MK2712
NTSC/PAL Clock Source

Description

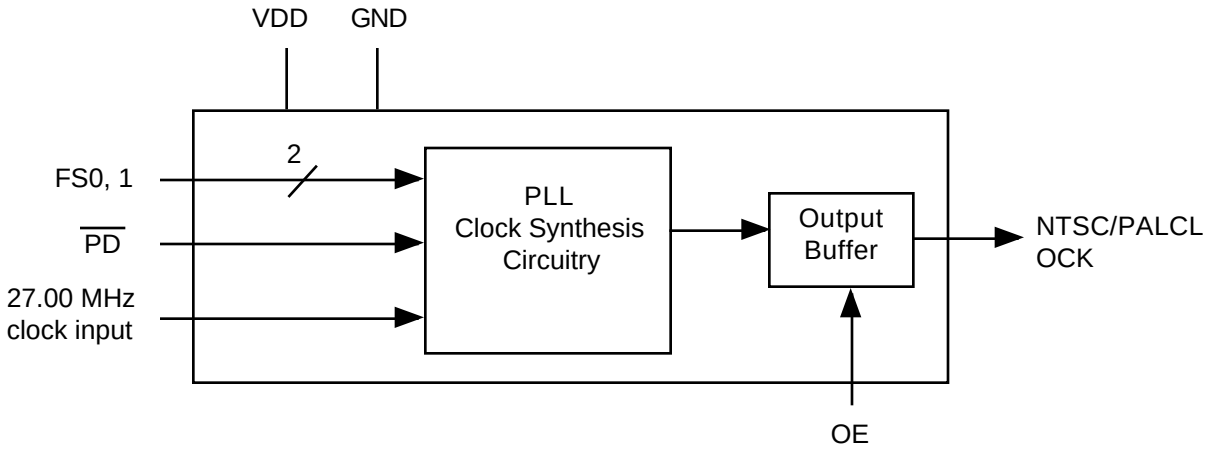
The MK2712 is the ideal way to generate clocks for NTSC/PAL video encoders and decoders. Stored in the device are two sets of popular frequencies for NTSC and PAL. In an 8 pin SOIC, the chip can save component count, board space, and cost over surface mount crystals and oscillators, and increase reliability by eliminating one or two mechanical devices from the board. The power down pin turns off the device, drawing less than 20µA.

ICS/MicroClock offers many other clocks for computers and computer peripherals. Consult us when you need to remove crystals and oscillators from your board.

Features

- Packaged in 8 pin SOIC
- Ideal for chips such as Analog Devices AD722 and Brooktree BT819
- Input clock frequency of 27.0000 MHz
- Power down turns off chip
- Output enable tri-states output for system testing
- Frequencies are within 1 ppm with accurate input clock
- Low jitter
- Output clock frequencies of 14.31818MHz, 17.7345MHz, 28.6364MHz, or 35.46896MHz
- 25mA drive capability at TTL levels
- 3.3V or 5V supply voltage
- Advanced, low power CMOS process
- Insensitive to input clock duty cycle

Block Diagram



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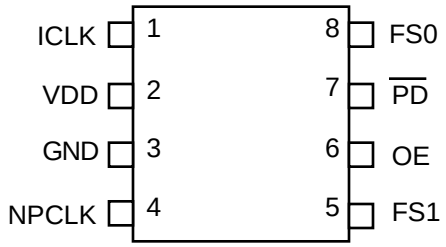
Pin Assignment



8 pin SOIC

Decoding Table

FS1	FS0	NPCLK (MHz)	Error (ppm)
0	0	14.31818	0.3 ppm
0	1	17.73447	0.3 ppm
1	0	28.63636	0.3 ppm
1	1	35.46894	0.3 ppm

Pin Descriptions

Number	Name	Type	Description
1	ICLK	I	Input Clock. Connect to a 27.0000 MHz clock.
2	VDD	P	Connect to +3.3V or +5V.
3	GND	P	Connect to ground.
4	NPCLK	O	NTSC or PAL output clock. Selected by FS1, FS0 per tables above.
5	FS1	I	Frequency Select pin #1. Selects NTSC or PAL frequency per table above.
6	OE	I	Output Enable. Tri-states clock output when this input is low. Internal pull-up.
7	$\overline{PD}$	I	Power Down. Active low. Clocks stop low.
8	FS0	I	Frequency Select pin #0. Selects NTSC or PAL frequency per table above.

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

External Components/Crystal Selection

A minimum number of external components are required for proper oscillation. Connect a 27.000 MHz clock to ICLK. A decoupling capacitor of 0.1µF should be connected between VDD and GND on pins 2 and 3, and a 33Ω terminating resistor should be used on the clock output if the trace is longer than 1 inch.

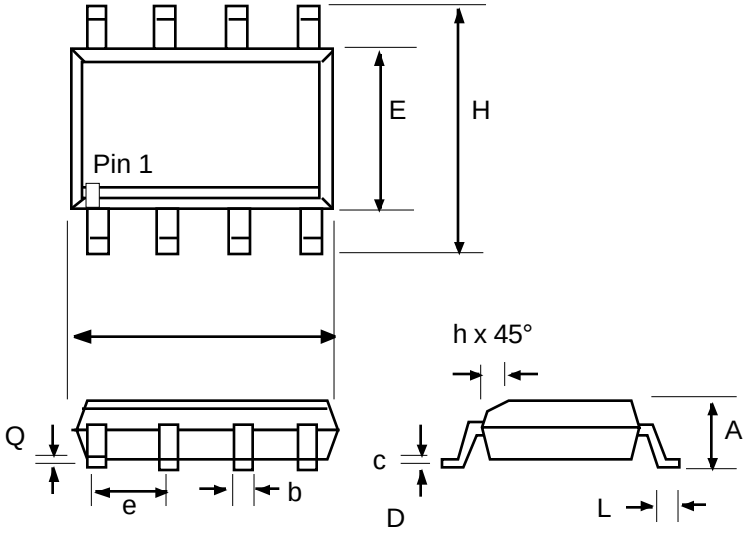
Electrical Specifications

Parameter	Conditions	Minimum	Typical	Maximum	Units
ABSOLUTE MAXIMUM RATINGS (note 1)					
Supply Voltage, VDD	Referenced to GND			7	V
Inputs	Referenced to GND	-0.5		VDD+.5V	V
Clock Outputs	Referenced to GND	-0.5		VDD+.5V	V
Ambient Operating Temperature		0		70	ºC
Soldering Temperature	Max of 10 seconds			260	ºC
Storage temperature		-65		150	ºC
DC CHARACTERISTICS (at 5.0V unless otherwise noted)					
Operating Voltage, VDD		4.5		5.5	V
Input High Voltage, VIH, input clock only	ICLK pin	3.5	2.5		V
Input Low Voltage, VIL, input clock only	ICLK pin		2.5	1.5	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 High Voltage, VOH	IOH=-25mA	2.4			V
Output Low Voltage, VOL	IOL=25mA			0.4	V
Operating Supply Current, IDD	No Load, FS1=1. FS0=1		13		mA
Power Down Supply Current, IDDPD	No Load		10		µA
Input Capacitance			5		pF
Actual Mean Frequency versus Target	With exact ICLK		0.3	0.3	ppm
AC CHARACTERISTICS (at 5.0V unless otherwise noted)					
Input Clock Frequency			27		MHz
Input Clock Duty Cycle	Time above 2.5V	20		80	%
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	Time above 1.5V	40	50	60	%
Absolute Maximum Clock Period Jitter, 15 pF	Variation from mean		± 90		ps
One Sigma Clock Period Jitter, 15 pF load			30		ps
Absolute Maximum Clock Period Jitter, 15 pF	VDD=3.3V		± 180		ps
One Sigma Clock Period Jitter, 15 pF load	VDD=3.3V		50		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



	Inches		Millimeters	
Symbol	Min	Max	Min	Max
A	0.055	0.061	1.397	1.5494
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
MK2712S	MK2712S	8 pin SOIC	0-70°C
MK2712STR	MK2712S	Add tape and reel	0-70°C