SM77H129-53.125M
CMOS Clock Oscillator

June 2020

- Pletronics' SM77H129 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 or cut tape packaging is available.
- 53.125MHz
- 9.9mm x 13.97mm package
- Enable/Disable or Standby Function
- Disable function includes low standby power mode
- Low Jitter

Pletronics Inc. certifies this device is in accordance with the RoHS 3 and WEEE 2 directives.

Pletronics Inc. guarantees the device does not contain the following:
Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Weight of the Device: 0.66 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
Io Output Current	+25 mA to -25 mA

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.

Part Marking and Marking Legend:

PLE SM77 *FF.FFF* M • *YMDxx*	PLE SM77 *FF.FFF* M • *YYWWxx*	7xYWWxx *FF.FFF* M • PLE *xxx*

PLE = Pletronics
FF.FFF M = Frequency in MHz
YYWW or YWW or *YMD* = Date of Manufacture (year and week, or year-month-day)
All other marking is internal factory codes

Specifications such as frequency stability, supply voltage and operating temperature range, etc. are not identified from the marking. External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Codes for Date Code YMD

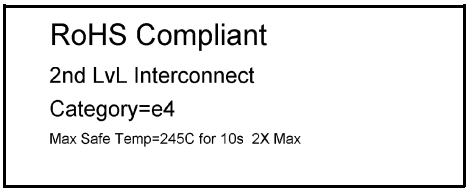
Code	9	0	1	2	3	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2019	2020	2021	2022	2023	Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

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

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

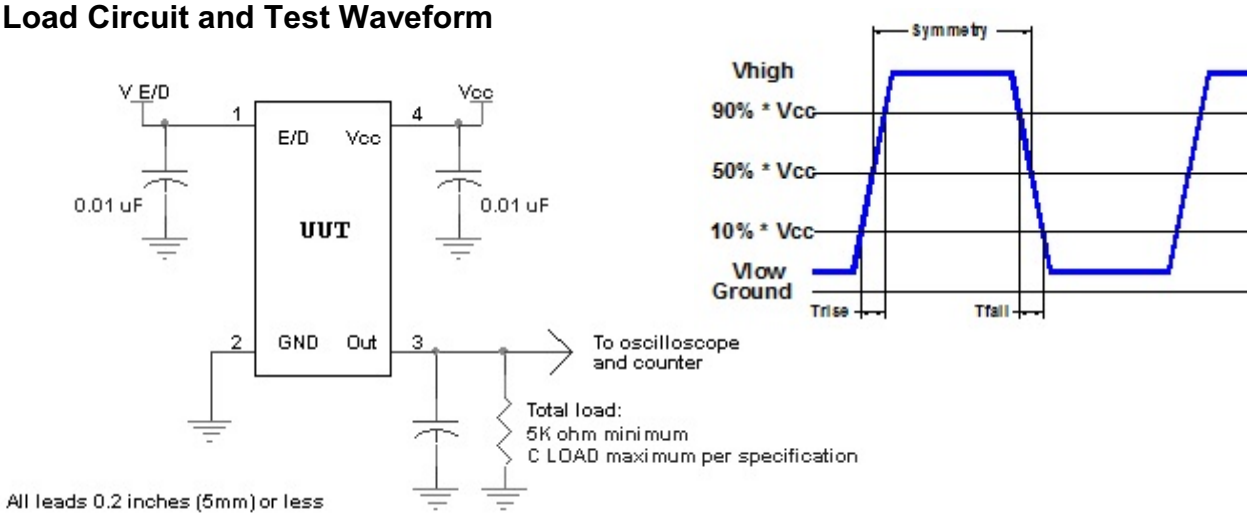


Electrical Specification for 3.30V ±10% over the specified temperature range

Item	Min	Typ	Max	Unit	Condition
Frequency	-	53.125	-	MHz	
Frequency Accuracy	-50	-	+50	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)
Jitter	-	-	0.6	pS RMS	12 KHz to 20 MHz from output freq
	-	-	2.5	pS RMS	10 Hz to 1 MHz from output freq
Enable/Disable Internal Pull-up	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	-	-	2.0	ms	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 freq
Output T_{RISE} and T_{FALL}	-	-	1	ns	between 80% and 20%Vcc
V_{CC} Supply Current (I_{CC})	-	-	45	mA	
Operating Temperature Range	0	-	+70	°C	
Storage Temperature Range	-55	-	+125	°C	

Specifications with Pad 1 E/D open circuit

Load Circuit and Test Waveform



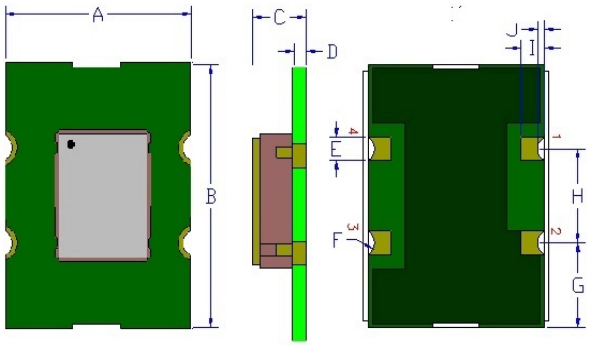
Reliability: Environmental Compliance

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

Mechanical:



	Inches	mm
B	0.550 ±0.010	13.97 ±0.25
A	0.390 ±0.010	9.90 ±0.25
C	0.105 ±0.010	2.67 ±0.25
D[1]	0.026 typ.	0.66
E[1]	0.050	1.27
F[1]	0.028 R	0.72 R
G[1]	0.180	4.57
H[1]	0.200	5.08
I[1]	0.050	1.27
J[1]	0.015	0.38

FR4 PCB Base:
Solder masked
All via holes tented on bottom
Copper Clad ½ oz. Typical
Gold plated 0.02 µinch (0.5 µm)

Pin 2 Ground plane is typical

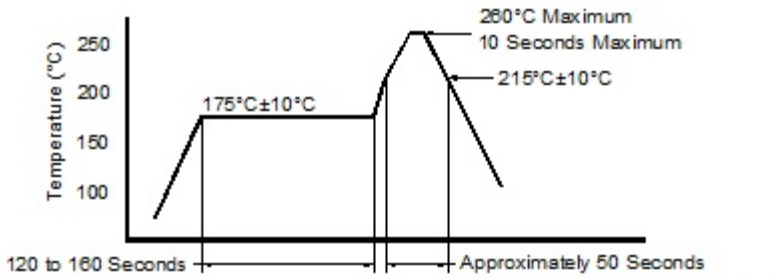
Not to scale

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.

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.

Reflow Cycle (typical for lead free processing)



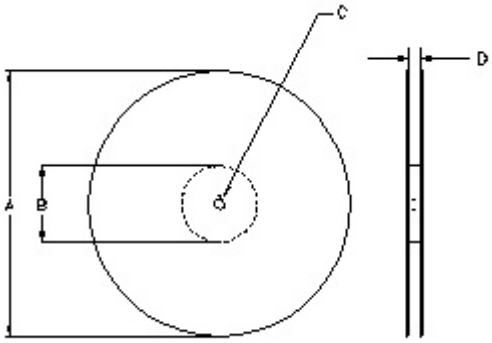
The part may be reflowed 3 times without degradation.

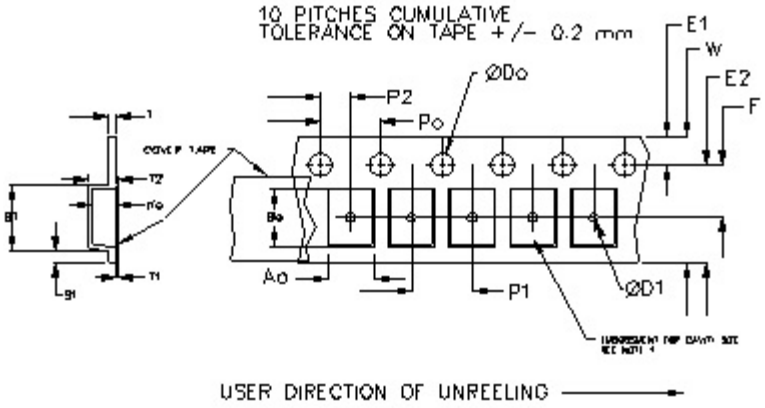
Tape and Reel: available for quantities of 250 to 1000 per reel, cut tape for < 250

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
24 mm	9.88	22.25	11.5 ±0.1	16.0 ±0.1	3.22	24.3	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	---	---	24.4 +2.0 -0.0	24.0

Reel dimensions may vary from the above

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Contacting Pletronics Inc.

Pletronics Inc.
19013 36th Ave. West
Lynnwood, WA 98036-5761 USA

Tel: 425-776-1880
Fax: 425-776-2760
E-mail: ple-sales@pletronics.com
URL: www.pletronics.com