Part Number:

PE77	45	D	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
Blank = Temp. range -10 to +70°C
C = Temp. range -20 to +70°C
E = Temp. range -40 to +85°C

Series Model

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

Series Model

Part Marking:

PLE PE77
***FF.FFF* M**
• ***YMDXX***

or

PE7XYWWXX
***FF.FFF* M**
• ***PLE XXX***

Marking Legend:
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	0	1	2	3	4	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2020	2021	2022	2023	2024	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	

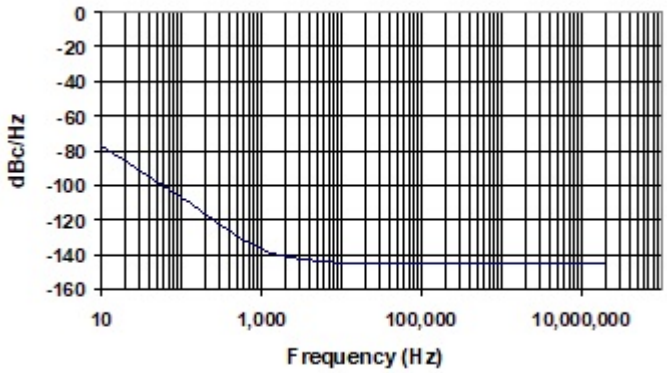
Electrical Specification for 3.30V ±10% over the specified temperature range and the frequency range of 40 to 325 MHz

Item	Min	Max	Unit	Condition
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[1]	-	0.6	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}, measured with Pad 1 = 0.0 volts
V disable	-	0.6	volts	Referenced to pad 3
V enable	2.40	-	volts	Referenced to pad 3
Output leakage $V_{OUT} = V_{CC}$	-10	+10	uA	Pad 1 low, device disabled
V_{OUT} = 0V	-10	+10	uA	
Enable time	100	500	nS	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	-10	+70	°C	Standard Temperature Range
	- 20	+70	°C	Extended Temperature Range "C" Option
	- 40	+85	°C	Extended Temperature Range "E" Option
Storage Temperature Range	-55	+125	°C	
Standby Current I_{CC}	-	30	uA	Pad 1 low, device disabled

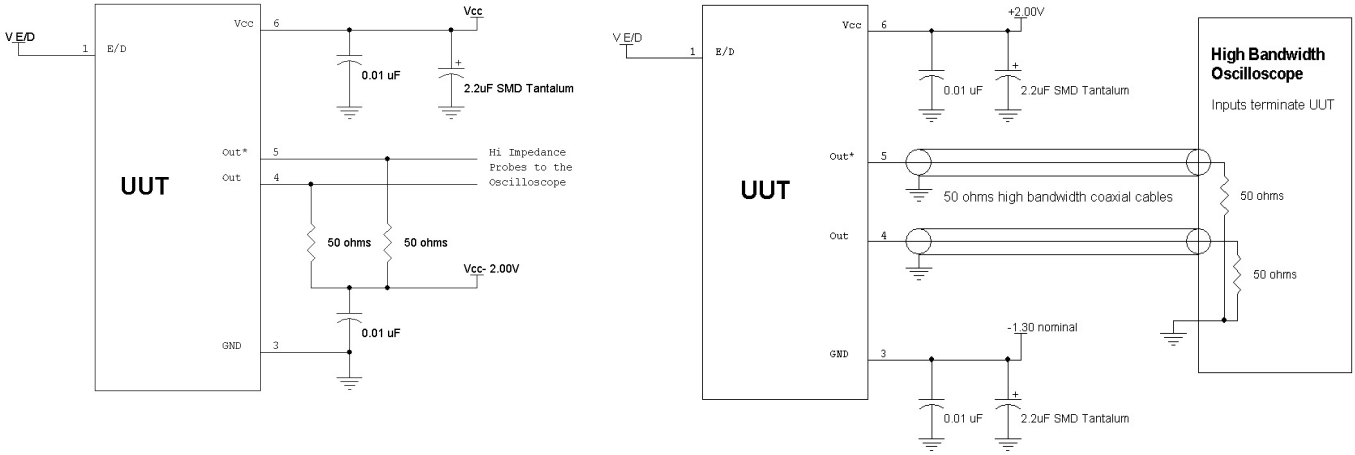
[1] Jitter computed from phase noise data at 125MHz

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

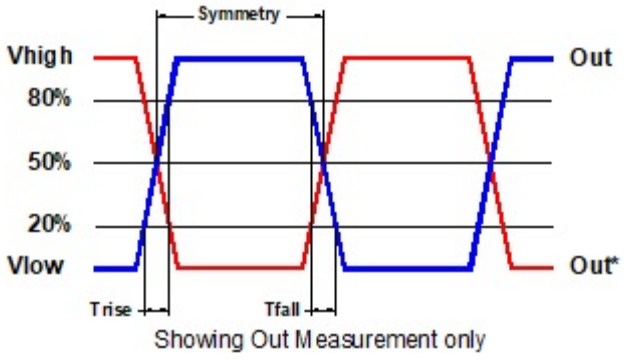
Typical Phase-Noise Response



Load Circuit



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

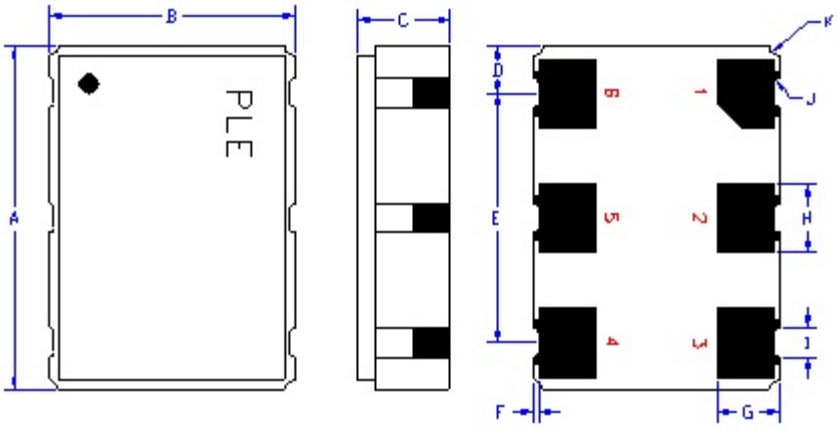
Package Labeling

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

Mechanical:



	Inches	mm
A	0.276 ±0.006	7.00 ±0.15
B	0.197 ±0.006	5.00 ±0.15
C	0.067 max	1.70 max
D[1]	0.038	0.96
E[1]	0.200	5.08
F[1]	0.004	0.10
G[1]	0.050	1.27
H[1]	0.055	1.40
I[1]	0.024	0.60
J[1]	0.004R	0.10R
K[1]	0.008R	0.20R

[1] Typical dimensions

Not to Scale

Note: C dimension is 1.5 mm typical

Contacts (pads) :
Gold 11.8 to 32.7 µinches (0.3 to 0.83 µm) over Nickel 50 to 350 µinches (1.27 to 8.89 µm)

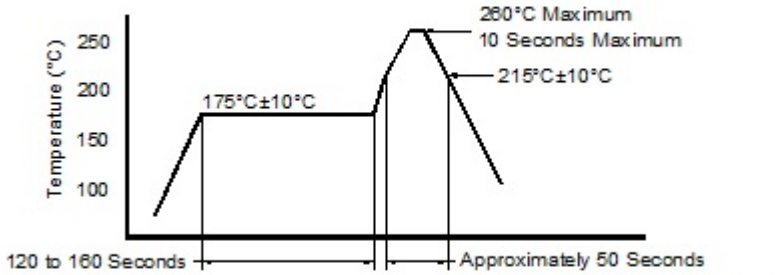
Pad	Function	Note
1	Output Enable/Disable	When this pad is not connected the oscillator shall operate. When this pad is <0.30 volts, the output will be inhibited (high impedance state.) Recommend connecting this pad to V_{CC} if the oscillator is to be always on.
2	No connect	There is no internal connection 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)



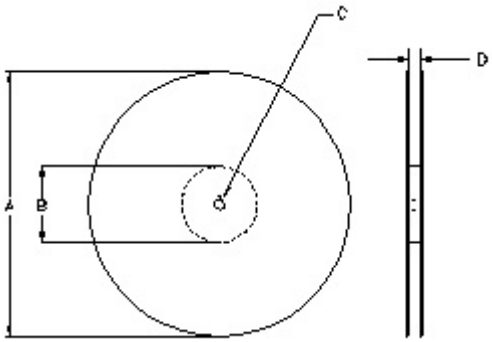
The part may be reflowed 3 times without degradation.

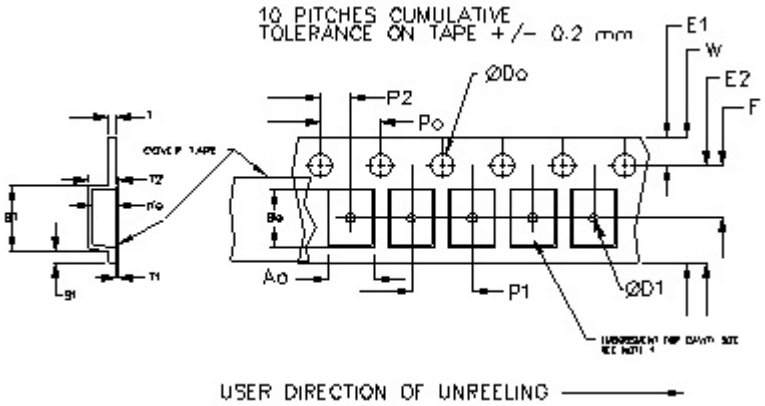
Tape and Reel: available for quantities of 250 to 1000 per reel, cut tape for < 250

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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Written By: R Gubser
Approved By: Melody Mistlin and Claude Lee after sales and engineering group review.

This specification was written around the NPC IC CF5036 and data taken at PLE about its performance.

Revision History:

March 11, 2005	Initial Release with freq high 225
March 15, 2005	Changed freq high to 212.5
May 26, 2005	Deleted F symmetry, added Vcc marking of B & V, chg high to 250 MHz
June 2005	Deleted dual voltage marking explanation and code W, added IC code
July 5, 2005	Improved how the Vhi and Vlo were listed. Add -40C changes (RAG)
Sept 2006	Updated marking page, RoHS label & mech shock & jitter to .6 from .13
Oct 2006	Added T250, etc. Changed height from 1.87 to 1.70 max
Dec 2006	Deleted tube package & frequency range
April 2007	Changed std OTR to -10 from 0 on part number and table
Feb 2010	Chg'd Contact Gold thickness & update YMD to 2014
April 26, 2010	Added "C" temperature range, Added 3 reflow Rag
May 5, 2010	Added specification of the Pad 1 voltage when the E/D pull up resistor is defined Modified the Standby Icc to match the NPC datasheet, changed 3uA to 30uA Added a min/max specification to the Enable time and text in the condition to state the frequency is not valid until the Start Up time is reached rag
June 21, 2011	Added footnote about how the jitter was determined rag
Aug 24, 2011	Added note for typical C dimension
February 3, 2016	Updated company logo, RoHS information and date code range.
November 5, 2018	Updated logos, notice page and date code range
May 6, 2021	Updated logos, date code range, RoHS information and barcode