

Model 1228

Stratum 3E, 20 x 20 mm OCXO

Features

- 10 to 40 MHz Frequency Range
- Compliant to Stratum 3E of GR-1244-CORE
- 3.3V or 5.0V operation
- Low Jitter/Phase Noise
- Tape and Reel Packaging



20.5 x 20.5 x 11.0 mm

Applications

- Telecom Switching
- Wireless Communication

Description

The CTS Model 1228 is a low cost, small size, high performance OCXO. The high quality SC Quartz Crystal used in this OCXO offers high stability and low jitter/phase noise, making it the ideal choice for any telecommunications system.

Ordering Information – Table 1

Model	Stability	Temp Range	Supply Voltage	Electronic Freq Control/Vref	Output	Frequency Code
1228	— 28	G	E	N	H	— xxMxxx

Code	Stability (ppb)
17	±100
58	±50
38	±30
28	±20
18	±10
59	10 pk-pk

Code	Supply
D	5.0V ±5%
E	3.3V ±5%

Code	Output
H	HCMOS
S	Sinewave

Code	Temp Range
A	0 to 50°C
B	0 to 70°C
C	-10 to 60°C
D	-20 to 70°C
E	-30 to 70°C
G	-40 to 85°C

Code	Specification
N	Fixed freq.
V	EFC, with Vref
R	EFC, without Vref

Standard Frequencies (MHz)*
10M000
12M800
13M000
16M384
19M440
20M000
25M600
26M000
38M880
40M000

Part Number Example:
1228-28GENH-20M000

* Custom frequencies are available. Please consult factory.



Electrical Specifications

Parameter	Conditions & Remarks	Min	Typical	Max	Unit
Operating Conditions					
Operating Temperature Range	T_{OP}	-40	-	85	°C
Supply Voltage	V_{CC} : 3.3V or 5.0V	3.135 4.75	3.3 5.0	3.465 5.25	Vdc
Power Consumption	Warm-up	-	-	3.2	W
	Steady State; $T_A = 25^\circ\text{C}$	-	-	1.2	W
Load	HCMOS	5	10	15	pF
	Sinewave	45	50	55	Ω

Frequency Stability

Frequency	F_{NOM} – See ordering options for standard frequencies	10	-	40	MHz
Calibration	25°C, at time of shipment (fixed frequency option “N”)	-	-	±0.200	ppm
Freq. vs Temperature	See Table 1 options	-	-	±10	ppb
Freq. vs Supply Voltage	$V_{CC} \pm 5\%$	-	±2	±5	ppb
Freq. vs Load	15 pf ±5%	-	-	±2	ppb
Freq. vs Time (Aging)	At time of shipment	-	-	±1	ppb/day
		-	-	±100	ppb/year
		-	-	±500	ppb/10 yrs
Short Term Stability (ADEV)	1.0 sec – still air	-	0.01	0.02	ppb
Warm-up time	$T_A = 25^\circ\text{C}$, within 100 ppb of freq. @ 60 minutes	-	-	5	minutes

Electronic Frequency Control (EFC)

Input Impedance	Z_I	50	-	-	k Ω
Modulation Bandwidth	-3 dB	500	-	-	Hz
Control Voltage Range	V_C ; positive monotonic (refer to V_{REF} p/n option)	0	-	V_{REF} or V_{CC}	Vdc
Tuning Range		±0.7	-	-	ppm
Linearity		-	-	10	%

Output Parameters

CMOS Output Levels (option)	3.3V (LVCMOS)	V_{OL}	-	-	10% V_{CC}	Vdc
	5.0V (HCMOS)	V_{OH}	90% V_{CC}	-	-	
Rise/Fall Times	10% to 90%, 10pf load	-	-	7	ns	
Duty Cycle	@50% of output signal	45	50	55	%	
Subharmonics	$F_{NOM} > 20\text{MHz}$	-	-	-30	dBc	

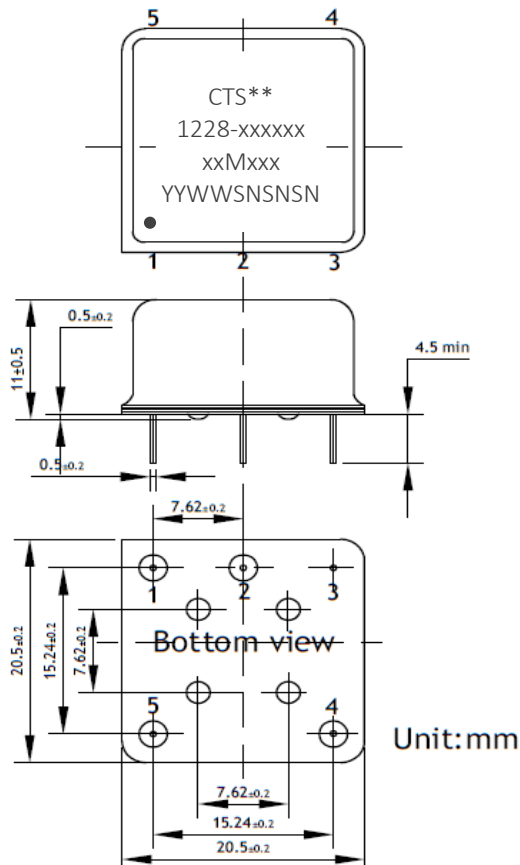
Electrical Specifications (Continued)

Parameter	Conditions & Remarks	Min	Typical	Max	Unit
Sinewave Output (option)	Into 50 Ω	2	5	8	dBm
Harmonics		-	-	-35	dBc
Subharmonics	$F_{NOM} > 20\text{MHz}$	-	-	-30	dBc
Spurious		-	-	-70	dBc
Phase Noise (for 10 MHz)	10 Hz	-	-118	-	dBc/Hz
	100 Hz	-	-143	-	
	1 kHz	-	-152	-	
	10 kHz	-	-155	-	
Reference Voltage (optional)	$V_{CC} = 3.3\text{V}$, 4ma max	2.7	2.8	2.9	Vdc
	$V_{CC} = 5.0\text{V}$, 4ma max	3.85	4.0	4.15	

Mechanical and Environmental

Soldering	Maximum reflow temperature, 245°C for 10 seconds, 240°C for 20 seconds, per IPC/JEDEC J-STD-020C. Not intended for inverted reflow.
MSL	Level 1
Shock :	500 G's 1 ms, Halfsine, 3 shock per direction, per MIL-STD-202F, Method 213B, Test Condition D.
Sinusoidal Vibration :	0.06" D.A. or 10 G's Peak, 10 to 500 Hz, per MIL-STD-202F, Method 204D, Test Condition A.
Random Vibration :	5.35 G's RMS. 20 to 200 Hz, per MIL-STD-202F, Method 214, Test Condition 1A, 15 minutes each axis.
Seal :	Hermetic
Marking Permanency :	per MIL-STD-202F, Method 215J.
Attachment Method :	SMT
Storage Temperature Range:	-45°C to +95°C

Mechanical Specifications



Marking	
**	Site Code
SNSNSN	Serial Number
YYWW	Date Code

Pad	Function
1	Supply Voltage – V_{CC}
2	RF Output
3	Ground/Case
4	Control Voltage – V_C or N/C
5	V_{REF} , or N/C

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