



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

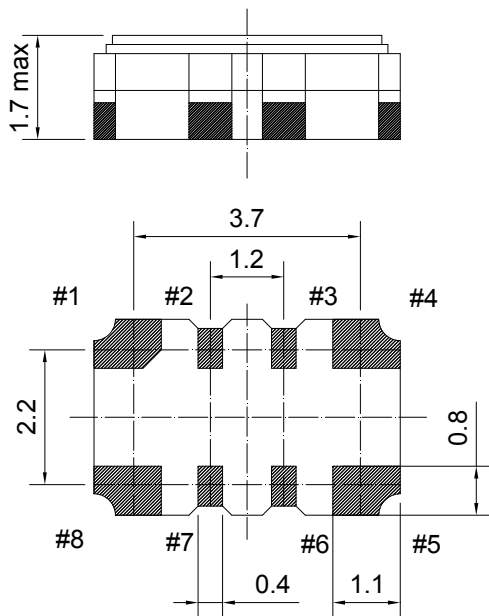
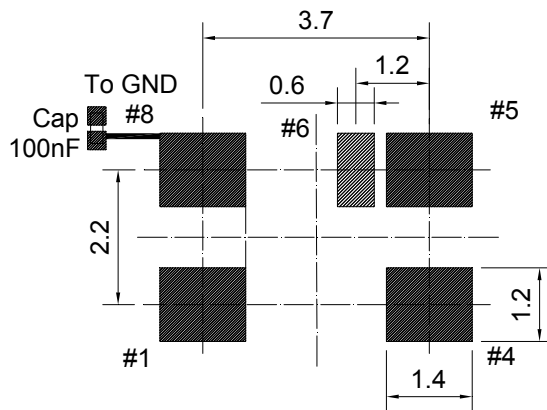
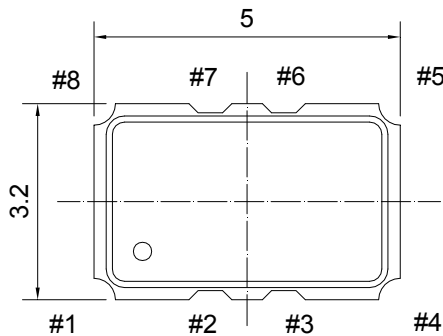
Description

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.

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TCXO5300Z-UHS-20MHz

Ultra-High Stability TCXO's

Specifications

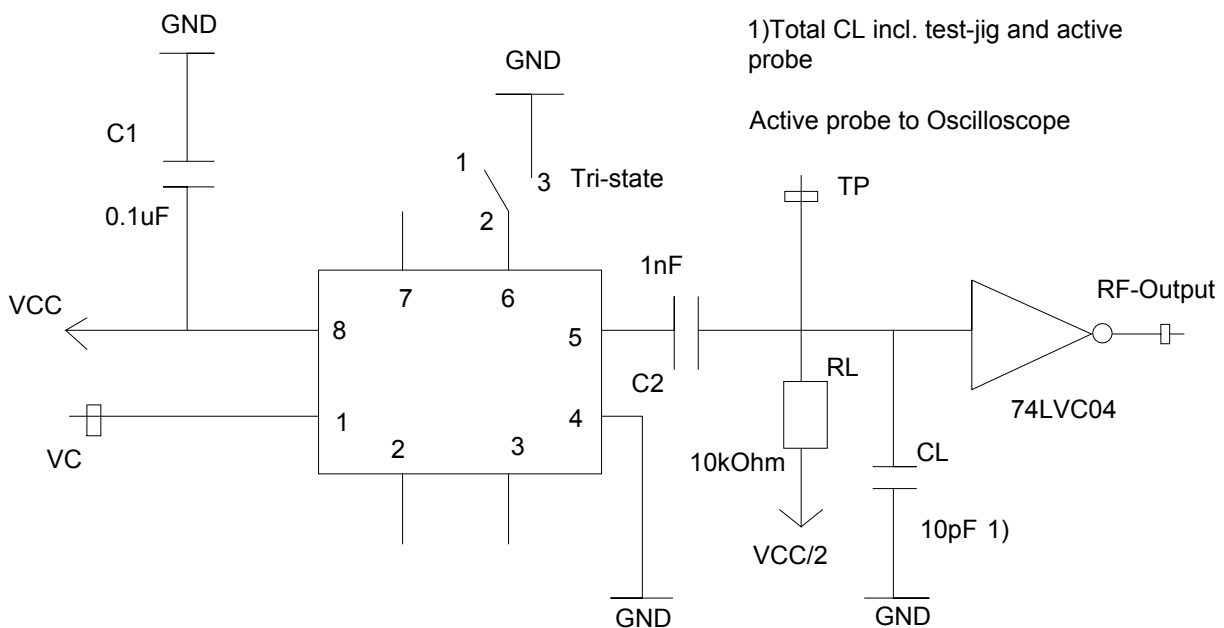
Oscillator Specification	Condition	Value	Unit
		Typ.	
Nominal Frequency		20.00	MHz
Frequency Stability			
Frequency Tolerance ex. Factory	@25°C	0.0~1.0	ppm
VS. Temperature reference (F _{MAX} + F _{MIN}) / 2	Over -40°C to +85°C	≤ ±0.10	ppm
VS ±5% change in supply voltage	Reference to frequency at nominal supply	≤ ±0.05	ppm
VS. ±10% change in load	Reference to frequency at nominal load	≤ ±0.05	ppm
VS. Aging	1 st 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

Test Circuit





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TCXO5300Z-UHS-19.2MHz

Ultra-High Stability TCXO's

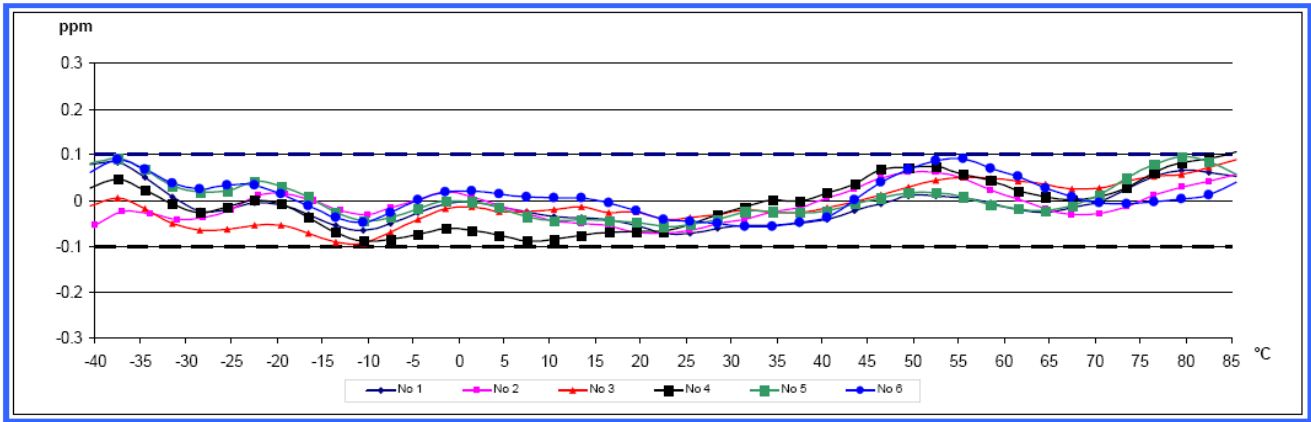
Specifications

Oscillator Specification	Condition	Value	Unit
		Typ.	
Nominal Frequency		19.20	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	1 st 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
Control 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 @ 19.2 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 profiles as per JEDEC J-STD-020	During 10 seconds max	260 max	°C
Packing Units	500 or 1,000 pcs	Tape & reel	

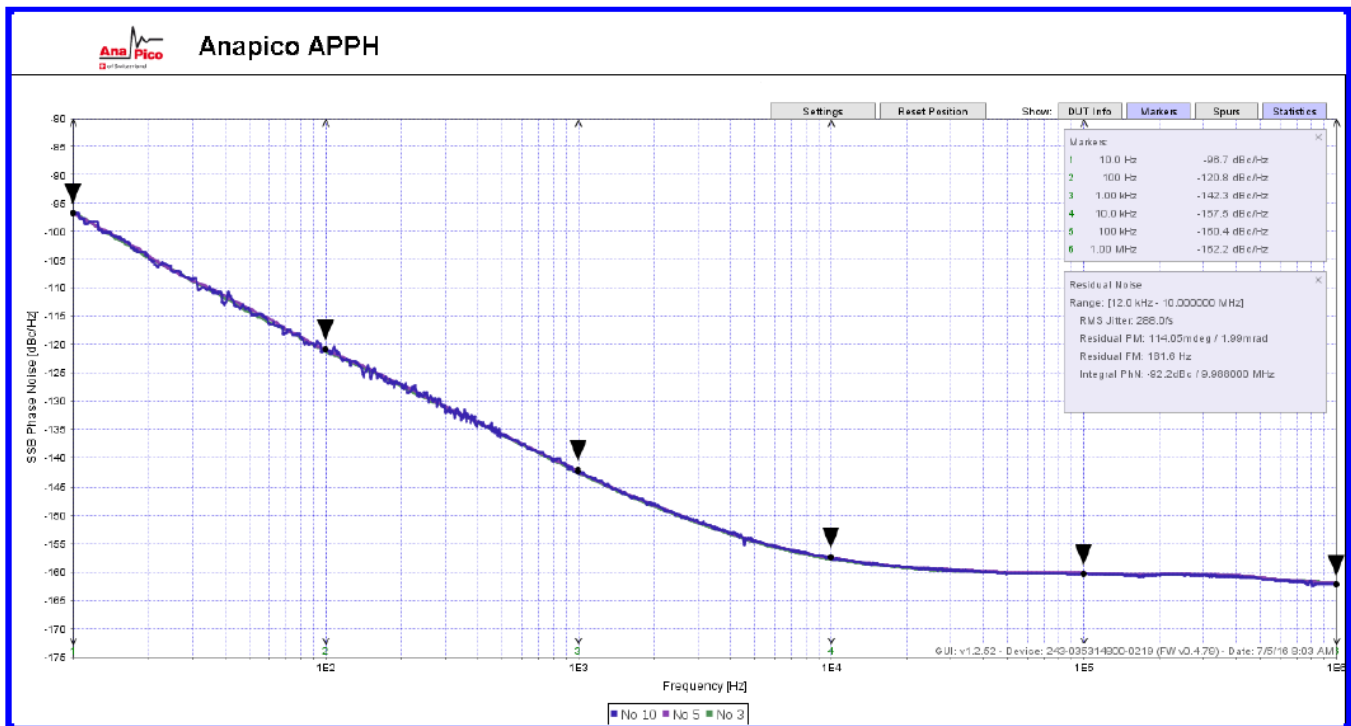


Test data

Frequency deviation vs. temperature



Phase noise





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Typical Applications

Global Navigation Satellite Systems

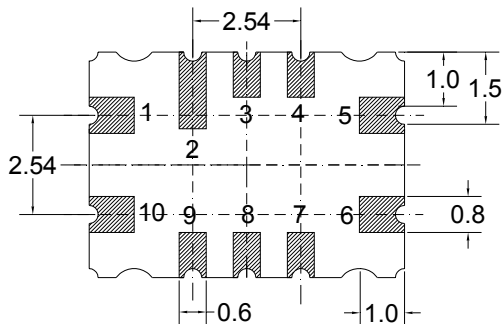
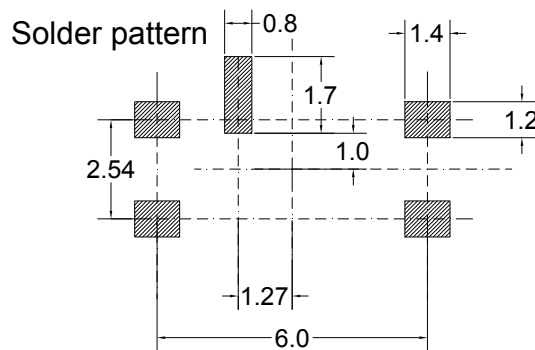
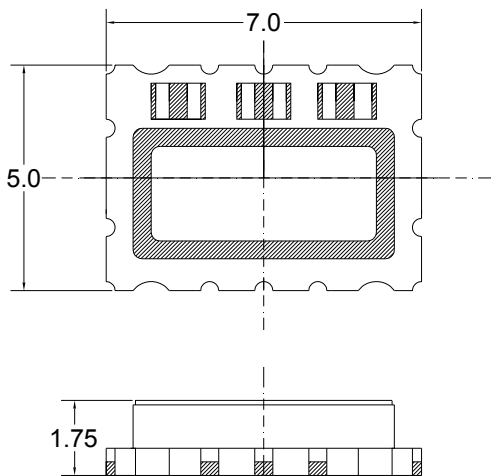
Small cell mobile communications such as WCDMA, TD-SCDMA, CMDA2000, WiMax, and LTE cell systems standards

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:MD150075-2



Pin function

#1 Vc (EFC)

#5 GND

#6 Output

#9 E/D or NC

#10 Vcc

Do not connect #2, #3, #4, #7, #8



Specifications

Oscillator Specification	Condition	Value	Unit
		Typ.	
Nominal Frequency		20.00	MHz
Frequency Stability			
Frequency Tolerance ex. Factory	@ +25°C	0.0~1.0	ppm
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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	1 st year	≤±1.00	ppm
	10 years	≤ ±3.50	
Frequency slope	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		>0.8	Vp-p
Output Load	±10%	10 kΩ//15pF	
Power Supply			
Supply Voltage		+3.3	V
Current Consumption		<5	mA
Frequency Control and Phase Noise			
Electronic frequency control (EFC) Range		ΔF > ±5	ppm
Control Voltage (V _C)	±1.0V Positive slope	+1.5	V
EFC Input Impedance		> 100	kΩ
Start Up Time		< 2	ms
Tri-State Function	Pin #6> oscillation	Pin #9	high or open
	Pin #6> high impedance	Pin #9	low
Phase Noise @ 20.0 MHz	@ 100 Hz	< -120	dBc/Hz
	@ 1 kHz	< -145	
	@ 10 kHz	<-155	
	@ 100 kHz	<-155	
Environmental Conditions			
Operating temperature range		-40 to +85	°C
Storage temperature range		-55 to +125	°C
Moisture Sensitivity	Unlimited	Level 1	
Reflow profiles as per IPC / JEDEC J-STD-020	Over 10 seconds max	≤ 260 max	°C