

## Ultra Low Phase Noise, Precision SC-cut HF OCXO in Miniature 15x21x11 mm DIL14 Compatible Package



20.8 x 15.24 x 11.05 mm  
Datasheet #1726B

### 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

### Absolute Maximum Ratings

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Input Break Down Voltage	V <sub>cc</sub>		-0.5		6.5	V	V <sub>cc</sub> option 0 V <sub>cc</sub> option A
Storage temper.	T <sub>s</sub>		-55		85	°C	
Control Voltage	V <sub>c</sub>		-1		10.5	V	

### Electrical (1\*)

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Frequency	F		30		125	MHz	
Frequency Stability	ΔF/F	vs. Temp.		±50		ppb	See table below 2*
		vs. Supply			2	ppb/5% change	
		vs. Load			2	ppb/5% change	
Aging		per day per first year 10 years		3E-9 3E-7	1.5	ppm	After 30 days of continuous operation
Allan Deviation		.01s to 1s		5E-11			
SSB Phase Noise at 100.000 MHz 5*	£(Δf)	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-95	-125 -158 -170 -178	dBc/Hz	Grade "L"
		10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-100	-130 -160 -172 -178	dBc/Hz	Grade "P"
		10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-105	-135 -162 -175 -178	dBc/Hz	Grade "U", Available with slope option "L"
Retrace		After 30 minutes		±20		ppb	
G-sensitivity		worst direction			±0.5	ppb/G	

All Parameters for 100.000 MHz

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### Electrical (cont.)

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Input Voltage	Vcc		4.75 3.165	5.0 3.30	5.25 3.465	V	See chart below to specify
Power consumption Still air 6*, 100MHz	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 “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	$\tau$	to 0.20ppm accuracy		60	90	seconds	
Output Power			+10	+13		dBm	100MHz, 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 “L” Slope option “P”
Input Impedance	Zin	At Vc Pin	10			KOhm	
Pull range		from nominal F		±2.5		ppm	
Absolute pull range	APR		±0.5			ppm	
Deviation slope		Monotonic, positive		0.7 1.3		ppm/V	Slope option “L” Slope option “P”
Linearity			±10%				
Setability	Vc0	@25°C, Fnom.	4.0 1.75	5.0 2.25	6.0 2.75	V	Slope option “L”, no bias Slope option “P”
Modulation Bandwidth	Fm		DC		1	KHz	

### Environmental and Mechanical

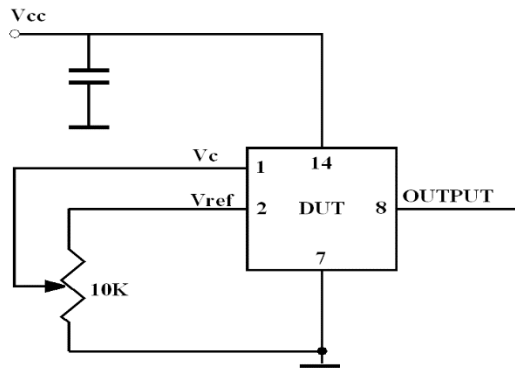
Parameter	Description
Operating temp. range	0 to 70°C Standard, Other options – see Chart below
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified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

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## Test Circuit

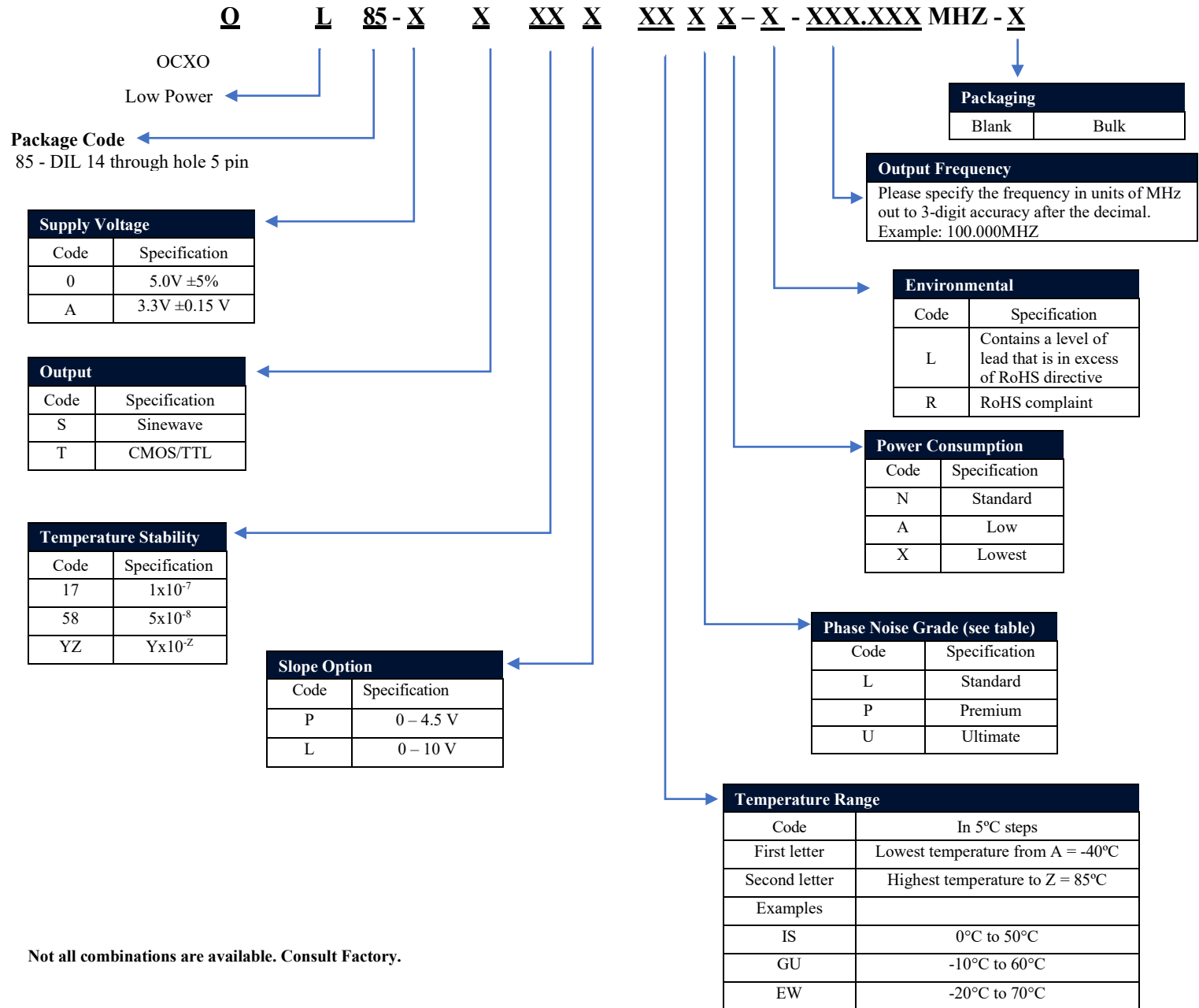


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## Creating a Part Number



### 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		

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ESD Sensitive

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### Notes:

1\* Not all combinations are available – consult factory

2\* It's not recommended to over-specify stability over temperature performance: it significantly affects the cost.

3) Unless absolutely necessary do not specify highest operating temperature above 70°C

4) All parameters, unless otherwise specified, are at nominal conditions, i.e.: T=25°C, Nominal Vcc & Nominal Load.

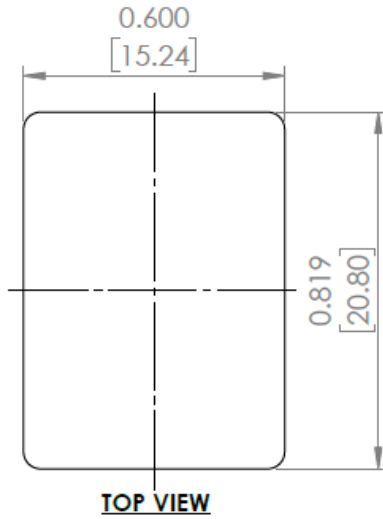
5\* Specifications for Vcc= 5.0 V. At Vcc = 3.3 V phase noise may slightly deteriorate from those values. Close to the carrier phase noise deteriorates with increase in frequency.

6\* Power consumption listed in the table is for 100.000MHz, 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.

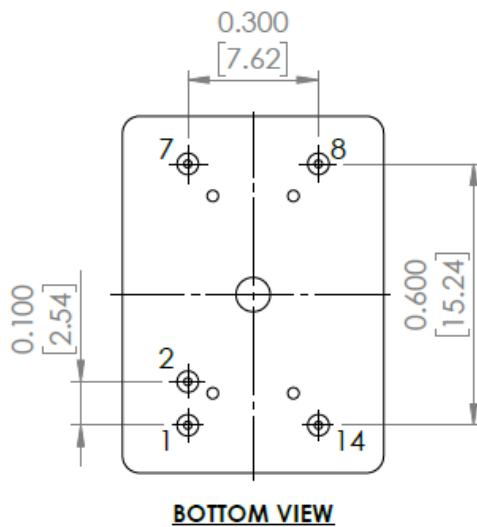
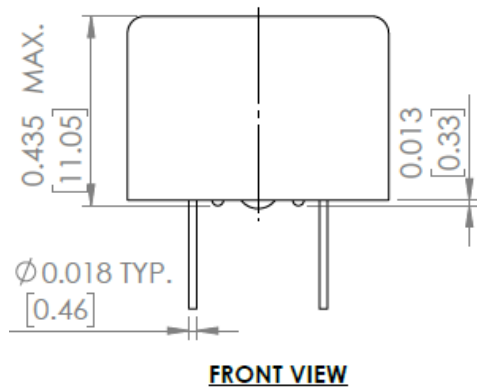
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Pin #	Function
1	Vc
2	Vref
7	Case, GND
8	OUTPUT
14	Vcc



**Dimensions: inches [mm]**

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## Phase Noise Plot

