

Phase-Locked SC-cut Clean-up OCXO in Europack



ESD Sensitive

36.1 x 27.2 x 19.8 mm

Datasheet #1707A

Features

- SC-cut crystal
- Low Phase Noise
- Very Compact Package

Applications

- Significantly improves Phase Noise of incoming signal with optional Higher Frequency Output
- COTS/Dual use

Absolute Maximum Ratings

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Input Break Down Voltage	Vcc		-0.5		5.5	V	Vcc = 5 V
Operating Temp.	To		0		70	°C	
Operable Temp.	TO		-40		85	°C	
Storage temper.	Ts		-40		85	°C	

Electrical

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Input Frequency	Fin			10.000		MHz	
Output Frequency	Fout		10	100.000	125.000	MHz	
Frequency Capture Range (APR)	$\Delta F/F$	Over All	± 600			ppb	When input signal disappears free run within 100 ppb as shipped, 1,500 ppb over 10 years
Allan Deviation		.01s to 0.1s		5E-11			
Frequency Stability	$\Delta F/F$	Locked	Equal to incoming signal				
Recommended MAX Input SSB Phase Noise	$\xi(\Delta f)$	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-80 -110 -130 -140 -140	dBc/Hz	
Input signal		CMOS	2			Vpk-pk	Code T
		Sine Wave	0		15	dBm	Code S
Output SSB Phase Noise Floor	$\xi(\Delta f)$	10Hz 100Hz 1KHz 10KHz 100KHz		-90 -125 -153 -170 -175		dBc/Hz	Grade "C"
		10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-100 -130 -158 -175 -180		dBc/Hz	Grade "L"

All parameters for output frequency 100 MHz



Electrical (cont.)

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes	
Output SSB Phase Noise Improvement Compared to Input Phase Noise adjusted to 10 MHz	$\xi(\Delta f)$	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		20 50 50 50 50		dBc/Hz	Should add 20LogN, 20 dB for 100 MHz Cannot improve beyond listed above noise floor	
G-sensitivity		worst direction			±1.0	ppb/G		
Input Voltage	V _{cc}	Code 0	4.75	5.0	5.25	V		
Power consumption	P	steady state, 25°C start-up @ -30°C		1.3 2.8	1.6 3.5	W	Standard Operating Temperature. For Op Temp. 85°C add 20%. Still air for all Lower P available, consult Factory	
Spectral Purity		Subharmonics Spurious Harmonics		-70 -35	-50 -80 -30	dBc	10 MHz and multiples Output Code S	
Load	Internally AC coupled 50 Ohm (Sinewave) 10K Ohm//15pf (CMOS/TTL)							
Warm-up time	τ	to lock on 100 ppb input		3	5	minutes		
Lock Time after warm-up				1		minute		
Output Power	P _{out}	Into 50 Ohm	15	17		dBm	Output Code S	
Logic 1 (CMOS)	V _{oh}		0.7V _{ref}			V	Output Code T	
Logic 0 (CMOS)	V _{ol}				0.1V _{ref}	V	Output Code T	
Duty Cycle			45/55		55/45	%	Output Code T	
Rise/Fall Time	T _r /T _f			2	3	ns	Output Code T	
Preset Voltage	V _{set}			2.25		V	Can be externally adjusted by LN Potentiometer 10 KOhm between V _{ref} and GND	
Lock Detect				Logic "1"			Can drive LED	
Input Detect				Logic "1"			Can drive LED	
Electrical Low Frequency								
Output Frequency				10		MHz		
Recommended Input SSB Phase Noise	$\xi(\Delta f)$	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-90 -110 -130 -140 -140	dBc/Hz	All parameters for 10,000 MHz output (10 MHz out is still preliminary)	
Frequency Capture Range (APR)	$\Delta F/F$	Over All	±100			ppb		When input signal disappears free run within 0.3ppb Max as shipped, 1,000 ppb over 10 years
Allan Deviation		.01s to 0.1s		5E-12				
Output SSB Phase Noise Floor	$\xi(\Delta f)$	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-125 -145 -162 -165 -169	dBc/Hz		Grade "C"
		10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-145 -157 -165 -168 -172	dBc/Hz		Grade "U"

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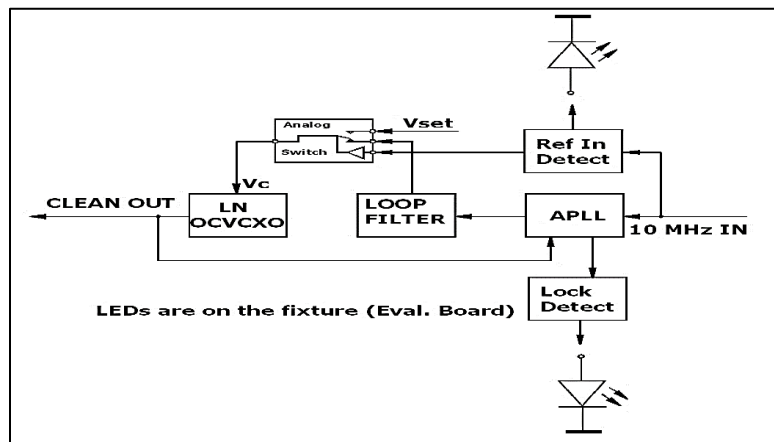
36.1 x 27.2 x 19.8 mm

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Output SSB Phase Noise Improvement Compared to Input Phase Noise	$f(\Delta f)$	10 Hz	45	dBc/Hz	Cannot improve beyond the noise floor for each grade as listed above
		100 Hz	50		
		1 KHz	50		
		10 KHz	50		
		100 KHz	50		

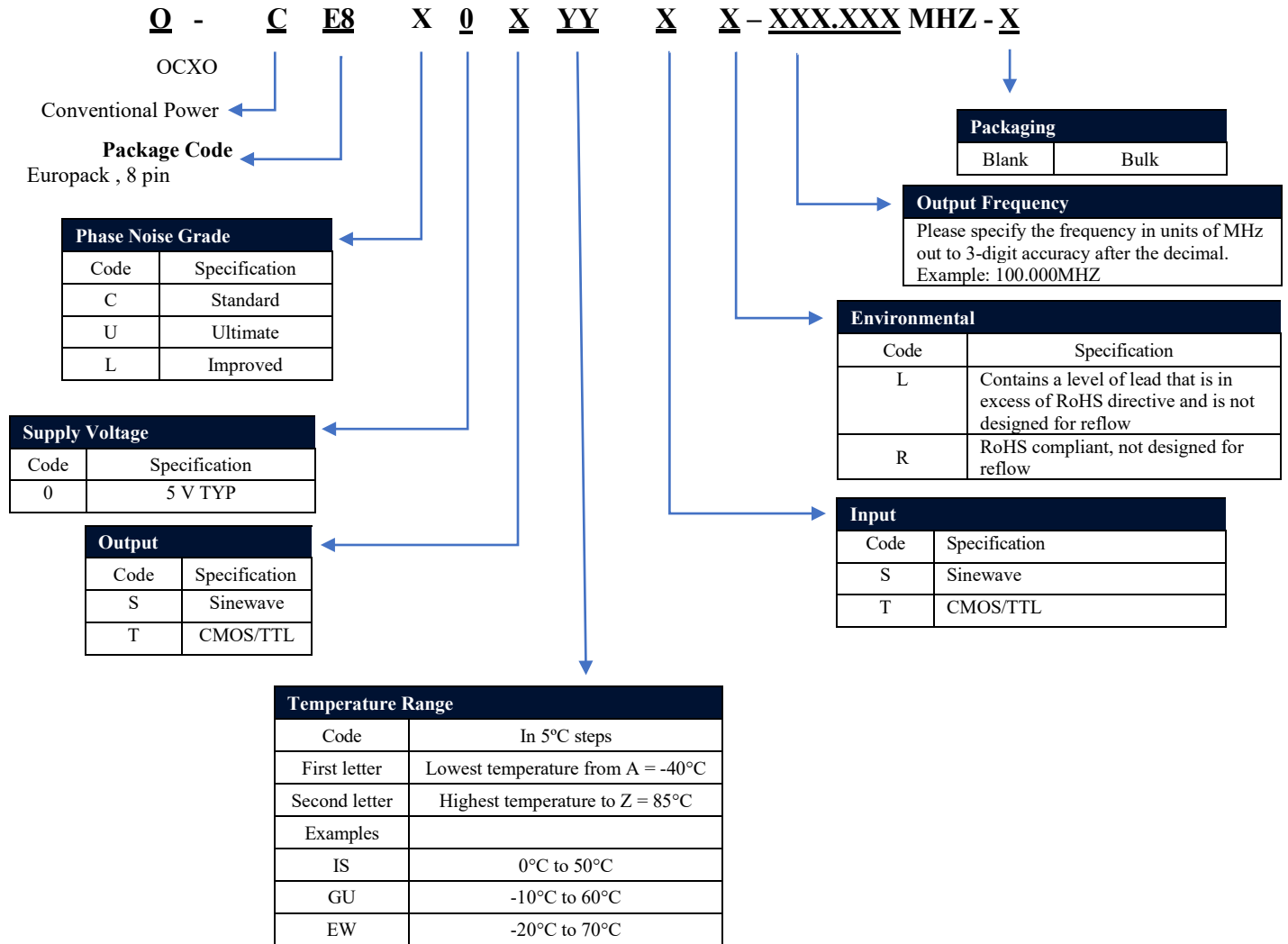
Environmental and Mechanical

Parameter	Description
Operating temp. range	0°C to 70°C Standard, Other options - see chart below
Mechanical Shock	Per MIL-STD-202, 30G, 11ms, survival
Vibration	Per MIL-STD-202, 5G to 2000 Hz, Survival





Creating a Part Number



Not all combinations are available. Consult Factory.

Temperature Code Table

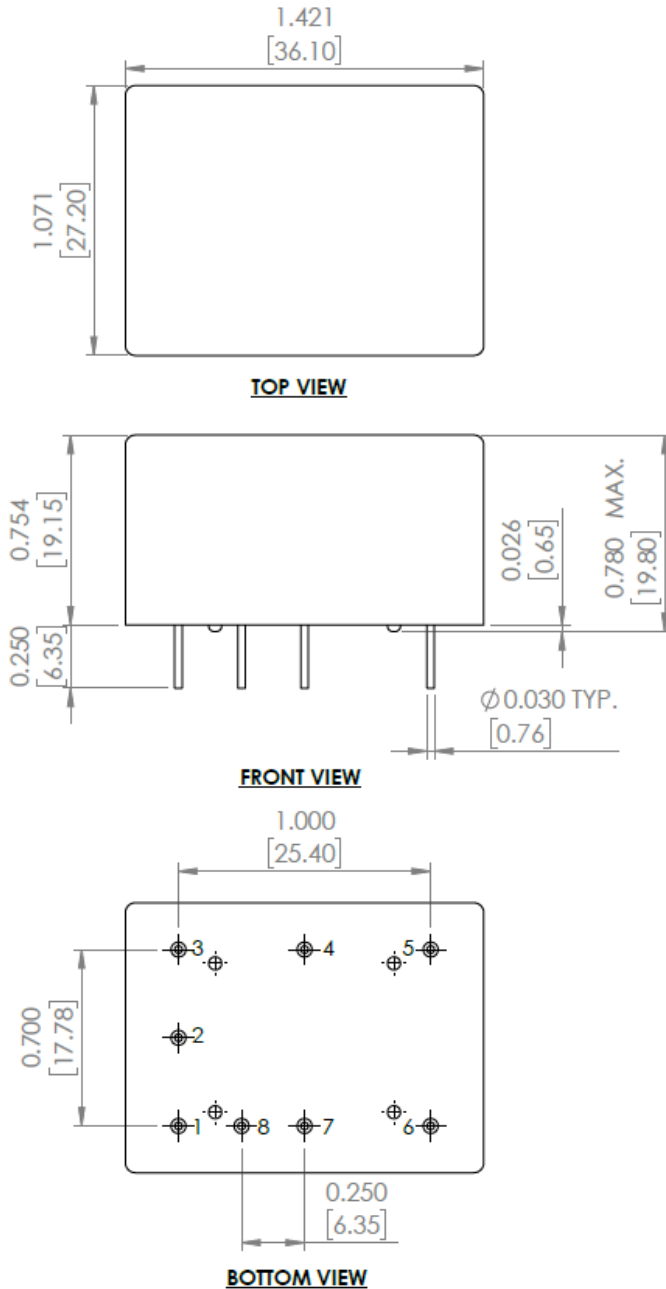
Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		

Notes:

- 1) Close to the carrier noise floor is frequency dependent and will be lower at lower frequencies and higher at higher ones. Will be specified on PO.
- 2) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal



Mechanical Dimensions



Pin #	Function
1	10 MHz Input
2	Vref
3	Vcc
4	Lock Detect
5	RF OUT
6	Case, GND
7	Input Signal Detect
8	Vset.

Dimensions: inches [mm]