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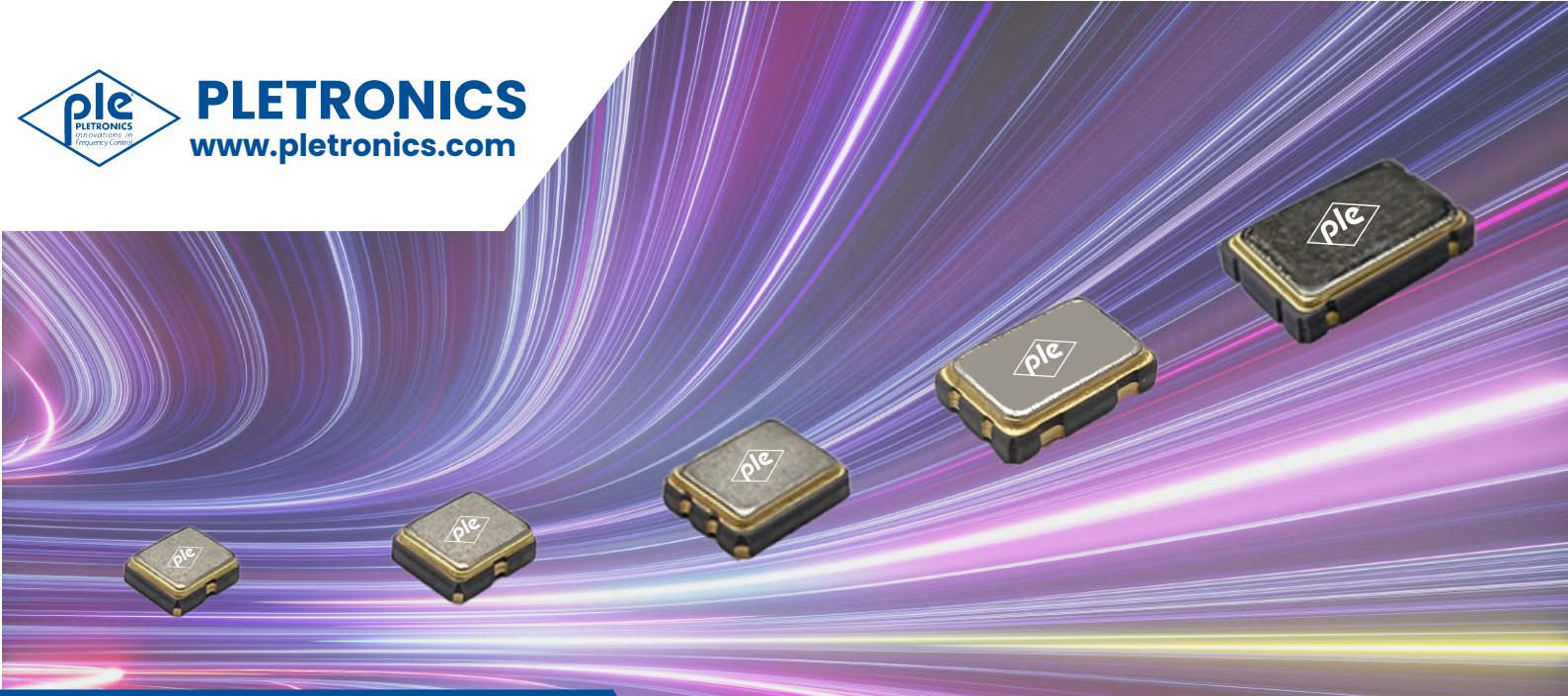

PRONTO

PLETRONICS NEW LINE OF CERAMIC PACKAGED CONFIGURABLE OSCILLATORS. THE PRONTO SERIES ARE FEATURE RICH DEVICES SUITABLE FOR A WIDE RANGE OF APPLICATIONS.

FEATURES INCLUDE:

- **< 1 week DELIVERY**
- **-40° C ~85° C**
- **LVCMOS: 1-200MHZ ; DIFFERENTIAL: 10-1500MHZ**

Introduction

Pletronics Pronto crystal oscillators are a new market leader. Available in multiple package sizes, good jitter performance, tight stability and high frequency range, are a few of the strengths of the Pronto product series.

There are several types of crystal oscillator design approaches that carry both pros and cons. An oscillator with Fundamental vibration mode is good for jitter sensitive designs but more difficult to reach a higher frequency due to the thickness limitation of the crystal. A Third overtone mode oscillator can provide better frequency stability and high frequency offerings but has a long lead time for undeveloped frequencies. Phase Lock Loop (PLL) technology is more flexible with availability of new frequencies and reduced lead times. The PLL jitter performance may not meet strict phase noise requirements.

In an effort to support fast paced board design, Pletronics has introduced the PRONTO – Configurable Crystal Oscillator series, which can provide higher frequency crystal oscillators with comparable jitter performance and reduced manufacturing time.

What is Configurable Crystal Oscillator

The Configurable Pronto Crystal Oscillator is based on state-of-the-art PLL technology as the fundamental design. The Pronto products can provide a wide range of frequencies, and good jitter performance to fit most applications with tight timing requirements. The Configurable crystal oscillator itself is a versatile product, to be configured to customer-specific requirements, followed by performance testing and verification before delivery to the customer. When compared to the traditional crystal oscillator manufacturing process, the Pronto specific product design with product configuration capability effectively shortens the application time to market compared to utilizing a fixed frequency oscillator.

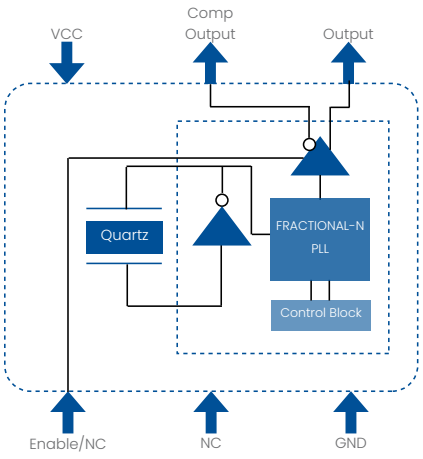

Figure 1: Configurable Crystal Oscillator Architecture

Key benefits of the configurable crystal oscillator are as follows,

1 Short Product Lead Time (From 12~16weeks traditional lead time to within a week)

The configurable crystal oscillator is a semi-finished product in nature. Pletronics offers a quick turn solution for production and sample quantities of the Pronto series directly from our factory in US. The customer specification such as output logic, frequency, stability, phase jitter, are then taken care of on the semi-finished product and go through the final verification and testing process before delivery to the customer. The product development cycle time is significantly reduced and now customers can get their specific crystal oscillator as short as a week. With the excellence of Pletronics customer service, we can deliver the specific crystal oscillator to our customers with a foreseeable run rate in several days and it is a revolution to the traditional crystal oscillator product lead time.

2 Flexible, Robust frequency output

The frequency range of PRONTO is 1MHz to 200MHz for LVCMOS output and 10MHz to 1500MHz for differential (LVDS, LVPECL) output. The higher frequency may further improve the overall system performance and cost in different ways,

- A fully verified higher frequency clock reference to the system is always better than a lower frequency clock due to the uncertain capability of the timing handler from the system chipset.
- A configurable crystal oscillator can go up to 200Mhz for LVCMOS and 1500MHz for LVPECL/LVDS.
- PRONTO is a quicker turn alternative to fundamental and third overtone type crystal oscillator with better control and cost structures.

3 Flexible voltage supply (Range from 1.8V to 3.3V)

Sometimes the system supply voltage is quite complicated, different generations and functions of ICs may require different supply voltages. It is normal to have more than one voltage supply in a single system. Pletronics configurable crystal oscillator design has a good voltage supply tolerance. The power rail can tolerate from 1.8V to 3.3V for LVCMOS type while 2.5V to 3.3V for Differential type which matches most system voltage requirements. This flexible voltage supply design effectively reduces the complexity of the system power design and cost.

4 Very Good phase jitter (As low as 0.6ps (typ))

Pletronics PRONTO products leverage the latest generation of PLL technology and has a significant improvement in phase noise performance, especially in high-frequency applications. This performance is sufficient for most applications.

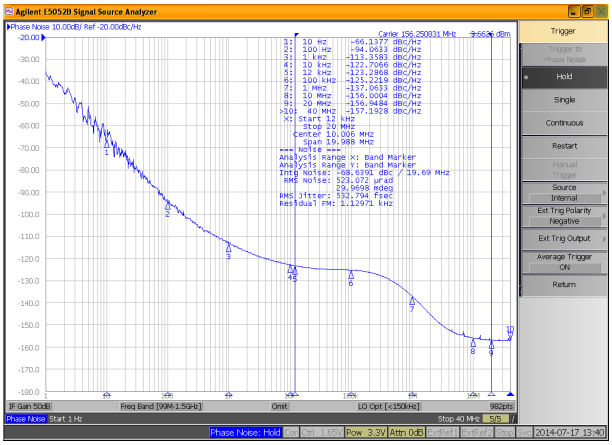

Figure 3: PRONTO, Differential Type @ 125.00MHz. Phase Jitter ~ 532fs

5 Variety of packages and compatibility to common crystal oscillator package

There are five different packages for LVCMOS output (2.0 x 1.6mm, 2.5 x 2.0mm, 3.2 x 2.5mm, 5.0 x 3.2mm and 7.0 x 5.0mm) and 3 different packages for Differential output (3.2 x 2.5mm, 5.0 x 3.2mm and 7.0 x 5.0mm). All the packages are pin and land-pattern-compatible to the traditional crystal oscillator package.

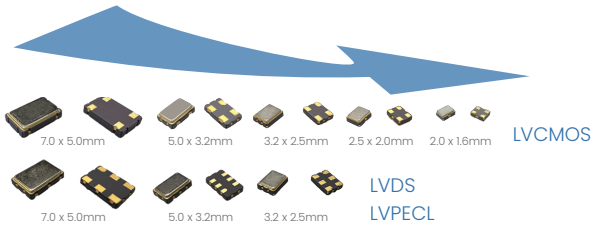

Figure 5. Package line up

6 Tight frequency stability and wide operation temperature range support

There are 3 options of frequency stability support for the PRONTO series which are ±20ppm, ±25ppm, and ±50ppm. Also, there are 3 options for operation temperature which are standard: -10° C to +70° C, Commercial: -20° C to +70° C, and Extended -40° C to +85° C. The combination may optimize the cost vs system application requirement.

Summary

Pletronics PRONTO is a state-of-the-art Frequency Control Product. It successfully shortens the application time to market. In addition, with its flexible frequency output, wide supply voltage, tight frequency stability, wide operation temperature and very good phase jitter features, it becomes the ideal choice for most of the applications.

Product Series Line Up

Product Series	Output Logic	Frequency Range	Idd max (mA)	VDD (V)	Integrated Phase Jitter (typ)(12kHz to 20MHz)	Package Size (mm)
QM22L	LVCMOS	1.0 to 200MHz	1.8V: 25mA 2.5V: 35mA 3.3V: 40mA	1.8V* 2.5V 3.3V	1.0ps	2.0 x 1.6
QM33L	LVCMOS	1.0 to 200MHz	1.8V: 25mA 2.5V: 35mA 3.3V: 40mA	1.8V* 2.5V 3.3V	1.0ps	2.5 x 2.0
QM44L	LVCMOS	1.0 to 200MHz	1.8V: 25mA 2.5V: 35mA 3.3V: 40mA	1.8V* 2.5V 3.3V	1.0ps	3.2 x 2.5
QM55L	LVCMOS	1.0 to 200MHz	1.8V: 25mA 2.5V: 35mA 3.3V: 40mA	1.8V* 2.5V 3.3V	1.0ps	5.0 x 3.2
QM77L	LVCMOS	1.0 to 200MHz	1.8V: 25mA 2.5V: 35mA 3.3V: 40mA	1.8V* 2.5V 3.3V	1.0ps	7.0 x 5.0
QL44L 2.5V/3.3V	LVDS	10 to 1500MHz	2.5V: 45mA 3.3V: 50mA	2.5V 3.3V	0.6ps	3.2 x 2.5
QL55L 2.5V/3.3V	LVDS	10 to 1500MHz	2.5V: 50mA 3.3V: 50mA	2.5V 3.3V	0.6ps	5.0 x 3.2
QL77L 2.5V/3.3V	LVDS	10 to 1500MHz	2.5V: 50mA 3.3V: 50mA	2.5V 3.3V	0.6ps	7.0 x 5.0
QP44L 2.5V/3.3V	LVPECL	10 to 1500MHz	2.5V: 45mA 3.3V: 50mA	2.5V 3.3V	0.6ps	3.2 x 2.5
QP55L 2.5V/3.3V	LVPECL	10 to 1500MHz	2.5V: 50mA 3.3V: 50mA	2.5V 3.3V	0.6ps	5.0 x 3.2
QP77L 2.5V/3.3V	LVPECL	10 to 1500MHz	2.5V: 50mA 3.3V: 50mA	2.5V 3.3V	0.6ps	7.0 x 5.0

*Note: 125MHz is the max frequency limit for 1.8V operation

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V20230005
Date : 2 MARCH 2023