

Low Power 5 Output XO 10MHz to 52MHz

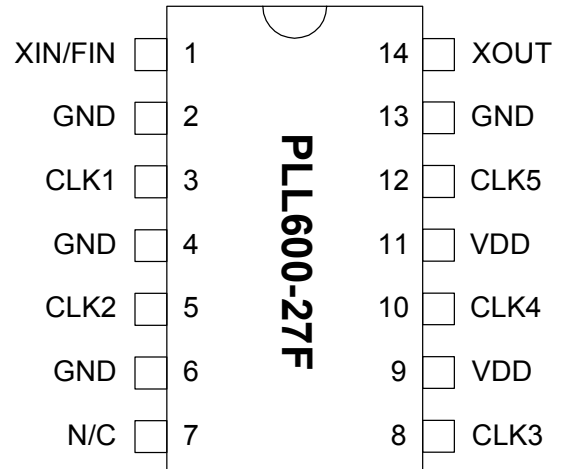
FEATURES

- Generates 5 CMOS outputs.
- 10 to 52MHz fundamental or 3rd OT crystal input.
- Low phase noise (-130 dBc @ 10kHz offset).
- Low jitter (RMS): 2.5ps period jitter.
- 12mA drive capability at TTL output.
- 1.62V to 3.63V DC operation.
- Available in 14 pin 150mil SOIC.

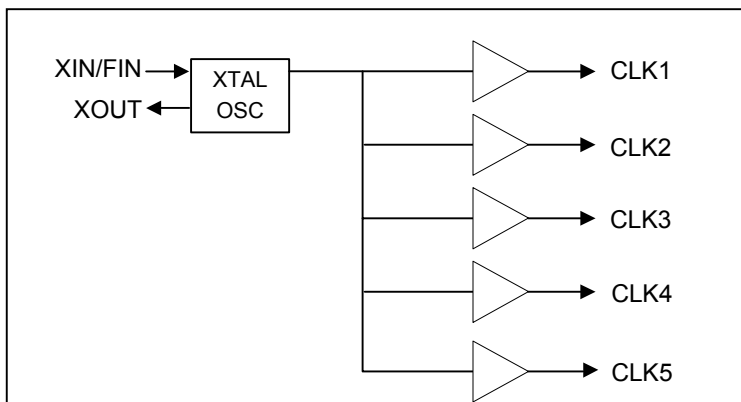
DESCRIPTION

The PLL600-27F is part of PhaseLink's low cost family of XO IC's, designed to replace multiple XO solutions saving the cost and board space of clock distribution buffers. In addition, it provides among the lowest current on the market for the 10MHz to 52MHz range. It accepts input crystals from 10 to 52MHz (fundamental resonant mode) and provides low phase noise (<-130dBc at 10kHz offset at 30MHz), and very low jitter (2.5 ps RMS period jitter) outputs.

PIN ASSIGNMENT



BLOCK DIAGRAM



Low Power 5 Output XO 10MHz to 52MHz
PIN DESCRIPTION

| Name | Pin # | Type | Description |
|------|----------|------|--|
| XIN | 1 | I | Crystal Input or Reference Clock input (10MHz to 52MHz). |
| GND | 2,4,6,13 | P | Ground. |
| CLK1 | 3 | O | Buffered clock output. |
| CLK2 | 5 | O | Buffered clock output. |
| N/C | 7 | - | No connection. |
| CLK3 | 8 | O | Buffered clock output. |
| VDD | 9,11 | P | Power supply. |
| CLK4 | 10 | O | Buffered clock output. |
| CLK5 | 12 | O | Buffered clock output. |
| XOUT | 14 | O | Crystal output. |

ELECTRICAL SPECIFICATIONS
1. Absolute Maximum Ratings

| PARAMETERS | SYMBOL | MIN. | MAX. | UNITS |
|-----------------------------------|----------|------|--------------|-------|
| Supply Voltage | V_{DD} | | 4.6 | V |
| Input Voltage, dc | V_I | -0.5 | $V_{DD}+0.5$ | V |
| Output Voltage, dc | V_O | -0.5 | $V_{DD}+0.5$ | V |
| Storage Temperature | T_S | -65 | 150 | °C |
| Ambient Operating Temperature* | T_A | -40 | 85 | °C |
| Junction Temperature | T_J | | 125 | °C |
| Lead Temperature (soldering, 10s) | | | 260 | °C |
| ESD Protection, Human Body Model | | | 2 | kV |

Exposure of the device under conditions beyond the limits specified by Maximum Ratings for extended periods may cause permanent damage to the device and affect product reliability. These conditions represent a stress rating only, and functional operations of the device at these or any other conditions above the operational limits noted in this specification is not implied.

* Note: Operating Temperature is guaranteed by design for all parts (COMMERCIAL and INDUSTRIAL), but tested for COMMERCIAL grade only.

2. AC Electrical Specifications

| PARAMETERS | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|-----------------------------|------------------------------------|------|------|------|-------|
| Input Crystal Frequency | | 10 | | 52 | MHz |
| Settling time | At power-up (Vdd reaches 1.62V) | | | 10 | ms |
| Output Clock Rise/Fall Time | 0.8V ~ 2.0V with 10 pF load | | 1.15 | | ns |
| | 0.3V ~ 3.0V with 15 pF load | | 2.4 | | |
| VDD sensitivity | Frequency vs. VDD +/- 10% | 0.8 | | 0.8 | ppm |
| Output Clock Duty Cycle | Measured @ 1.4V | 45 | 50 | 55 | % |
| Short Circuit Current | | | ±50 | | mA |

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3. Jitter and Phase Noise Specifications

| PARAMETERS | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|---|--|------|------|------|--------|
| RMS Period Jitter (1 sigma – 1000 samples) | With capacitive decoupling between VDD and GND. | | 2.1 | 2.5 | ps |
| Phase Noise relative to carrier | 30MHz @100Hz offset | | -80 | | dBc/Hz |
| Phase Noise relative to carrier | 30MHz @1kHz offset | | -110 | | dBc/Hz |
| Phase Noise relative to carrier | 30MHz @10kHz offset | | -130 | | dBc/Hz |
| Phase Noise relative to carrier | 30MHz @100kHz offset | | -138 | | dBc/Hz |
| Phase Noise relative to carrier | 30MHz @1MHz offset | | -145 | | dBc/Hz |

4. DC Specifications

| PARAMETERS | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|---|------------------|--------------------------------|-----------------------|------|------|-------|
| Supply Current, Dynamic, with Loaded Outputs @ 3.3V | I _{DD} | At 27MHz, Cload=10pF (3.3V) | | 6.0 | | mA |
| Supply Current in tri-state | I _{DD} | Output disabled | | | 520 | μA |
| Operating Voltage | V _{DD} | | 1.62 | | 3.63 | V |
| Output High Voltage | V _{OH} | I _{OH} = -12mA (3.3V) | 2.4 | | | V |
| Output Low Voltage | V _{OL} | I _{OL} = 12mA (3.3V) | | | 0.4 | V |
| Output High Voltage at CMOS level | V _{OHC} | I _{OH} = -4mA (3.3V) | V _{DD} – 0.4 | | | V |
| Output drive current | | At TTL level (3.3V) | 12 | 17 | | mA |

5. Crystal Specification

| PARAMETERS | SYMBOL | MIN. | TYP. | MAX. | UNITS |
|----------------------------------|-----------------------|------|------|------|-------|
| Crystal Resonator Frequency | F _{XIN} | 10 | | 52 | MHz |
| Crystal Loading Rating | C _{L (xtal)} | | 8.5 | | pF |
| Maximum Sustainable Drive Level | | | | 200 | μW |
| Operating Drive Level | | | 50 | | μW |
| C0 (for frequencies below 30MHz) | | | | 5 | pF |
| C0 (for frequencies above 30MHz) | | | | 4 | pF |
| ESR | R _s | | | 30 | Ω |

Note: A detailed crystal specification document is also available for this part

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PACKAGE INFORMATION

| 14 PIN Narrow SOIC (mm) | | |
|---------------------------|----------|-------|
| SOIC | | |
| Symbol | Min. | Max. |
| A | 1.35 | 1.75 |
| A1 | 0.10 | 0.25 |
| B | 0.33 | 0.51 |
| C | 0.19 | 0.25 |
| D | 9.80 | 10.00 |
| E | 3.80 | 4.00 |
| H | 5.80 | 6.20 |
| L | 0.40 | 1.27 |
| e | 1.27 BSC | |

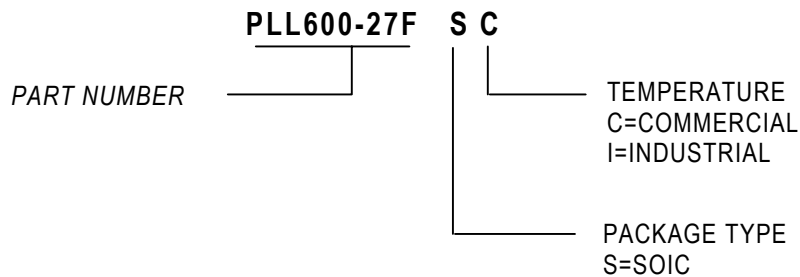
ORDERING INFORMATION

For part ordering, please contact our Sales Department:

47745 Fremont Blvd., Fremont, CA 94538, USA
Tel: (510) 492-0990 Fax: (510) 492-0991

PART NUMBER

The order number for this device is a combination of the following:
Device number, Package type and Operating temperature range



| <u>Order Number</u> | <u>Marking</u> | <u>Package Option</u> |
|---------------------|----------------|-----------------------|
| PLL600-27F SC | P600-27F SC | SOIC - Tube |
| PLL600-27F SC-R | P600-27F SC | SOIC - Tape and Reel |

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- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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