

O-L85XXXXYYX-X-X

Precision Ultra Low Power Consumption

SC-cut OCXO in miniature 20x15 mm Package (DIL14)

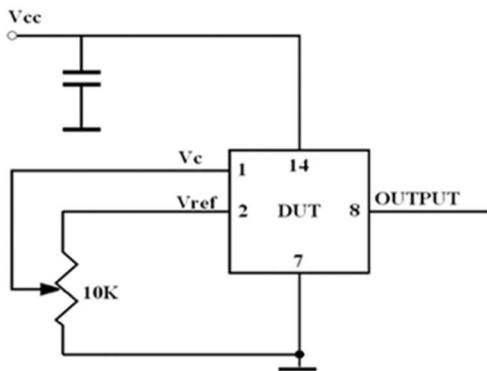
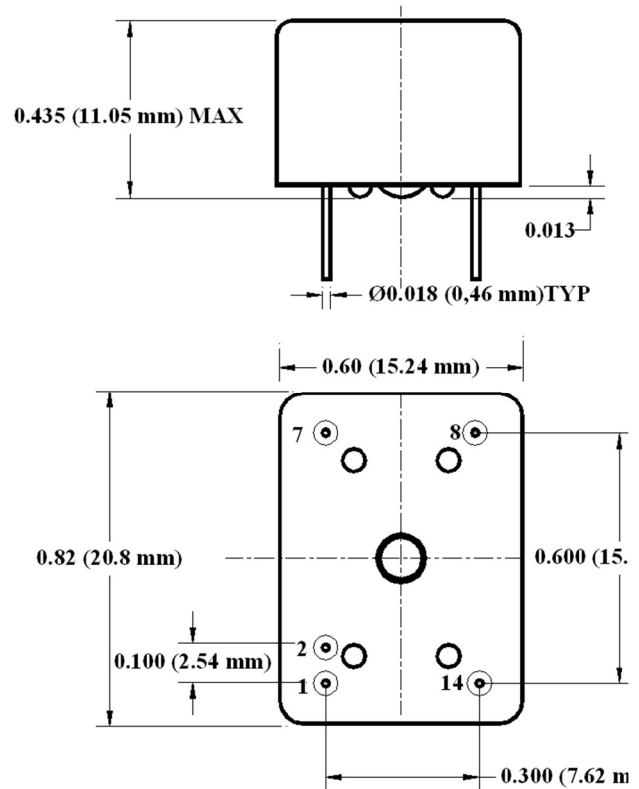
Product Data Sheet

Features

- 4 Point Mount SC-cut crystal
- Ultra Low Power Consumption
- Excellent Stability
- Fast Warm-up Time (1 minute)
- Very Low Phase Noise (-145 dBc/Hz @ 10 Hz)
- Ultra Miniature Hermetically Sealed Package

Applications

- Test and Measurement (especially hand-held)
- Battery powered equipment
- High Performance Synthesizers
- High Performance GPS receivers
- COTS/Dual use



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CONTROLS, INC.**

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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
			-0.3		3.6		V _{cc} = 3.3 V
Storage temper.	T _s		-50		90	°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 5E-8	3.0E-7		after 30 days available 1*
G-sensitivity					±1	ppb/G	All directions
Allan Deviation		.1s to 1s		2E-12			P-grade
SSB Phase Noise	£ (Δf) 2*	1Hz		-100	-95	dBc/Hz	C-Grade
		10 Hz		-130	-125		
		100 Hz		-155	-150		
		1 KHz		-165	-162		
		10 KHz		-168	-165		
		100 KHz		-170	-168		
		1Hz		-105	-100		L-Grade
		10 Hz		-140	-135		
		100 Hz		-155	-153		
		1 KHz		-165	-162		
		10 KHz		-168	-165		
		100 KHz		-170	-168		
1Hz		-112	-110	P-grade			
10 Hz		-142	-140				
100 Hz		-158	-155				
1 KHz		-165	-162				
10 KHz		-168	-167				
100 KHz		-170	-168				
1Hz		-115	-113	U-grade			
10 Hz		-146	-145				
100 Hz		-158	-156				
1 KHz		-165	-162				
10 KHz		-168	-167				
100 KHz		-170	-168				
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		0.4 0.3 0.2 1.2	0.5 0.4 0.25 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

All parameters for 10 MHz



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Warm-up time	τ	to 0.10ppm accuracy to 0.25ppm			90 60	seconds	
Output Power			+8	+10		dBm	10 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
Control voltage	Vc		0		Vref	V	4*
Reference Voltage	Vref			4.5 3.0		V	5 V supply 3.3 V supply
Output Impedance at Vref	Rref			100		Ohm	
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	Zin	At Vc pin	10			KOhm	
Modulation bandwidth	Fm		DC		1	KHz	
Setability	Vc0	@25°C, Fnom.	Vref/2- 0.25	Vref/2	Vref/2 + 0.25	V	10 MHz 5*
Initial Calibration		Vc = Vref/2 @25°C			± 100	ppb	10 MHz

Environmental and Mechanical

Operating temp. range	-40°C to 85°C MAX, Other options – see chart below
Storage Temperature	-50°C to 90°C
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; Pin #7 – GND; Pin #8 – Output; Pin #14- Vcc
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Notes:

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. 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.
3. Power consumption listed in the table is for 10.000 MHz, CMOS output. Sine wave output would consume slightly more power dissipating it in the 50 Ohm load. With increase in upper operating temperature, the power consumption will increase about 15 to 30 mW per 5°C depending on the grade.
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, ie: T=25°C, Nominal Vcc & Nominal Load.



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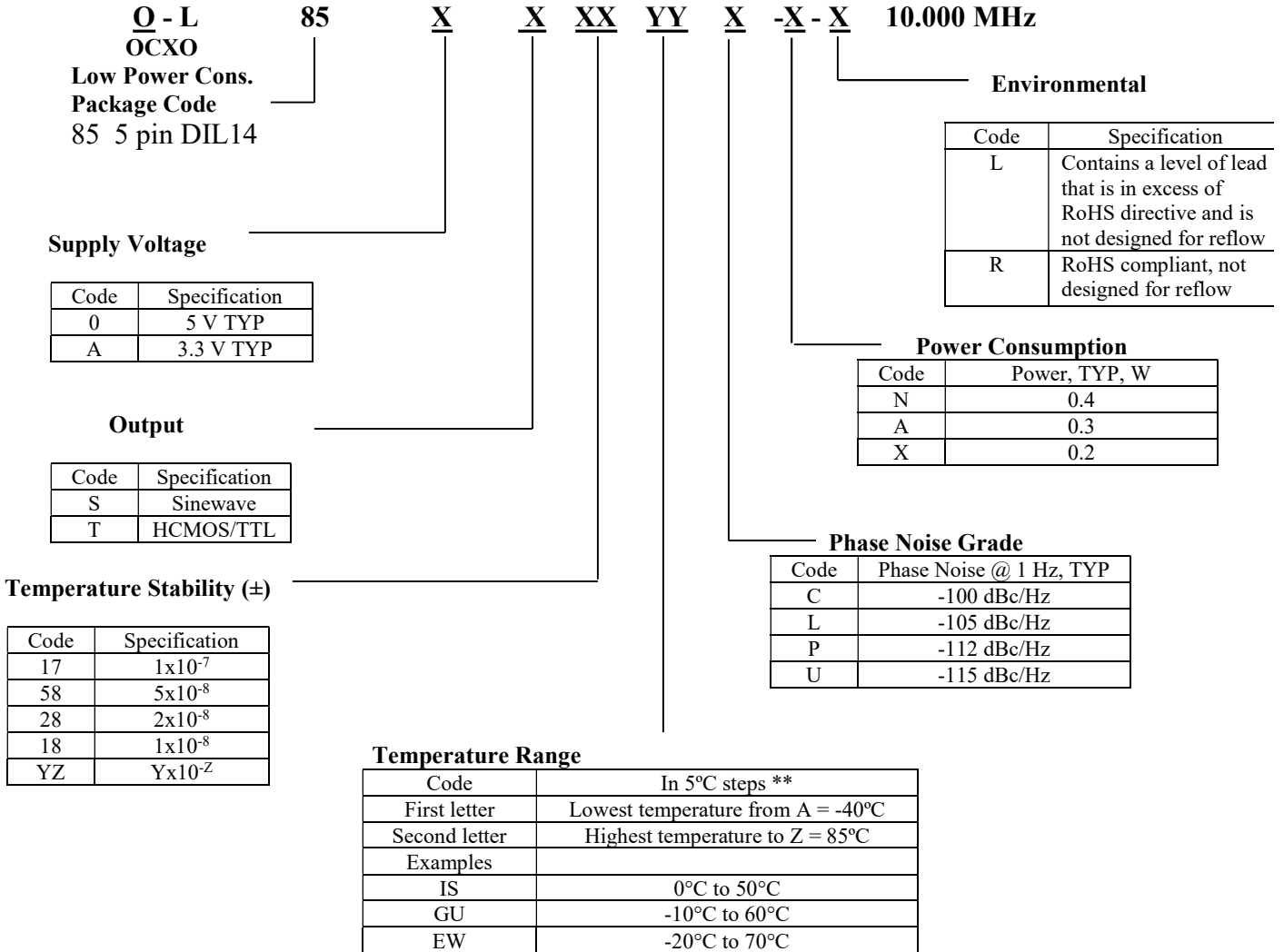
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Rev. D

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		



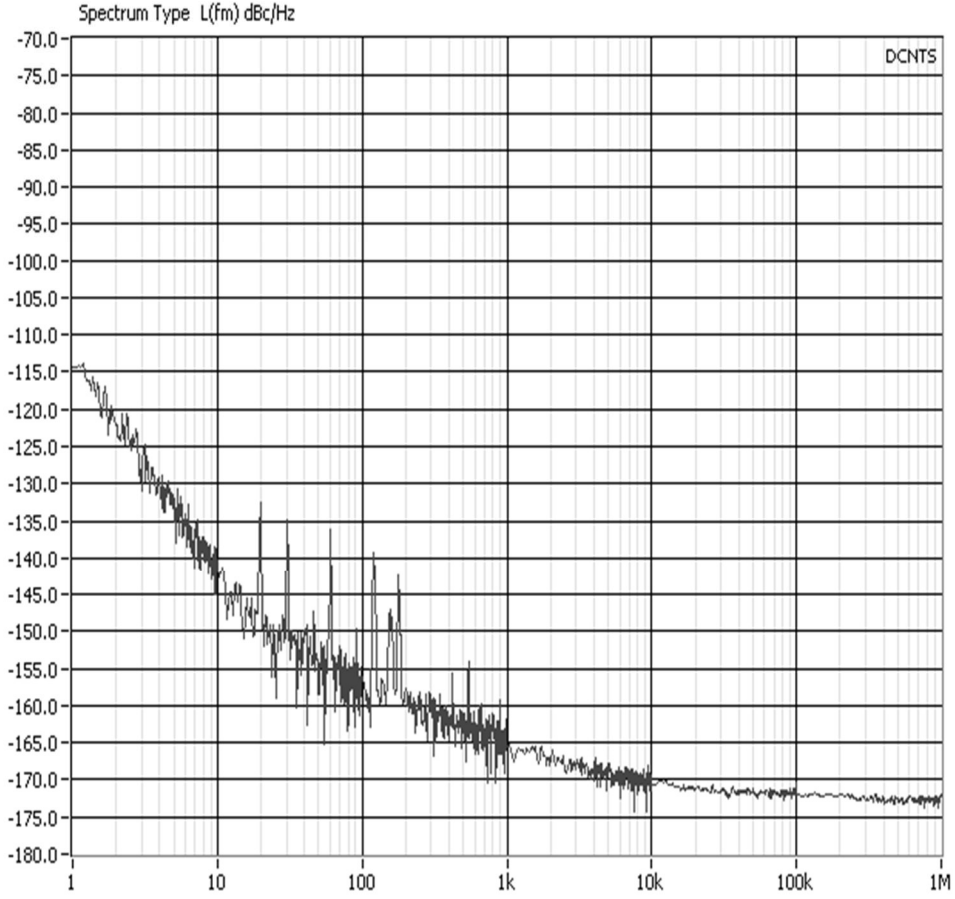
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NOISE XT

Phase Noise Plot



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