

Rev. E

O-L24HXXXXYY-X-X-X
Precision Low Power Consumption
SC-cut OCXO in miniature 20x20 mm Package
With DIL14 Compatible Pinout

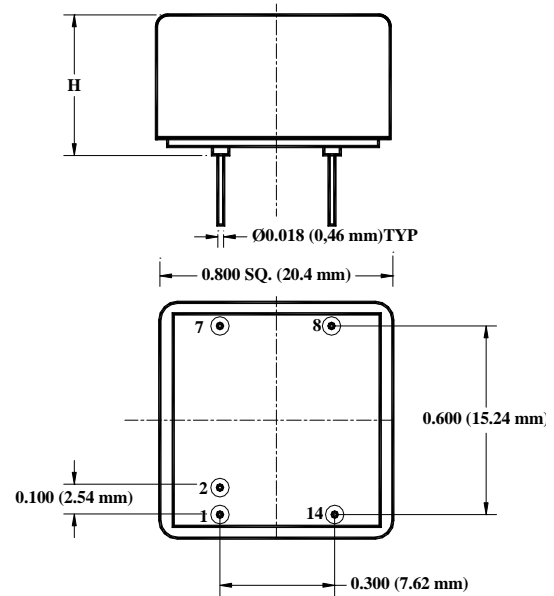
Product Data Sheet

Features

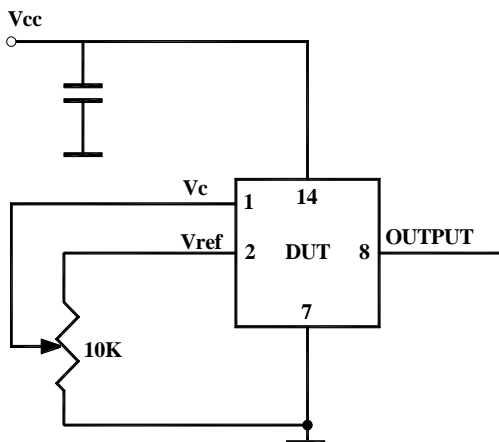
- SC-cut crystal
- Low Power Consumption
- Excellent Stability
- Fast Warm-up Time (1 minute)
- Very Low Phase Noise (-130 dBc/Hz @ 10 Hz)
- Hermetically sealed package
- DIL14 Pinout

Applications

- Instrumentation
- Battery powered equipment
- Telecommunication Systems
- Data Communications
- GPS
- COTS/Dual use



Height, H	Code
0.433" (11 mm)	4
0.533" (13.5 mm)	5



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Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
<i>Absolute Maximum Ratings</i>							
Input Break Down Voltage	V _{cc}		-0.5		5.5	V	V _{cc} = 5 V
Storage temper.	T _s		-40		85	°C	
Operating temper.	T _o		-40		85	°C	
Control Voltage	V _c		-1		6	V	

<i>Electrical (6)</i>							
Frequency	F		8.0	10.000	30.000	MHz	*
Frequency stability	ΔF/F	vs. Temp.		10		ppb	See chart below
		vs. Supply		1	2	ppb/5% V _{cc}	
Aging		per day per year, first year 10 years		5E-10 1E-7			after 30 days 5E-8 available 1*
Allan Deviation		.1s to 1s		5E-12			
SSB Phase Noise		1Hz		-100	-98	dBc/Hz	2*
		10 Hz		-135	-130		
		100 Hz		-153	-150		
		1 KHz		-162	-160		
		10 KHz		-165	-164		
		100 KHz		-168	-165		
Retrace		After 30 minutes			±10	ppb	24 hrs off
Input Voltage	V _{cc}		4.75 3.165	5.0 3.30	5.25 3.465	V	See chart below to specify
Power consumption, Still air 3*, 10MHz	P	steady state, 25°C, Operating temp range to 70°C start-up @ -30°C		0.6 0.45 0.3 2.0	0.7 0.55 0.4 2.5	W	Grade "N" Grade "A" Grade "X"
Spectral Purity		Subharmonics Spurious Harmonics		none -35	-80 -30	dBc	
Load		10KOhm//15pF (HCMOS/TTL), AC-coupled 50 Ohm (Sine-wave)					Output Code T Output Code S
Warm-up time	τ	to 0.10ppm accuracy to 0.25 ppm			90 60	seconds	
Output Power			+5	+7		dBm	10 MHz, Output Code S
Logic 1 (CMOS)	V _{oh}		0.7 V _{ref}			V	Output Code T
Logic 0 (CMOS)	V _{ol}				0.1 V _{ref}	V	Output Code T
Control voltage	V _c		0		V _{ref}	V	4*
Reference Voltage	V _{ref}			4.5 3.0		V	5 V supply 3.3 V supply
Pull range		from nominal F, 10 MHz	±0.5 ±0.4	±0.7 ±0.5		ppm	5 V supply 3.3 V supply
Deviation slope		Monotonic, posit. 10 MHz		0.3 0.33		ppm/V	5 V supply 3.3 V supply
Input impedance	Z _{in}	At V _c pin	10			KOhm	
Modulation bandwidth	F _m		DC		1	KHz	8*
Setability	V _{c0}	@25°C, F _{nom} .	V _{ref} /2- 0.25	V _{ref} /2	V _{ref} /2 + 0.25	V	10 MHz 5*
Initial Calibration		V _c = V _{ref} /2 @25°C			±100	ppb	10 MHz

All parameters for 10 MHz

Environmental and Mechanical

Operating temp. range	-20°C to 70°C Standard, Other options – see chart below
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

Pin Out	Pin #1-- Vc ; Pin#2 – Vref (optional 7*); Pin #7 - GND Pin #8 – Output Pin #14 – Vcc;
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Notes:

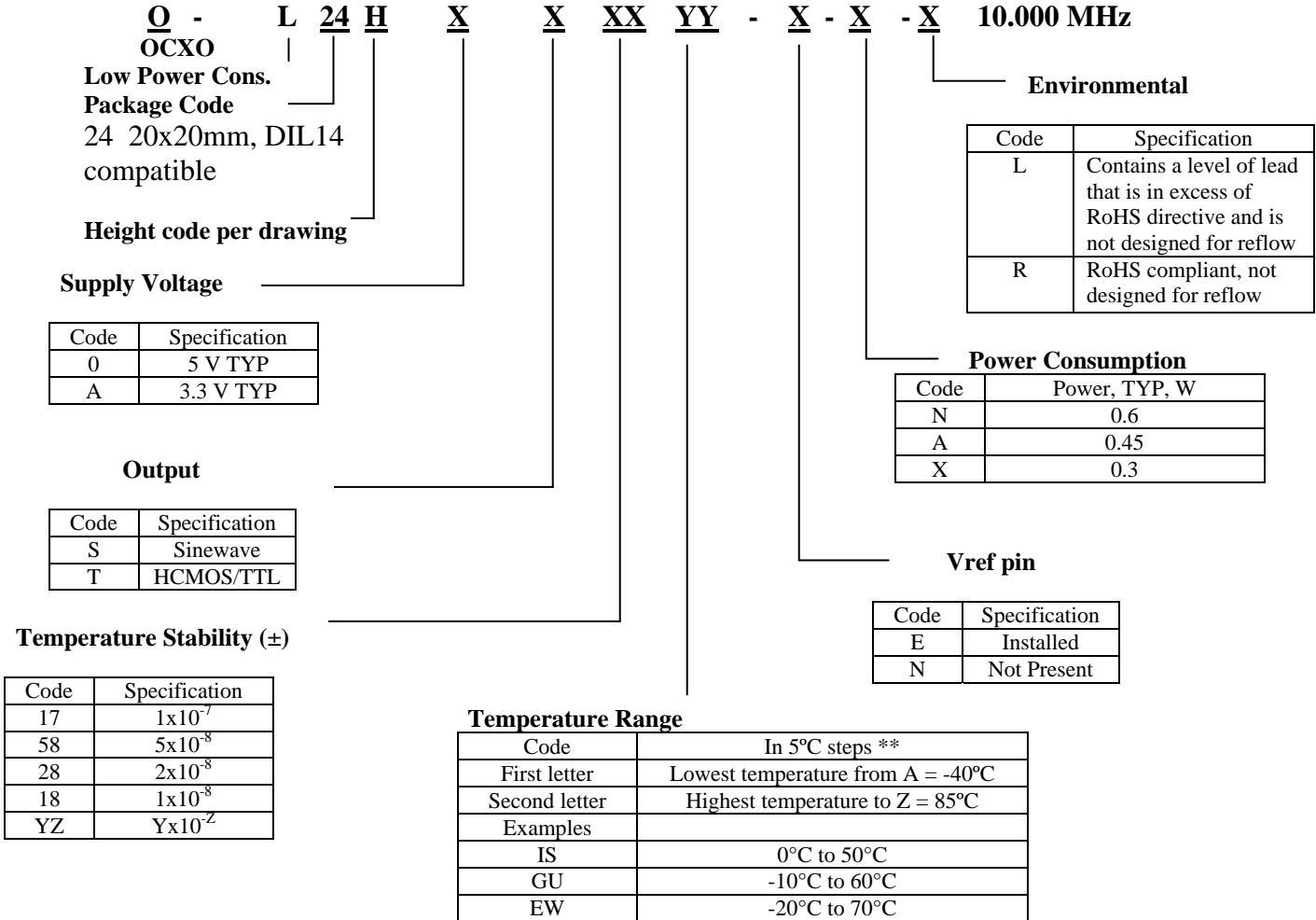
- * All the specifications for frequencies above 20 MHz are very preliminary
- 1. Aging rates are proportional to the operating frequency. Pull range will be adjusted accordingly to provide for lifetime possibility to set on frequency
- 2. Close to the carrier phase noise deteriorates with increase in frequency.
- 3. Power consumption listed in the table is for 10.000 MHz, Sine-wave output, 0.5” height unit. With increase in upper operating temperature, the power consumption will increase about 40 mW per 5°C. CMOS output option will decrease consumption by about 25 mW. 0.4” units will have about 5% more power consumption.
- 4. If Vref is not used for adjusting the frequency, Vc range can be increased to 5.0 V with either Vcc option.
- 5. The Vc input may or may not be internally biased to roughly Vref/2. If internal bias is needed – it has to be specified on PO.
- 6. All parameters, unless otherwise specified, are at nominal conditions, i.e. : T=25°C, Nominal Vcc & Nominal Load.
- 7. Pin #2 Vref is optional, please see part number creation.
- 8. Older and stock units may have MBW of 150 Hz Max.
- 9. For higher frequency the only height option available is 5.



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Creating a Part Number



Not all combinations are available – consult factory

**Temperature Code Table

Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		



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