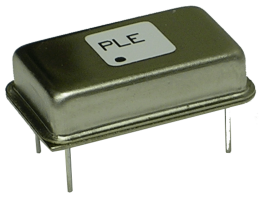
PLETRONICS
www.pletronics.com 425-776-1880



SM77T001-16.384M
CMOS Clock Oscillator

October 2012

- Pletronics' SM77T001-16.384M is a quartz crystal controlled precision square wave generator with a CMOS output.
- Built with the PLE SM77H series of 5x7 mm CMOS oscillators
- Tube packaging is available.
- Full Size Thru-Hole DIP package
- Enable/Disable Function
- Disable function includes low standby power mode
- Low Jitter
- Internal V_{CC} bypass capacitor

ENHANCED VERSION TO MEET THE REQUIREMENT OF A LEGACY PRODUCT

Pletronics will continue to support this P11 footprint but will utilize the SM77 device technology. The P11 will now be a hermetic sealed metal package with an unchanged appearance but will have an SM77xxH series ceramic LCC oscillator inside.

Lead Free

Pletronics Inc. certifies this device is in accordance with the RoHS (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: 2.0 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020C
Second Level Interconnect code: e1 or e2

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 110°C/Watt depending on the solder pads, ground plane and construction of the PCB.

Part Marking:

PLE
SM77T001
16.384M
YMDx

PLE	=	Pletronics
SM77T001	=	Model
16.384M	=	Frequency in MHz of the SM77
YMD	=	Year, Month, and Day
X	=	Internal factory code

Package Labeling

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

P/N: SM77T001-16.384M
Customer P/N: 12345678
Qty: 1000 D/C 2ACS
MSL: 1

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

RoHS Compliant

2nd LvL Interconnect
Category=e1

Max Safe Temp=245C for 10s (Reflow only) 2X Max

Max Safe Temp=280C for 15s (Wave solder only)

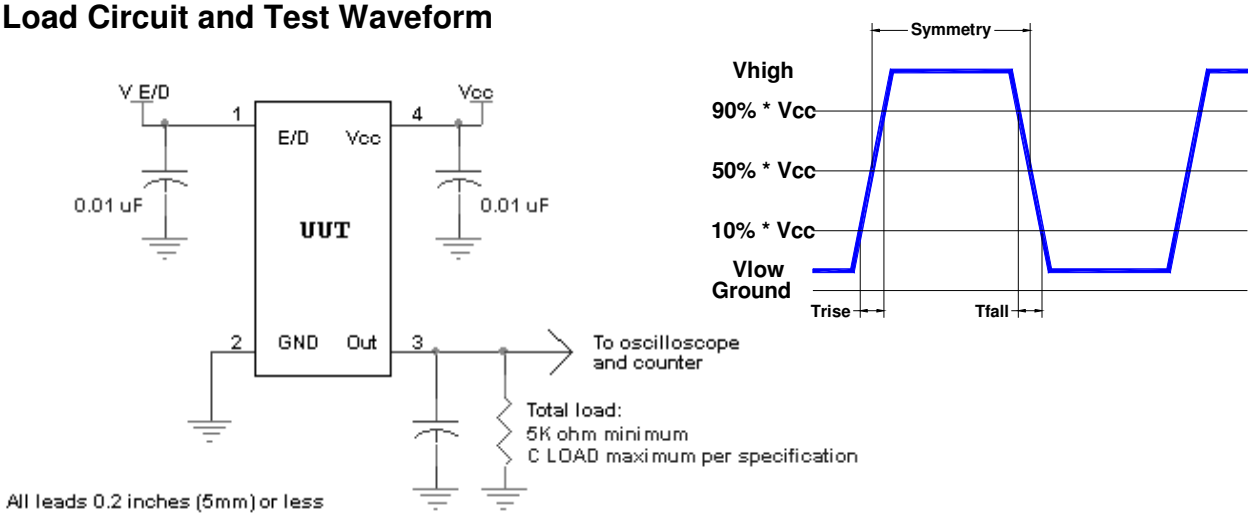
PCB Mounting (typical for lead free processing)

Hand soldering is recommended.
Wave solder at 255°C to 280°C with maximum wave exposure of 15 seconds
Reflow solder maximum exposure of 245°C for 15 seconds
Soldering done in a nitrogen atmosphere enhances the solder joint quality.

Electrical Specification 16.384M, 3.30V ±10% over the specified temperature range

Item	Min	Max	Unit	Condition
Frequency Accuracy	-25	+25	ppm	For all supply voltages, load changes, aging for 1 year, shock, vibration and temperatures
Output Waveform	CMOS			
Output High Level	90	-	%	of V_{CC} (See load circuit)
Output Low Level	-	10	%	
Output Symmetry	45	55	%	at 50% point of V_{CC} (See load circuit)
Enable/Disable Internal Pullup	50	-	Kohm	to V_{CC}
V disable	-	30	%	of V_{CC} applied to pin 1
V enable	70	-	%	
Output leakage $V_{OUT} = V_{CC}$	-10	+10	uA	Pin 1 low, device disabled
$V_{OUT} = 0V$	-10	+10	uA	
Standby Current I_{CC}	-	3	uA	
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	-	3	mS	Time for output to reach specified frequency
Operating Temperature Range	-40	+85	°C	Standard Temperature Range
Storage Temperature Range	-55	+125	°C	
Output T_{RISE} and T_{FALL}	-	5	nS	C_{LOAD} = 15 pF 10% to 90% of V_{CC} See Load Circuit
	-	8	nS	C_{LOAD} =30 pF 10% to 90% of V_{CC} See Load Circuit
V_{CC} Supply Current (I_{CC})	-	17	mA	C_{LOAD} = 15 pF

Load Circuit and Test Waveform



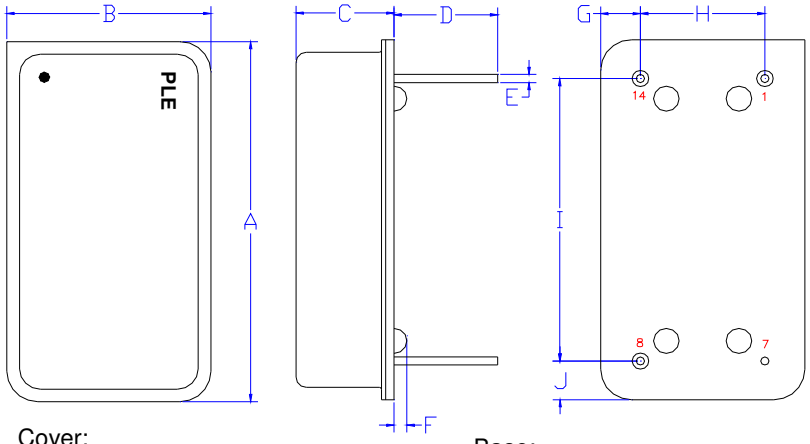
Reliability: Environmental Compliance

Parameter	Condition
Mechanical Shock	MIL-STD-883 Method 2002, Condition A
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

Mechanical:



Cover:
Kovar
Electroless Nickel Plated
1 µinch (25 µm) typical
Resistance welded to base

Marking:
Laser marked lettering

Base:
Kovar
Glass to metal sealed leads

Pin 7 Connected to case

Not to scale

	Inches	mm
A	0.787 ±0.005	20.00 ±0.13
B	0.487 ±0.005	12.37 ±0.13
C	0.225 ±0.011	5.72 ±0.28
D[1]	0.250	6.35
E[1]	0.020	0.51
F[1]	0.031	0.79
G[1]	0.094	2.37
H[1]	0.300	7.62
I[1]	0.600	15.24
J[1]	0.094	2.37

[1] Nominal dimension

Pin	Function	Note
1	Output Enable/Disable	When this pin is not connected the oscillator shall operate. When this pin 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.
7	Ground (GND)	
8	Output	
14	Supply Voltage (V_{CC})	Recommend connecting appropriate power supply bypass capacitors as close as possible.

Layout and application information

For Optimum Jitter Performance, Pletronics recommends:
- a ground plane under the device
- 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.

IMPORTANT NOTICE

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