

LV55D015-81.0M LVDS Clock Oscillator

April 2013



- Pletronics' LV55D Series is a quartz crystal controlled precision square wave generator with an LVDS output.
- The package is designed for high density surface mount designs.
- Tape and Reel or cut tape packaging is available.
- 3.2 x 5 mm LCC Ceramic Package
- Enable/Disable Function on pad 1
- Disable function includes low standby power mode
- 3.3 V Supply
- Low Jitter

**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-020D.1

Second Level Interconnect code: e4

Absolute Maximum Ratings:

Parameter	Unit
V _{CC} Supply Voltage	-0.5V to +5.0V
V _i Input Voltage	-0.5V to V _{CC} + 0.5V
V _o 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 45 to 65°C/Watt depending on the solder pads, ground plane and construction of the PCB.

ESD Rating

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

Part Number:

P81.0LG
• **YMDxx**

Marking Legend:

P = Pletronics

LG = LVDS

81.0M = Frequency in MHz

YMD = Date of Manufacture (year and week, or year-month-day)

All other marking is internal factory codes

Codes for Date Code YMD

Code	0	1	2	3	4	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2010	2011	2012	2013	2014	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

(The tape and reel will be marked LV55D015-81.0M)

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

Font is Arial

P/N:		
	LV5545DV-100.0M	
Customer P/N:		
	12345678	
Qty:		D/C
	1000	6MC

RoHS Compliant

2nd LVL Interconnect

Category=e4

Max Safe Temp=260C for 10s 2X Max

Reliability: Environmental Compliance

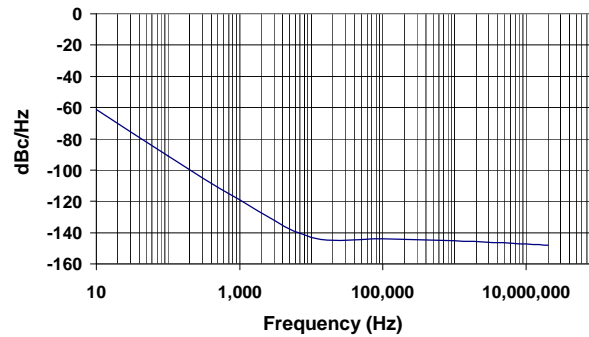
Parameter	Condition
Mechanical Shock	MIL-STD-883 Method 2002, Condition B
Vibration	MIL-STD-883 Method 2007, Condition A
Solderability	MIL-STD-883 Method 2003
Thermal Shock	MIL-STD-883 Method 1011, Condition A

Electrical Specification for 3.30V $\pm 10\%$ over the specified temperature range

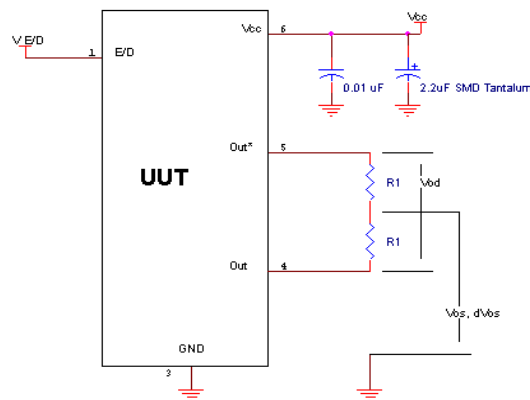
Item	Min	Typ	Max	Unit	Condition
Frequency Accuracy	-50	-	+50	ppm	For all supply voltages, load changes, aging for 1 year, shock, vibration and temperatures
Output Waveform	LVDS				
Output High Level	--	1.43	1.60	Volts	See load circuit R1 = 50 ohms
Output Low Level	0.90	1.10	--	Volts	
Differential Output (V_{OD})	250	350	450	mVolts	
Output Offset Voltage (V_{OS})	-	1.25	-	Volts	
Output Symmetry	45	50	55	%	Referenced to 50% of amplitude or crossing point
Output T_{RISE} and T_{FALL}	-	150	400	pS	V_{th} is 20% and 80% of waveform
Jitter	-	-	0.6	pS RMS	Measured from 12KHz to 20MHz from $F_{nominal}$
	-	-	2.8		Measured from 10Hz to 1MHz from $F_{nominal}$
Vcc Supply Current	-	16	27	mA	Includes current of properly terminated device
Enable/Disable Internal Pull-up	50	-	-	Kohm	To Vcc (equivalent resistance)
V disable	-	-	0.7	Volts	Referenced to Ground
V enable	1.7	-	-	Volts	Referenced to Ground
Output leakage $V_{OUT} = V_{CC}$ $V_{OUT} = 0V$	-10	-	+10	uA	Pad 1 low, device disabled
	-10	-	+10	uA	
Enable	-	-	3	mS	Time for output to reach a logic state
Disable time	-	-	200	nS	Time for output to reach a high Z state
Start up time	-	-	3	mS	Measured from the time Vcc = 3.0V
Standby Current I_{CC}	-	-	10	uA	Pad 1 low, device disabled
Operating Temperature Range	-40	-	+85	°C	
Storage Temperature Range	-55	-	125	°C	

Specifications with Pad 1 E/D open circuit

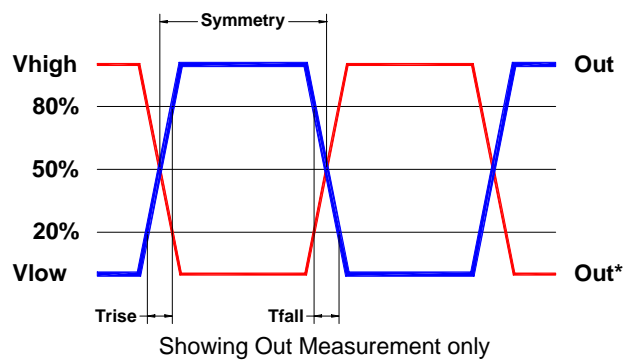
Typical Phase-Noise Response



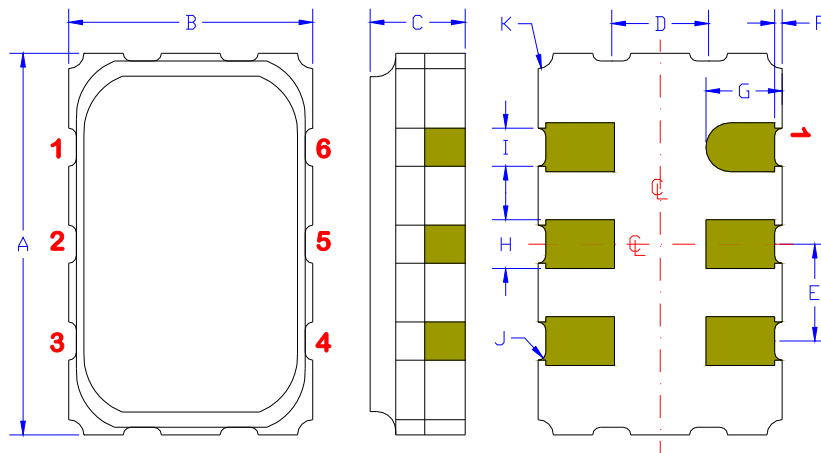
Load Circuit



Test Waveform



Mechanical:



Contacts:

Gold 11.8 to 39.4 μ m (0.3 to 1.0 μ m)
over
Nickel 50 to 350 μ m (1.27 to 8.89 μ m)

¹ Typical dimensions

Not to Scale

	Inches	mm
A	0.197 \pm 0.006	5.00 \pm 0.15
B	0.125 \pm 0.006	3.20 \pm 0.15
C	0.053 max	1.35 max
D ¹	0.050	1.27
E ¹	0.050	1.27
F ¹	0.004	0.10
G ¹	0.039	1.00
H ¹	0.025	0.63
I ¹	0.020	0.50
J ¹	0.004R	0.10R
K ¹	0.008R	0.20R

Pad	Function	Note
1	Output Enable/Disable	When this pad is not connected the oscillator shall operate. When this pad is <0.30 volts, the output will be inhibited (high impedance state.) Recommend connecting this pad to V _{CC} if the oscillator is to be always on.
2	No connect	There is no internal connection to this pad
3	Ground (GND)	
4	Output	The outputs must be terminated, 100 ohms between the outputs is the ideal termination.
5	Output*	
6	Supply Voltage (V _{CC})	Recommend connecting appropriate power supply bypass capacitors as close as possible.



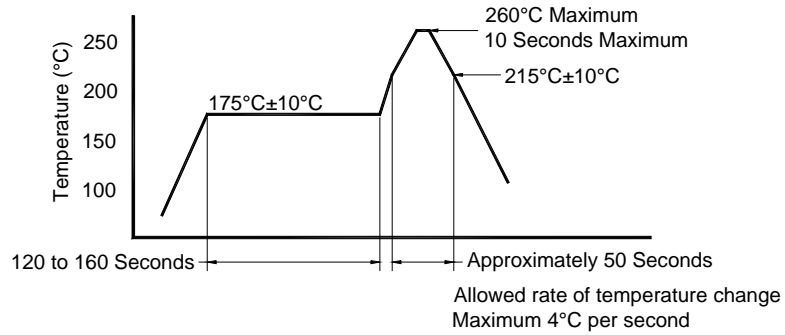
Layout and application information

Recommend connecting Pad 1 and Pad 2 together to permit the design to accept Enable/Disable on both input pads

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)



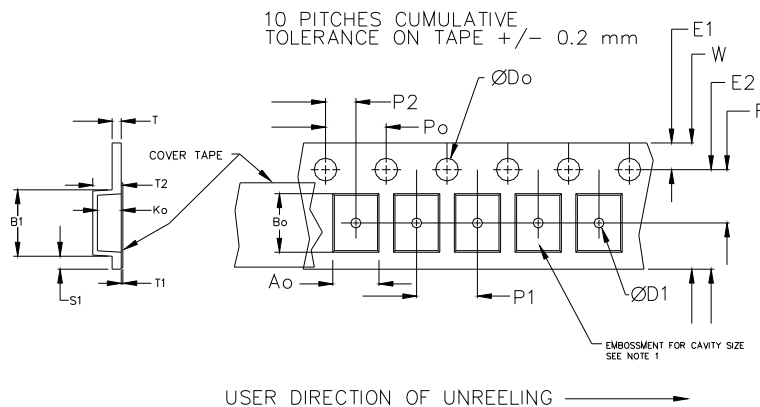
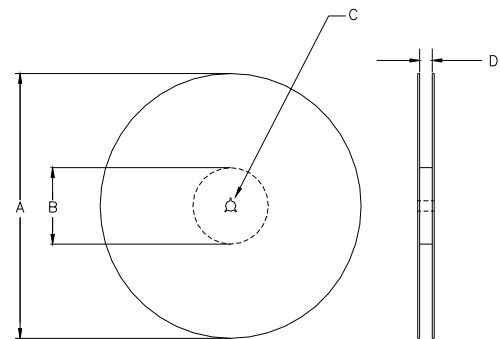
The part may be reflowed 3 times without degradation.

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	4.0	2.0 ±0.05	0.6	0.6	0.1
12mm		1.5			2.0 ±0.1			
16mm		1.5						
24mm		1.5						

Variable Dimensions Table 2							
Tape Size	B1 Max	E2 Min	F	P1	T2 Max	W Max	Ao, Bo & Ko
16 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
C	mm	13.0 +0.5 / -0.2		
D	mm	16.4 +2.0 -0.0	16.4 +2.0 -0.0	16.4 +2.0 -0.0
		16.0		

Reel dimensions may vary from the above

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