals with load capacitance above 18 pF, crystal capacitors should be connected from pins X1 to ground and X2 to ground. The value (in pF) of these crystal capacitors should be $= (C_L - 18) * 2$, where C_L is the crystal load capacitance in pF. So for a crystal with 20pF load capacitance, the crystal capacitors should be 4pF each.

Package Outline and Package Dimensions
16 pin SOIC narrow


Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	0.055	0.070	1.397	1.778
b	0.013	0.019	0.330	0.483
c	0.007	0.010	0.191	0.254
D	0.385	0.400	9.779	10.160
E	0.150	0.160	3.810	4.064
H	0.225	0.245	5.715	6.223
e	.050 BSC		1.27 BSC	
h		0.016		0.406
Q	0.004	0.01	0.102	0.254

Ordering Information

Part/Order Number	Marking	Shipping packaging	Package	Temperature
MK1621-01S	MK1621-01S	tubes	16 pin SOIC	0-70°C
MK1621-01STR	MK1621-01S	tape and reel	16 pin SOIC	0-70°C

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