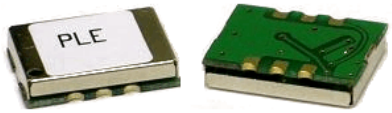


PE3XB Series 3.3 V
PECL Clock Oscillators

January 2008

This device is obsolete, January 2008
The PE33B is replaced by the PE91xxDV device
The PE37B is replaced by the PE97xxDV device
For new designs use the PE99xxDV device

- Pletronics' PE3XB Series is a quartz crystal controlled precision square wave generator with an PECL output.
- Solder pad compatible with many 9x14 Plastic J lead packages.
- FR4 base with a mechanical metal cover.
- Tape and Reel or Tube packaging is available.
- 1 to 250 MHz
- 9.9 mm x 13.97 mm 'B' package
- Enable/Disable Function:
  PE33B on pad 2
  PE37B on pad 1
- 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: 1.34 or .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 +6.5V
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 60 to 100°C/Watt depending on the solder pads, ground plane and construction of the PCB.

PE3XB Series 3.3 V
PECL Clock Oscillators

January 2008

Part Number:

PE33	45	B	E	V	-125.0M	-XX

Packaging code or blank
T250 = 250 per Tape and Reel
T500 = 500 per Tape and Reel
T1K = 1000 per Tape and Reel

Frequency in MHz

Supply Voltage V_{cc}
V = 3.3V ± 10%

Optional Enhanced OTR
E = Temperature range -40 to 85°C

Series Model

Frequency Stability
45 = ± 50 ppm
44 = ± 25 ppm
20 = ± 20 ppm

Series Model
PE33 = E/D on pad 2
PE37 = E/D on pad 1

Part Marking:

PLE
PE33B
***FFFFF*M**
• ***YMDXX***
or
PLE
PE37B
***FFFFF*M**
• ***YMDXX***
or
PE33B*X*
***FFFFF*M**
PLE *XX*
• ***YYWWXX***
or
PE37B*X*
***FFFFF*M**
PLE *XX*
• ***YYWWXX***

Legend:
PLE = Pletronics
*FFFFF*M = Frequency in MHz
YMD or YYWW = Date of Manufacture (Year - month - day or year and week)
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	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					

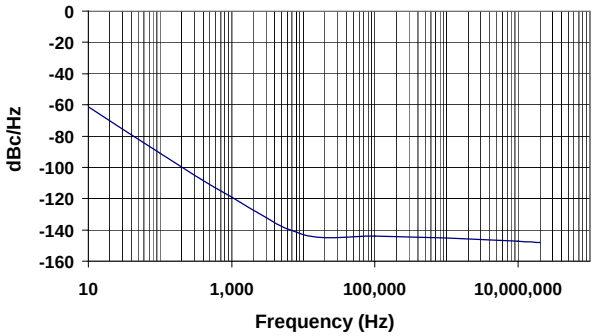
Day	25	26	27	28	29	30	31					

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

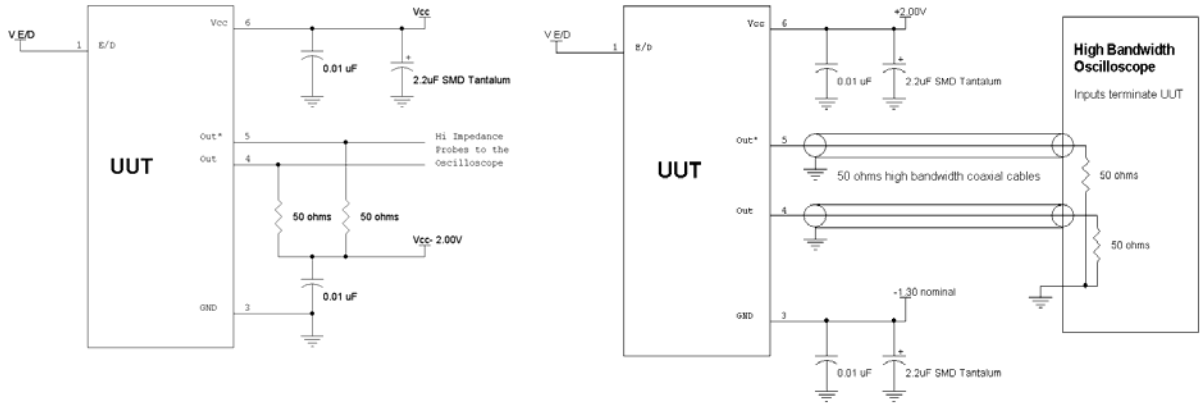
Item	Min	Max	Unit	Condition
Frequency Range	1	250	MHz	
Frequency Accuracy "**45**"	-50	+50	ppm	For all supply voltages, load changes, aging for 1 year, shock, vibration and temperatures
"**44**"	-25	+25		
"**20**"	-20	+20		
Output Waveform	PECL /ECL			
Output High Level (0°C to 85°C)	2.275	2.420	volts	Referenced to Ground, V_{CC} = 3.3 V
	0.975	1.120	volts	Referenced to termination voltage, V_{CC} = 3.3 V
	-1.025	-0.880	volts	Referenced to Vcc, V_{CC} = 3.3 V
Output High Level (-40°C)	2.216	2.420	volts	Referenced to Ground, V_{CC} = 3.3 V
	0.916	1.120	volts	Referenced to termination voltage, V_{CC} = 3.3 V
	-1.084	-0.88	volts	Referenced to Vcc, V_{CC} = 3.3 V
Output Low Level (0°C to 85°C)	1.490	1.680	volts	Referenced to Ground, V_{CC} = 3.3 V
	0.190	0.380	volts	Referenced to termination voltage, V_{CC} = 3.3 V
	-1.810	-1.620	volts	Referenced to Vcc, V_{CC} = 3.3 V
Output Low Level (-40°C)	1.470	1.745	volts	Referenced to Ground, V_{CC} = 3.3 V
	0.170	0.445	volts	Referenced to termination voltage, V_{CC} = 3.3 V
	-1.830	-1.555	volts	Referenced to Vcc, V_{CC} = 3.3 V
Output Symmetry	45	55	%	at 50% point of V_{CC} (See load circuit)
Jitter	-	0.2	pS RMS	12 KHz to 20 MHz from the output frequency
	-	2.8	pS RMS	10 Hz to 1 MHz from the output frequency
Output T_{RISE} and T_{FALL}	-	0.7	nS	Vth is 20% and 80% of waveform
V_{CC} Supply Current (I_{CC})	-	90	mA	
Enable/Disable Internal Pull-up	50	-	Kohm	to V_{CC}
V disable	-	0.6	volts	Referenced to pad 3
V enable	2.40	-	volts	
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	-	10	mS	Time for output to reach specified frequency
Operating Temperature Range	0	+70	°C	Standard Temperature Range
	- 40	+85	°C	Extended Temperature Range "**E**" Option
Storage Temperature Range	-55	+125	°C	

Specifications with E/D pad open circuit

Typical Phase-Noise Response

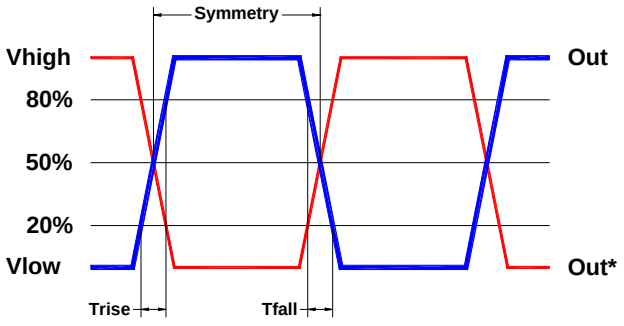


Load Circuit



E/D shown on pad 1 for PE37B, will be on pad 2 for PE33B

Test Waveform



Showing Out Measurement only

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

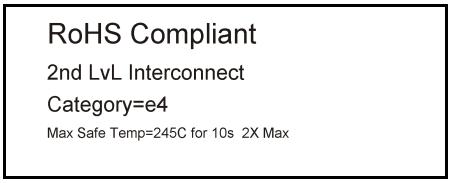
ESD Rating

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



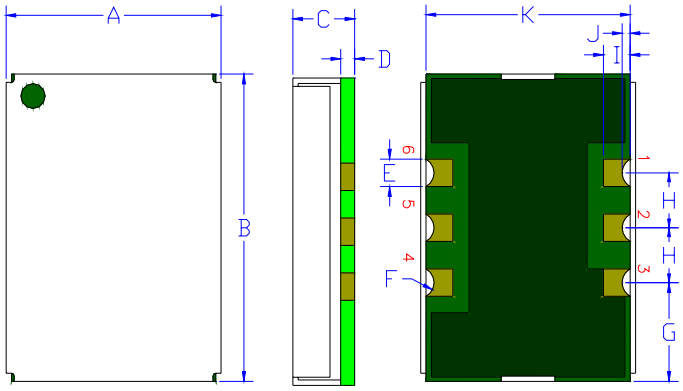
Layout and application information

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.

Mechanical:



FR4 PCB Base:
Solder masked
All via holes tented on bottom
Copper Clad ½ oz. Typical
Gold plated 0.02 µinch (0.5 µm)
Label:
White Kapton with Black Letters
–or--
Blue Epoxy heat cure ink covering top with laser marked lettering

Cover:
Centered on the base
304 Stainless Steel
0.010 inch (0.25µm)
Electroless Nickel Plated
1 µinch (25 µm) typical

Pin 3 Ground plane is typical

Not to scale

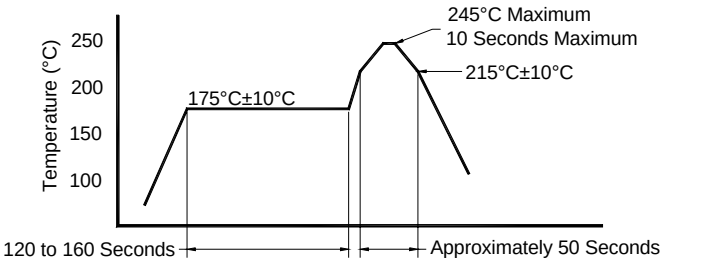
	Inches	mm
B	0.550 ±0.010	13.97 ±0.25
A	0.390 ±0.010	9.90 ±0.25
C	0.105 ±0.010	2.67 ±0.25
D[1]	0.026 typ.	0.66
E[1]	0.050	1.27
F[1]	0.028 R	0.72 R
G[1]	0.180	4.57
H[1]	0.100	2.54
I[1]	0.050	1.27
J[1]	0.015	0.38
K[1]	0.380	9.65

- The package is not hermetically sealed.
- The sides are intentionally left open to permit cleaning material to freely flow in the package, thus minimizing the accumulation of contaminants during cleaning processes.
- The internal part of the package must be thoroughly dry before operating.

PE33 Pad	PE37 Pad	Function	Note
2	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 at a steady, non switching state. Recommend connecting this pad to V_{CC} if the oscillator is to be always on.
1	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. When the device is disabled, the Output will be an active logic low and the Output* will be an active logic high. The outputs can not be “wire-ORed” with other oscillators or signal generators
5		Output*	
6		Supply Voltage (V_{CC})	Recommend connecting appropriate power supply bypass capacitors as close as possible.

Lead Free

Reflow Cycle (typical for lead free processing)



The part may be reflowed 2 times without degradation.

Tape and Reel: available for quantities of 250 to 1000 per reel

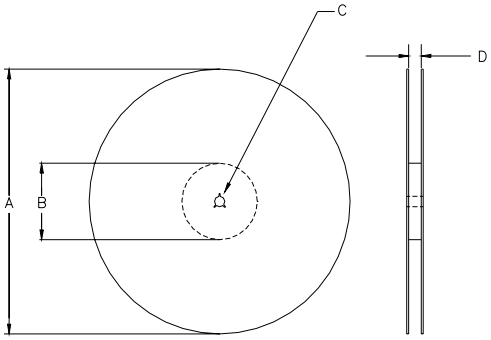
Constant Dimensions Table 1

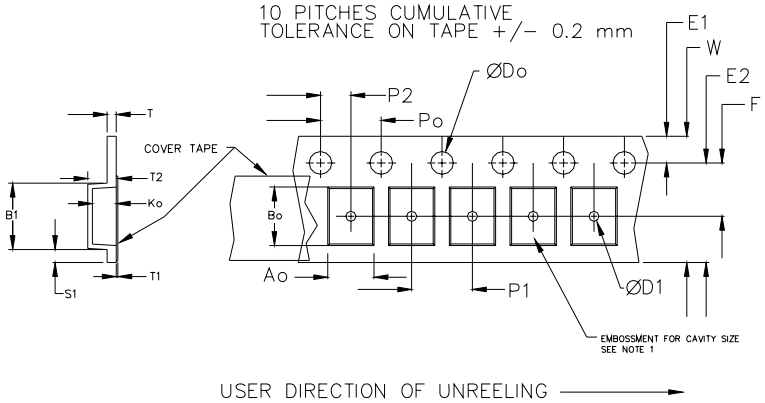
Tape Size	D0	D1 Min	E1	P0	P2	S1 Min	T Max	T1 Max
8mm	1.5 +0.1 -0.0	1.0	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	0.6	0.6	0.1
12mm		1.5						
16mm		1.5			2.0 ±0.1			
24mm		1.5						

Variable Dimensions Table 2

Tape Size	B1 Max	E2 Min	F	P1	T2 Max	W Max	Ao, Bo & Ko
24 mm	12.1	14.25	7.5 ±0.1	16.0 ±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	---	---	24.4 +2.0 -0.0	24.0

Reel dimensions may vary from the above

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