



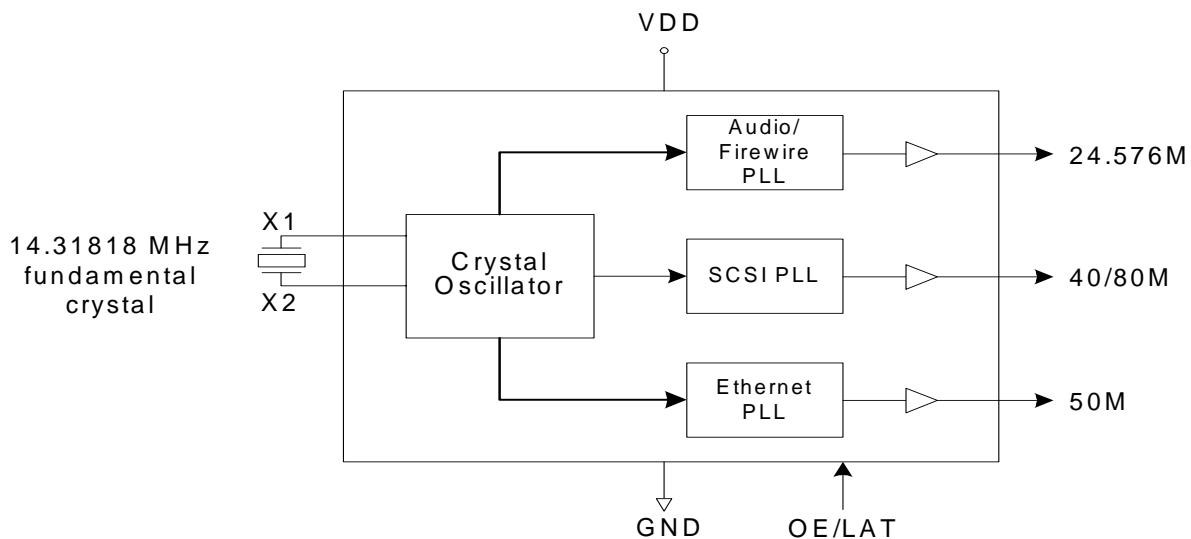
Description

The ICS410 is a cost-effective clock synthesizer developed to optimize component count for PC peripheral applications. The device supports a common, low cost 14.31818 MHz crystal using an on-chip crystal oscillator. The device locks all output frequencies to enhance system performance. By supporting common PC peripheral interface frequencies including 50 MHz ethernet, 24.576 MHz audio, and 40/80 MHz SCSI frequencies the clock lower chip count enhancing system cost and reliability.

The ICS410 utilizes a low pin count 8-pin SOIC package to optimize board space.

ICS is a leader in low jitter and power consumer application clock sources. These devices are capable of supporting CCD, video, audio, USB, CPU, and other peripherals.

Block Diagram

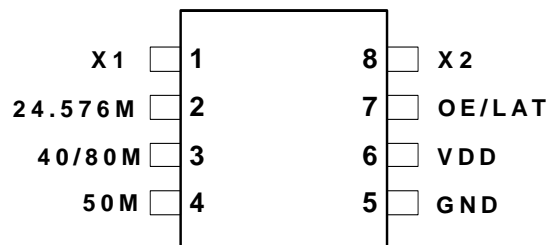


Features

- Low operating voltage of 3.3V
- On-chip oscillator supports 14.31818 MHz crystal
- Fixed 24.576 MHz clock
- Fixed 50 MHz clock
- 40/80 MHz selected on rising edge of OE/LAT pin
- Power consumption of 15 mA (typ) extends battery life
- Duty cycle of 45 to 55%
- Packaged in 8 pin SOIC
- Contact ICS for custom frequency requirements



Pin Assignment



8 Pin (150 mil) SOIC

40/80M Frequency Selection

Pin 3 (40/80)	Freq
0	40M
1	80M

Pin Descriptions

Pin Number	Pin Name	Pin Type	Pin Description
1	X1	Input	Crystal connection. Connect to 14.31818 MHz parallel mode crystal.
2	24.576M	Output	24.576 MHz clock output. Tri-state when OE/LAT is low.
3	40/80M	Output	40M or 80M selectable clock output. Latched on rising edge of OE. Tri-state 40/80 MHz when OE/LAT is low.
4	50M	Output	50 MHz clock output.
5	GND	Power	Connect to ground.
6	VDD	Power	Connect to voltage supply.
7	OE/LAT	Input	Output selects/disables 40/80M output.
8	X2	Input	Crystal connection. Connect to 14.31818 MHz parallel mode crystal.

External Components

A minimum number of external components are required for proper operation. A decoupling capacitors of 0.01 μ F should be connected between VDD and GND as close to the device as possible. A 33 Ω series terminating resistor may be used on each output.

Operation of OE/LAT

The 40/80M output clock is selected by a soft pull-up or pull-down on pin 3. On power up the rising edge on OE latches in the high or low level on pin 3 which starts the appropriate frequency. An external pull-down or pull-up resistor (10k Ω) on pin 3 will select an output frequency of 40 or 80 MHz respectively. Any low-to-high transition on OE/LAT after power up will latch the logic level on pin 3. The 24.576 MHz and 40/80 MHz are disabled and tri-stated when OE is low.



Absolute Maximum Ratings

Stresses above the ratings listed below can cause permanent damage to the ICS410. These ratings, which are standard values for ICS commercially rated parts, are stress ratings only. Functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods can affect product reliability. Electrical parameters are guaranteed only over the recommended operating temperature range.

Item	Rating
Supply Voltage, VDD	7 V
All Inputs and Outputs	-0.5 V to VDD+0.5 V
Ambient Operating Temperature	0 to +70 °C
Storage Temperature	-65 to +150 °C
Junction Temperature	175 °C
Soldering Temperature	260 °C

Recommended Operation Conditions

Parameter	Min.	Typ.	Max.	Units
Ambient Operating Temperature	0	–	+70	°C
Power Supply Voltage (measured in respect to GND)	+3.00		+3.60	V

DC Electrical Characteristics

VDD=3.3V ±10% Notes: 1. Nominal switching threshold is VDD/2

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Operating Voltage	VDD		3.0		3.6	V
Input High Voltage	V _{IH}	Note 1	2.0			V
Input Low Voltage	V _{IL}	Note 1			0.8	V
Output High Voltage	V _{OH}	I _{OH} = -25 mA	2.4			V
Output Low Voltage	V _{OL}	I _{OL} = 25 mA			0.8	V
Operating Supply Current	IDD	No load, 3 Out		15		mA
Short Circuit Current	I _{OS}	Each output		80		mA



AC Electrical Characteristics

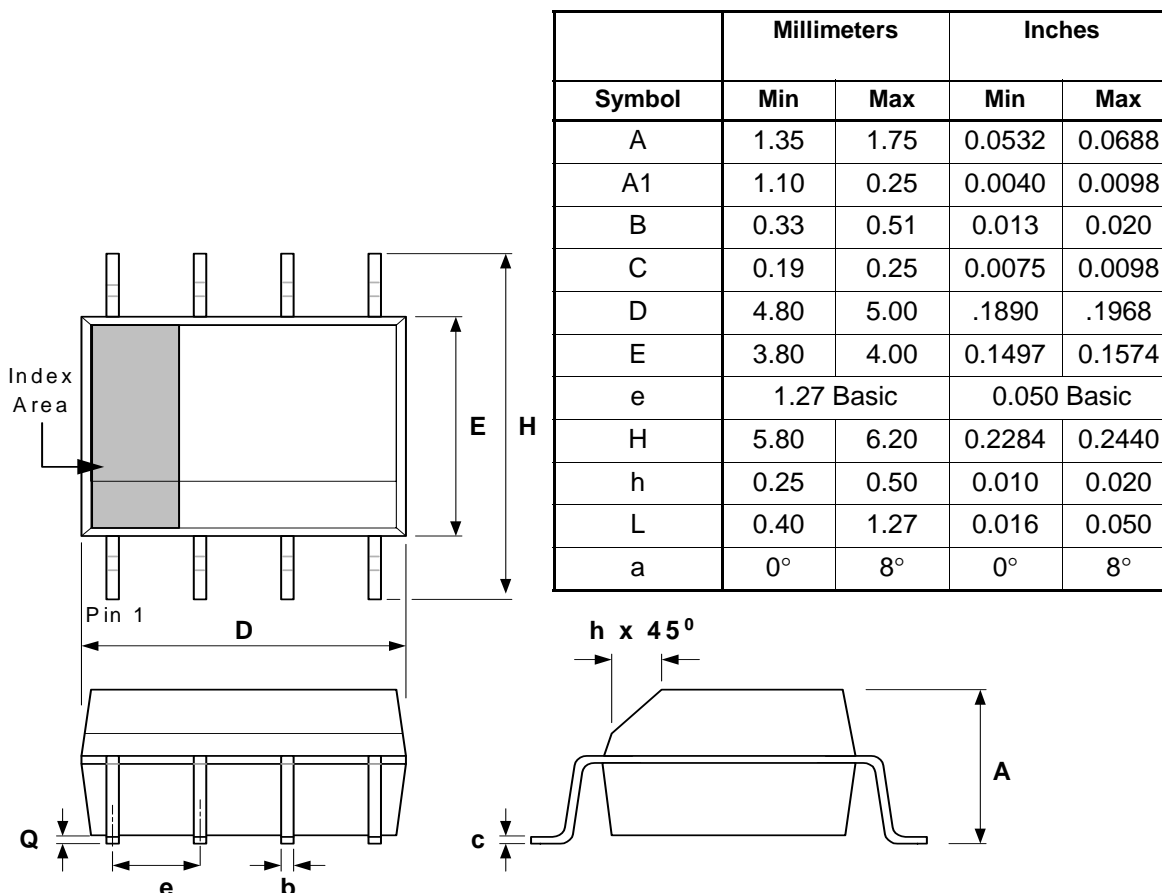
VDD = 3.3V \pm 10%, Ambient Temperature 0 to +70° C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Frequency				14.318		MHz
Output Rise Time	t _{OR}	0.8 to 2.0 V, C _L =15 pF		1.75		ns
Output Fall Time	t _{OF}	2.0 to 0.8 V, C _L =15 pF		1.75		ns
Output Clock Duty Cycle		at VDD/2	45	50	55	%
Absolute Jitter, Short Term		variation from mean		250		ps
One Sigma Jitter				85		ps



Package Outline and Package Dimensions (8 pin SOIC, 150 Mil. Narrow Body)

Package dimensions are kept current with JEDEC Publication No. 95



Ordering Information

Part / Order Number	Marking	Shipping Packaging	Package	Temperature
ICS410M	ICS410	Tubes	8 pin SOIC	0 to 70 °C
ICS410MT	ICS410	Tape and Reel	8 pin SOIC	0 to 70 °C

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