

Clock generator for HDD

BU2191F

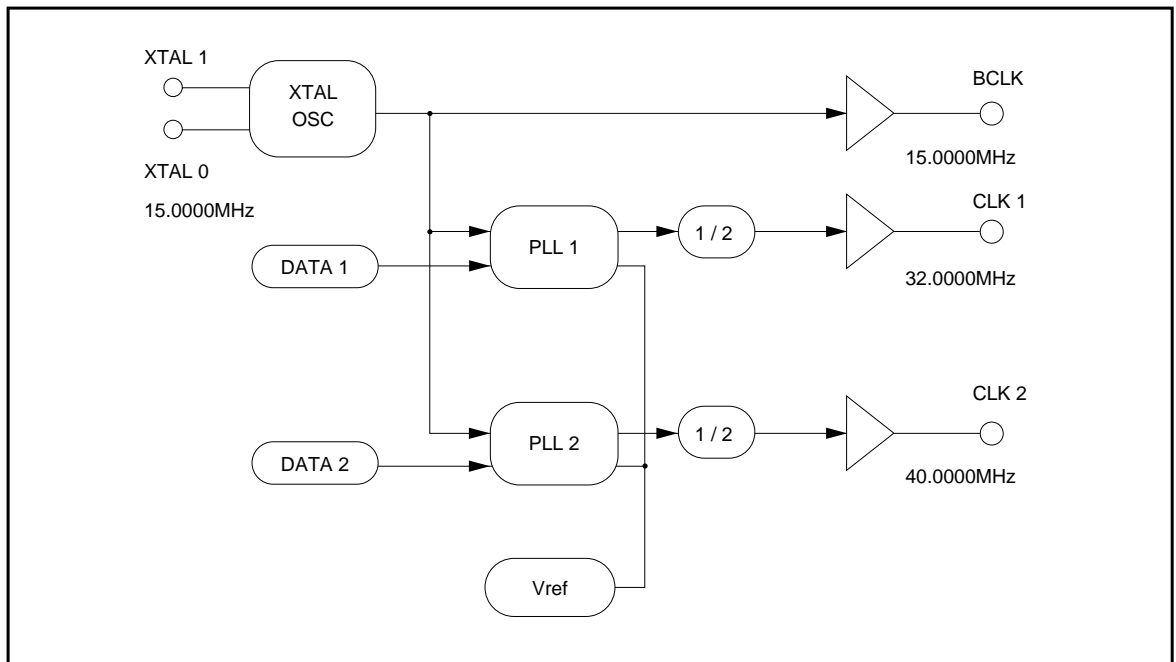
The BU2191F is a clock generator IC for hard disk drives, and uses a single crystal resonator to generate the three clock signals needed for hard disk drives.

●Applications
Hard disk drives

●Features

- 1) Clock signals of three different frequencies can be generated with a single attached crystal resonator.
- 2) Internal loop filter, eliminating the need for an attached loop.
- 3) Single 5.0V power supply.
- 4) SOP 8-pin package.

●Block diagram



● Pin descriptions

Pin No.	Pin name	Function	Circuit
1	CLK2	Clock output 2 (f2 = 40MHz)	A
2	GND	Ground	—
3	XTALI	Reference oscillation input	B
4	XTALO	Reference oscillation output	B
5	BCLK	Reference oscillation buffer output (fBCLK = 15MHz)	A
6	CLK1	Clock output 1 (f1 = 32MHz)	A
7	V _{DD}	V _{DD}	—
8	AV _{DD}	Analog power supply	—

● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Applied voltage	V _{DD}	- 0.5 ~ + 7.0	V
Input voltage	V _{IN}	- 0.5 ~ V _{DD} + 0.5	V
Storage temperature	T _{stg}	- 30 ~ + 125	°C
Power dissipation	P _D	450	mW

* Does not represent guaranteed performance

* Reduced by 4.5mW for each increase in Ta of 1°C over 25°C.

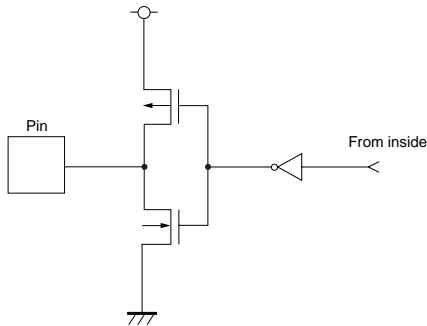
○ Not designed for radiation resistance.

● Recommended operating conditions (Ta = 25°C)

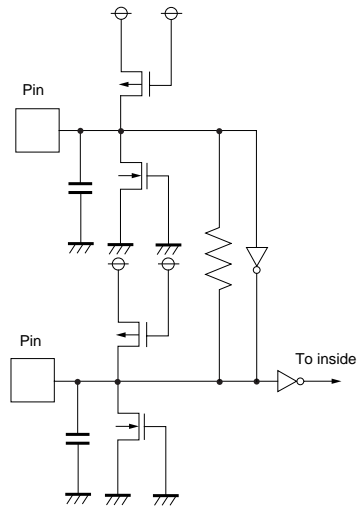
Parameter	Symbol	Limits	Unit
Power supply voltage	V _{DD}	4.5 ~ 5.5	V
Input high level voltage	V _{IH}	0.8V _{DD} ~ V _{DD}	V
Input low level voltage	V _{IL}	0.0 ~ 0.2V _{DD}	V
Operating temperature	T _{opr}	- 5 ~ + 70	°C
Output load	CL	15 (Max.)	pF

●Input / output circuits

Type A



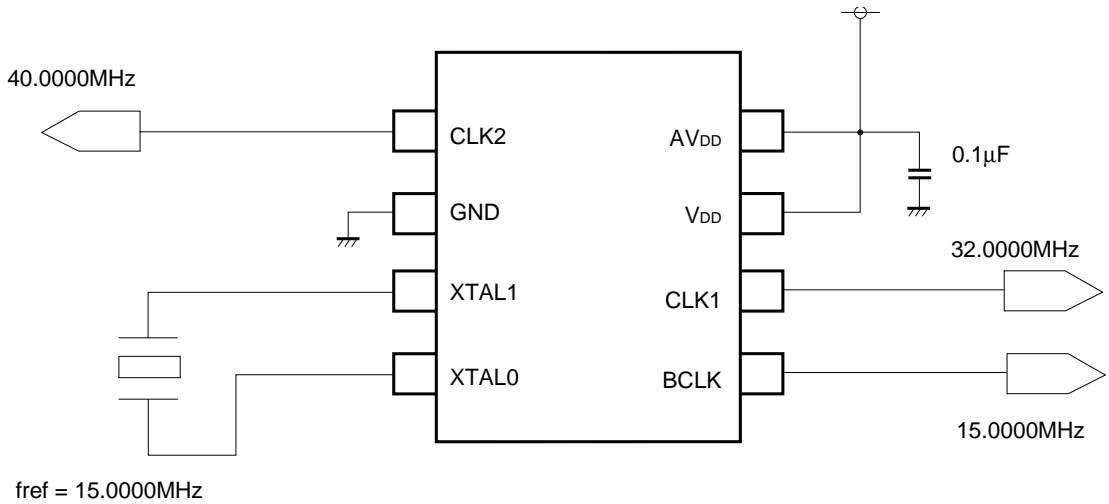
Type B



●Electrical characteristics (unless otherwise noted, Ta = 25°C, AVDD = 5.0V, DVDD = 5.0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output low level voltage	VO _L	—	—	0.4	V	IoL = 4.0mA
Output high level voltage	VO _H	V _{DD} - 0.5	—	—	V	IoL = - 4.0mA
Operating supply current	I _{DD}	—	30	50	mA	fXTAL = 15.0000MHz, no load
Reference frequency (1)	f _{REF}	—	15.0000	—	MHz	
Output frequency (1)	f _{BCK}	14.997	15.0000	15.003	MHz	
Output frequency (2)	f1	31.994	32.0000	32.006	MHz	f _{REF} × 128 / 15 / 4
Output frequency (3)	f2	39.992	40.0000	40.008	MHz	f _{REF} × 16 / 3 / 2
Rise time	fR	—	—	5	nsec	V _{DD} × 0.2 to V _{DD} × 0.8
Fall time	fF	—	—	5	nsec	V _{DD} × 0.8 to V _{DD} × 0.2
Jitter	Jcy	- 250	—	250	psec	
Jitter 3s	J3s	—	—	1	nsec	
Power up time	tPT	—	—	10	msec	
Duty	Duty	45	50	55	%	Measure at 1.4V (Vth)

●Application example



* This IC should be used mounted on a PC board. If mounted in a socket, characteristics of the IC may be adversely affected.

●Attached components

(1) Crystal resonator

A crystal resonator with an oscillation frequency of 15,000MHz is usually sufficient. However, if fo precision is necessary, adjust by attaching a capacitor to each end of the crystal resonator.

(2) Power supply

VDD bypass capacitor.

●External dimensions (Units: mm)

