

**O-L85-XXXXXXXXXX-X**  
**Ultra Low Phase Noise, Precision SC-cut HF OCXO**  
**in Tiny 15x21x11 mm DIL14 Compatible Package**

Rev. B

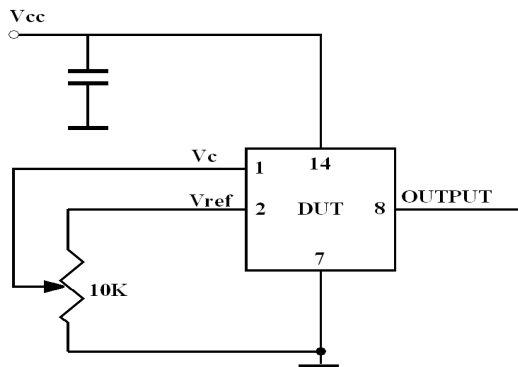
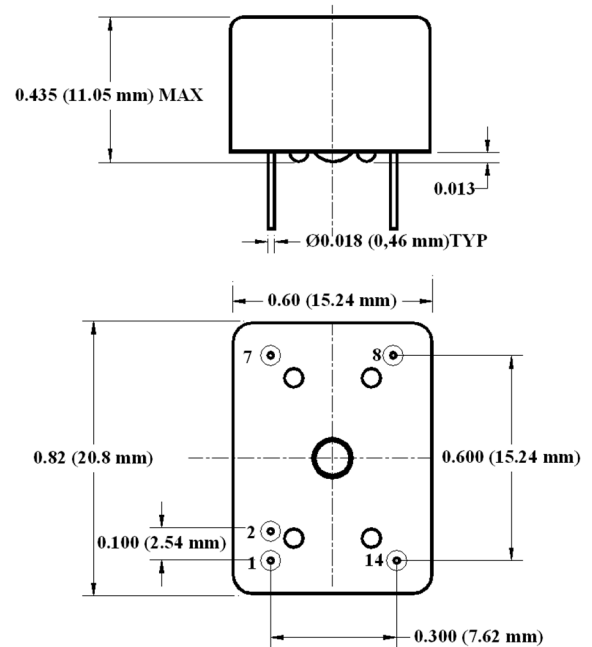
Product Data Sheet

**Features**

- Ultra Low Power Consumption
- SC-cut crystal
- Ultra Low Phase Noise
- Sine Wave +13 dBm output
- Extremely Small Hermetic Package

**Applications**

- Instrumentation
- Radar
- High End Synthesizers
- Battery powered equipment
- Communications



O-L85-XXXXXXXXXX-X

Rev. B

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
<i>Absolute Maximum Ratings</i>							
<b>Input Break Down Voltage</b>	Vcc		-0.5 -0.5		6.5 4.0	V	Vcc option 0 Vcc option A
<b>Storage temper.</b>	Ts		-55		85	°C	
<b>Control Voltage</b>	Vc		-1		10.5	V	

*Electrical (1)*

<b>Frequency</b>	F		30		125	MHz		All parameters for 100,000 MHz	
<b>Frequency stability</b>	$\Delta F/F$	vs. Temp.		$\pm 50$		ppb	See table below Note 2		
		vs. Supply			2	ppb/5% change			
		Vs. load			2	ppb/5% change			
<b>Aging</b>		per day per first year 10 years		3E-9 3E-7	1.5	ppm	After 30 days of continuous operation		
<b>Allan Deviation</b>		.01s to 1s		5E-11					
<b>SSB Phase Noise at 100.000 MHz 5*</b>	$\mathcal{L}(f)$	10 Hz		-95			dBc/Hz		Grade $\delta L\delta$
		100 Hz			-125				
		1 KHz			-158				
		10 KHz			-170				
		100 KHz			-178				
		10 Hz		-100			Grade $\delta P\delta$		
		100 Hz			-130				
		1 KHz			-160				
		10 KHz			-172				
		100 KHz			-178				
		10 Hz		-105			Grade $\delta U\delta$ , Available with slope option $\delta L\delta$		
		100 Hz			-135				
1 KHz			-162						
10 KHz			-175						
100 KHz			-178						
<b>Retrace</b>		After 30 minutes		$\pm 20$		ppb			
<b>G-sensitivity</b>		worst direction			$\pm 0.5$	ppb/G			
<b>Input Voltage</b>	Vcc		4.75 3.165	5.0 3.30	5.25 3.465	V	See chart below to specify		
<b>Power consumption Still air 6*, 100 MHz</b>	P	steady state, 25°C operating temp range to 70°C start-up		0.5 0.4 0.3 1.2	0.6 0.5 0.35 1.5	W	Grade $\delta N\delta$ Grade $\delta A\delta$ Grade $\delta X\delta$		
<b>Spectral Purity</b>		Subharmonics Spurious Harmonics		none -35	-80 -30	dBc			
<b>Load</b>		10KOhm//15pF (HCMOS/TTL), AC-coupled 50 Ohm (Sine-wave)					Output Code T Output Code S		
<b>Spectral Purity</b>		Output power Subharmonics Spurious Harmonics	10	13 none -35	-80 -30	dBm dBc	Non-supply related		



Load	10KOhm//15pF (HCMOS/TTL), AC-coupled 50 Ohm (Sine-wave)					Output Code T	Output Code S
Warm-up time	$\tau$	to 0.20ppm accuracy to 0.35ppm			90 60	seconds	
Output Power			+10	+13		dBm	100 MHz, Output Code S
Logic 1 (CMOS)	Voh		0.7 Vref			V	Output Code T
Logic 0 (CMOS)	Vol				0.1 Vref	V	Output Code T
Reference Voltage	Vref			4.5 3.0		V	5 V supply 3.3 V supply
Output Impedance at Vref	Rref			100		Ohm	
Control voltage	Vc		0 0		10.0 4.5	V	Slope option $\delta L\ddot{o}$ Slope option $\delta P\ddot{o}$
Input Impedance	Zin	At Vc Pin	10			KOhm	
Pull range		from nominal F		$\pm 2.5$		ppm	
Absolute pull range	APR		$\pm 0.5$			ppm	
Deviation slope		Monotonic, posit		0.7 1.3		ppm/V	Slope option $\delta L\ddot{o}$ Slope option $\delta P\ddot{o}$
Linearity			$\pm 10\%$				
Setability	Vc0	@25°C, Fnom.	4.0 1.75	5.0 2.25	6.0 2.75	V	Slope option $\delta L\ddot{o}$ , no bias Slope option $\delta P\ddot{o}$
Modulation Bandwidth	Fm		DC		1	KHz	

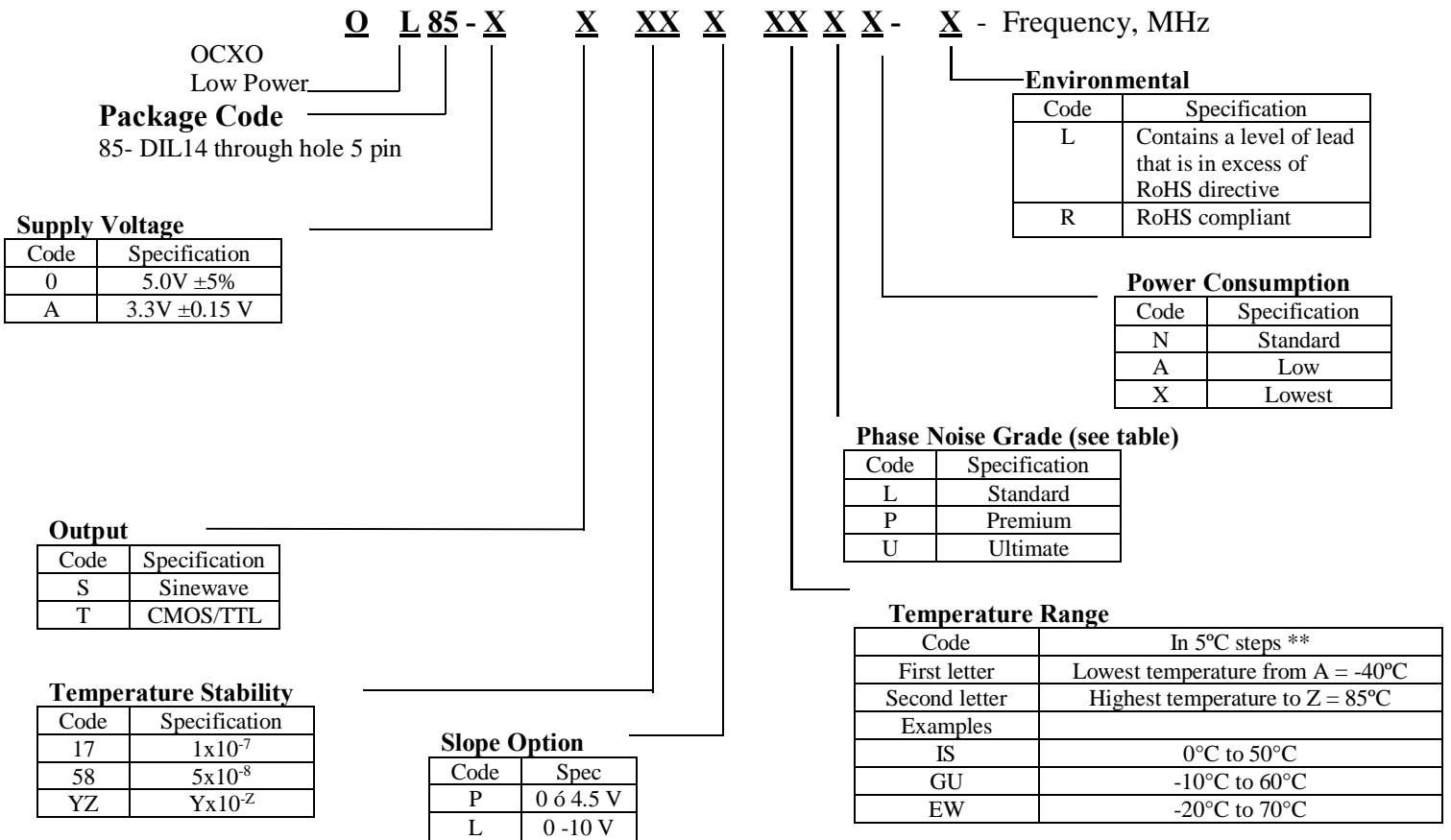
### Environmental and Mechanical

Operating temp. range	0 to 70°C Standard, Other options $\delta$ see Chart below
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified by the customer
Seal	Hermetically sealed
Soldering Conditions	260°C for 10 seconds MAX, leads only

### Electrical Connections

Pin Out	Pin #1- Vc; Pin #2 $\delta$ Vref ; Pin#7 $\delta$ Case, GND; Pin #8 $\delta$ OUTPUT; Pin #14 - Vcc
---------	--

## Creating a Part Number



\*\*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		

### Notes:

- Not all combinations are available ó consult factory
- It's not recommended to over-specify stability over temperature performance: it significantly affects the cost.
- Unless absolutely necessary do not specify highest operating temperature above 70°C
- All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.
- Specifications for Vcc= 5.0 V. At Vcc = 3.3 V phase noise may slightly deteriorate from those values. Close to the carrier phase noise deteriorates with increase in frequency.
- Power consumption listed in the table is for 100.000 MHz, sine-wave output. With increase in upper operating temperature, the power consumption will increase about 15 to 30 mW per 5°C depending on the grade.

**NOISE** XT

Phase Noise Plot

