



Clock Generator IC for MD Audio System

Approved Product

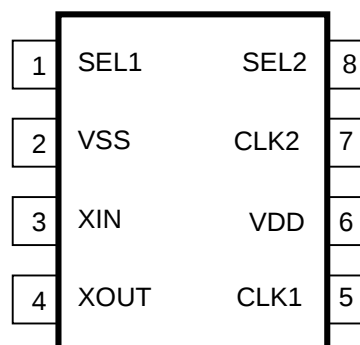
Product Features

- Support clock requirements for Mini Disc application
- Two clock outputs
- Integrates loading capacitance for crystal
- Integrates loop filter that requires no external components or adjustments
- Use 16.9344MHz crystal or external input
- 3.3 Volt operation
- 8 pin SOIC package

Product Description

The C6006 is a clock generator that integrates clock requirements for Mini Disc Audio application. The C6006 uses a 16.9344MHz crystal to produce 90.3168MHz or 45.1584MHz and 12.042MHz or 10.035MHz. The device is packaged in an 8pin SOIC for minimum occupation of board space.

Pin Configuration



Frequency Table

SEL1	CLK1
0	45.1584MHz
1	90.3168MHz

SEL2	CLK2
0	10.0352MHz
1	12.04224MHz

Table 1



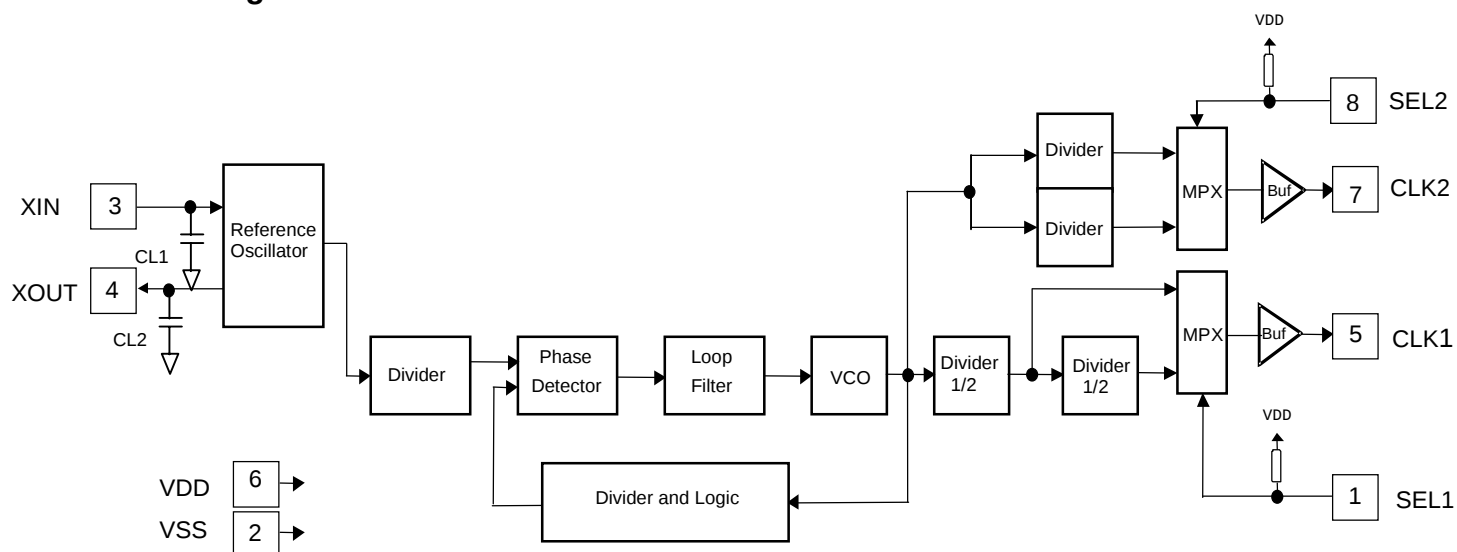
CYPRESS

C6006

Clock Generator IC for MD Audio System

Approved Product

Block Diagram



Pin Description

PIN No.	Pin Name	I/O	Description
1	SEL1	I	If this input pin is asserted LOW, CLK1 to be 45.1584MHz. When HIGH (default), CLK1 to be 90.3168MHz. Internal pull-up.
2	VSS	PWR	Device ground for all circuitry.
3	XIN	I	On-chip reference oscillator input pin. Requires either an external crystal (nominally 16.9344MHz) or externally generated reference signal.
4	XOUT	O	On-chip reference oscillator pin. Drives an external crystal. When an externally generated reference signal is used at XIN, this pin remains unconnected.
5	CLK1	O	90.3168MHz or 45.1584MHz selected via SEL1 input pin.
6	VDD	PWR	3.3 Volt Power supply.
7	CLK2	O	12.04224MHz or 10.0352MHz selected via SEL2 input pin.
8	SEL2	I	If this input pin is asserted LOW, CLK2 to be 10.0352MHz. When HIGH (default), CLK2 to be 12.04224MHz. Internal pull-up.

Note:

I = Input pins, O = Output pins and PWR = Power connection pins.



CYPRESS

C6006**Clock Generator IC for MD Audio System**

Approved Product

Maximum Ratings

Maximum Input Voltage Relative to VSS: $VSS - 0.3V$
 Maximum Input Voltage Relative to VDD: $VDD + 0.3V$
 Storage Temperature: -65° to $+150^{\circ}C$
 Operating Temperature: -10° to $+70^{\circ}C$
 Maximum Power Supply: 5.5V
 Operating Voltage: 3.0 – 3.6V

This device contains circuitry to protect the inputs against damage due to high static voltages or electric field; however, precautions should be taken to avoid application of any voltage higher than the maximum rated voltages to this circuit. For proper operation, V_{in} and V_{out} should be constrained to the range:

$$VSS < (V_{in} \text{ or } V_{out}) < VDD$$

Unused inputs must always be tied to an appropriate logic voltage level (either VSS or VDD).

DC Parameters ($VDD = 3.3V \pm 10\%$, $T_A = -10^{\circ}$ to $+70^{\circ}C$)

Characteristic	Symbol	Min	Typ	Max	Units	Conditions
Input Low Voltage	V_{IL}	-	-	0.8	Vdc	Note 1
Input High Voltage	V_{IH}	2.0	-	-	Vdc	
Input Low Current	I_{IL}	-100	-	-	μA	For internal Pull-up resistors, Note 1 and Note 2
Input High Current	I_{IH}	-	-	10	μA	
Dynamic Supply Current	$I_{dd3.3V}$	-	20	35	mA	No output load
Output Low Voltage	V_{OL}	-	-	0.4	V	$I_{OL} = 4.0 \text{ mA}$
Output High Voltage	V_{OH}	2.4	-	-	V	$I_{OH} = 3.0 \text{ mA}$
XIN/XOUT Capacitors	$CL_{1,2}$	-	23	-	pF	

Note1: Applicable to input signal.

Note2: Although internal pull-up resistors have a typical value of 240K, this value may vary between 200K and 500K.

AC Parameters

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Rise Time	T_R	-	-	4	nSec	All clocks at rated load, Note 2
Fall Time	T_F	-	-	4	nSec	All clocks at rated load, Note 2
Power up to Stable Output	T_{PU}	-	-	3	mSec	All Output Clocks, Note 3
Clock Duty Cycle	T_{DC1}	40	50	60	%	All clocks at rated load, Note 3
Clock Jitter, @CLK1	T_{j1}	-	-	150	pSec	Cycle to cycle jitter Note 2, Note 3
Clock Jitter, @CLK2	T_{j2}	-	-	250	psec	

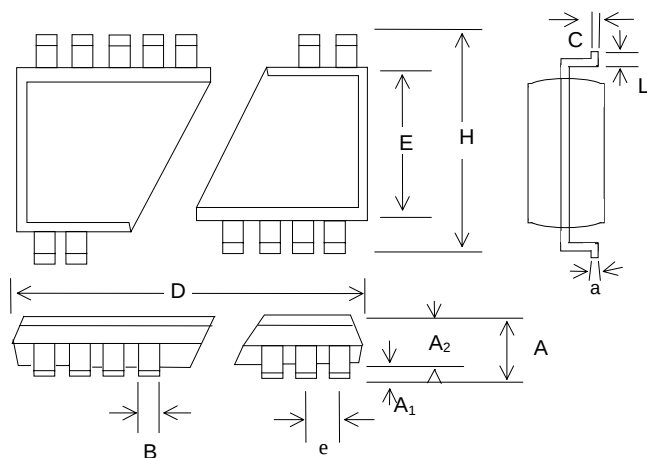
Notes:

- Parameters are guaranteed by design and characterization. Not 100% tested in production. All parameters specified with fully loaded outputs.
- Measured between $0.2 \cdot VDD$ and $0.8 \cdot VDD$ Volts.
- Triggering is done at 1.5 Volts.
- All output has 15pf load.

Clock Generator IC for MD Audio System

Approved Product

Package Drawing and Dimensions



8 Pin SOIC Outline Dimensions

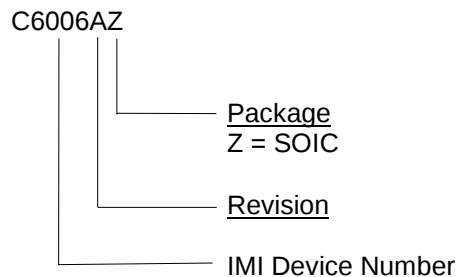
SYMBOL	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.053	-	0.069	1.35	-	1.75
A ₁	0.004	-	0.010	0.10	-	0.25
A ₂	0.047	-	0.059	1.20	-	1.50
B	0.013	-	0.020	0.33	-	0.51
C	0.007	-	0.010	0.19	-	0.25
D	0.189	-	0.197	4.80	-	5.00
E	0.150	-	0.157	3.80	-	4.00
e	0.050 BSC			1.27 BSC		
H	0.228	-	0.244	5.80	-	6.20
L	0.016	-	0.050	0.40	-	1.27
a	0°	-	8°	0°	-	8°

Ordering Information

Part Number	Package Type	Production Flow
C6006AZ	8 Pin SOIC	Commercial, -10°C to +70°C

Note: The ordering part number is formed by a combination of device number, device revision, package style, and screening as shown below.

Marking: Example: IMI, Date Code
C6006AZ
Lot #





C6006

Clock Generator IC for MD Audio System

Approved Product

DISCLAIMER

International Microcircuits, Inc. ("IMI") reserves the right to change or modify the information contained in this datasheet and the products described therein, without prior notice. IMI does not convey any license under its patent rights nor the rights of others. Charts, drawings and schedules contained in this datasheet are provided for illustration purposes only and they vary depending upon specific applications.

IMI makes no warranty or guarantee regarding suitability of these products for any particular purpose, nor does IMI assume any liability arising out of the application or use of any product or circuit described herein. IMI does not authorize use of its products as critical components in any application in which the failure of the IMI product may be expected to result in significant injury or death, including life support systems and critical medical instruments.



CYPRESS

C6006

Clock Generator IC for MD Audio System

Approved Product

Document Title: C6006 Clock Generator IC for MD Audio System				
Document Number: 38-07100				
Rev.	ECN No.	Date of Issue	Orig. of Change	Description of Change
**	107391	05/22/01	IKA	New Data Sheet