
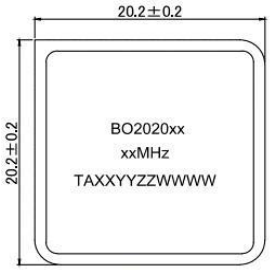
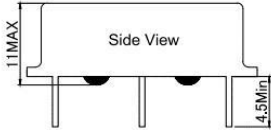


Features				Applications		
<ul style="list-style-type: none"> <li>● Ultra Stable</li> <li>● Wide Temperature Range</li> <li>● DIP (20mm*20mm)</li> </ul>				<ul style="list-style-type: none"> <li>● Base Stations</li> <li>● Instrumentations</li> <li>● Medical Electronics</li> <li>● Satellite communication</li> </ul> 		
BO2020L Specifications						
Parameter	Value			Unit	Condition	
	Min.	Typ.	Max.			
Supply Voltage	-	5.0	-	V	Vcc±5%	
	-	12.0	-	V	Vcc±5%	
Power Consumption	-	-	4.5	W		
	-	-	1.5	W		
Frequency Range	10 ~40			MHz		
Nominal Frequency	10, 20, 40			MHz		
Initial Frequency Tolerance	±100	-	±300	ppb	At shipment, nominal EFC	
Freq. Stability Vs. Temp.	±3	-	±10	ppb	-20°C ~ +70°C	
	±5	-	±20	ppb	-40°C ~ +70°C	
	±10	-	±50	ppb	-40°C ~ +85°C	
	±50	-	±100	ppb	-55°C ~ +85°C	
Sine Wave	Output Level	7	-	dBm		
	Harmonics	-	-	-40	dBc	
	Spurious	-	-	-80	dBc	
	Load	-	50	-	Ω	
HCMOS	V <sub>OH</sub>	2.4	-	-	V	HCMOS Output, Load=15pf
	V <sub>OL</sub>	-	-	0.4	V	HCMOS Output, Load=15pf
	Duty Cycle	45	-	55	%	(V <sub>OH</sub> - V <sub>OL</sub> )/2
	Rise/Fall edge	-	-	6	ns	HCMOS Output, Load=15pf
	Load	-	15	-	pf	
Short-term Stability@10MHz	-	-	5×10 <sup>-12</sup>	ppb/s	Test after 15 Min.	
Warm-up Time	-	-	5	Min	At +25°C, with tolerance ±100ppb	
Supply Sensitivity	-	-	±1	ppb	Vcc±5%	
Load Sensitivity	-	-	±1		Load±5%	
Aging per Day	-	-	±0.5		After 30 days of operation	
Aging per Year	-	-	±50		After 30 days of operation	
SSB Phase Noise @10MHz	-	-	-125	dBc/Hz	Offset 10Hz	At +25°C, 12V
	-	-	-145		Offset 100Hz	
	-	-	-160		Offset 1kHz	
	-	-	-165		Offset 10kHz	
	-	-	-168		Offset 100kHz	
Control Voltage Range	0	-	5	V		
Frequency Tuning Range	±0.5	-	±2.0	ppm		
Tuning Slope	Positive					
Environmental Conditions						
Operating Temperature Range	-55°C~+85°C					
Storage Temperature Range	-55°C~+125°C					

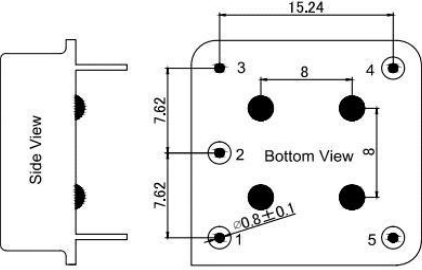
### Outline Dimension & Pin Connections



BO2020xx  
xxMHz  
TAXXYZZZWWWWW



Side View



Bottom View

Pin Connections		
Pin1	Vcon	Control Voltage
Pin2	Ref	Voltage Reference
Pin3	GND	Ground, Case
Pin4	Fout	Output
Pin5	Vdd	Power Supply

Note:  
 1. Leave Pin 1 unconnected if Vcon is not used.  
 2. Leave Pin 2 unconnected if Ref is not used.  
 3. Reference connection of voltage control circuit.

### Reliability

Parameter	Condition
Temperature Stress Test	IEC60068, GJB360B
Mechanical Stress Test	IEC60068, GJB360B
EMC Test (ESD)	IEC61000, JESD22
Solderability	EIA/JESD22-B102-C
RoHS	RoHS Directive 2011/65/EU Annex II Recasting 2002/95/EC

### Ordering Guide

**BO 2020 L X X X XXX X X XX.XX**

**Product**  
OCXO

**Outline**  
20mm x 20mm

**Freq. Range:**  
L: < 50MHz

**Output**  
H: CMOS  
S: Sine Wave

**Supply Voltage:**  
5: 5.0Vdc  
3: 3.3Vdc

**Temp. Range:**  
C: -20 [ ] +70 [ ]  
G: -40 [ ] +70 [ ]  
I: -40 [ ] +85 [ ]  
U: -55 [ ] +85 [ ]

**Frequency:**  
xx MHz

**Tuning:**  
N: No Tuning  
E:  $\pm 50$ ppb  
D:  $\pm 100$ ppb

**Phase Noise**  
D: -135dBc/Hz @ 1kHz  
E: -140dBc/Hz @ 1kHz  
G: -145dBc/Hz @ 1kHz  
H: -150dBc/Hz @ 1kHz

**Stability**  
107:  $\pm 10$ ppb  
508:  $\pm 50$ ppb  
208:  $\pm 20$ ppb

Example: BO2020LH5FC100IN10

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