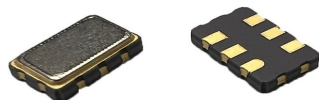




PLETRONICS PE55J Series 3.3V PECL Clock Oscillator



PE55JV
5.0 x 3.2 x 1.35 mm
LCC Ceramic Package

Features

- Quartz crystal controlled Precision Square Wave Oscillator
- PECL Differential Output
- Enable/Disable Function on pad 1
- Low Jitter
- 3.3V nominal Supply Voltage
- 25 - 320 MHz Frequency Range

Applications

Driving A/Ds, D/As, FPGAs
Fibre Channel
Ethernet, GbE, SynchE
Medical
Storage Area Networking
COTS
Telecom
PON

Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition
Frequency Range ²	25	-	320	MHz	
Frequency Stability ² $\pm 20 = 20^*$, $\pm 25 = 44$, $\pm 50 = 45$	± 20	-	± 50	ppm	Includes supply voltage change, load changes, aging for 1 year at 25°C \pm 2°C, shock, vibration and temperatures. *limited frequencies, see page 2
Operating Temperature Range ²	-10 -20 -40	-	+70 +70 +85	°C	Standard range Extended range C option Extended range E option
Supply Voltage ^{1,2} V _{CC}	3.135	3.3	3.465	V	
Supply Current I _{CC} (Pin 1 open)	-	-	60 70	mA	≤ 220 MHz > 220 MHz
Output Waveform	PECL				
Output High Level V _{OH}	2.275 2.215	2.350	2.420	V	≤ 220 MHz > 220 MHz V _{CC} = 3.3V, Referenced to Ground
Output Low Level V _{OL}	1.49	1.60	1.68	V	V _{CC} = 3.3V, Referenced to Ground
Output T _{RISE} and T _{FALL}	-	-	0.5 0.4	ns	≤ 220 MHz > 220 MHz V _{th} is 20% and 80% of output swing
Start Up Time	-	-	10	ms	Time for output to reach specified frequency
Duty Cycle	45	-	55	%	At output crossing point
V _{DISABLE} V _{IL}	-	-	0.3V _{CC}	V	Referenced to ground
V _{ENABLE} V _{IH}	0.7V _{CC}	-	-		
Enable Time	-	-	2	ms	Time for output to reach a logic high state
Disable Time	-	-	200	ns	Time for output to reach a high Z state
Enable/Disable Internal Pull-up	30	70	150	K Ω	Pin 1 open or high
Output Leakage V _{OUT} = V _{CC} V _{OUT} = 0V	- -10	-	+10 -	μ A	Pad 1 low, device disabled
Standby Current	-	-	15 30	μ A	
Phase Jitter	-	0.1 0.03	-	ps	12 kHz to 20 MHz from the output frequency at 156.25 MHz
	-	0.8	-		12 kHz to 20 MHz from the output frequency at 312.5 MHz
	-	-	-		10 Hz to 1 MHz from the output frequency at 156.25 MHz
Phase Noise 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	-	-64 -98 -127 -142 -152	-	dBc/Hz	25°C \pm 2°C at 156.25 MHz
Storage Temperature Range	-55	-	+125	°C	

Notes: Specifications with Pad 1 E/D open circuit

¹ Place an appropriate power supply bypass capacitor next to device for correct operation

² Specified by part number



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Part Number

Series Model	Frequency Stability		Operating Temperature Range	Supply Voltage V_{CC}	Frequency in MHz	Optional T&R Packaging code
PE55	45	J	E	V	- 125.0M	-XX
	45 = ± 50 ppm (STD) 44 = ± 25 ppm 20* = ± 20 ppm		Blank = -10 to +70°C (STD) C = -20 to +70°C E = -40 to +85°C	V = 3.3V $\pm 5\%$	25 - 320 MHz	T250 = 250 per Reel T500 = 500 per Reel T1K = 1000 per Reel (Std for 1K pcs)

* Contact PLE sales for limited frequencies. Full frequency range available which excludes aging.

Device Marking

PFFF.FF P

• YMDxx

P = Pletronics
FFF.FF P = Frequency in MHz, P for PECL
YMD = Date Code, All other marking is internal codes

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

Codes for Date Code YMD (Year Month Day)

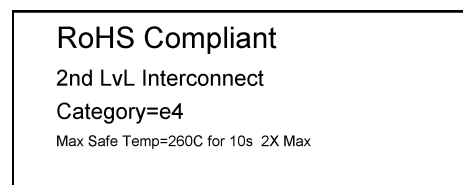
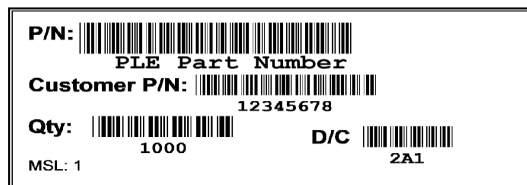
Code	2	3	4	5	6	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2022	2023	2024	2025	2026	Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

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

P/N Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Courier New
Bar code is 39-Full ASCII

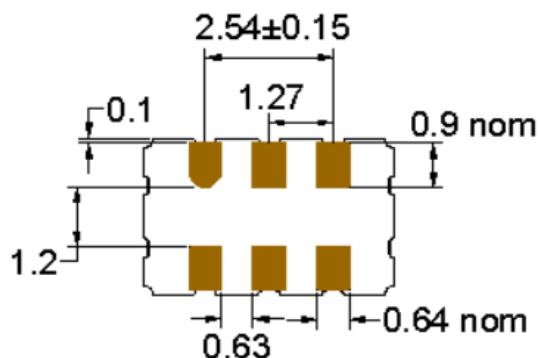
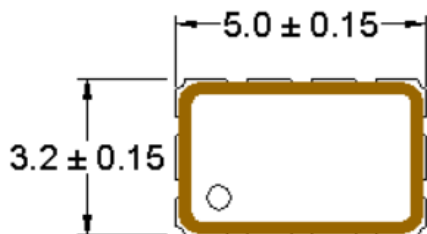
RoHS Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial



Pletronics Inc. certifies this device is in accordance with the RoHS and REACH directives.

Pletronics Inc. guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Weight of the Device: 0.056 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020D
Second Level Interconnect code: e4

Mechanical Dimensions



Dimensions in mm

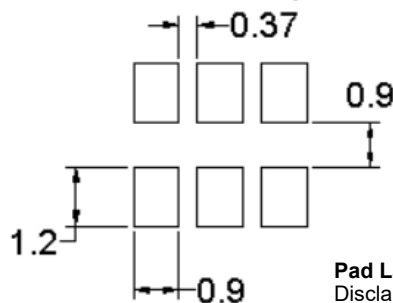
Pad Connections

Pad	Function
1	Enable/Disable
2	NC
3	Ground
4	Output
5	Output N
6	Vcc

ENABLE/DISABLE

Pad 1	Outputs
V _{IH} /Open	Active
V _{IL} /Gnd	Disabled/Tristate

Solder Pad Layout



Pad Layout

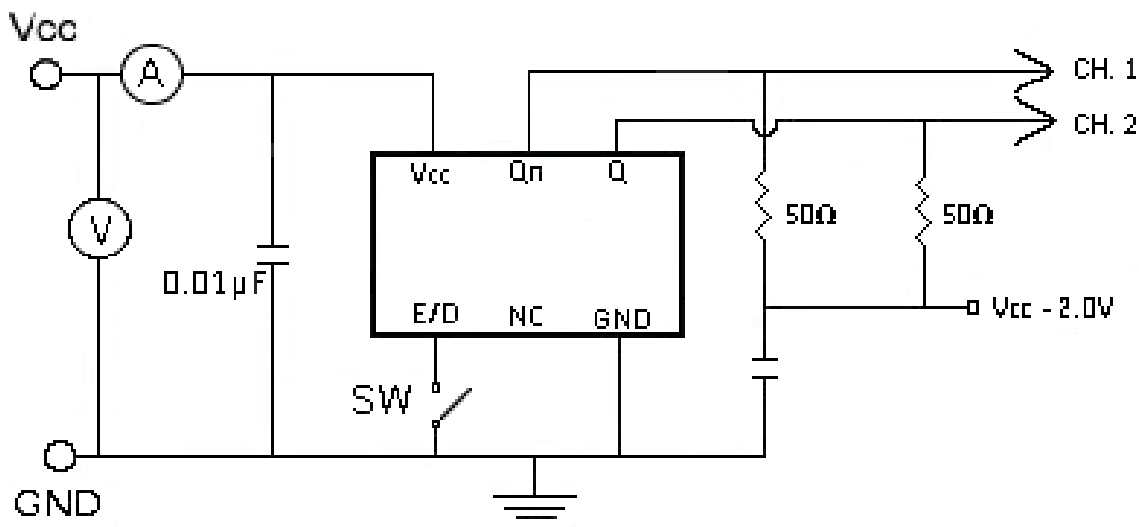
Disclaimer: Recommended layout shown.
Adjust layout as needed for individual
process requirements.

Contacts (pads): Gold (0.3 to 1.0 μ m) over Nickel (1.27 to 8.89 μ m)

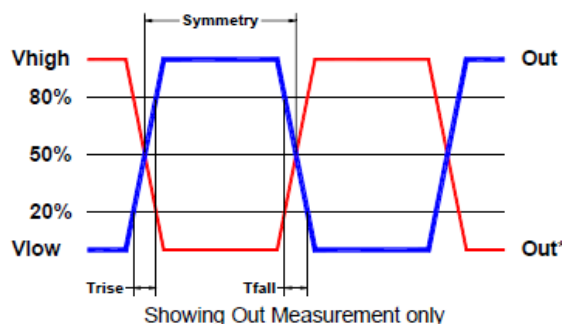
For Optimum Jitter Performance, Pletronics recommends:

- A ground plane under the device
- Do not route large transient signals (both current and voltage) under the device
- Do not place near a large magnetic field such as a high frequency switching power supply
- Do not place near piezoelectric buzzers or mechanical fans

Electrical Test / Load Circuit



Test Waveform



Environmental / ESD Ratings

Reliability: Environmental Compliance

Parameter	Condition
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A
Solderability	IPC J-STD-002
Thermal Cycle	MIL-STD-883 Method 1010, Condition B

ESD Rating

Model	Min. Voltage	Condition
Human Body Model	2000V	JESD22-A114
Machine Model	200V	JESD22-A115

Absolute Maximum Ratings

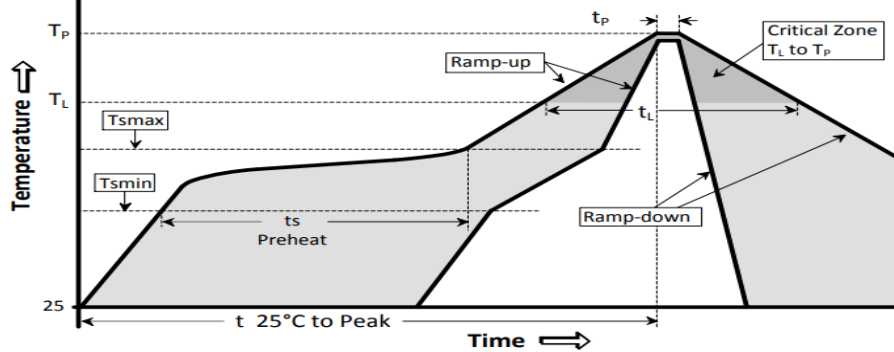
Parameter	Unit
V _{CC} Supply Voltage	-0.3V to +4.0V
V _i Input Voltage	-0.3V to V _{CC} + 0.3V
V _o Output Voltage	-0.3V to V _{CC} + 0.3V

Thermal Characteristics:

The maximum die or junction temperature is 150°C

Reflow Cycle

Maximum Reflow Conditions in accordance with IPC/JEDEC J-STD-020C "Pb-free"

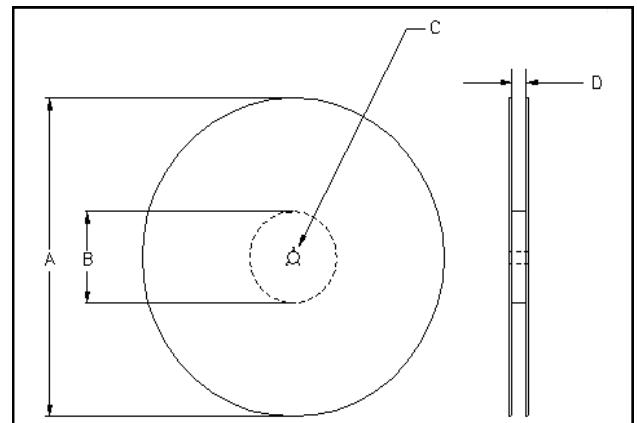
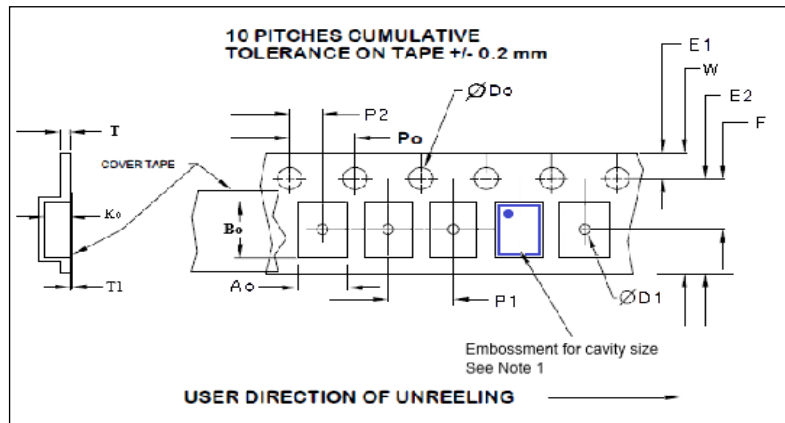


The part may be reflowed 2 times without degradation (typical for lead free processing).

Temperature Profile	Symbol	Condition	Unit
Average ramp-up rate	(T _{smax} to T _p)	3°C / second max	°C / s
Ramp down Rate	T _{cool}	6°C / second max	°C / s
Time 25°C to Peak Temperature	T _{to-peak}	8 minutes max	min
Preheat			
Temperature min	T _{smin}	150	°C
Temperature max	T _{smax}	200	°C
Time T _{smin} to T _{smax}	t _s	60 – 180	sec
Soldering above liquidus			
Temperature liquidus	T _L	217	°C
Time above liquidus	t _L	60 – 150	sec
Peak temperature			
Peak Temperature	T _p	260	°C
Time within 5°C of peak temperature	t _p	20 – 40	sec

Tape and Reel

Tape and Reel available for quantities of 250 to 1000 per reel, cut tape for < 250. 12mm (or 16mm) tape, 8mm pitch.



Tape Variable Dimensions Table 2

Tape Size	E2 typ	F	P1	W max	A ₀	B ₀	K ₀
12mm	10.25	5.5 ±0.05	8.0 ±0.1	12.2	3.6±0.1	5.4±0.1	1.4±0.1
16mm	14.25	7.5 ±0.05	8.0 ±0.1	16.3	3.6±0.1	5.4±0.1	1.4±0.1

Dimensions in mm Drawing Not to scale

Note 1: Embossed cavity to conform to EIA-481-B

Tape Constant Dimensions Table 1

Tape Size	D ₀	D1 typ	E1	P ₀	P ₂	T max	T1 max
12mm	1.5	1.5	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	0.3	0.1
16mm	+0.1 -0.0	1.5			2.0 ±0.1		

Reel Dimensions (may vary) Table 3

Reel Size	A	B	C	D
	Inches	mm	Inches	mm
7	7.0	180	2.50	60
				13.0 ±0.5 -0.2
				Tape size +0.4 -2.0 -0.0



PLETRONICS PE55J Series 3.3V PEGL Clock Oscillator

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