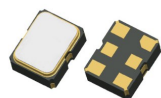




PLETRONICS LV33G Series 1.8V LVDS Clock Oscillator



LV33GX
2.5 x 2.0 x 0.9mm
LCC Ceramic Package

Features

- Quartz crystal controlled Precision Square Wave Oscillator
- LVDS Output
- Enable/Disable Function on pad 1
- Low Jitter
- 1.8V nominal Supply Voltage
- 13.5 - 220 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 Fo	13.5	-	220	MHz	Not all frequencies available, check with PLE sales
Frequency Stability ² ± 20 = 20* , ± 25 = 44 , ± 50 = 45	±20	-	±50	ppm	Includes supply voltage change, load change, aging of 1 year at 25°C ± 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})	1.71	1.8	1.89	V	
Supply Current (I _{CC})	-	-	18	mA	
Output Waveform	LVDS				Load = 100Ω. Recommended termination is DC-Coupled (Point to Point)
Differential Output Voltage (V _{OD})	250	350	450	mV	
Output Offset Voltage (V _{OS})	1.125	1.25	1.375	V	
Differential Output Error (ΔV _{OD})	-	-	50	mV	
Output Offset Voltage Error (ΔV _{OS})	-	-	50	mV	
Output Swing (V _{OPP})	0.25	-	-	V	
Output High Level (V _{OH})	-	1.43	1.6	V	
Output Low Level (V _{OL})	0.9	1.1	-	V	
Output T _{RISE} and T _{FALL}		0.15	0.4	ns	V _{th} is 20% and 80% V _{OPP}
Startup Time	-	-	10	ms	
Duty Cycle (at 0.5V _{OPP})	45	-	55	%	
V _{DISABLE} (V _{IL})	-	-	0.3V _{CC}	V	Referenced to Ground
V _{ENABLE} (V _{IH})	0.7V _{CC}	-	-		
Enable Time	-	-	10	ms	
Disable Time	-	-	200	ns	
Enable/Disable Internal Pull-up	-	39	-	KΩ	To V _{CC} , Pin 1 open or ≥0.7V _{CC}
Output Leakage V _{OUT} = V _{CC} V _{OUT} = 0V	- -10	-	+10 -	μA	Pad 1 low, device disabled
Standby Current	-	-	10	μA	
Jitter	-	0.14	0.6	ps	Fo ≥ 40MHz; 12 kHz to 20 MHz offset
Phase Noise 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz 20 MHz	-	-107 -131 -142 -150 -154 -157	-	dBc/Hz	25°C ± 2°C at 100 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 V_{CC} for best performance

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 code (Std 3K no designator)
LV33	45	G	E	X	- 100.0M	-XX
	45 = ± 50 ppm (STD) 44 = ± 25 ppm 20* = ± 20 ppm	G	Blank = -10 to +70°C (STD) C = -20 to +70°C E* = -40 to +85°C	W = 1.8V ± 5%	13.5 - 220 MHz	T250 = 250 per Reel T500 = 500 per Reel T1K = 1000 per Reel

* Contact PLE sales for limited frequencies for 20ppm -40 to 85°C. Full frequency range available which excludes aging.

Device Marking

FF.FFL • YMxxx	FF.FF = Frequency in MHz (max 5 digits includes decimal) Examples: 156.25M is 156.2; 50MHz is 50.0 L = LVDS YM = Date Code, All other marking is internal code
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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.

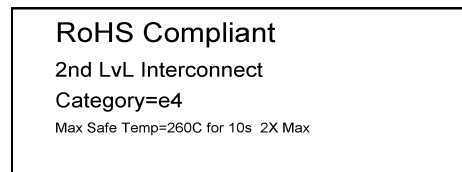
Codes for Date Code YM (Year Month)

Code	6	7	8	9	0	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2026	2027	2028	2029	2030	Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

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

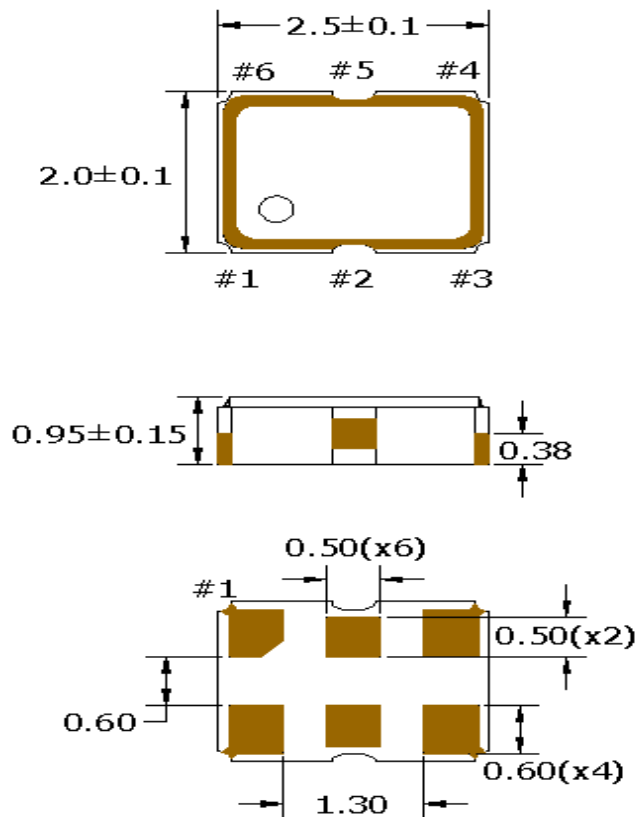
RoHS Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial



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

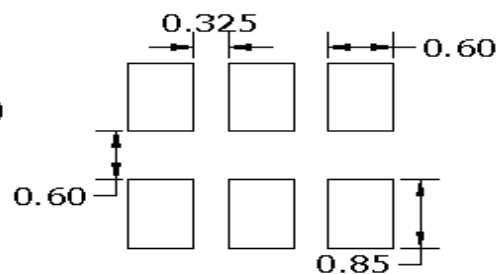
Pletronics Inc. guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Weight of the Device: 0.015 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020D
Second Level Interconnect code: e4

Mechanical Dimensions - Solder Pad Layout



Pin Connections	
PIN #	Function
1	Enable/Disable
2	No connect
3	Ground/Lid
4	Output
5	Output N
6	Vcc

ENABLE/DISABLE	
PIN1	Output
V _{IH} /Open	Active
V _{IL} /Gnd	Disabled/Tristate



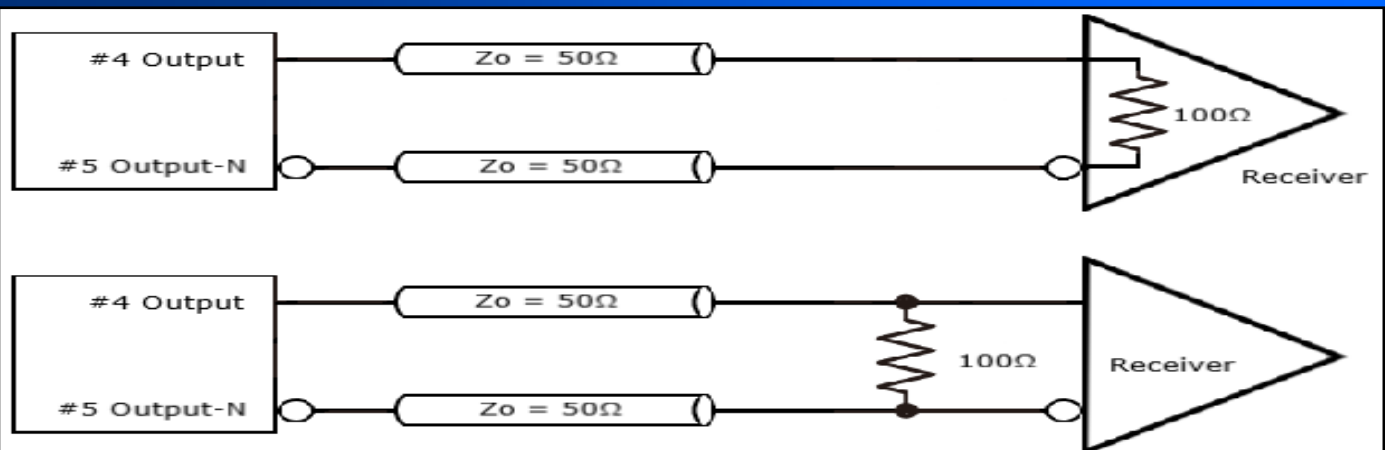
Dimensions in mm

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

Pad Layout

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

Recommended Termination



For any other terminations, the oscillator should be sampled and tested in the application. Both outputs shall be termi-

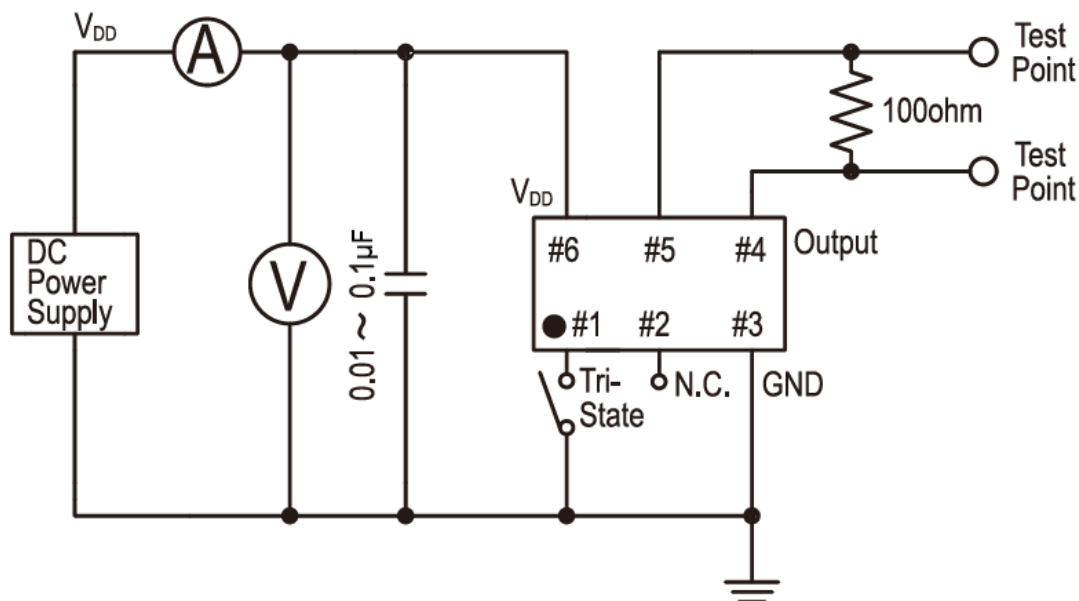
For Optimum Jitter Performance, Pletronics recommends:

- 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

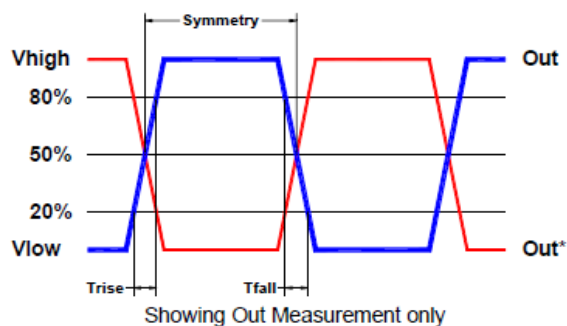


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Electrical Test /Load Circuit



Test Waveform



Environmental / ESD Ratings

Reliability: Environmental

ESD Rating

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

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

Thermal Characteristics:

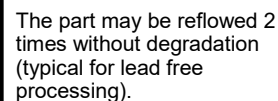
The maximum die or junction temperature is 150°C

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



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





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