



Features and Benefits

- High frequency stability(up to ± 0.5 ppm over -40°C to $+85^{\circ}\text{C}$)
- Low power consumption (up to 15 mA)
- DIL14 package design
- 3.3V CMOS output

Typical Applications

- Microwave Communication
- Mobile Devices

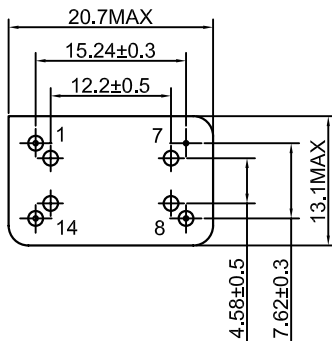
Description

TCXO2013LSQ1 offers high frequency stability and low power consumption in DIL14 package with wide range of stability vs. operating temperature options to suit the different applications needs.

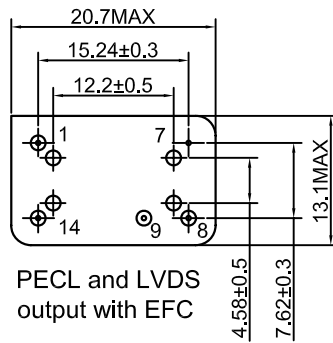
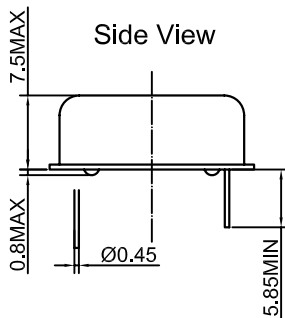
Mechanical Drawing & Pin Connections

Drawing No: MD1400-(**

Bottom View



Side View



Pin Connections: (Without EFC)

PIN #	Symbol	CONNECTION
1	N.C or Comp OUT	No Connection or Complementary RF Output (PECL and LVDS)
7	GND	Ground
8	RF OUT	RF Output
9	Pin Not Present	
14	Vs	Supply Voltage

Pin Connections: (With EFC)

PIN #	Symbol	CONNECTION
1	Vc	Control Voltage(EFC)
7	GND	Ground
8	RF OUT	RF Output
9	Comp OUT	Complementary RF Output (PECL and LVDS)
14	Vs	Supply Voltage

Unit in mm
 1mm = 0.0394 inches



Specifications

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency Range			1		200	MHz	
Signal Waveform			HCMOS				
Output Load				15		pF	
Amplitude			According to relevant Logic Standard				
Power Supply							
Supply Voltage	V _s		3.15	3.30	3.45	V	
Current Consumption (Note 2)			15 ~ 50			mA	
Frequency Adjustment Range							
Mechanical (internal trimmer)			±3			ppm	Ordering Option = blank
Electronic Frequency Control (EFC)			±5			ppm	Ordering Option = "V"
EFC Voltage	V _c		0.15	1.65	3.15	V	
EFC Slope	Δf / ΔV _c		Positive				
EFC Input Impedance			100			kΩ	
Frequency Stability							
Vs Operating Temperature			±0.5		±5.0	ppm	Refer to ordering options
Vs Supply Voltage changes	V _s	±5%		±0.1	±0.3	ppm	
Vs Load changes		±10%			±0.2	ppm	
Long Term Aging Per Year		@ +40°C			±1.0	ppm	
Environmental Conditions							
Operating Temperature Range			-40		+85	°C	Refer to ordering options
Storage Temperature Range			-55		+105	°C	
Enclosure (see drawing) L x W x H		max	20.7 x 13.1 x 7.5			mm	IEC 60679-3 CO21
Weight					5	g	

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Depending on frequency and supply voltage
3. Reduced package height H = 5.1mm max. on request
4. All combinations of options might not be available. Please consult DEI for details

Absolute Maximum Ratings

Parameter	Sym	Min	Max.	Unit	Condition
Supply Voltage	V _s	-0.5	V _s +10%	V	V _s to GND
Control Voltage	V _c	-0.5	6	V	V _c to GND

Handling and Testing

Parameter	Procedure		Condition
Electrostatic Discharge (ESD)			
THD devices	IEC60749-26	HBM	2000V
SMD devices	IEC60749-27	MM	200V
Washable	Yes		
RoHS Compliant	Yes		



Ordering Options

Frequency Stability		Temperature (Lower)		Temperature (Upper)	
Code	Stability [ppm]	Code	T (°C)	Code	T (°C)
1	±0.5	1	0	1	+50
2	±1.0	2	-10	2	+60
3	±1.5	3	-20	3	+70
4	±2.0	4	-30	4	+75
5	±2.5	5	-40	5	+80
6	±3.0			6	+85
7	±3.5				
8	±5.0				

Ordering Codes

Model	EFC	Frequency in MHz (up to 4 digits)	Frequency Stability	Minimum Operating Temperature	Maximum Operating Temperature
TCXO2013LSQ1	_ or "V"	xxx.yyyy	t	w	Z

Example: TCXO2013LSQ1-20.0000-5-5-6 has the following specifications

EFC = no EFC control
 Frequency = 20.0000 MHz
 Stability = ±2.5 ppm
 Operating Temperature = -40°C to +85°C

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 leak: Test Qc, Fine leak: Test Qk
Solderability Resistance to soldering heat	2-20 2-58	5.6.3	208H 210F		3.6.52 3.6.48	Test Ta Method 1 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, 6 ms 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 Fc, 30 min per axes, 10 Hz – 55 Hz 0,75mm; 55 Hz – 2 kHz, 10g
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 1000h, 2000h, 8000h @ +85°C