MK1711-01
200 MHz Selectable Clock Source

Description

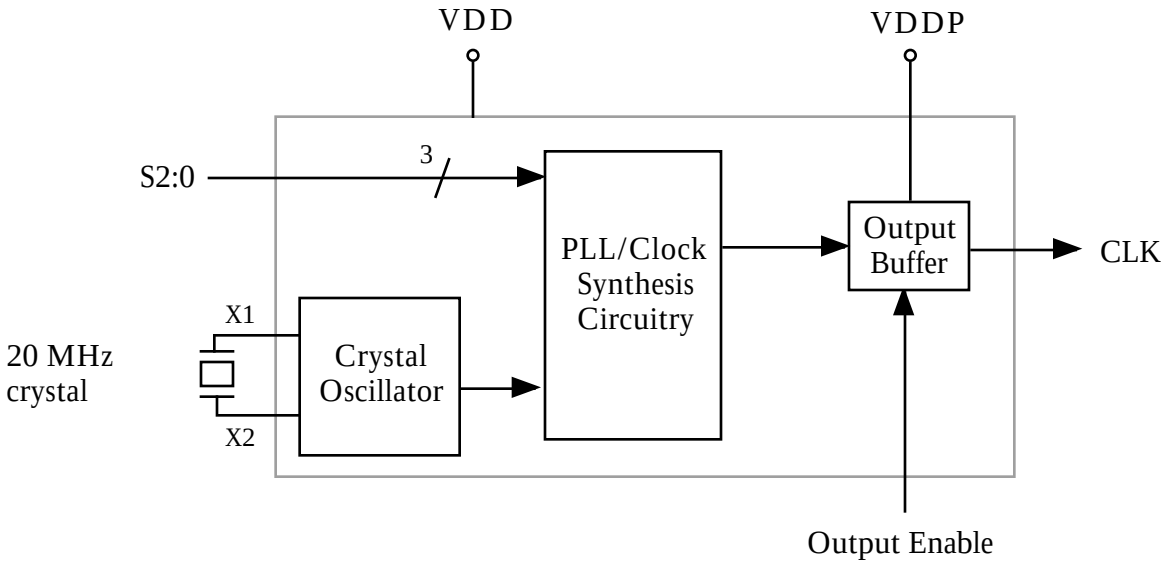
The MK1711-01 is a low cost, low jitter, high performance, high speed PLL clock synthesizer designed for high-frequency applications. Using MicroClock's analog and digital Phase-Locked Loop (PLL) techniques, the device uses an inexpensive 20 MHz crystal to generate a high-quality output clock up to 200MHz.

MicroClock manufactures the largest variety of clock synthesizers for all applications. Consult MicroClock to eliminate crystals and oscillators from your board.

Features

- Packaged in 16 pin narrow SOIC
- Uses an inexpensive 20.0 MHz crystal
- Eight selectable frequencies up to 200 MHz
- Duty cycle of 50% typical
- +3.3V operating voltage
- 25mA output drive capability at TTL levels
- Compatible with TI DSP devices

Block Diagram



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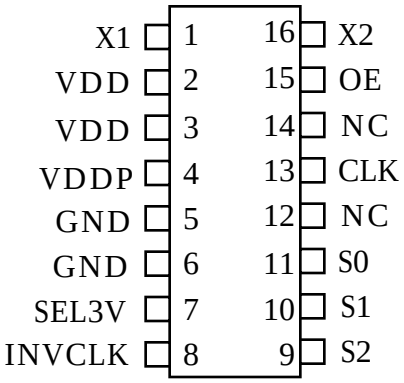
Pin Assignment

MK1711-01



16 pin narrow (150 mil) SOIC

Output Clock Select Table (MHz)

Input	S2	S1	S0	CLK1
20	0	0	0	200
20	0	0	1	182
20	0	1	0	167
20	0	1	1	154
20	1	0	0	143
20	1	0	1	133
20	1	1	0	125
20	1	1	1	118

Pin Descriptions

Number	Name	Type	Description
1	X1	XI	Crystal connection. Connect to a 20.00 MHz crystal.
2	VDD	P	VDD. Connect to +3.3V (Possibly 5V).
3	VDD	P	VDD. Connect to +3.3V (Possibly 5V).
4	VDDP	P	Connect to 3.3V only.
5	GND	P	Connect to ground.
6	GND	P	Connect to ground.
7	SEL3V	I	Select 3.3V only power supply. Connect to GND for VDD=5V. Internal pull-up.
8	INVCLK	I	Inverts output clock. Internal pull-up.
9	S2	I	Clock Select 2. Selects output per table above. Internal pull-up.
10	S1	I	Clock Select 1. Selects output per table above. Internal pull-up.
11	S0	I	Clock Select 0. Selects output per table above. Internal pull-up.
12	NC	-	No Connect. Nothing is connected internally to this pin.
13	CLK	O	Clock output determined by status of S2, S1, S0. See table above.
14	NC	-	No Connect. Nothing is connected internally to this pin.
15	OE	I	Output Enable. Active high. Tri-states clock output when low. Internal pull-up.
16	X2	XO	Crystal connection. Connect to a 20.00 MHz crystal.

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

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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 = 5.0V unless noted)					
Operating Voltage, VDD		3.00		5.25	V
Input High Voltage, VIH, X1 pin only		3.5	2.5		V
Input Low Voltage, VIL, X1 pin only			2.5	1.5	V
Input High Voltage, VIH		2			V
Input Low Voltage, VIL				0.8	V
Output High Voltage, VOH	IOH=-50mA	2.4			V
Output Low Voltage, VOL	IOL=50mA			0.4	V
Output High Voltage, VOH, CMOS level	IOH=-16mA	VDD-0.4			V
Operating Supply Current, IDD	No Load, note 2		8		mA
Short Circuit Current			TBD		mA
Input Capacitance	S2, S1, S0, OE		7		pF
Frequency synthesis error	All clocks			0	ppm
AC CHARACTERISTICS (VDD = 5.0V unless noted)					
Input Crystal Frequency			20.00000		MHz
Input Crystal Accuracy				±50	ppm
Output Clock Rise Time, 200 MHz	0.8 to 2.0V			0.6	ns
Output Clock Fall Time, 200MHz	2.0 to 0.8V			0.6	ns
Output Clock Duty Cycle	At VDD/2	45		55	%
Maximum Absolute Jitter, short term			200	±350	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.
2. With VDD at 3.3V and CLK at 200MHz.

External Components

The MK1711-01 requires a minimum number of external components for proper operation. Decoupling capacitors of 0.1µF should be connected between VDD and GND (pins 3 and 5), as close to the MK1711-01 as possible. A series termination resistor of 33Ω may be used for the clock output. The input crystal must be connected as close to the chip as possible. The input crystal should be a parallel mode, 20 MHz fundamental, with 20pF load capacitance.

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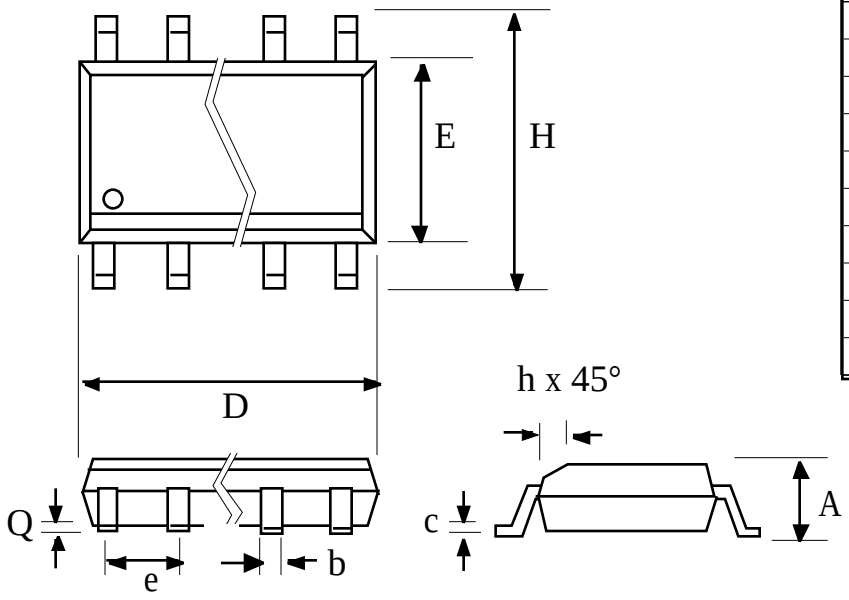
Package Outline and Package Dimensions

16 pin SOIC narrow



	Inches		Millimeters	
Symbol	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	0.190	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
MK1711-01S	MK1711-01S	tubes	16 pin SOIC	0-70°C
MK1711-01STR	MK1711-01S	tape and reel	16 pin SOIC	0-70°C