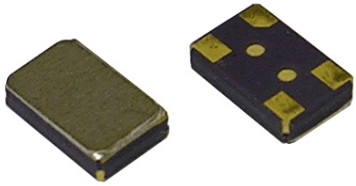
PLETRONICS
www.pletronics.com 425-776-1880



S3881 - 32.768K
CMOS Clock Oscillator

July 2007

Lead Free

- The Pletronics' S3881 is a quartz crystal controlled precision square wave generator with a CMOS output.
- The package is designed for high density surface mount designs.
- This is a low cost mass produced oscillator.
- Tape and Reel packaging is available.
- 32.768 kHz
- 2.5 x 4.0 mm LCC Ceramic Package
- Enable/Disable Function on pad 1 with low power consumption
- **Start-up Time of 3 Seconds or less**

Pletronics Inc. certifies this device is in accordance with the RoHS 6/6 (2002/95/EC) and WEEE (2002/96/EC) directives.

Pletronics Inc. guarantees the device does not contain the following:
Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Weight of the Device: 0.09 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020C
Second Level Interconnect code: e4

Absolute Maximum Ratings:

Parameter	Unit
V_{CC} Supply Voltage	-0.5V to +7.0V
Vi Input Voltage	-0.5V to V_{CC} + 0.5V
Vo Output Voltage	-0.5V to V_{CC} + 0.5V

Thermal Characteristics

The maximum die or junction temperature is 155°C
The thermal resistance junction to board is 30 to 50°C/Watt depending on the solder pads, ground plane and construction of the PCB.

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Part Number:

S3881	- 32.768K	-XX	
			Packaging code or blank T250 = 250 per cut Tape T500 = 500 per cut Tape T1K = 1000 per Tape and Reel
			Frequency in kHz
			Series Model

Part Marking:

Pywws or **Pymd**
32.76 **32.76**

Where: *yywws or ymd* = Date code

Codes for Date Code YMD

Code	6	7	8	9	0	1	2
Year	2006	2007	2008	2009	2010	2011	2012

Code	A	B	C	D	E	F	G	H	J	K	L	M
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Code	1	2	3	4	5	6	7	8	9	A	B	C
Day	1	2	3	4	5	6	7	8	9	10	11	12
Code	D	E	F	G	H	J	K	L	M	N	P	R
Day	13	14	15	16	17	18	19	20	21	22	23	24
Code	T	U	V	W	X	Y	Z					
Day	25	26	27	28	29	30	31					

Reliability: Environmental Compliance

Parameter	Condition
Mechanical Shock	MIL-STD-883 Method 2002, Condition B
Vibration	MIL-STD-883 Method 2007, Condition A
Solderability	MIL-STD-883 Method 2003
Thermal Shock	MIL-STD-883 Method 1011, Condition A

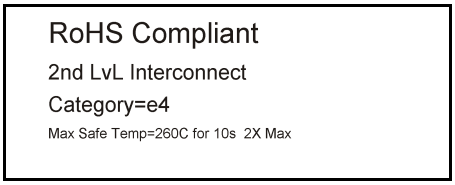
ESD Rating

Model	Minimum Voltage	Conditions
Human Body Model	1500	MIL-STD-883 Method 3115
Charged Device Model	1000	JESD 22-C101

Package Labeling

Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Courier New
Bar code is 39-Full ASCII

Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial

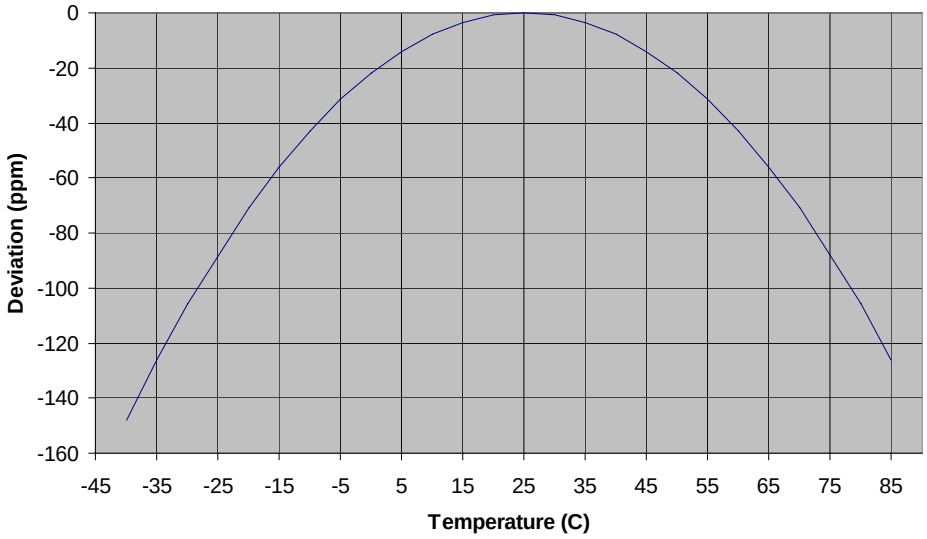


Electrical Specification for Vcc 1.3V to 5.5V over - 40 to +85°C

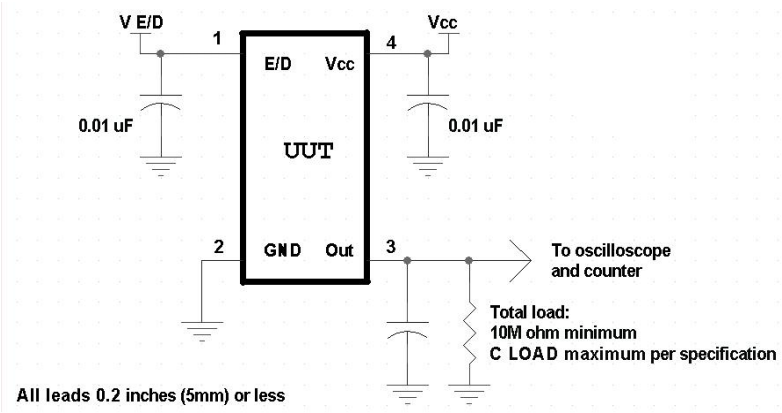
Item	Min	Typ	Max	Unit	Condition	
Frequency		32.768		kHz		
Frequency Calibration Tolerance	-10	0	+30	ppm	at V_{CC} = 3.3V and 25 °C	
Frequency Stability *	-100	-	+30	ppm	when operating at -20 to +70 °C	
	-200	-	+30	ppm	when operating at -40 to +85 °C	
Frequency versus Supply	0	0.5	2.0	ppm	for V_{CC} range of 2.3 V to 5.5V	
Output Waveform		CMOS				
Output High Level	90	-	-	%	of V_{CC} (See load circuit)	
Output Low Level	-	-	10	%	of V_{CC} (See load circuit)	
Output T_{RISE} and T_{FALL}	-	50	200	nS	C_{LOAD} = 15pF T_R / T_F 10% to 90% and D.C. at 50% point of V_{CC} (See load circuit)	
Output Symmetry	45	50	55	%		
V disable	-	-	10	%	of V_{CC} applied to pad 1	
V enable	90	-	-	%	of V_{CC} applied to pad 1	
Output leakage $V_{OUT} = V_{CC}$	-10	-	+10	uA	Pad 1 low, device disabled	
V_{OUT} = 0V	-10	-	+10	uA		
Supply Current (I_{CC})	-	0.8	0.9	uA	V_{CC} = 1.3 V	C_{LOAD} = 1 pF
	-	1.2	1.5	uA	V_{CC} = 3.3 V	
	-	2.2	2.6	uA	V_{CC} = 5.5 V	
	-	1.9	2.3	uA	V_{CC} = 1.3 V	C_{LOAD} = 15 pF
	-	4.3	5.2	uA	V_{CC} = 3.3V	
	-	7.5	9.0	uA	V_{CC} = 5.5V	
Standby Current I_{CC}	-	-	200	nA	Pad 1 low, device disabled at 25 °C	
Enable time	-	-	100	nS	Time for output to reach a logic state	
Disable time	-	-	100	nS	Time for output to reach a high Z state	
Start up time Enable time	-	0.9	3	S	Time for output to reach specified frequency	
Operating Temperature Range	-40	-	+85	°C		
Storage Temperature Range	-55	-	+125	°C		

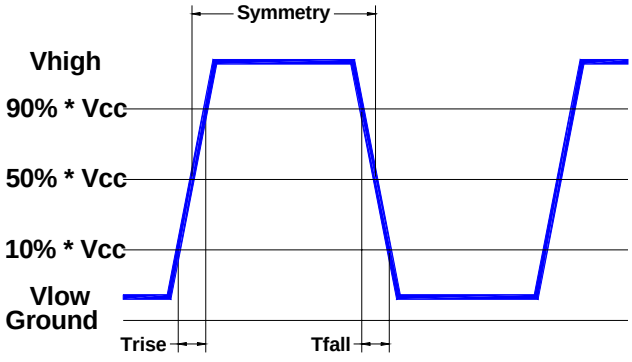
*For all supply voltages, load changes, aging for 1 year, shock, vibration and temperatures
Specifications with Pad 1 E/D open circuit unless otherwise stated.

Typical Frequency versus Temperature Characteristics

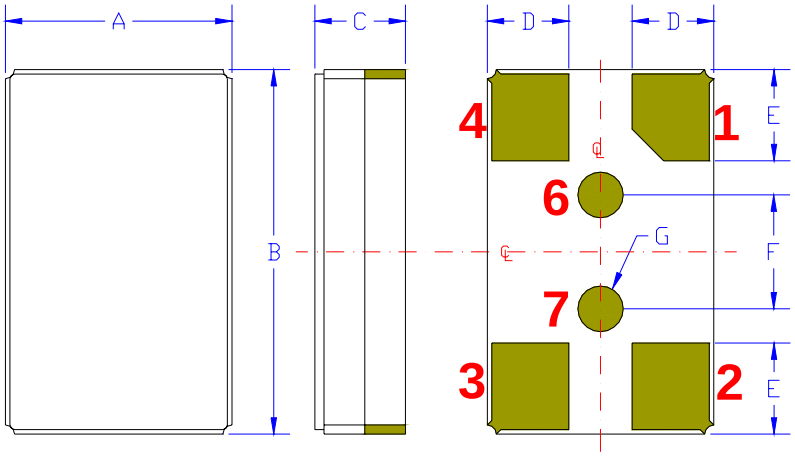


Load Circuit and Test Waveform





Mechanical:



	Inches	mm
A	0.098 ±0.008	2.5 ±0.20
B	0.157 ±0.008	4.0 ±0.20
C	0.039 ±0.004	1.0 ±0.10
D[1]	0.035	0.9
E[1]	0.039	1.0
F[1]	0.047	1.20
G[1]	0.016D	0.40D

[1] Typical dimensions

Contacts :
Gold 11.8 µinches 0.3 µm minimum over
Nickel 50 to 350 µinches 1.27 to 8.89 µm

Not to Scale

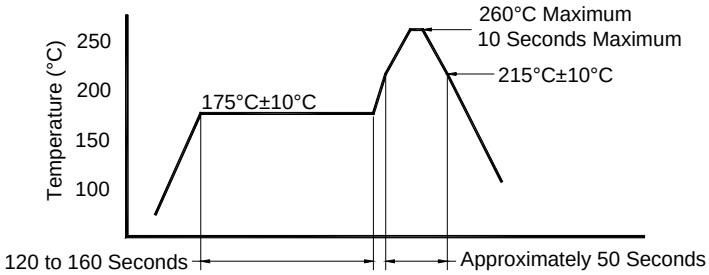
Pad	Function	Note
1	Output Enable/Disable	When this pad is not connected the oscillator shall operate. When this pad is logic low the output will be inhibited (high impedance state.) Recommend connecting this pad to V_{CC} if the oscillator is to be always on.
2	Ground (GND)	
3	Output	
4	Supply Voltage (V_{CC})	Recommend connecting appropriate power supply bypass capacitors as close as possible.
6	Internal Connection	Do not connect to this pad
7	Internal Connection	Do not connect to this pad

Lead Free

Layout and application information

For Optimum Jitter Performance, Pletronics recommends:
- a ground plane under the device while avoiding connection to the two dot pads on the bottom. Use the PCB solder mask to isolate the two dot pads
- no large transient signals (both current and voltage) should be routed under the device
- do not layout near a large magnetic field such as a high frequency switching power supply
- do not place near piezoelectric buzzers or mechanical fans.

Reflow Cycle (typical for lead free processing)



The part may be reflowed 2 times without degradation.

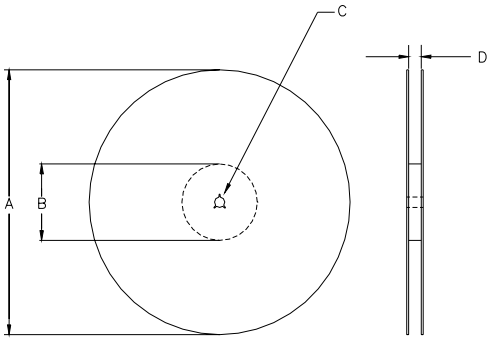
Allowed rate of temperature change
Maximum 4°C per second

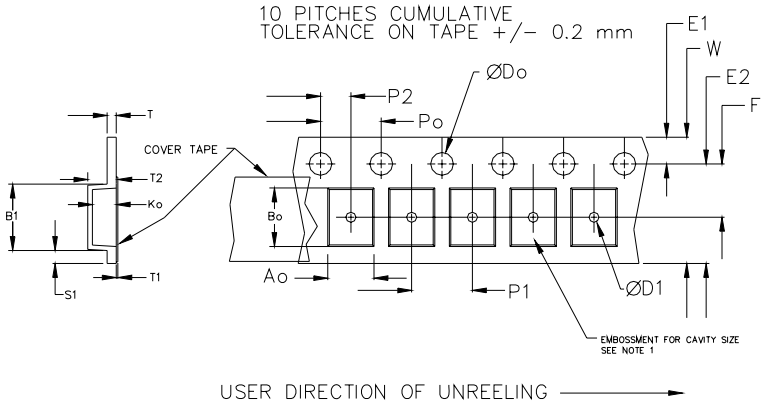
Tape and Reel: available for quantities of 1000 per reel, cut tape for < 1000

Constant Dimensions Table 1								
Tape Size	D0	D1 Min	E1	P0	P2	S1 Min	T Max	T1 Max
8mm	1.5 +0.1 -0.0	1.0	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	0.6	0.6	0.1
12mm		1.5						
16mm		1.5			2.0 ±0.1			
24mm		1.5						

Variable Dimensions Table 2							
Tape Size	B1 Max	E2 Min	F	P1	T2 Max	W Max	Ao, Bo & Ko
12 mm	12.1	14.25	7.5 ±0.1	8.0 ±0.1	8.0	16.3	Note 1

Note 1: Embossed cavity to conform to EIA-481-B Dimensions in mm Not to scale





		REEL DIMENSIONS			
A	inches	7.0	10.0	13.0	
	mm	177.8	254.0	330.2	
B	inches	2.50	4.00	3.75	
	mm	63.5	101.6	95.3	Tape Width
C	mm	13.0 +0.5 / -0.2			
D	mm	12.4 +2.0 -0.0	12.4 +2.0 -0.0	12.4 +2.0 -0.0	12.0

Reel dimensions may vary from the above

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