Dynamic Engineers Inc.
2550 Gray Falls Dr., Suite#128, Houston, TX, 77077
TEL: 1-281-870-8822 EMAIL: Sales@DynamicEng.com

TCXO5300Z-UHS-20MHz
Ultra-High Stability TCXO

Features and Benefits

Ultra-High Stability (UHS) ±100 ppb
Less than 0.1 ppb Allan deviation

Typical Applications

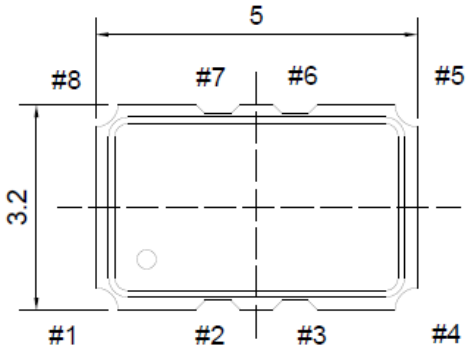
Global Navigation Satellite Systems
Small cell mobile communications such as WCDMA, TD-SCDMA, CMDA2000, WiMax, and LTE cell systems standards

Description

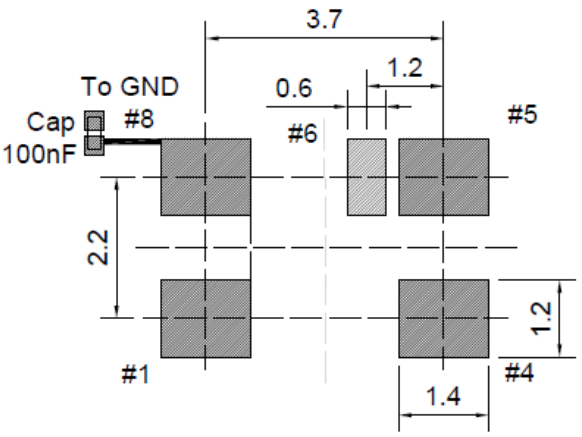
State-of-the-art next generation compensation IC technology used in conjunction with precision resonator design and processing techniques

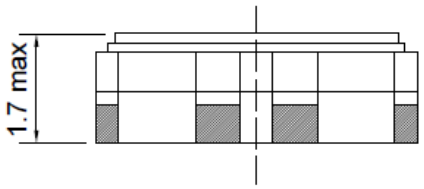
Mechanical Drawing & Pin Connections

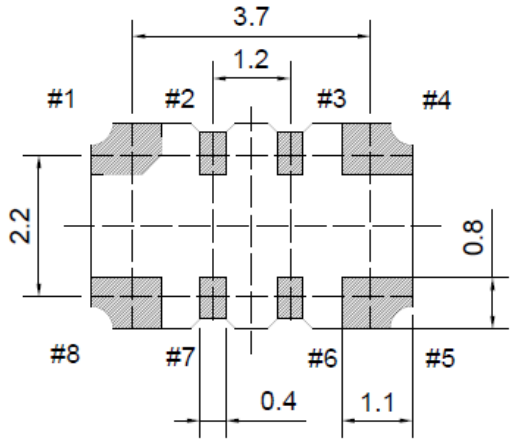
Drawing No: **MD150017-4**



Footprint







Pin Function

#1	Vc(Voltage Control)
#2	N.C.
#3	N.C.
#4	GND
#5	Output
#6	Tri-state or N.C.
#7	N.C.
#8	Vcc

Unit : mm

Dynamic Engineers Inc.
2550 Gray Falls Dr., Suite#128, Houston, TX, 77077
TEL: 1-281-870-8822 EMAIL: Sales@DynamicEng.com

Specifications

Oscillator Specification	Condition	Value Typ.	Unit
Nominal Frequency		20.00	MHz
Frequency Stability			
Frequency Tolerance ex. Factory	@25°C	0.0~1.0	ppm
VS. Temperature reference (F_{MAX} + F_{MIN}) / 2	Over -40°C to +85°C	≤ ±0.10	ppm
VS ±5% change in supply voltage	Reference to frequency at nominal supply	≤±0.05	ppm
VS. ±10% change in load	Reference to frequency at nominal load	≤±0.05	ppm
VS. Aging	1st year	≤±0.80	ppm
Frequency slope vs. temperature	Over operating temperature	≤0.05	ppm/°C
Short term stability ADEV	t = 1 sec	< 1 x 10^{-10}	
RF Output			
Output Wave Form		Clipped Sine wave	
Output Level		> 1.0	Vp-p
Output Load	±5%	10 kΩ//10pF	
Power Supply			
Supply Voltage		+3.3	V
Current Consumption		< 2	mA
Frequency Control and Phase Noise			
Electronic frequency control (EFC) Range	Positive slope	ΔF > ±5	ppm
EFC Voltage (V_C)	±1.0V	+1.5	V
EFC Input Impedance		> 100	kΩ
Start Up Time		< 2	ms
Tri-State Function	Pin #5 > oscillation Pin #5 > high impedance	Pin #6 ≥ 2.1 Pin #6 ≤ 0.9	V or open V or GND
Phase Noise @ 20.0 MHz	@ 1 kHz @ 10 kHz @ 100 kHz	< -135 <-145 <-155	dBc/Hz
Environmental Conditions			
Operating temperature range		-40 to +85	°C
Storage temperature range		-55 to +105	°C
Moisture Sensitivity	Unlimited	Level 1	
Reflow conditions per JEDEC J-STD-020	During 10 seconds max	260 max	°C
Packing Units	500 or 1,000 pcs	Tape and Reel	

Environmental Conditions

Test	IEC 60068 Part	IEC 60679-1 Clause	MIL-STD-202G Method	MIL-STD-810F Method	MIL-PRF-55310D Clause	Test Conditions (IEC)
Sealing Tests (if applicable)	2-17	5.6.2	112E		3.6.1.2	Gross lead: Test Oc Fine Leak: Test Qk
Solderability	2-20	5.6.3	208H		3.6.52	Test Ta, Method 1
Resistance to soldering heat	2-58		210F		3.6.48	Test Td_1, Method 2 Test Td_2, Method 2
Shock	2-27	5.6.8	213B	516.4	3.6.40	Test Ea, 3 x per axes 100g, 6ms half-sine pulse
Vibration sinusoidal	2-6	5.6.7.1	201A 204D	516.4-4	3.6.38.1 3.6.38.2	Test F_C, 30 min per axes 10 Hz – 55 Hz, 0, 75 mm, 55 Hz – 2 kHz, 10 g
Vibration random	2-64	5.6.7.3	214A	514.5	3.6.38.3 3.6.38.4	Test Fdb
Endurance Tests - Aging - Extended aging		5.7.1 5.7.2	108A		4.8.35	30 days @ 85°C 1000 h, 2000 h, 8000h @ 85°C

Handling Precautions

Flux Residue Resistance

Analog circuit performance can be affected by unclean board.

Be aware if the circuit has very high resistances – even in the low MΩ – special attention may need to be paid to cleaning. A finished assembly may be adversely affected by flux or cleansing residue. The electronics industry in the past few years has joined the rest of the world in becoming environmentally responsible. Hazardous chemicals are being removed from the manufacturing process – including flux that has to be cleaned with organic solvents. Water-soluble fluxes are becoming more common, but water itself can become contaminated easily with impurities. These impurities will lower the insulation characteristics of the PCB substrate. It is vitally important to clean with freshly distilled water every time a high-impedance circuit is cleaned. There are applications that may call for the older organic fluxes and solvents, such as very low power battery powered equipment with resistors in the 10s of MΩ range. Nothing can beat a good vapor defluxing machine for ensuring that the board is clean.

Test Circuit