ICS615   PCB   24

PRELIMINARY INFORMATION

MICROCLOCK

ICS615
Set-Top Box Clock Source

Description

The ICS615 is a low cost, low jitter, high performance PLL clock synthesizer designed to replace 13.5, 27, and 54MHz crystals and oscillators. Using analog/digital Phase-Locked Loop (PLL) techniques, the device uses an inexpensive external 13.5 MHz crystal or clock input to produce output clocks of 13.5 MHz, 27 MHz, and 54 MHz .
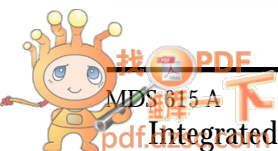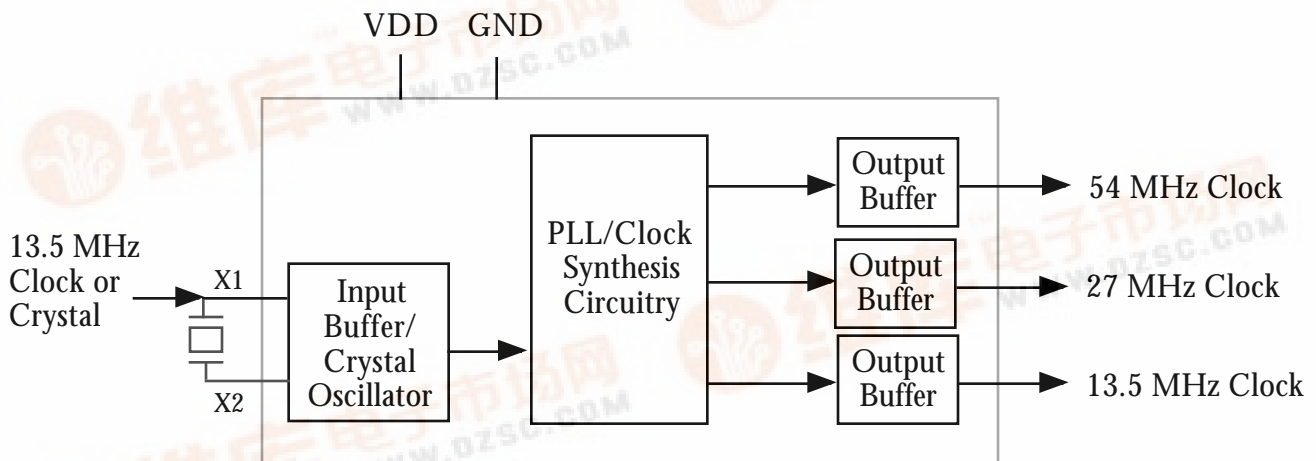
ICS/MicroClock manufactures the largest variety of Set-Top Box and multimedia clock synthesizers for all applications. Our patented integrated VCXO further reduces component count and cost (see the MK2720). If more than three clock outputs are needed, see the MK277x family of parts. Consult ICS/MicroClock to eliminate VCXOs, PLLs, crystals and oscillators from your board.

Features

• Packaged in 8 pin narrow SOIC
• Output clocks of 54, 27, and 13.5MHz
• Uses a 13.500 MHz clock or external crystal
• Full CMOS outputs with 25mA output drive capability at TTL levels
• Low skew outputs
• Advanced, low power, sub-micron CMOS process
• +3.3V or +5V operating voltage
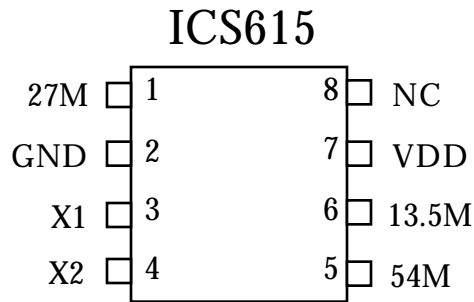• See the MK2720 for these frequencies plus the VCXO function, in an 8 pin SOIC.

Block Diagram

MDS 615 A

Revision 052098   Printed 11/15/00

Integrated Circuit Systems, Inc.•525 Race Street•San Jose•CA•95126•(408)295-9800tel•www.icst.com

MICROCLOCK

Pin Assignment

ICS615

```
27M  ⊏  1        8 ⊐  NC
GND  ⊏  2        7 ⊐  VDD
X1   ⊏  3        6 ⊐  13.5M
X2   ⊏  4        5 ⊐  54M
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8 pin (150 mil) SOIC

Pin Descriptions

Number	Name	Description
1	27M	27 MHz clock output.
2	GND	Connect to ground.
3	X1	Crystal connection. Connect to a13.5 MHz clock or crystal.
4	X2	Crystal connection. Connect to a 13.5 MHz crystal. Leave unconnected for clock input.
5	54M	54 MHz clock output.
6	13.5M	13.5 MHz clock output.
7	VDD	VDD. Connect to +3.3V or +5V.
8	NC	No Connect. This is an unused power down pin for 27 MHz clock

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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		5.50	V
Output High Voltage, VOH	IOH=-4mA	2.4			V
Output Low Voltage, VOL	IOL=4mA			0.4	V
Output High Voltage, VOH, CMOS level	IOH=-4mA	VDD-0.4			V
Operating Supply Current, IDD	No Load		30		mA
Short Circuit Current			±30		mA
AC CHARACTERISTICS (VDD = 5.0V unless noted)					
Input Clock			13.5		MHz
Output Clock Rise Time	0.4 to 2.4V, CL=25pF		1.5	2.5	ns
Output Clock Fall Time	2.4 to 0.4V, CL=25pF		1.5	2.5	ns
Output Clock Duty Cycle	At 1.4V	45	50	55	%
Skew between any two outputs				1	ns
Maximum Absolute Jitter, short term			250		ps

Note: 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 ICS615 requires a minimum number of external components for proper operation. A decoupling capacitor of 0.1µF should be connected between VDD and GND on pins 7 and 2, as close to the ICS615 as possible. A series termination resistor of 33   may be used for the clock outputs. The normal use is with a clock input into pin 3, with pin 4 left unconnected. For a crystal input, consult ICS/MicroClock.

Package Outline and Package Dimensions

8 pin SOIC
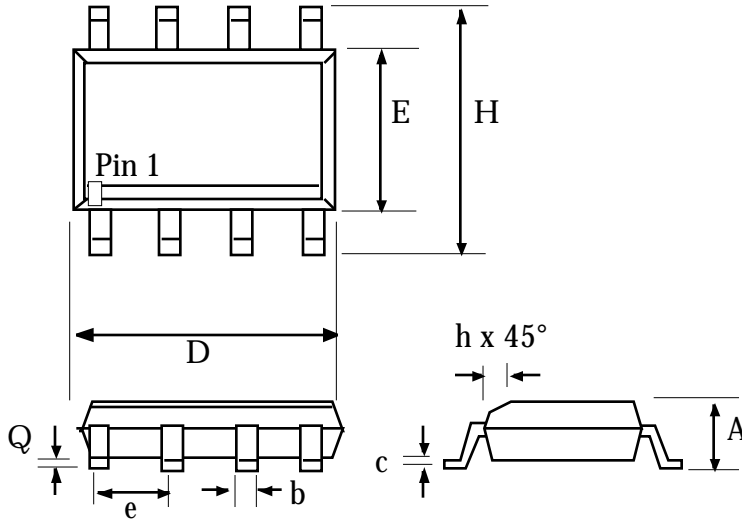
Symbol	Inches Min	Inches Max	Millimeters Min	Millimeters Max
A	0.055	0.068	1.397	1.7272
b	0.013	0.019	0.330	0.483
D	0.185	0.200	4.699	5.080
E	0.150	0.160	3.810	4.064
H	0.225	0.245	5.715	6.223
e	.050 BSC		1.27 BSC	
h		0.015		0.381
Q	0.004	0.01	0.102	0.254

Ordering Information

Part/Order Number	Marking	Shipping packaging	Package	Temperature
ICS615M	ICS615M	tubes	8 pin SOIC	0-70°C
ICS615MT	ICS615M	tape and reel	8 pin SOIC	0-70°C

CHANGE HISTORY

Version	Date first published	Status	Comments
A	5/20/98	Preliminary	Original