XtalTQ Technologies

Features

- Ultra Stable
- Low Phase Noise
- Freq. Range 50~156.25MHz
- High Precision
- DIP 20x20mm

Applications

- Satellite navigation
- wireless communication system
- High definition television system
- Low phase noise signal source
- Low jitter radio frequency communication circuit

BT2020H Vibration Insensitive Specifications

Parameter		Value			Unit	Conditions	
		Min.	Typ.	Max.			
Supply Voltage		–	3.3	–	V	Vcc±5%	
		–	5	–	V		
Supply Current		–	–	45	mA		
Frequency Range		50~ 156.25			MHz		
Nominal Frequency		50,100,120,122.88			MHz		
Initial Frequency Tolerance		–	±0.50	±1.00	ppm	At shipment, nominal EFC, +25℃	
Freq.Stability Vs.Temp.		±0.28	–	±1.00	ppm	-20℃~+70℃	
		±0.28	–	±1.00	ppm	-40℃~+70℃	
		±0.28	–	±1.00	ppm	-40℃~+85℃	
		±0.50	–	±2.00	ppm	-50℃~+85℃	
Sine Wave	Output	5	8	–	dBm		
	Harmonic Suppression	–	-40	-30	dBc		
	Spur Suppression	–	-80	-70	dBc		
	Load	–	50	–	Ω		
HCMOS	Voh	2.4	–	–	V	HCMOS Output，Load=15pf	
	Vol	–	–	0.4	V	HCMOS Output，Load=15pf	
	Duty Cycle	45	–	55	%	(V_{OH} - V_{OL})/2	
	Rise/Fall Edge	–	–	6	ns	HCMOS Output，Load=15pf	
	Load	–	–	15	pf		
RMS Jitter(E5052B)		–	–	1000	fs	12KHz~20MHz	
Supply Sensitive		–	–	±0.2	ppm	Vcc±5%	
Load Sensitive		–	–	±0.2		Load±5%	
Aging/First Year		–	–	±1.0		Standard	
SSB Phase Noise @100MHz		–	–	–	dBc/Hz	Offset 10Hz	Static phase noise at +25°C
		–	–	–		Offset 100Hz	
		–	-146	-140		Offset 1kHz	
		–	-157	-155		Offset 10kHz	
		–	-160	-158		Offset 100kHz	
SSB Phase Noise @100MHz		–	–	–	dBc/Hz	Offset 10Hz	X-axis dynamic phase noise at +25°C
		–	–	–		Offset 100Hz	
		–	-129	-120		Offset 1kHz	
		–	-158	-145		Offset 10kHz	
		–	-161	-155		Offset 100kHz	
SSB Phase Noise @100MHz		–	–	–	dBc/Hz	Offset 10Hz	Y-axis dynamic phase noise at +25°C
		–	–	–		Offset 100Hz	
		–	-125	-120		Offset 1kHz	
		–	-157	-145		Offset 10kHz	
		–	-160	-155		Offset 100kHz	
SSB Phase Noise @100MHz		–	–	–	dBc/Hz	Offset 10Hz	Z-axis dynamic phase noise at +25°C
		–	–	–		Offset 100Hz	
		–	-132	-120		Offset 1kHz	
		–	-157	-145		Offset 10kHz	
		–	-160	-155		Offset 100kHz	
Control Voltage Range		1.5 ± 1.0			V		
Frequency Tunning Range		±5	±7	–	ppm		
Tunning Slope		Positive					
Non-Lineraity		–	–	10	%		

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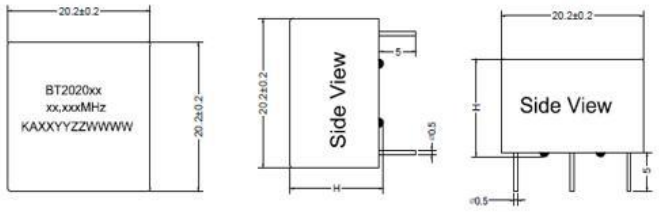
Static Phase Noise @1kHz

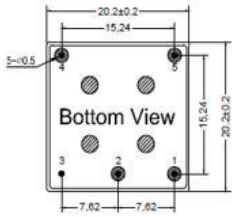
Frequency Range	<-130dBc	<-135dBc	<-140dBc	<-145dBc	
50～100MHz	O	O	O	O	O= Availavle
102.4～122.88MHz	O	O	O	X	X= Not Available
125～156.25MHz	O	O	X	X	

Environmental Conditions

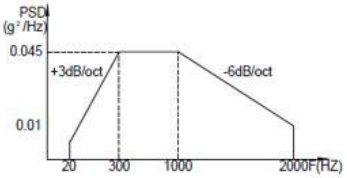
Operating Temp. Range	-50℃ ~ +85℃
Storage Temp.Range	-55℃ ~ +125℃
Note: The minimum to maximum value indicates the range of indicators	

Outline Dimension & Pin Connections





PIN1	Vcon/NC
PIN2	Vref/NC
PIN3	GND
PIN4	Output
PIN5	Vdd
H	≤12mm



Note:
Leave Pin 1 unconnected if Vcon is not used.
Leave Pin 2 unconnected if Vref is not used.

Maximun Ratings

Parameter	Symbol	Rating
Supply Voltage	Vdd	3.3V/5V
Control Voltage	Vcon	0V/3V
ESD, HBM/CDM/MM		4KV/ 2KV/ 200V

Reliability

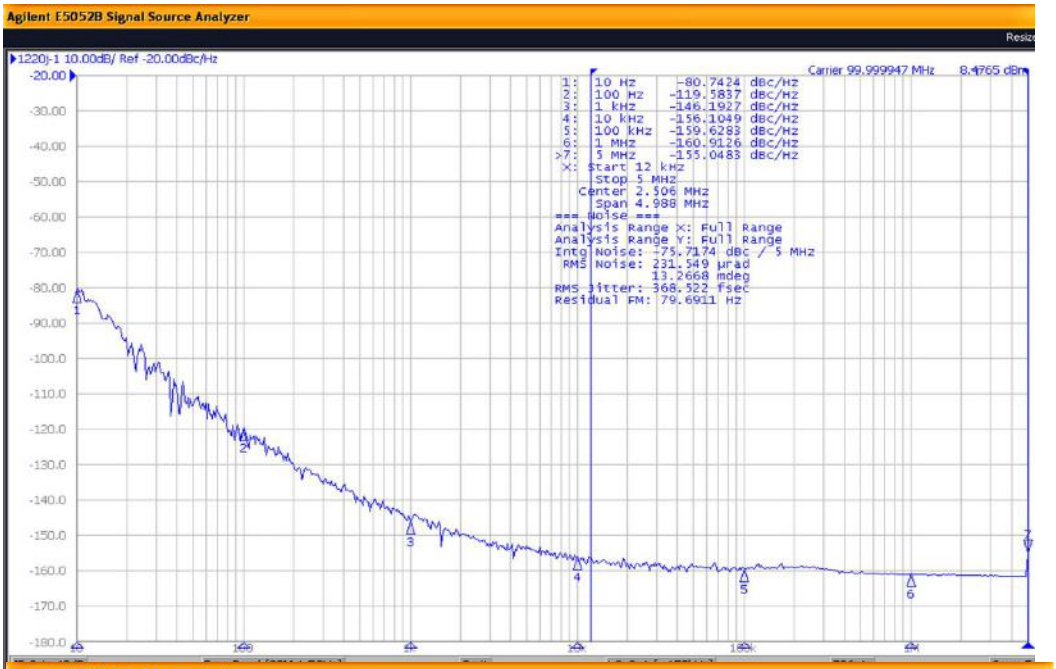
Parameter	Condition
Temperature Stress Test	IEC60068, GJB360B
Mechanical Stress Test	IEC60068, GJB360B
EMC Test (ESD)	IEC61000, JESD22
Solderability	EIA/JESD22-B102-C
RoHS	RoHS Directive 2011/65/EU Annex II Recasting 2002/95/EC

Ordering Guide

BT2020XXXXXXXXXXX.XXZ

- Product: TCXO
- Outline: 20mm x 20mm
- Frequency Range: L: < 50MHz H:≥ 50MHz
- Output: H: CMOS S: Sine Wave
- Supply Voltage: 3: 3.3 Vdc 5: 5.0 Vdc
- Temp. Range: C: -20℃ ~ +70℃ I: -40℃ ~ +85℃ M: -50℃ ~ +85℃ F: F: Customized
- Z: Vibration Insensitive
- Frequency: xx MHz
- Tuning Range: N: No Tuning A: Typ. ±5ppm
- Phase Noise: A: -120dBc/Hz@1kHz B: -125dBc/Hz@1kHz C: -130dBc/Hz@1kHz D: -135dBc/Hz@1kHz E: -140dBc/Hz@1kHz G: -145dBc/Hz@1kHz
- Temp. Stability: 206: ±2ppm 106: ±1ppm 507: ±0.5ppm 287: ±0.28ppm

Example: BT2020HS3I507GA100Z


Agilent E5052B Signal Source Analyzer
Resize
1220j-1 10.00dB/ Ref -20.00dBc/Hz
Carrier 99.999947 MHz 8.4765 dBm
1: 10 Hz -80.7424 dBc/Hz
2: 100 Hz -119.5837 dBc/Hz
3: 1 kHz -146.1927 dBc/Hz
4: 10 kHz -156.1049 dBc/Hz
5: 100 kHz -159.6283 dBc/Hz
6: 1 MHz -160.9126 dBc/Hz
>7: 5 MHz -155.0483 dBc/Hz
x: Start 12 kHz
Stop 5 MHz
Center 2.506 MHz
Span 4.988 MHz
=== Noise ===
Analysis Range X: Full Range
Analysis Range Y: Full Range
Intg Noise: -75.7174 dBc / 5 MHz
RMS Noise: 231.549 µrad
13.2668 mdeg
RMS Jitter: 368.522 fsec
Residual FM: 79.6911 Hz


Agilent E5052B Signal Source Analyzer
Resize
Tr1 10.00dB/ Ref -20.00dBc/Hz
Tr2 10.00dB/ Ref -20.00dBc/Hz
Tr3 10.00dB/ Ref -20.00dBc/Hz
Carrier 100.00000 MHz 8.5273 dBm
4: 100 kHz -160.1556 dBc/Hz
User Start 10 Hz
Stop 5 MHz
[Tr1] 1: 100 Hz -84.9037 dBc/Hz
[Tr1] 2: 1 kHz -129.0474 dBc/Hz
[Tr1] 3: 10 kHz -157.6713 dBc/Hz
[Tr1] >4: 100 kHz -160.3591 dBc/Hz
[Tr2] 1: 100 Hz -91.7937 dBc/Hz
[Tr2] 2: 1 kHz -125.4122 dBc/Hz
[Tr2] 3: 10 kHz -156.3417 dBc/Hz