ABX0201

Low Phase Noise XO (24MHz to 50MHz)

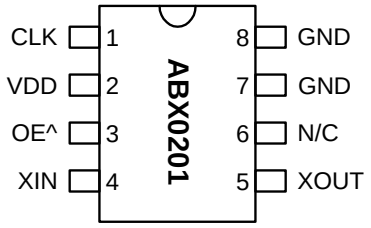
FEATURES

- Low phase noise XO output for the 24MHz to 50MHz range (-135 dBc at 10kHz offset).
- 12 to 25MHz crystal input.
- Integrated crystal load capacitor: no external load capacitor required.
- Low jitter (RMS): 3ps period jitter (1 sigma).
- Selectable High Drive (30mA) or Standard Drive (10mA) output.
- 3.3V operation.
- Available in 8-Pin TSSOP or SOIC.

DESCRIPTION

The ABX0201 is a low cost, high performance and low phase noise XO, providing less than -135dBc at 10kHz offset in the 24MHz to 50MHz operating range. The very low jitter (3ps RMS period jitter) makes this chip ideal for applications requiring clean reference frequency sources. Input crystal can range from 12 to 25MHz (fundamental resonant mode).

PIN CONFIGURATION

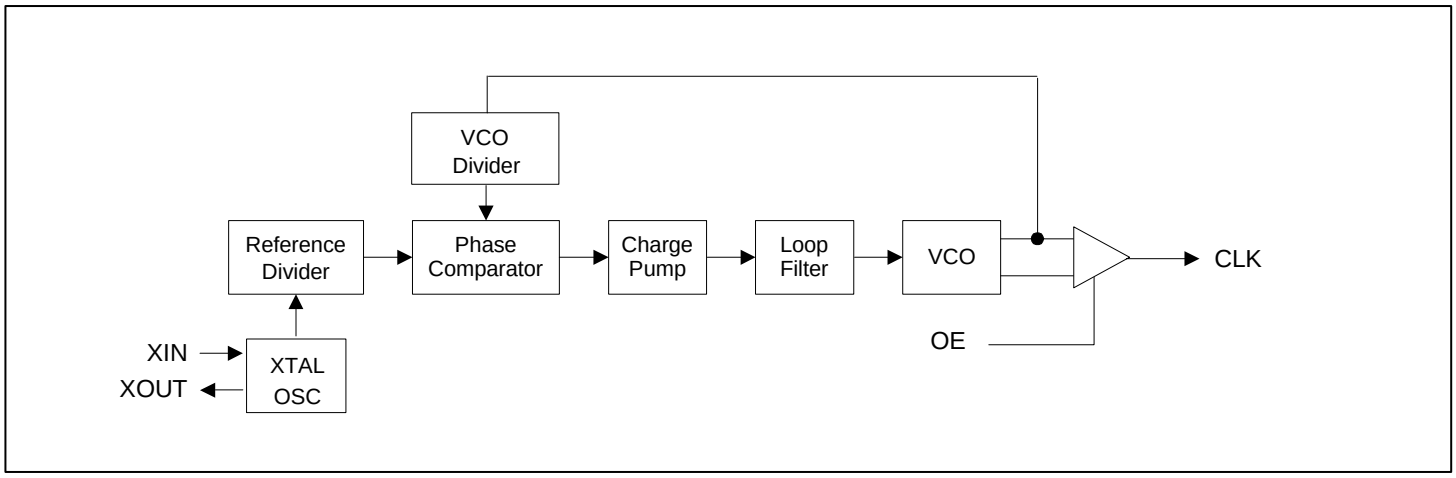


^: Denotes internal pull-up

OUTPUT RANGE

MULTIPLIER	FREQUENCY RANGE	OUTPUT BUFFER
x2	24 - 50MHz	CMOS

BLOCK DIAGRAM



PIN DESCRIPTIONS

Name	Number	Type	Description
CLK	1	O	Output clock.
VDD	2	P	+3.3V power supply.
OE	3	I	Output enable input. Disables (tri-state) output when low. Internal pull-up enables output by default if pin is not connected to low.
XIN	4	I	Crystal input. See Crystal Specifications on page 3.
XOUT	5	I	Crystal output. See Crystal Specifications on page 3.
N/C	6	-	Not connected.
GND	7, 8	P	Ground.

ELECTRICAL SPECIFICATIONS

1. Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage	V_{DD}		4.6	V
Input Voltage, dc	V_I	-0.5	V_{DD}+0.5	V
Output Voltage, dc	V_O	-0.5	V_{DD}+0.5	V
Storage Temperature	T_S	-65	150	°C
Ambient Operating Temperature*	T_A	-40	85	°C
Junction Temperature	T_J		125	°C
Lead Temperature (soldering, 10s)			260	°C
ESD Protection, Human Body Model			2	kV

Exposure of the device under conditions beyond the limits specified by Maximum Ratings for extended periods may cause permanent damage to the device and affect product reliability. These conditions represent a stress rating only, and functional operations of the device at these or any other conditions above the operational limits noted in this specification is not implied.

* Note: Operating Temperature is guaranteed by design for all parts (COMMERCIAL and INDUSTRIAL), but tested for COMMERCIAL grade only.

2. DC Electrical Specifications

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic, with Loaded Outputs	I_{DD}	F_{XIN} = 12 - 25MHz Output load of 10pF		16	20	mA
Operating Voltage	V_{DD}		2.97		3.63	V
Output drive current (High Drive)	I_{OH}	V_{OH}= V_{DD}-0.4V, V_{DD}=3.3V	30			mA
	I_{OL}	V_{OL} = 0.4V, V_{DD} = 3.3V	30			mA
Output drive current (Standard Drive)	I_{OH}	V_{OH}= V_{DD}-0.4V, V_{DD}=3.3V	10			mA
	I_{OL}	V_{OL} = 0.4V, V_{DD} = 3.3V	10			mA
Short Circuit Current				±50		mA

3. AC Specification

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Crystal Frequency			12		25	MHz
Output Clock Rise/Fall Time (Standard Drive)		0.3V ~ 3.0V with 15 pF load		2.4		ns
Output Clock Rise/Fall Time (High Drive)		0.3V ~ 3.0V with 15 pF load		1.2		
Output Clock Duty Cycle		Measured @ 50% V_{DD}	45	50	55	%

4. Jitter and Phase Noise Specification

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
RMS Period Jitter (1 sigma – 1000 samples)	at 44MHz, with capacitive decoupling between VDD and GND.		3		ps
Phase Noise relative to carrier	44MHz @100Hz offset		-80		dBc/Hz
Phase Noise relative to carrier	44MHz @1kHz offset		-110		dBc/Hz
Phase Noise relative to carrier	44MHz @10kHz offset		-135		dBc/Hz
Phase Noise relative to carrier	44MHz @100kHz offset		-130		dBc/Hz
Phase Noise relative to carrier	44MHz @1MHz offset		-132		dBc/Hz

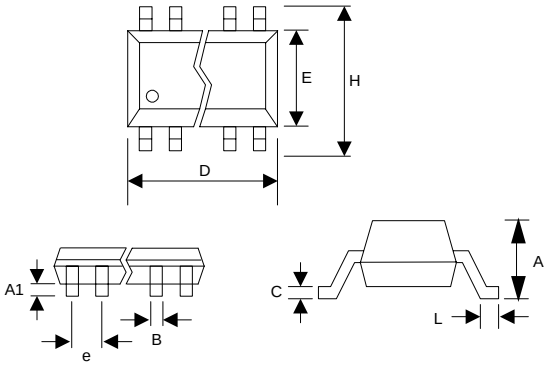
5. Crystal Specifications

PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Crystal Resonator Frequency	F_{XIN}	12		25	MHz
Crystal Loading Capacitance Rating	$C_{L\ (xtal)}$		20		pF
Driving power			1		mW
ESR	R_S			30	Ω

PACKAGE INFORMATION

8 PIN (dimensions in mm)

	Narrow SOIC		TSSOP	
Symbol	Min.	Max.	Min.	Max.
A	1.47	1.73	-	1.20
A1	0.10	0.25	0.05	0.15
B	0.33	0.51	0.19	0.30
C	0.19	0.25	0.09	0.20
D	4.80	4.95	2.90	3.10
E	3.80	4.00	4.30	4.50
H	5.80	6.20	6.20	6.60
L	0.38	1.27	0.45	0.75
e	1.27 BSC		0.65 BSC	



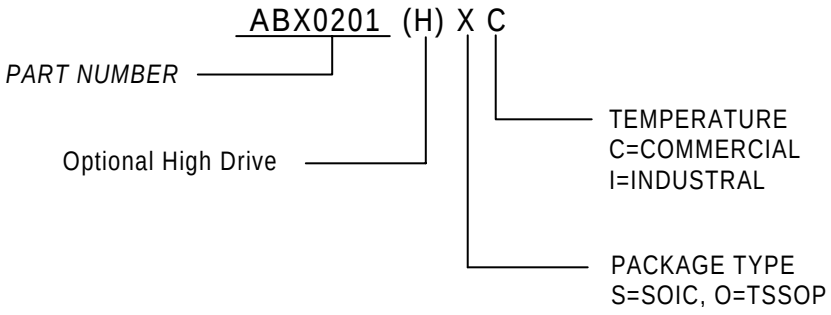
ORDERING INFORMATION

For part ordering, please contact our Sales Department:

30332 Esperanza., Rancho Santa Margarita, Ca 92688
Ph: 949-546-8000 Fax: 949-546-8001

PART NUMBER

The order number for this device is a combination of the following:
Device number, Package type and Operating temperature range



Order Number	Marking	Package Option
ABX0201OC-T	ABX0201OC	TSSOP - Tape and Reel
ABX0201OC	ABX0201OC	TSSOP - Tube
ABX0201HOC-T	ABX0201HOC	TSSOP - Tape and Reel
ABX0201HOC	ABX0201HOC	TSSOP - Tube
ABX0201SC-T	ABX0201SC	SOIC – Tape and Reel
ABX0201SC	ABX0201SC	SOIC – Tube
ABX0201HSC-T	ABX0201HSC	SOIC – Tape and Reel
ABX0201HSC	ABX0201HSC	SOIC – Tube

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