



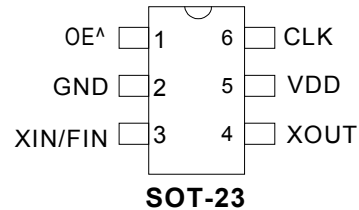
ABX0027B

Ultra Low Current XO 10 MHz to 52 MHz

FEATURES

- Low phase noise (-145 dBc @ 10kHz offset).
- CMOS output with OE tri-state control.
- Ultra Low current consumption (<2mA, at 27MHz, 3.3V)
- 10 to 52MHz fundamental or 3rd OT crystal input.
- 12mA drive capability at TTL output.
- Low jitter (RMS): 2.5ps period jitter.
- 1.8V, 2.5V and 3.3V DC operation.
- Available in 6 pin SOT-23

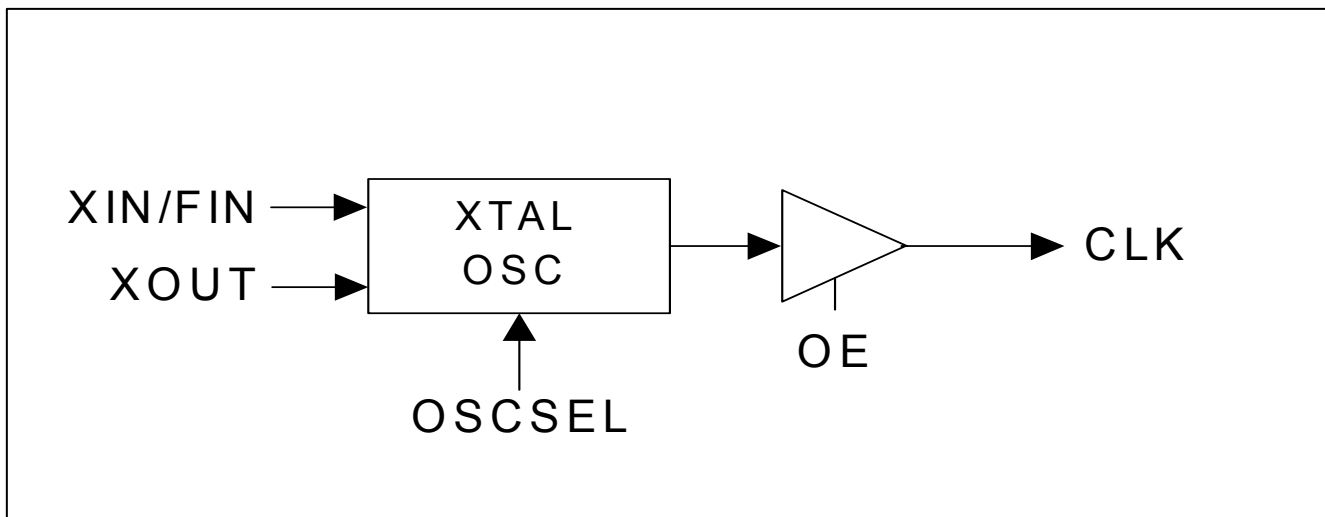
PIN ASSIGNMENT (PACKAGE)



DESCRIPTION

The ABX0027B form a low cost family of XO IC's, designed to consume the lowest current on the market for the 10MHz to 52MHz range. It accepts fundamental resonant mode crystal input from 10 to 52MHz. Providing less than -145 dBc at 10kHz offset at 30MHz and with a very low jitter (2.5 ps RMS period jitter) makes this chip ideal for applications requiring low current frequency sources.

BLOCK DIAGRAM





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PACKAGE PIN DESCRIPTION

Name	Pin No.	Type	Description
	SOT-6		
OE	1	I	Output Enable input. See Table on page 1.
GND	2	P	Ground connection.
XIN/FIN	3	I	Crystal input or reference clock input pin.
XOUT	4	O	Crystal output.
VDD	5	P	Power supply connection.
CLK	6	O	Output clock.

OE has internal pull-up resistor, so the default value is '1' when not connected.

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.

Ultra Low Current XO 10 MHz to 52 MHz**2. AC Electrical Specifications**

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Crystal Frequency		10		52	MHz
Settling time	At power-up (V _{DD} reaches 1.62V)			10	ms
	Disable to enable, osc. Off			10	ms
	Disable to enable, osc. On			500	μs
Output Clock Rise/Fall Time	0.8V ~ 2.0V with 10 pF load		1.15		ns
	0.3V ~ 3.0V with 15 pF load		2.4		
VDD sensitivity	Frequency vs. VDD +/- 10%	0.8		0.8	ppm
Output Clock Duty Cycle	Measured @ 50% V _{DD}	45	50	55	%

3. Jitter and Phase Noise Specifications

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
RMS Period Jitter (1 sigma – 10,000 samples)	With capacitive decoupling between VDD and GND.		2.1	2.5	ps
Phase Noise relative to carrier	27MHz @100Hz offset		-108		dBc/Hz
Phase Noise relative to carrier	27MHz @1kHz offset		-135		dBc/Hz
Phase Noise relative to carrier	27MHz @10kHz offset		-147		dBc/Hz
Phase Noise relative to carrier	27MHz @100kHz offset		-148		dBc/Hz
Phase Noise relative to carrier	27MHz @1MHz offset		-148		dBc/Hz

4. DC Specification

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic, with Loaded Outputs (at VDD = 3.3V)	I _{DD}	At 10MHz, Cload=15pF		1.0	1.1	mA
		At 13.5MHz, Cload=15pF		1.2	1.3	
		At 17.7MHz, Cload=15pF		1.5	1.6	
		At 27MHz, Cload=15pF		2.0	2.1	
		At 48MHz, Cload=15pF		3.5	3.6	
Operating Voltage	V _{DD}		1.62		3.63	V
Output High Voltage	V _{OH}	I _{OH} = -12mA (3.3V)	2.4			V
Output Low Voltage	V _{OL}	I _{OL} = 12mA (3.3V)			0.4	V
Output High Voltage at CMOS level	V _{OHC}	I _{OH} = -4mA	V _{DD} - 0.4			V
Output drive current		At TTL level (3.3V)	12	17		mA
Short Circuit Current		(3.3V)		±50		mA

5. Crystal Specifications

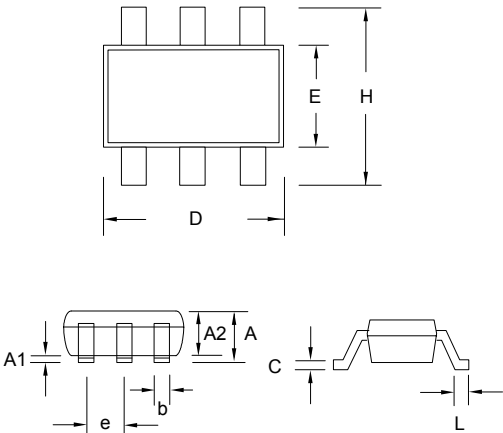
PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Crystal Resonator Frequency	F _{XIN}	10		52	MHz
Crystal Loading Rating	C _{L (xtal)}		8.5		pF
Maximum Sustainable Drive Level				200	μW
Operating Drive Level			50		μW
C0 (for frequencies below 30MHz)				5	pF
C0 (for frequencies above 30MHz)				4	pF
ESR	R _s			30	Ω

Note: A detailed crystal specification document is also available for this part

PACKAGE INFORMATION

SOT-23 (6L)

Symbol	Dimension in MM	
	Min.	Max.
A	1.05	1.35
A1	0.05	0.15
A2	1.00	1.20
B	0.30	0.50
C	0.08	0.20
D	2.80	3.00
E	1.50	1.70
H	2.60	3.00
L	0.35	0.55
e	0.95 BSC	





ABX0027B

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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

ABX0027B X X - T
 PART NUMBER _____
 PACKAGE TYPE _____
 T=SOT-23
 NONE= TUBE
 T=TAPE and REEL
 TEMPERATURE
 C=COMMERCIAL

Note: Abracon Supports GREEN Packaging Only

Part / Order Number	Marking	Package Option
ABX0027BTCL-T	ABX0027BTC	6-Pin SOT (Tape and Reel)

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