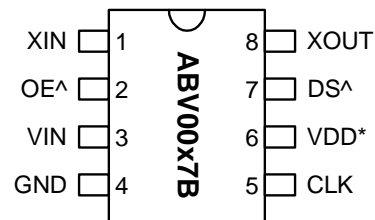


Low Power CMOS Output VCXO Family (17MHz to 130MHz)

FEATURES

- VCXO output for the 17MHz to 130MHz range
 - ABV0017B: 17MHz to 36MHz
 - ABV0027B: 27MHz to 65MHz
 - ABV0037B: 65MHz to 130MHz
- Low phase noise (-142 dBc @ 10kHz offset).
- CMOS output with OE tri-state control.
- Selectable output drive (Standard or High drive).
 - Standard: 8mA drive capability at TTL level.
 - High: 24mA drive capability at TTL level.
- Fundamental crystal input.
- Integrated high linearity variable capacitors.
- +/- 150 ppm pull range, max 5% linearity.
- Low jitter (RMS): 2.5ps period jitter.
- 2.5 to 3.3V operation.
- Available in 8-Pin SOIC

PIN CONFIGURATION



8 Pin SOIC

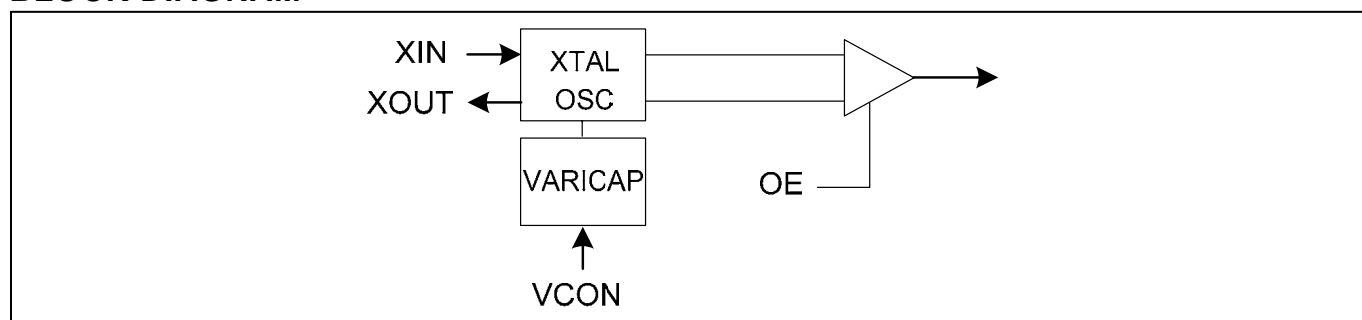
DESCRIPTION

The ABV0017B/27B/37B are a low cost, high performance, low phase noise, and high linearity VCXO family for the 17 to 130MHz range, providing less than -130dBc at 10kHz offset. The very low jitter (2.5 ps RMS period jitter) makes these chips ideal for applications requiring voltage controlled frequency sources. The IC's are designed to accept fundamental resonant mode crystals.

FREQUENCY RANGE

PART #	MULTIPLIER	FREQUENCY
ABV0017B	No PLL	17 - 36 MHz
ABV0027B	No PLL	27 - 65 MHz
ABV0037B	No PLL	65 - 130 MHz

BLOCK DIAGRAM



Low Power CMOS Output VCXO Family (17MHz to 130MHz)

PIN AND PAD DESCRIPTION

Name	Pin#	Die Pad Position		Type	Description
		X (μm)	Y (μm)		
XIN	1	94.183	768.599	I	Crystal input pin.
OE	2	94.157	605.029	I	Output Enable input pin. Disables the output when low. Internal pull-up enables output by default if pin is not connected low.
VCON	3	94.183	331.756	I	Frequency control voltage input pin.
GND	4	94.193	140.379	P	Ground pin.
CLK	5	715.472	203.866	O	Output clock pin.
VDD	6	715.307	455.726	P	VDD power supply pin.
DRIVSEL	7	715.472	626.716	I	Output drive select pin. High drive if set to '0'. Low drive if set to '1'. Internal pull-up.
XOUT	8	476.906	888.881	I	Crystal output pin. Ref clock input.

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	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Crystal Frequency		ABV0017B	17		36	MHz
		ABV0027B	27		65	
		PLL500-47B	65		130	
Output Clock Rise/Fall Time		0.8V ~ 2.0V with 10 pF load		0.8		ns
		0.3V ~ 3.0V with 15 pF load		2.5		
Output Clock Duty Cycle		Measured @ 1.4V	45	50	55	%
Short Circuit Current				±50		mA

Low Power CMOS Output VCXO Family (17MHz to 130MHz)

3. Voltage Control Crystal Oscillator

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
VCXO Stabilization Time *	$T_{VCXOSTB}$	From power valid			10	ms
VCXO Tuning Range		$F_{XIN} = 12 - 25\text{MHz};$ XTAL $C_0/C_1 < 250$ $0V \leq VCON \leq 3.3V$		300		ppm
CLK output pullability		$VCON = 1.65V, \pm 1.65V$	± 150			ppm
VCXO Tuning Characteristic				100		ppm/V
Pull range linearity					5	%
Power Supply Rejection	PWSRR	Frequency change with VDD varied +/- 10%	-1		+1	ppm
VCON pin input impedance			2000			$k\Omega$
VCON modulation BW		$0V \leq VCON \leq 3.3V, -3\text{dB}$	45			kHz

Note: Preliminary Specifications still to be characterized. Parameters denoted with an asterisk (*) represent nominal characterization data and are not production tested to any specific limits.

4. 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.		2.5		ps
Phase Noise relative to carrier	@100Hz offset		-100		dBc/Hz
Phase Noise relative to carrier	@1kHz offset		-125		dBc/Hz
Phase Noise relative to carrier	@10kHz offset		-142		dBc/Hz
Phase Noise relative to carrier	@100kHz offset		-150		dBc/Hz
Phase Noise relative to carrier	@1MHz offset		-150		dBc/Hz

Low Power CMOS Output VCXO Family (17MHz to 130MHz)

5. DC Specifications

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic, with Loaded Outputs	I _{DD}	F _{XIN} = 27MHz, 15pF output load		2.8	4	mA
		F _{XIN} = 35MHz, 15pF output load		4.2	6	
		F _{XIN} = 78MHz, 15pF output load		7.2	9	
Allowable output load capacitance	C _L (Output)	ABV0017B			30	pF
		ABV0027B			20	pF
		ABV0037B Std drive up to 100MHz			15	pF
		ABV0037B High drive			10	pF
Operating Voltage	V _{DD}		2.25		3.63	V
Output High Voltage	V _{OH}	I _{OH} = -8mA	2.4			V
Output Low Voltage	V _{OL}	I _{OL} = 8mA			0.4	V
Output High Voltage at CMOS level		I _{OH} = -4mA	V _{DD} - 0.4			V
Output drive current		Standard drive at TTL level	8	9.5		mA
		High drive at TTL level	24	27		
Short Circuit Current				±50		mA
VCXO Control Voltage	VCON		0		V _{DD}	V

6. Crystal Specifications

PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Crystal Loading Rating (VCON = 1.65V)	C _L (xtal)		8.5		pF
Maximum Sustainable Drive Level				200	μW
Operating Drive Level			50		μW
Max C0 for ABV0017B				5	pF
Max C0 for ABV0027B				3.5	
Max C0 for ABV0037B				2.5	
C0/C1				250	-
ESR	R _s			30	Ω

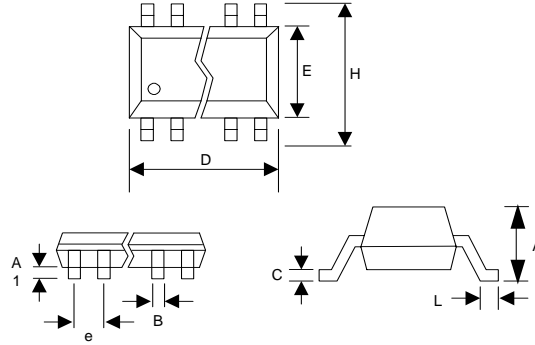
Note: The crystal must be such that it oscillates (parallel resonant) at nominal frequency when presented a C Load as specified above. If the crystal requires more load to be at nominal frequency, the additional load must be added externally. This however may reduce the pull range.

Low Power CMOS Output VCXO Family (17MHz to 130MHz)

PACKAGE INFORMATION

8 PIN (dimensions in mm)

Narrow SOIC		
Symbol	Min.	Max.
A	1.47	1.73
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	4.80	4.95
E	3.80	4.00
H	5.80	6.20
L	0.38	1.27
e	1.27 BSC	

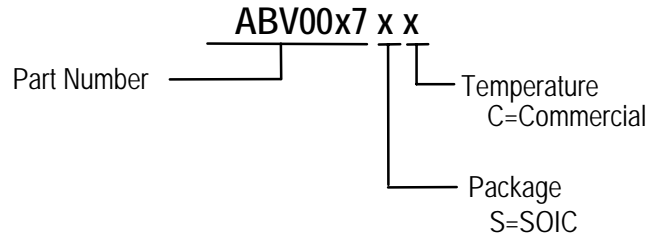


ORDERING INFORMATION

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



Order Number	Marking	Package Option
ABV0017BSC	ABV0017BSC	8-Pin SOIC (Tube)
ABV0017BSC-T	ABV0017BSC	8-Pin SOIC (Tape and Reel)
ABV0027BSC	ABV0027BSC	8-Pin SOIC (Tube)
ABV0027BSC-T	ABV0027BSC	8-Pin SOIC (Tape and Reel)
ABV0037BSC	ABV0037BSC	8-Pin SOIC (Tube)
ABV0037BSC-T	ABV0037BSC	8-Pin SOIC (Tape and Reel)

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