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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Low Power, 1.62V to 3.63V, 10MHz to 40MHz, 1:3 Oscillator Fanout Buffer

FEATURES

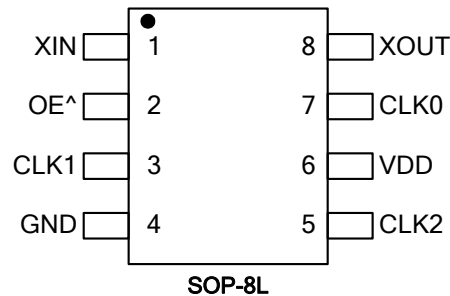
- Advanced Oscillator Design for Wide Frequency Coverage
- 3 LVCMOS Outputs
- 12 mA Output Drive Strength
- Input/Output Frequency:
 - Fundamental Crystal: 10MHz to 40MHz
- Very Low Jitter and Phase Noise
- Low Current Consumption
- Single 1.62V to 3.63V Power Supply
- Available in SOP-8L GREEN/RoHS Compliant Package

DESCRIPTION

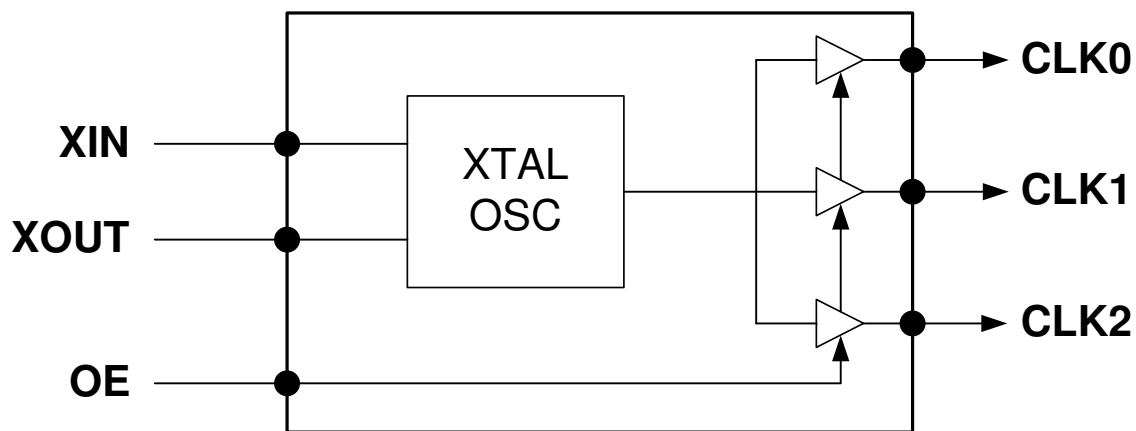
The PL135-37 is an advanced oscillator fanout buffer design for high performance, low-power applications. The PL135-37 accepts a fundamental crystal input of 10MHz to 40MHz and produces three LVCMOS outputs of the same frequency. The Output Enable (OE) function can be used to tri-state the outputs.

The PL135-27 offers the best phase noise and jitter performance and lowest power consumption of any comparable IC.

PACKAGE PIN CONFIGURATION



BLOCK DIAGRAM



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PIN DESCRIPTION

| Name | SOP-8L | Type | Description |
|------|--------|------|--|
| XIN | 1 | I | Crystal input |
| OE | 2 | I | Output enable input. This pin has internal pull-up resistor. All outputs will be tri-stated when pulled low. |
| CLK1 | 3 | O | Output clock |
| GND | 4 | P | Ground connection |
| CLK2 | 5 | O | Output clock |
| VDD | 6 | P | Power supply |
| CLK0 | 7 | O | Output clock |
| XOUT | 8 | I | Crystal output |

* **Note:** This pin includes an internal 60K Ω pull up.

LAYOUT RECOMMENDATIONS

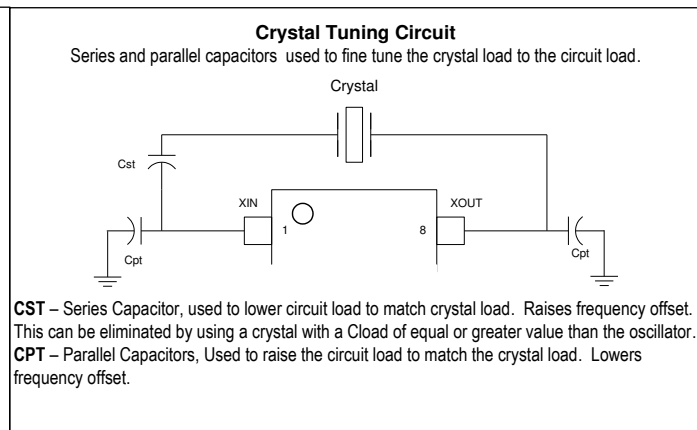
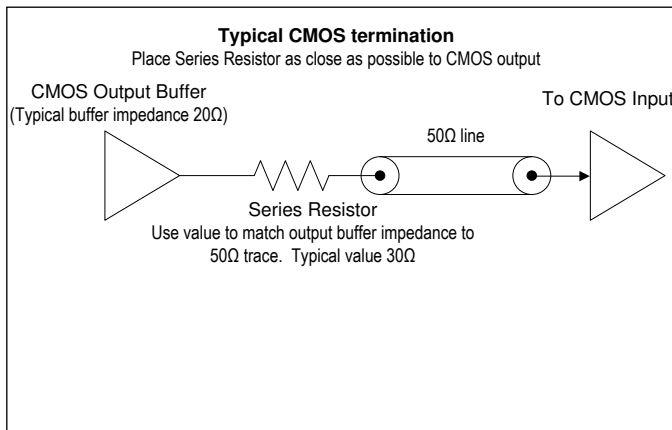
The following guidelines are to assist you with a performance optimized PCB design:

Signal Integrity and Termination Considerations

- Keep traces short!
- Trace = Inductor. With a capacitive load this equals ringing!
- Long trace = Transmission Line. Without proper termination this will cause reflections (looks like ringing).
- Design long traces as “striplines” or “microstrips” with defined impedance.
- Match trace at one side to avoid reflections bouncing back and forth.

Decoupling and Power Supply Considerations

- Place decoupling capacitors as close as possible to the V_{DD} pin(s) to limit noise from the power supply
- Multiple V_{DD} pins should be decoupled separately for best performance.
- Addition of a ferrite bead in series with V_{DD} can help prevent noise from other board sources
- Value of decoupling capacitor is frequency dependant. Typical value to use is 0.1 μ F.



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ELECTRICAL SPECIFICATIONS
ABSOLUTE MAXIMUM RATINGS

| PARAMETERS | SYMBOL | MIN. | MAX. | UNITS |
|--------------------------------|----------|------|--------------|-------|
| Supply Voltage Range | V_{DD} | -0.5 | 4.6 | V |
| Input Voltage Range | V_I | -0.5 | $V_{DD}+0.5$ | V |
| Output Voltage Range | V_O | -0.5 | $V_{DD}+0.5$ | V |
| Storage Temperature | T_S | -65 | 150 | °C |
| Ambient Operating Temperature* | | -40 | 85 | °C |

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. *Operating temperature is guaranteed by design. Parts are tested to commercial grade only.

AC SPECIFICATIONS

| PARAMETERS | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|-------------------------|---|------|------|------|-------|
| Crystal Input Frequency | Fundamental Crystal | 10 | | 40 | MHz |
| Settling Time | At power-up ($V_{DD} \geq 1.62V$) | | | 5 | ms |
| Output Enable Time | OE Function; $T_a=25^\circ C$, 10pF Load | | | 10 | ns |
| V_{DD} Sensitivity | Frequency vs. V_{DD} , $\pm 10\%$ | -1 | | 1 | ppm |
| Output Rise Time | 15pF Load, 10/90% V_{DD} , 3.3V | | 2 | 3 | ns |
| Output Fall Time | 15pF Load, 90/10% V_{DD} , 3.3V | | 2 | 3 | ns |
| Output to Output Skew | Under all conditions | | | 250 | ps |
| Duty Cycle | Under all conditions | 45 | 50 | 55 | % |

DC SPECIFICATIONS

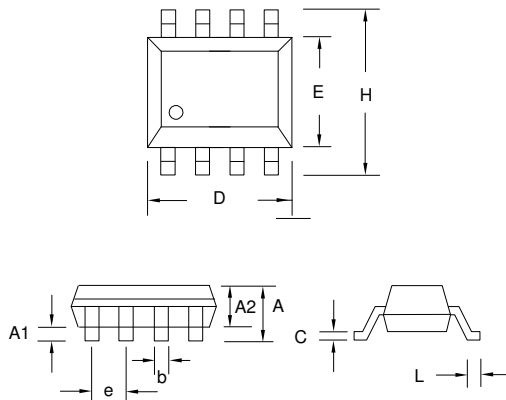
| PARAMETERS | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|-------------------------|--------------|-----------------------------------|------|-----|------|-------|
| Supply Current, Dynamic | I_{DD} | $V_{DD} = 3.3V$, 25MHz, No Load | | 4 | | mA |
| | | $V_{DD} = 2.5V$, 25MHz, No Load | | 3 | | mA |
| | | $V_{DD} = 1.8V$, 25MHz, No Load | | 2 | | mA |
| Supply Current, Standby | I_{DD_SB} | OE Pin Pulled Low, 25MHz, 3.3V | | | 0.6 | mA |
| Operating Voltage | V_{DD} | | 1.62 | | 3.63 | V |
| Output Low Voltage | V_{OL} | $I_{OL} = +12mA$, 3.3V | | | 0.4 | V |
| Output High Voltage | V_{OH} | $I_{OH} = -12mA$, 3.3V | 2.4 | | | V |
| Output Current | I_{OSD} | $V_{OL} = 0.4V$, $V_{OH} = 2.4V$ | 12 | | | mA |

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CRYSTAL SPECIFICATIONS

| PARAMETERS | SYMBOL | MIN. | TYP. | MAX. | UNITS |
|---|---------------|------|------|------|----------|
| Fundamental Crystal Resonator Frequency | F_{XIN} | 10 | | 40 | MHz |
| Crystal Loading Rating | $C_{L(xtal)}$ | | 8.5 | | pF |
| Maximum Sustainable Drive Level | | | | 200 | μ W |
| Operating Drive Level | | | 50 | | μ W |
| Crystal Shunt Capacitance | C_0 | | | 3 | pF |
| Effective Series Resistance | ESR | | | 30 | Ω |

PACKAGE DRAWINGS (GREEN PACKAGE COMPLIANT)
SOP-8L

| Symbol | Dimension in MM | |
|--------|-----------------|------|
| | Min. | Max. |
| A | 1.35 | 1.75 |
| A1 | 0.10 | 0.25 |
| A2 | 1.25 | 1.50 |
| B | 0.33 | 0.53 |
| C | 0.19 | 0.27 |
| D | 4.80 | 5.00 |
| E | 3.80 | 4.00 |
| H | 5.80 | 6.20 |
| L | 0.40 | 0.89 |
| e | 1.27 BSC | |



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ORDERING INFORMATION (GREEN PACKAGE COMPLIANT)

For part ordering, please contact our Sales Department:

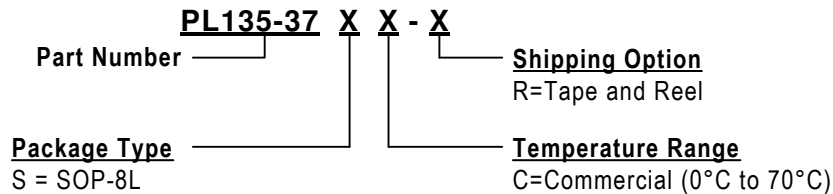
2180 Fortune Drive, San Jose, CA 95131, USA

Tel: (408) 944-0800 Fax: (408) 474-1000

PART NUMBER

The order number for this device is a combination of the following:

Part number, Package type and Operating temperature range



| Part/Order Number | Marking | Package Option |
|-------------------|------------------------|------------------------------|
| PL135-37SC-R | P135-37 SC LLLLL | 8-Pin SOP-8L (Tape and Reel) |

*Note: LLLLL designates lot number

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