

Features:

- 5 x 7 x 2.5 mm ceramic SMD TCXOs with HCMOS square wave output
- 0.01 uF decoupling capacitor built-in
- Wide frequency range: 2.5 MHz to 170.0 MHz
- Frequency stability as tight as ± 0.5 ppm over 0 to +50°C or ± 1 ppm over -40 to +85°C
- General Specifications – (at +25°C and specified input voltage)

RoHS Information:

- RoHS Compliant
- HCMOS Output


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Product Series		BT1657T				
Frequency Range		2.5 MHz to 170.0 MHz				
Output Wave from		Square wave. (wave form code is "T")				
Initial Calibration Tolerance ⁽¹⁾		± 2 ppm at +25°C ± 2 °C and Vcon = +1.5V D.C.				
Standard Frequencies		1 MHz – 800 MHz				
Frequency Stability		± 0.5 ppm	± 1 ppm	± 1.5 ppm	± 2.0 ppm	± 2.5 ppm (Standard)
Operating Temperature Range	0 to +50°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	-10 to +60°C	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	-20 to +70°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	-30 to +75°C (standard)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	-40 to +85°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Click Here To See The Part Number Example						
Frequency Stability (ppm)	Vs. Aging	± 1.0 ppm max. first year at +25°C				
	Vs. Voltage Change	± 0.3 ppm max. for a $\pm 5\%$ input voltage change				
	Vs. Load Change	± 0.3 ppm max. for a $\pm 10\%$ loading condition change				
	Vs. Reflow	± 1 ppm max. 1 reflow and measured 24 hours afterwards				
Supply Voltage		+2.8 V (Voltage code is "28")	+3.0 V (Voltage code is "3")	+3.3V (Voltage code is "33")	+5.0 V (Voltage code is "5")	
Current Consumption (typical)	2 mA @ 8.192 MHz	2 mA @ 8.192			5 mA @ 8.192	
	3 mA @ 10 MHz	4 mA @ 10 MHz			7 mA @ 10 MHz	
	14 mA @ 77.760 MHz	17 mA @ 77.760 MHz			32 mA @ 77.760 MHz	
	16 mA @ 155.520 MHz	21 mA @ 155.520 MHz			43 mA @ 155.520 MHz	
	Call Us, Above 155.520 MHz For A Quote					
Output Level	Logic "1"	2.4 V min.				
	Logic "0"	0.4 V max.				
Rise and Fall Time		10 nano. Sec. max. 20% \leftrightarrow 80% of waveform				
Duty Cycle (Symmetry)		50% \pm 10% measured at 50% VDD				
Start-up Time		10 m. sec max.				
Output Load		15 pF				
SSB Phase Noise at +25°C	Offset	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz
	BT1657T: 100.000	-72 dBc/Hz	-110 dBc/Hz	-125 dBc/Hz	-132 dBc/Hz	-125 dBc/Hz
Output Format		AC block, DC coupled				
Storage Temperature		-50°C to +100°C				

⁽¹⁾: Frequency stability over temperature will be measured from this initial frequency.



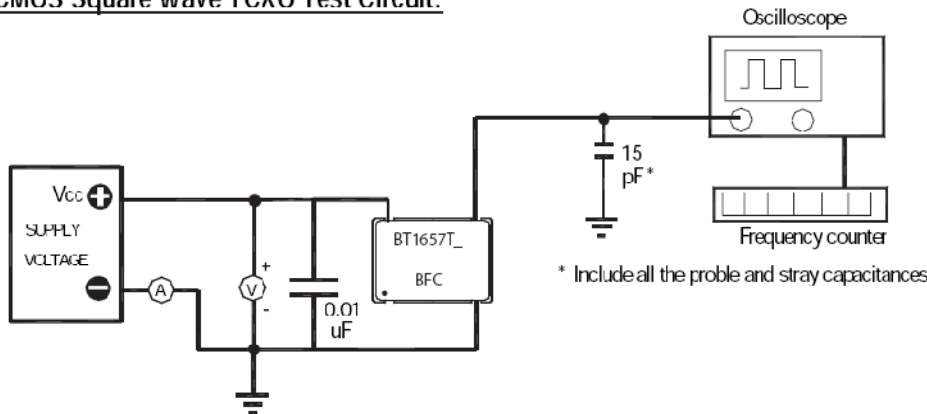
Part Number Format

Model	Voltage	Frequency Range	Stability	Operating Temp.
BT1657T	2 = 2.8V		± 0.5ppm	0°C to +50°C
	3 = 3.0V		± 1ppm	-10°C to +60°C
	33 = 3.3V		± 1.5	-20°C to +70°C
	5 = 5.0V		± 2.0ppm	-30 to +75°C
			± 2.5ppm (Standard)	-40 to +85°C

Part Number Example

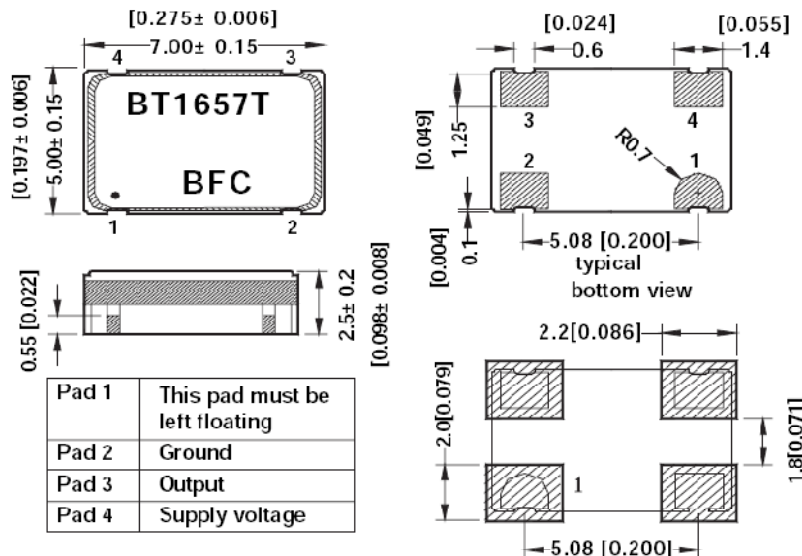
BT1657	3	20.000 MHz	Click here to see the Operating Range & Operating Temperature	
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HCMOS Square Wave TCXO Test Circuit:



Package Dimensions and Suggested Land Pattern:

Unit: mm



Chamfered pad is pad No. 1. Count counter-clockwise when looking at top view.
Count clockwise when looking at bottom view.
0.01 uF decoupling capacitor built-in

**Environmental
Performance
Specifications**

RoHS Compliance	Pb (lead) free
Storage temperature range	-55°C to +125°C
Humidity	85% RH, 85°C, 48 Hours
Hermetic seal	Leak rate 2×10^{-8} ATM-cm ³ /sec max.
Solderability	MIL-STD-202F method 208E
Reflow	260°C for 10 sec.
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condi. E, 1000GG ½ sine wave