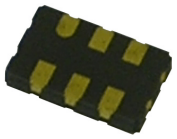

PE55J002-50.0M
PECL Clock Oscillators

July 2017

- Pletronics' PE55J Series is a quartz crystal controlled precision square wave generator with a PECL output.
- Improved phase noise performance.
- Low cost mass produced oscillator.
- 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
- Fundamental and 3rd Overtone Crystals used
- Improved circuit to minimize oscillator issues such as multi-mode output signal.
- Low Jitter Product

Pletronics Inc. certifies this device is in accordance with the RoHS 6/6 (2011/65/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	-0.3V to +4.0V
Vi Input Voltage	-0.3V to V_{CC} + 0.3V
Vo Output Voltage	-0.3V to V_{CC} + 0.3V

Thermal Characteristics

The maximum die or junction temperature is 125°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.

ESD Rating

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

Product information is current as of publication date. The product conforms to specifications per the terms of the Pletronics standard warranty. Production processsing does not necessarily include testing of all parameters.

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Part Marking

P*FF.FF*P
- ***YMDX***

Marking Legend:
P = Pletronics and PECL
FF.FF = Frequency in MHz
YMD = Date of Manufacture (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	5	6	7	8	9	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2015	2016	2017	2018	2019	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

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

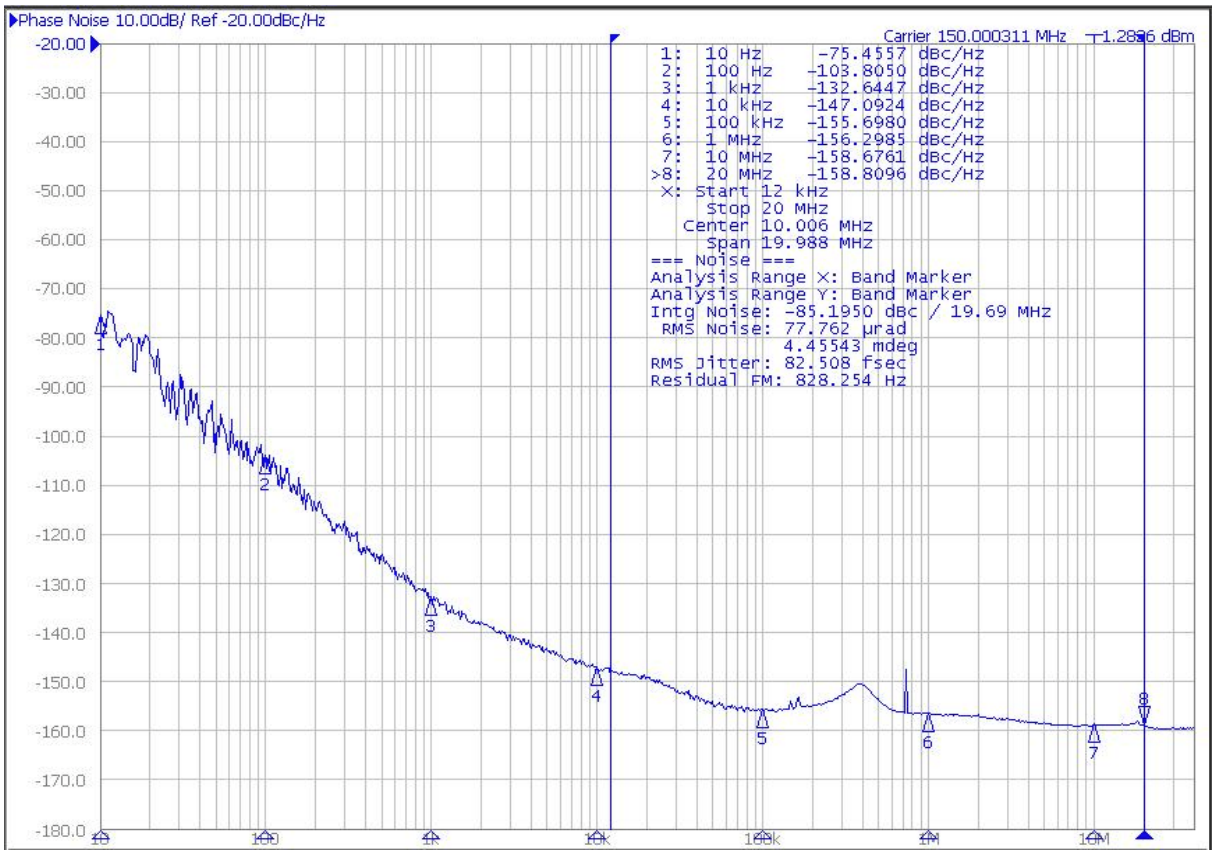
Electrical Specification

Item	Min	Typ	Max	Unit	Condition
Frequency	-	50.0	-	MHz	
Frequency Accuracy	-50	-	+50	ppm	Aging 11 ppm for 10 years, all conditions
Output Waveform		PECL /ECL			
Output High Level	2.275	2.35	2.420	V	V_{CC} = 3.3 V
Output Low Level	1.490	1.60	1.680	V	V_{CC} = 3.3 V
Output Symmetry	45	-	55	%	at 50% point of V_{CC} (See load circuit)
Jitter[1]	-	0.25	-	ps RMS	12 KHz to 20 MHz from the output frequency
	-	1.75	-	ps RMS	10 Hz to 1 MHz from the output frequency
Output T_{RISE} and T_{FALL}	-	-	0.5	ns	Vth is 20% and 80% of waveform
V_{CC} Supply Voltage	-	3.3	-	V	± 5%
V_{CC} Supply Current (I_{CC})	-	-	60	mA	
Enable/Disable Internal Pull-up	50	-	-	k Ω	to V_{CC}, measured with Pad 1 = 0.0 volts
V disable	-	-	0.7	V	Referenced to pad 3, 0.3 V_{CC}
V enable	1.7	-	-	V	Referenced to pad 3, 0.7 V_{CC}
Output leakage $V_{OUT} = V_{CC}$	-10	-	+10	uA	Pad 1 low, device disabled
V_{OUT} = 0V	-10	-	+10	uA	
Enable time	-	-	2	ms	Time for output to reach a logic state, the output frequency is correct at the specified Start Time.
Disable time	-	-	200	ns	Time for output to reach a high Z state
Start up time	-	-	10	ms	Time for output to reach specified frequency
Operating Temperature Range	-40	-	+100	°C	Extended Temperature Range
Storage Temperature Range	-55	-	+125	°C	
Standby Current I_{CC}	-	-	30	uA	Pad 1 low, device disabled

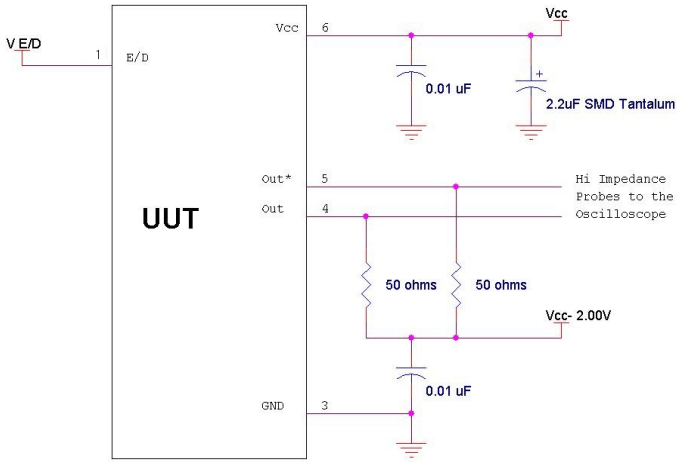
[1] Jitter computed from phase noise data at 50.0MHz

Specifications with Pad 1 E/D open circuit unless stated otherwise

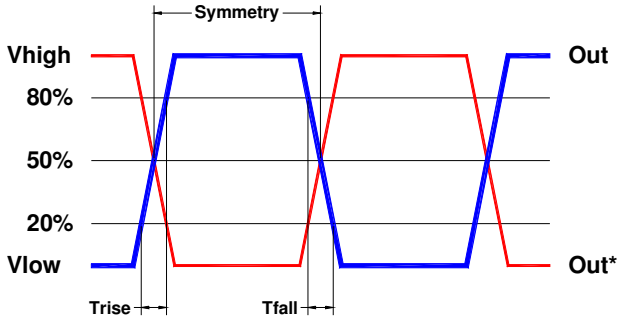
Typical Phase Noise



Load Circuit

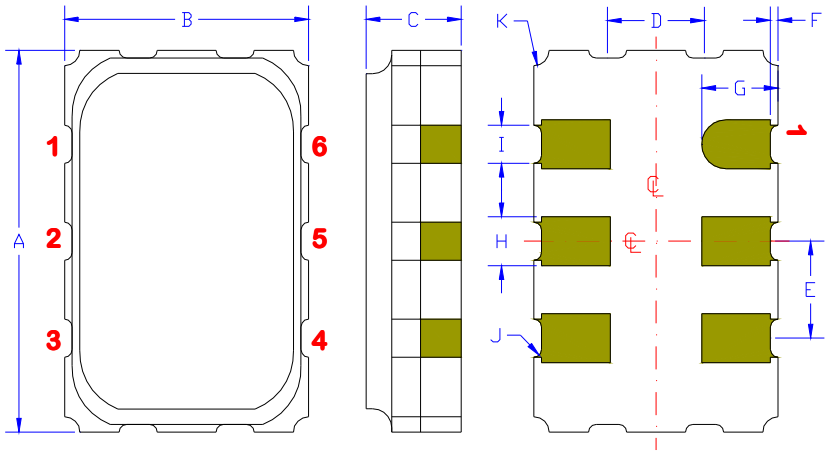


Test Waveform



Showing Out Measurement only

Mechanical:



Contacts:
Gold 11.8 to 39.4 µinches (0.3 to 1.0µm)
over
Nickel 50 to 350 µinches (1.27 to 8.89 µm)

[1] Typical dimensions

Not to Scale

	Inches	mm
A	0.197 ±0.006	5.00 ±0.15
B	0.125 ±0.006	3.20 ±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

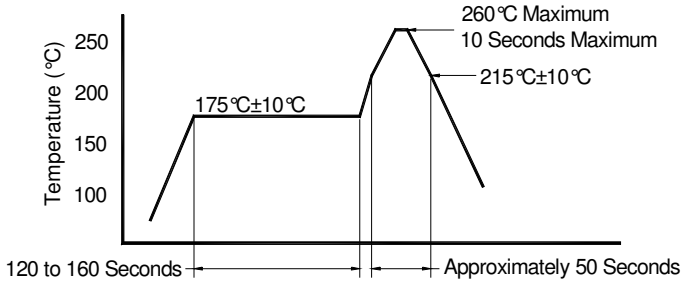
Pad	Function	Note
1	Output Enable/Disable	When this pad is not connected the oscillator shall operate. When this pad is <0.30 volts, the output will be inhibited (high impedance state.) Recommend connecting this pad to V_{CC} if the oscillator is to be always on.
2	No connect	There is no internal connection to this pad
3	Ground (GND)	
4	Output	Both outputs must be terminated and biased for proper operation. The ideal termination is 50 ohms connected to 2.0V below the Supply Voltage.
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 input on either pad

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)



Allowed rate of temperature change
Maximum 4°C per second

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

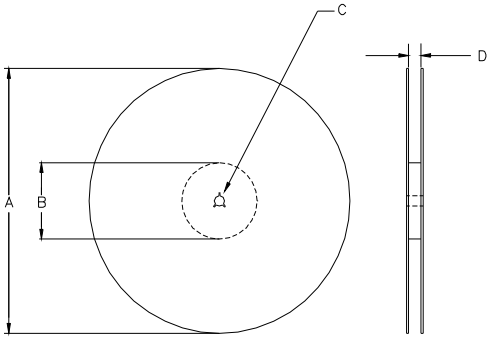
Constant Dimensions Table 1

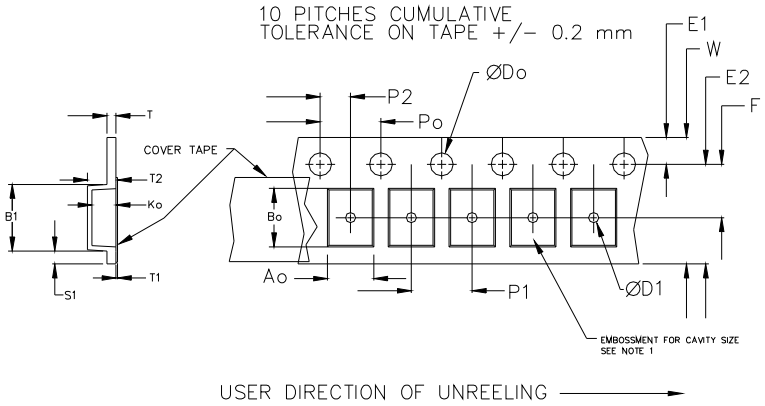
Tape Size	D0	D1 Min	E1	P0	P2	S1 Min	T Max	T1 Max
8mm	1.5 +0.1 -0.0	1.0	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	0.6	0.6	0.1
12mm		1.5						
16mm		1.5			2.0 ±0.1			
24mm		1.5						

Variable Dimensions Table 2

Tape Size	B1 Max	E2 Min	F	P1	T2 Max	W Max	Ao, Bo & Ko
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	Tape Width
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

IMPORTANT NOTICE

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