

Dual XO with 4 CMOS Outputs 10MHz to 52MHz

FEATURES

- Generates 4 CMOS outputs from 2 crystal inputs
 - XIN1- Accepts a 10 to 52MHz crystal input and generates 1 CMOS output at the same frequency.
 - XIN2- Accepts a 10 to 52MHz crystal input and generates 3 CMOS outputs at the same frequency.
- Low phase noise (-130 dBc @ 10kHz offset).
- Low jitter (RMS): 2.5ps period jitter.
- 12mA drive capability at TTL output.
- 1.62V to 3.63V DC operation.
- Available in 14 pin 150mil SOIC.

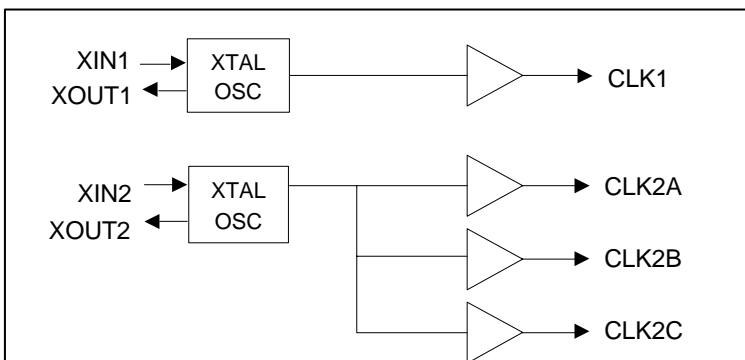
DESCRIPTION

The ABX0027M is part of Abracon 's low cost family of XO IC's, designed to replace multiple XO solutions saving the cost and board space of clock distribution buffers. In addition, this product family provides among the lowest current on the market for the 10MHz to 52MHz range. They accept input crystals from 10MHz to 52MHz (fundamental resonant mode) and provide low phase noise (<-130dBc at 10kHz offset at 30MHz), and very low jitter (2.5 ps RMS period jitter) outputs.

PIN ASSIGNMENT



BLOCK DIAGRAM



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PIN DESCRIPTION

Name	Pin #	Type	Description
XIN1	1	I	Crystal input.
GND	2,3,10	P	Ground.
CLK2[A:C]	4,6,9	O	Buffered output from XIN2 crystal input.
VDD	5,12	P	Power supply.
XOUT2	7	O	Crystal output for XIN2 crystal.
XIN2	8	I	Crystal input.
CLK1	11	O	Buffered output from XIN1 crystal input.
N/C	13	-	No connection.
XOUT1	14	O	Crystal output for XIN1 crystal.

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. AC Electrical Specifications

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Crystal Frequency (XIN1 and XIN2)		10		52	MHz
Settling time	At power-up (Vdd reaches 1.62V)			10	ms
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 @ 1.4V	45	50	55	%
Short Circuit Current			±50		mA

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3. Jitter and Phase Noise Specifications

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
RMS Period Jitter (1 sigma – 1000 samples)	With capacitive decoupling between VDD and GND.		2.1	2.5	ps
Phase Noise relative to carrier	30MHz @100Hz offset		-80		dBc/Hz
Phase Noise relative to carrier	30MHz @1kHz offset		-110		dBc/Hz
Phase Noise relative to carrier	30MHz @10kHz offset		-130		dBc/Hz
Phase Noise relative to carrier	30MHz @100kHz offset		-138		dBc/Hz
Phase Noise relative to carrier	30MHz @1MHz offset		-145		dBc/Hz

4. DC Specifications

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic, with Loaded Outputs @ 3.3V	I _{DD}	XIN1 and XIN2 at 27MHz, Cload=10pF		6.0		mA
Supply Current in tri-state	I _{DD}	Output disabled			520	μA
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 (3.3V)	V _{DD} - 0.4			V
Output drive current		At TTL level (3.3V)	10			mA

5. Crystal Specification

PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Crystal Resonator Frequency	F _{XIN1}	10		52	MHz
	F _{XIN2}				
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

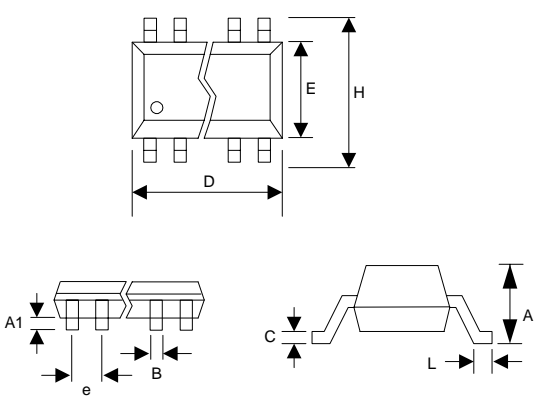
Note: A detailed crystal specification document is also available for this part

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PACKAGE INFORMATION

14 PIN Narrow SOIC (mm)

Symbol	SOIC	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	9.80	10.00
E	3.80	4.00
H	5.80	6.20
L	0.40	1.27
e	1.27 BSC	

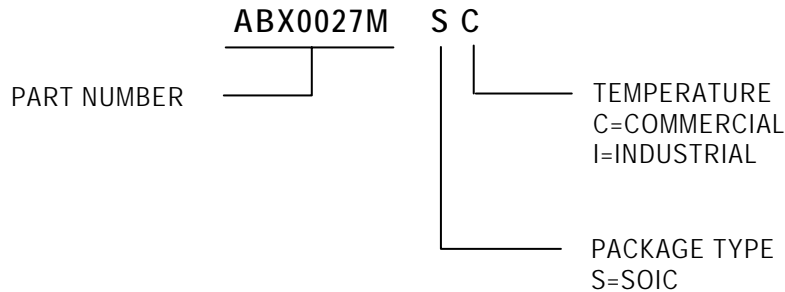


ORDERING INFORMATION

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



<u>Order Number</u>	<u>Marking</u>	<u>Package Option</u>
ABX0027M SC	ABX0027M SC	SOIC - Tube
ABX0027M SC-T	ABX0027M SC	SOIC - Tape and Reel

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