




# MK2716 HDTV Clock Synthesizer

## Description

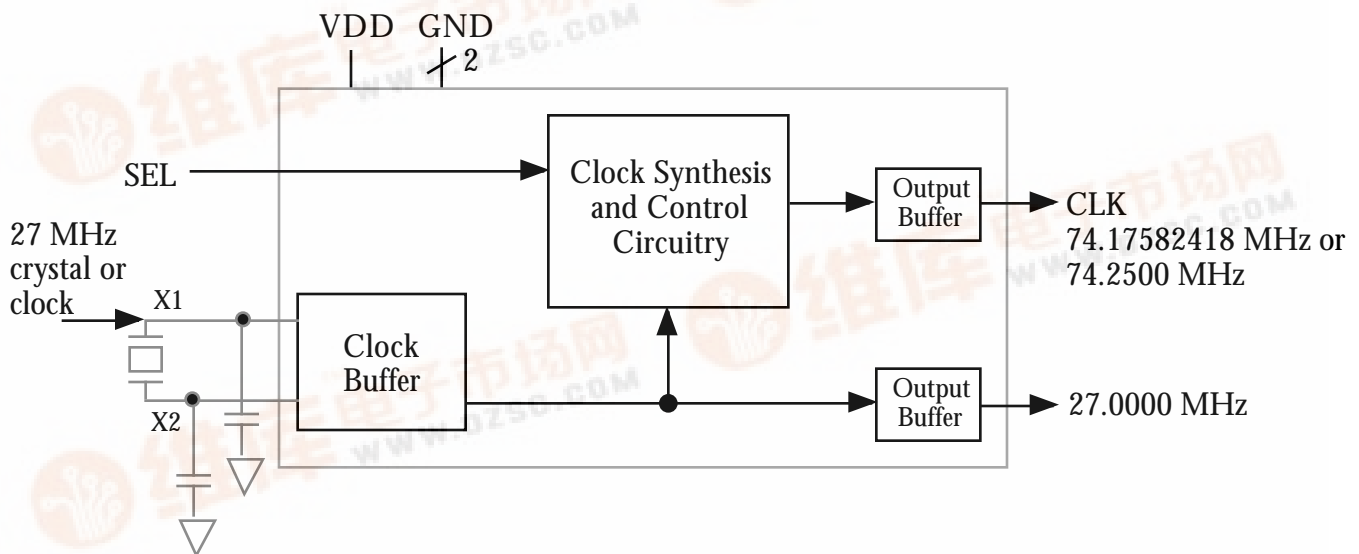
The MK2716 is a low cost, low jitter, high performance clock synthesizer designed to produce the 74.176 MHz and 74.25 MHz clocks necessary for HDTV systems. Using analog Phase-Locked Loop (PLL) techniques, the device accepts a 27 MHz clock or fundamental crystal input. The zero ppm synthesis error exactly locks the display to the digital stream.

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

## Features

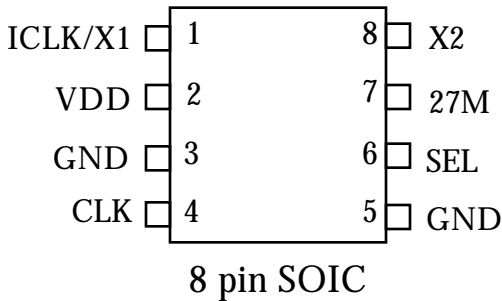
- Packaged as 8 pin SOIC or die 
- Input frequency of 27 MHz
- Zero ppm synthesis error in output clock
- 3.3 V or 5.0 V±10% operating supply
- 25 mA drive capability at TTL levels
- Ideal for HDTV applications and oscillator manufacturers
- Advanced, low power CMOS process
- Custom masks easily and quickly made

## Block Diagram





## Pin Assignment



Frequency Select Table (MHz)

SEL	CLK
0	74.17582418
1	74.25

## Pin Descriptions

Number	Name	Type	Description
1	ICLK/X1	XI	Input clock connection. Connect to a 27 MHz clock input or 27 MHz fundamental crystal.
2	VDD	P	Connect to +3.3V or +5V.
3	GND	P	Connect to ground.
4	CLK	O	74.17582418 MHz or 74.25 MHz clock output (see table above).
5	GND	P	Connect to ground.
6	SEL	I	Select pin determines value of CLK per table above.
7	27M	O	27 MHz buffered clock or crystal oscillator output.
8	X2	XO	Connect to 27 MHz crystal, or leave unconnected for clock input.

Type: I = Input; O = output; P = power supply connection; XI, XO = crystal connections

## Decoupling and External Components

The MK2716 requires a 0.1µF decoupling capacitor to be connected between VDD and GND on pins 2 and 3. It must be connected close to the MK2716. Pin 5 can be connected to pin 3. A 33Ω terminating resistor should be placed close to pin 4, and pin 7. If using a crystal input, it should be a 27.00 MHz, parallel resonant, fundamental mode, with load (correlation) capacitance of 18 pF. If the crystal has a load capacitance of 20 pF, connect 4 pF capacitors from X1 and X2 to ground.

### Electrical Specifications

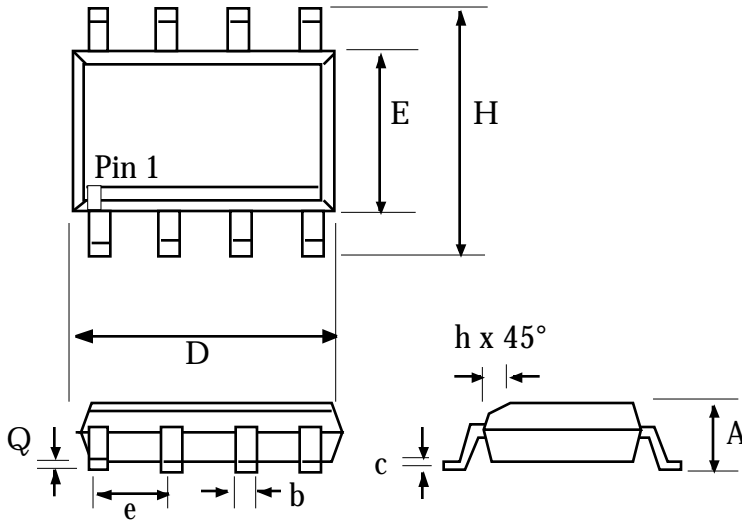
Parameter	Conditions	Minimum	Typical	Maximum	Units
<b>ABSOLUTE MAXIMUM RATINGS (Note 1)</b>					
Supply voltage, VDD	Referenced to GND			7	V
Inputs and Clock Outputs	Referenced to GND	-0.5		VDD+0.5	V
Ambient Operating Temperature		0		70	°C
Soldering Temperature	Max of 10 seconds			260	°C
Storage temperature		-65		150	°C
<b>DC CHARACTERISTICS (VDD = 5V unless noted)</b>					
Operating Voltage, VDD		3.0	5	5.5	V
Input High Voltage, VIH		2			V
Input Low Voltage, VIL				0.8	V
Output High Voltage, VOH	IOH=-4mA	VDD-0.4			V
Output Low Voltage, VOL	IOL=25mA			0.4	V
Operating Supply Current, IDD, 5.0V	No Load		30		mA
Short Circuit Current	Each output		±50		mA
Input Capacitance			7		pF
<b>AC CHARACTERISTICS (VDD = 5V unless noted)</b>					
Input Frequency			27.000		MHz
Frequency Error, output clock				0	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 1.4V	40	50	60	%
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.  
2. Typical values are at 25°C.



## Package Outline and Package Dimensions

### 8 pin SOIC



Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	0.055	0.068	1.397	1.7272
b	0.013	0.019	0.330	0.483
D	0.185	0.200	4.699	5.080
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		0.015		0.381
L	0.016	0.035	0.406	0.889
Q	0.004	0.01	0.102	0.254

## Ordering Information

Part/Order Number	Marking	Package	Temperature	Std Qty
MK2716S	MK2716S	8 pin narrow SOIC	0-70°C	-
MK2716STR	MK2716S	8 pin SOIC on tape and reel	0-70°C	2500 pieces

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