Rev B

O-CS23-HH-XXYZ-XX-X-X-X Series
Precision High Stability Low Profile OCXO
22x25x10mm SMD pkg

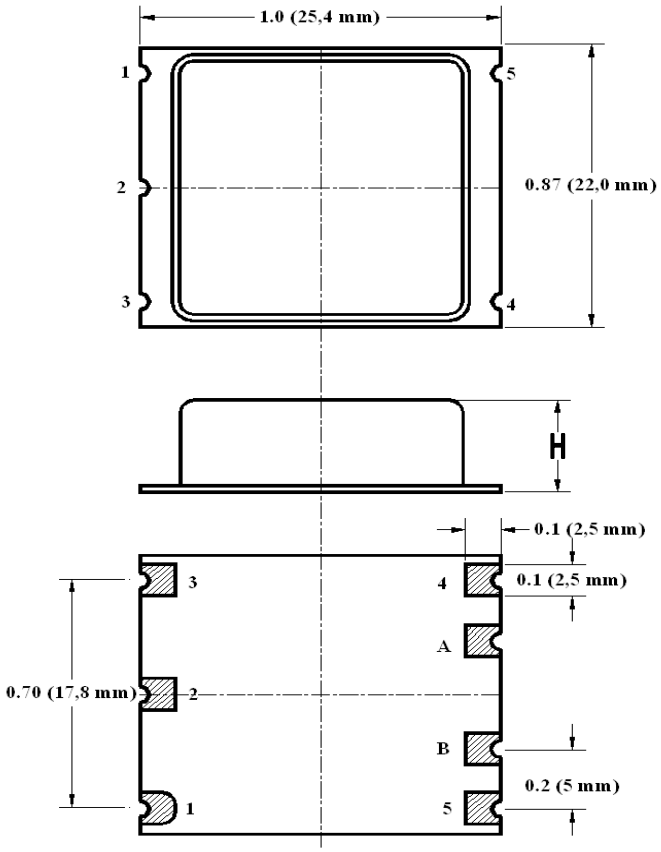
Product Data Sheet

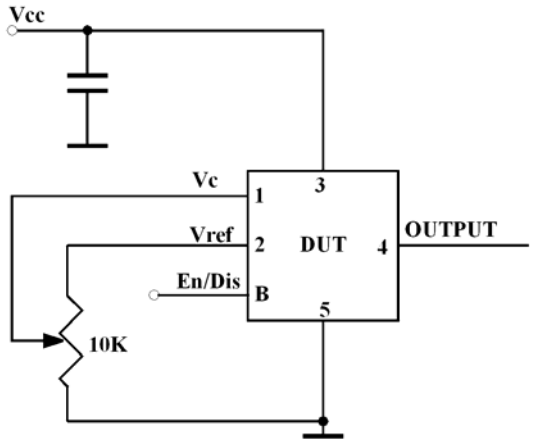
Features

- SC-cut crystal
- High Stability
- Low Profile SMD package
- TTL output

Applications

- Instrumentation
- Telecommunications
- GPS





Height, H	Code
0.367" (9.3 mm)	09
0.425" (10.8 mm)	10

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OVEN-CONTROLLED CRYSTAL OSCILLATORS

Data Sheet 1429A

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Absolute Maximum Ratings							
Input Break Down Voltage	Vcc	5V supply	-0.5		5.5	V	Vcc = 5V
Storage temper.	Ts		-50		90	°C	
Control Voltage	Vc		-1		6	V	Slope option "P"
Electrical 6*							
Frequency	F		8.000	10.000	50.000	MHz	*
Frequency stability	ΔF/F	vs. Temp.		±10		ppb	See chart below
		vs. Supply		1	2	ppb/5%Vcc	
Aging		per day per year, first year second year		5E-10 1E-7	 3.5E-7		after 30 days 5e-8 available 1*
Allan Deviation		0.1s to 1s		5E-12			
SSB Phase Noise (achieved after 10 minutes warm-up)	Sφ	1Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-100 -135 -153 -162 -165 -168	-98 -130 -150 -160 -164 -165	dBc/Hz	2*
Retrace 9*		After 30 minutes			±10	ppb	24 Hours off
Input Voltage	Vcc		4.75 3.165	5.0 3.3	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 2.0	0.7 2.5	W	
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 0.1ppm accuracy to 0.25ppm			90 60	seconds	
Output Power			+5	+7		dBm	10MHz, 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*
Output Enable		CMOS Logic "1" (4.5V>V>2.5) or floating Logic "0" (V<0.5V)	Enabled Disabled	V	 Pout< - 30 dBm		
Input impedance	Zin	At Vc pin	10			KOhm	
Modulation BW	Fm		DC		1,000	Hz	7*
Reference Voltage	Vref			4.5 3.0		V	5V supply 3.3V supply
Pull range		from nominal F, 10 MHz	±0.5 ±0.4	±0.7 ±0.5		ppm	5V supply 3.3V supply
Deviation slope		Monotonic, positive 10 MHz		0.3 0.33		ppm/V	5V supply 3.3V supply
Initial Calibration		Vc = Vref/2 @25°C			+/-100	ppb	10 MHz
Setability	Vc0	@25°C, Fnom.	Vref/2, ±0.25			V	10MHz 5*

All parameters for 10 MHz

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Notes:
* All specifications for frequencies above 20MHz 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-carrier phase noise deteriorates with frequency increase.
3* Power consumption listed in the table is for 10.000MHz, Sine-wave output. With increase in upper operating temperature, the power consumption will increase by about 40mW per 5ºC. CMOS output option will decrease consumption by about 25mW. Shorter height option may increase power consumption by as much as 5%.
4* If Vref is not used for adjusting the frequency, Vc range can be increased to 5.0V 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=25ºC, Nominal Vcc & Nominal Load.
7* Older and stock units may have a MBW of 150Hz Max.
8* For higher frequencies, only the taller height option may be available.
9* Longer storage time, especially at low temperatures, may affect both retrace and setability parameters. It may require a few days on power for re-stabilization.

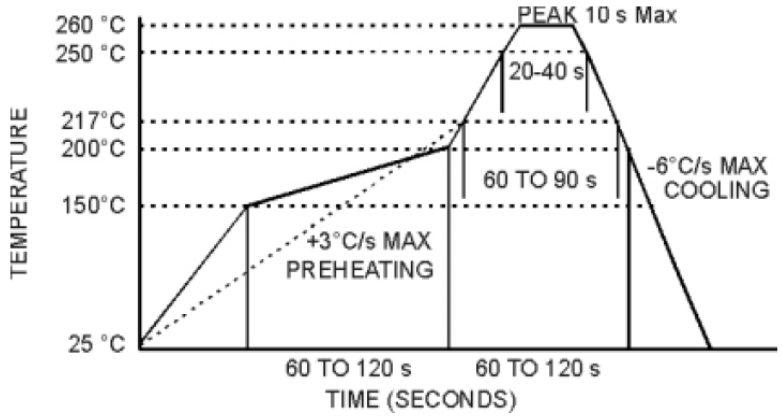
Environmental and Mechanical

Operating temp. range	0°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	See profile below. The device may be reflowed once. Reflowing upside down is not allowed. Hand soldering is highly encouraged. NO CLEAN assembly is recommended

Electrical Connections

Pin Out	Pad #1-Vc ; Pad#2 – Vref; Pad #3 – Vcc; Pad #4- Output ; Pad #5- GND; Pad A – N/C; Pad B – Output Enable

MAX Reflow Profile



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OVEN-CONTROLLED CRYSTAL OSCILLATORS

Data Sheet 1429A

Creating a Part Number

O - C S23 HH - X X YZ - XX - X - X - X - FREQ

OCXO
Conventional Power
Package Code
22x25 SMD

Height Code per Dwg

Supply Voltage

Code	Specification
0	5V ± 5%
A	3.3V ± 5%

Output

Code	Specification
S	Sinewave
T	HCMOS/TTL

Temperature Stability

Code	Specification
17	$\pm 1 \times 10^{-7}$
58	$\pm 5 \times 10^{-8}$
28	$\pm 2 \times 10^{-8}$
18	$\pm 1 \times 10^{-8}$
YZ	$\pm Y \times 10^{-Z}$

Temperature Range

Code	In 5ºC steps **
First letter	Lowest temperature from A = -40ºC
Second letter	Highest temperature to Z = 85ºC
Examples	
IS	0°C to 50°C
GU	-10°C to 60°C
EW	-20°C to 70°C

Vref Pin

Code	Specification
E	Installed
N	Not Present

Enable Option

Code	Function
N	N/A
E	Per table

Environmental

Code	Specification
L	Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R	RoHS compliant, not designed for reflow

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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